Weapon Systems

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UNITED STATES ARMY 1995

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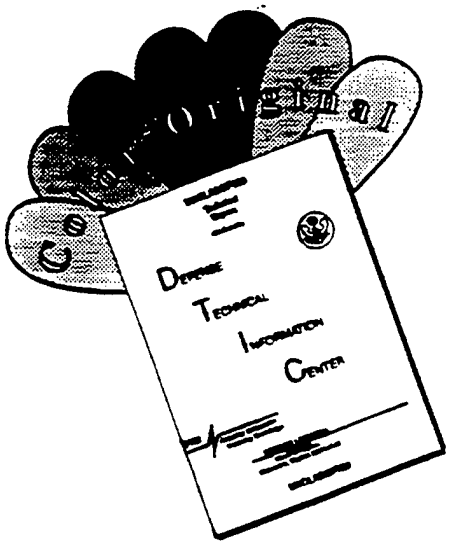

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To the Reader:

This year, as we celebrate the 50th anniversary of the Allied World War II victory, we must remember the lessons learned from that victory. The pre-WWII Army was ill-equipped and ill-trained, and we had to take valuable time to fix these problems. Following WWII the Army downsized dramatically and cut needed capability. Only five short years later the Nation had to restore that capability to defend democracy and freedom—again we were ill-trained and ill equipped and suffered needless losses in early battles. The challenges facing us now are to downsize without sacrificing capability and to continue to adapt to a changing threat environment. A trained, well-manned, and well-equipped force remains the best deterrent to potential aggressers. Today we no longer can take time to get ready–we have to be ready every single day. Today's Army, with fewer resources, is more actively engaged abroad than during any previous peacetime era.

This handbook reviews the major Army systems needed to maintain a well-equipped power projection force capable of accomplishing all its assigned missions—from achieving decisive victory to providing humanitarian support—anywhere in the world. Technology gives us an immense advantage, but we cannot rest on our laurels. We must continue to buy smarter with our limited modernization dollars. Force XXI is the Army of the future, and requires us to exploit all aspects of the information revolution by "digitizing the force." Only continued modernization will preserve today's edge and allow our troops to win no matter what the mission. This handbook details the key systems required for the Army's continued modernization.

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About the Cover

1. **AH-1G Cobra:** The Cobra was the Army's first helicopter solely designed to carry weapons, not troops. Based on the Huey, the Cobra gunship was first used in combat in 1967 in Vietnam.

2. **Revolutionary War Soldier (1777 – 1783):** This soldier, a member of Colonel David Hall's Delaware Regiment, Continental Line, is a fine example of a relatively well-equipped regular soldier. The red facing on his coat is indicative of a soldier from Maryland, Virginia, Delaware, or Pennsylvania.

3. **World War I Soldier (1917 – 1918):** The U.S. Army deployed 45 divisions to Europe during the First World War. This soldier, firing a French-made Chauchat Automatic Rifle, would have been a common sight during the war as most U.S. soldiers used weapons of foreign design and frequently foreign manufacture.

4. **World War II Paratrooper (1941 – 1945):** The use of paratroopers in World War II, an idea first suggested by GEN Billy Mitchell in World War I, added a new dimension to Army operations. The U.S. Army raised six airborne divisions during the war, and they were used extensively in both theaters.

5. **World War II Sherman M4 Medium Tank (1942 – 1945):** The Sherman Tank was the U.S. Army's most produced armored vehicle. The Sherman was also used in great numbers by the United Kingdom, Russia, France, and many other Allied nations.

6. **Infantry Captain in Woodland Battle Dress Uniform:** The core strength of today's Army is, and will always be, the bright, motivated, and well trained soldiers that "wear the green".

7. **21st Century Land Warrior (21CLW):** Although appearing like science fiction characters, the 21CLW is suprisingly close to reality. 21CLW will bring the benefits of digitization to the individual soldier.

8. **Staff Sergeant in Desert Battle Dress Uniform:** The role of women in the military has been increasing since World War II. In Operations Desert Shield and Storm, over 26,000 female soldiers were in theater by February 1991, the initiation of the ground war, and they played a vital role in the success of the operation.

9. **M270 Multiple Launch Rocket System (MLRS):** The MLRS entered Army service in 1983 and was first used in combat in Operation Desert Storm. The MLRS fired over 10,000 rounds during Desert Storm, and Iraqi soldiers referred to it as "steel rain".

10. **UH-1D Iroquois (Huey):** The Huey was the Army's workhorse utility helicopter during the Vietnam War and into the 1980s. Modernized Huey's still play a large role in Army Aviation, and will remain in service into the next century.

11. **10th Cavalry Trooper (1880's):** This Buffalo Soldier is representative of the many cavalry soldiers who played a large role in opening the West. The U.S. Army maintained horse cavalry units part-way through World War II. The last Army horse cavalry unit saw combat in the Philippines in 1942.

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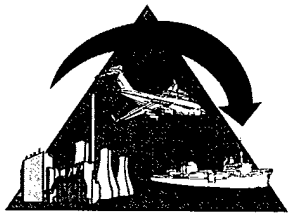
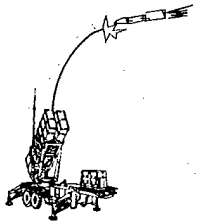
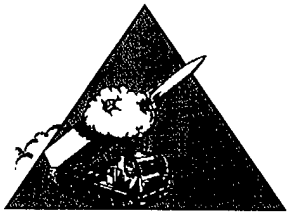
This book is divided into five **Modernization Objective** sections. The systems are listed only in the Modernization Objective section to which the system adds the most capability.



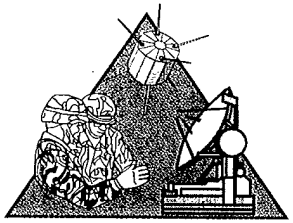
Project & Sustain



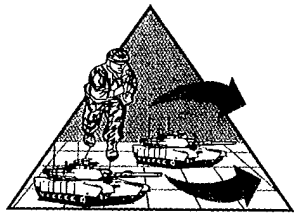
Protect The Force



Conduct Precision Strikes

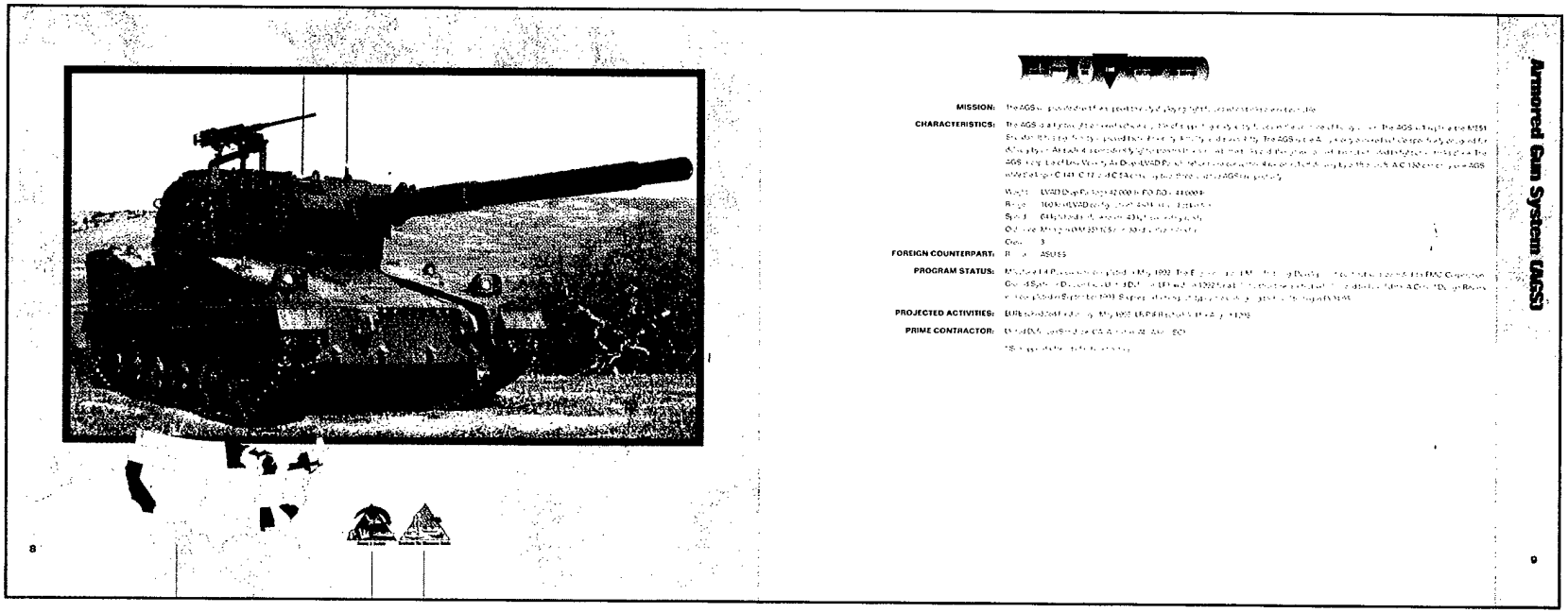


Win Information War



Dominate The Maneuver Battle

The Life Cycle Management Model shows the development stage that the system is in. The terms are explained on the facing page.



The **U.S. Outline** highlights the states in which the prime and major subcontractors are located.

The **Modernization Objective icons** are displayed for all Modernization Objective to which the system adds capabilities.

The **Prime Contractor (s)** for the system is displayed. The major sub-contractors can be found listed in the Contractors by System and Contractors by State Appendices.

SCIENCE AND TECHNOLOGY (S&T): Efforts focused on the identification and development of promising technologies (not directly tied to specific acquisition programs) are collectively called science and technology programs. S&T encompasses programs in basic research, exploratory development, and advanced development.

CONCEPT EXPLORATION AND DEFINITION: The focus of this phase is on defining and evaluating the feasibility of alternative concepts and providing the basis for assessing the relative merits of the concepts. The objectives of this phase are to:

- Explore various material alternatives to satisfying the documented mission need,
- Define the most promising system concept(s),
- Develop supporting analyses and information to include identifying high risk areas and risk management approaches to support the Milestone I decision, and
- Develop a proposed acquisition strategy and initial program objectives for cost, schedule, and performance for the most promising system concept(s).

DEMONSTRATION AND VALIDATION (DEM/VAL): When warranted, multiple design approaches and parallel technologies are pursued within the system concept(s) during this phase. The objectives of this phase are to:

- Better define the critical design characteristics and expected capabilities of the system concept(s),
- Demonstrate that the technologies critical to the most promising concept(s) can be incorporated into system design(s) with confidence,
- Prove that the processes critical to the most promising system concept(s) are understood and attainable,
- Develop the analyses/information needed to support a Milestone II decision, and
- Establish a proposed Development Baseline containing refined program cost, schedule, and performance objectives for the most promising design approach.

ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD): The objectives of this phase are to:

- Translate the most promising design approach developed in the Demonstration and Validation phase into a stable, producible and cost effective system design,
- Validate the manufacturing or production process, and
- Demonstrate through testing that the system capabilities:
  - Meet contract specification requirements, and
  - Satisfy the mission need and meet minimum acceptable operational performance requirements.

PRODUCTION AND DEPLOYMENT: System performance and quality will be monitored by follow-on test and evaluation during this phase. The objectives of this phase are to:

- Establish a stable, efficient production and support base,
- Achieve an operational capability that satisfies the mission need, and
- Conduct follow-on operational and production verification testing to confirm and monitor performance and quality and verify the correction of deficiencies.

OPERATIONS AND SUPPORT: This phase overlaps with the Production and Deployment phase, and begins after initial systems have been fielded. The objectives of this phase are to:

- Ensure the fielded system continues to provide capabilities required to meet the identified mission need, and
- Identify shortcomings or deficiencies that must be corrected to improve performance.

Haiti, 1994

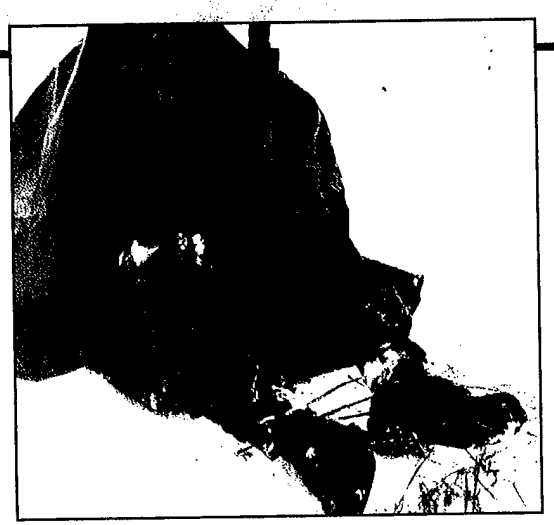
Fifty years ago the United States and its Allies achieved momentous victories over Nazi Germany and Imperial Japan. As we honor those who achieved these victories, we must never forget the lessons learned from their sacrifices, as the cost in lives was extreme.

By the time WWII ended, the U.S. role in the world had changed dramatically. Not only was neutrality no longer viable, but the U.S. now had to play a disproportionately large role in world affairs because so many nations were severely damaged by the war. The U.S. was also forced, for the first time, to maintain a large peacetime military and a substantial overseas presence. The role of the Army changed with America's new world standing. The difference between the pre-war Army and the late 1940s force was dramatic. The 1948 Army had a budget three times larger with over twice as many personnel as the force in 1940, the last peacetime year. However, the Army was committed to a presence throughout Europe, Japan, Korea, and the Philippines.

Macedonia, 1994

Zaire, 1994

The situation today is strangely similar. The end of the Cold War has allowed reductions in the size of America's forces stationed abroad, but the scope of our overseas commitments has hardly diminished. By the end of Fiscal Year 1995, the Army will have reduced its size by over a third from its Cold War levels, cut eight active divisions, closed 20% of its state-side installations, returned 60% of its European installations, and reduced its annual budget by approximately $30 billion since Fiscal Year 1989. At the same time, however, over a quarter of the Army is overseas on any given



Korea, 1951

day, and the average soldier will spend 138 days a year deployed outside of the U.S.

Since 1989 and the fall of the Berlin Wall, over 20 new countries have been formed or reformed. While most have had peaceful transitions, others have resulted in bloodshed and suffering for thousands of innocents. It is in this new and uncertain environment that the U.S. Army is now conducting more frequent non-traditional peacekeeping and humanitarian assistance missions—such as those in Macedonia and Rwanda—while still maintaining a traditional, albeit reduced, presence in Germany and Korea. The world, frequently through the United Nations, has come to rely upon the unique capabilities of the U.S. military. The Army's ability to deploy and support combat forces far from home also allows it to provide humanitarian assistance and disaster relief in austere environments around the globe.

U.S. commitments abroad continue to grow while overall troop strength is reduced. The lesson of history, however, is that a credible deterrent must be maintained. The invasion of Korea in June of 1950 and initial defeat of the poorly prepared U.S. units rushed to Korea proved that deterrence must be backed by capable forces. Without question, today's Army is prepared, but it cannot stand still and remain prepared. Maintaining readiness while modernizing for tomorrow to ensure land force dominance is the focus of today's Army.

Zaire, 1994

Germany, 1944

WHERE WE ARE GOING

On the information age battlefield, we will have the ability to share information in real time across extended distances. We will know where friendly forces are and where they are not. We will know about the enemy in real time, and we will know our logistics posture on a continuing basis. We will be able to rapidly and simultaneously mass multiple forms of combat power at the decisive point.

GEN Gordon R. Sullivan, 1994

Force XXI

General Sullivan's words define the vision of the Army of the 21st Century, the Information Age Army, **Force XXI.** Electronic

connectivity, or digitization, will link the Force XXI elements. Force XXI commanders and soldiers will have access to not just more information, but better information, from more sources and in real time. Each tank, helicopter, support vehicle, and electronic sensor—even the individual soldier—will have two-way access to such information. Each will "see" their piece of the battlefield with a clarity never before possible.

The **Army Digitization Office** will coordinate Force XXI modernization through incremental hardware and software improvements, new system development, and use of commercial off the shelf components. Off the shelf components will allow fielding of digital components earlier and at a lower cost than if entirely new systems were developed. The process has already begun. For example, the first battalion size element with off the shelf digital hardware and software was tested at the National Training Center in April of 1994. The Army's goal is to equip the first brigade size element with a digital capability by the turn of the century This fielding schedule requires the use of existing hardware wherever possible, with modification as necessary.

New equipment and systems are only a part of the Force XXI digitization effort. Early deployment will allow the doctrinal and organizational implications of digitization to be fully integrated throughout the modernization process. Army tactical organization is expected to change dramatically to exploit new capabilities. This is expected to rival the momentous changes that occurred as the Army began to mechanize just prior to WWII. Unfortunately, during that period inadequate funding led to delays in fielding equipment and to such scenes as the cardboard tank, wooden cannon, and borrowed private trucks for the Louisiana Maneuvers in 1940.

The Army undertook another fundamental change in the early 1970's. The end of the Vietnam war refocused the Army on Europe as its most likely battlefield and the need to prepare to fight a large armored threat. The **"Big-Five"** modernization program resulted in the Abrams main battle tank, Bradley armored infantry fighting vehicle, Apache attack helicopter, Blackhawk utility helicopter, and Patriot air defense missile system being procured simultaneously to redress the "hollow force". The dramatic improvements in capabilities required a

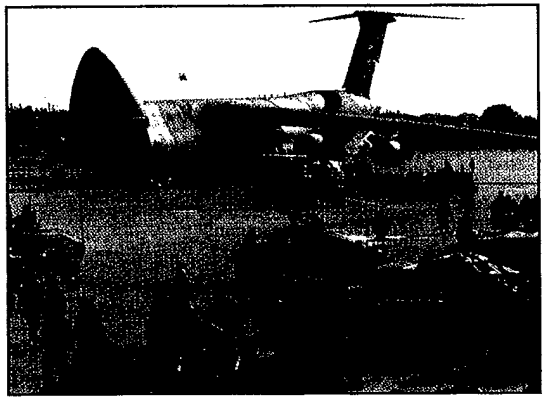
Virginia, 1941

major review of Army doctrine and organization. Concurrent with the development and procurement of the new systems, Army organization was updated and the **AirLand Battle** doctrine was developed to exploit these systems.

The "Big-Five" modernization cost was substantial, but a wise modernization strategy was implemented. Today, the Abrams, Bradley, Apache, Blackhawk, and Patriot give the Army superiority over any potential threat. Force XXI improvements must be made to guarantee that it remains superior for years to come. Improving systems is considerably less expensive than replacing them, and will allow the Army to maintain the edge, even in the current budget environment.

Force XXI will involve a simultaneous evaluation and adjustment of organizations, doctrine, and systems, much like that which occurred during the "Big-Five" modernization. Fielding a fully equipped digitized brigade will help avoid a repeat of the scenes from 1940, with troops having to simulate new systems and capabilities being integrated into the force. The first battalion size element is already being tested, exploring integration issues and validating off the shelf components. An important element in the modernization process is the linkage between the weapons users and the system designers. For Force XXI to be successful, this link must be solid and be made as early as possible. **The Army's Battle Labs** and the new **Louisiana Maneuvers (LAM) Task Force** were established for just this purpose. The Battle Labs are responsible for the preliminary testing effort, determining what off the shelf technologies are suitable for Force XXI and what new systems need to be developed. In conjunction with the Deputy Chief of Staff of Operations, the LAM test the concepts and organization on a large scale.

The Power Projection Army



Haiti, 1994

Following Desert Storm, the DoD conducted a **Mobility Requirements Study,** which identified several changes the end of the Cold War demanded in the character of U.S. forces. During the 1980s, the Army had nearly a third of its active combat brigade-size units forward-deployed in Europe and additional forces forward-deployed in other geographical areas. By 1995, 80% of all Army forces will be stationed in CONUS. The need to rapidly deploy from the U.S. to anywhere on the globe, in a few days or hours, is changing the Army to a power projection force.

In Operation Desert Shield, the Army deployed in a six month period almost half of its combat power to a part of the world that lacked any permanent U.S. bases. In WWII, the Army did not deploy a force the size of the Desert Storm Army until the invasion of Normandy in June of 1944, four years after beginning preparations to fight that war. Today, time and space have been compressed and we no longer have the luxury of time to raise a capable Army. In WWII the Army could not modernize in eighteen months; the challenge today is to be ready in four days.

The **Army Strategic Mobility Plan** establishes challenging timelines for Army forces to deploy to a future theater of operations. The initial Army brigade would be on the ground within four days of being notified. The remainder of the lead division would be in the area twelve days after notification. Additionally, two heavy divisions, comprising the lead elements of the

Netherlands, 1994

Contingency Corps, would also be in the theater within 30 days. The entire corps—including five divisions, an armored cavalry regiment, corps artillery, and all combat support and combat service support elements (hospitals, transportation units, supply units, military police, intelligence units, etc...)—would be in the theater within 75 days!

To achieve the objectives of the Army Strategic Mobility Plan and ensure that the Contingency Corps can be deployed anywhere in the world, the Army will depend on both the Navy and the Air Force. Army airborne forces are the most versatile option available to the President. However, those airborne soldiers need USAF airlifters to get where they need to go. Navy sealift is equally important for moving heavy armored forces and for supporting all services in theater. For the first time, this Handbook addresses such important logistic systems as **Rail Improvements** and **Logistics Over the Shore (LOTS).** Improvements to the Army's ability to move by rail will facilitate moving heavy forces to ports of embarkation. In a similar way, LOTS will improve the Army's ability to unload sealift shipping in unimproved ports. These logistic programs will ensure that the Army can get where it needs to go.

HOW WE WILL GET THERE

An efficient army cannot be a static organism. Its evolution must keep pace with and is in large part dependent upon constantly evolving changes in the industrial, scientific, social, and political fields.

GEN Douglas MacArthur, 1934

Continuous Modernization

Modernization is a crucial and constant requirement for the Army. Ensuring that the Army maintains its qualitative edge over any prospective opponent is vital to maintaining the relevance of our Armed Forces. The constant effort to improve, known as **continuous modernization,** has two direct impacts. Primarily, it maintains the deterrent value of the Army. The most effective army is the one that never fights because potential opponents believe they would lose if they challenged it. Deterrence is the best way to save soldiers' lives. Barring this, the other significant impact of continuous modernization is to win in combat quickly, with minimal loss of life.

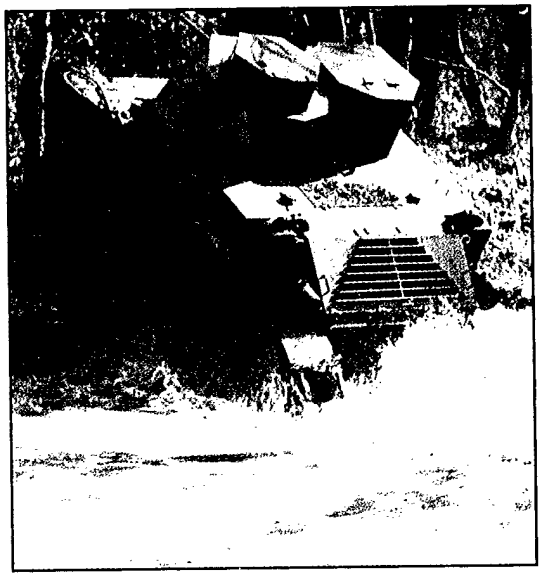
During the 1920s and 1930s in the midst of the Great Depression, modernization of aging equipment and the development of new equipment were not high national priorities. As late as 1939, the War Department budget of $646 million

Maryland, 1938

earmarked only $89 million for research, development, and the purchase of new equipment. In the inter-war period, other nations were rapidly developing improvements to the systems that had dominated World War I: the airplane, the tank, and

modern artillery. The absence of a similar modernization in the U.S. Army hampered the development of doctrine and organizations capable of exploiting these new types of equipment.

In the period between U.S. mobilization in 1940 and the bombing of Pearl Harbor in 1941, the Army tried to overcome years of neglect. The appropriation for 1941 alone was $3 billion, which was augmented with an additional $6 billion following the collapse of France (the previous 19 years had allowed only $6.5 billion for War Department military activities). The Army expanded rapidly from 267,000 men to almost 1.5 million. Though most units were not fully equipped, the large forces allowed the conduct of massive maneuvers in Louisiana and the Carolinas to exercise new formations, integrate new equipment and soldiers, and test new doctrines for mobile warfare. Yet the Army found that it could not modernize overnight. The attack on Pearl Harbor brought the United States into the war before it was ready and it suffered greatly in its first major actions against Japanese and German forces at Bataan and Kasserine Pass, respectively. Two years of preparation and billions of dollars had not adequately prepared the Army for modern warfare. Failure to modernize cost American lives.

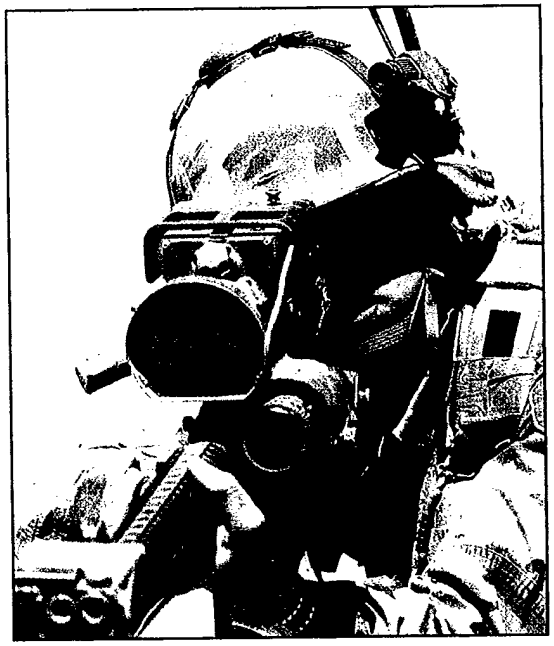


Virginia, 1938

Improving Capabilities

Force XXI allows fielding of an improved capability without necessarily fielding entirely new systems. Digitization will not require a new main battle tank, rather modifications to existing vehicles. Continuous modernization has already led to many improvements on the M1 Abrams which provides a good case study for continuous modernizations and digitization. The basic vehicle has already gone through three major modifications since being introduced in 1980, and the fourth is underway. The original M1 mounted a 105mm gun. The improved M1 added additional armor to the existing design. The M1A1 mounts a 120mm gun, additional armor, and an improved Nuclear, Biological, and Chemical protection system The M1A2 adds improved electronics, a navigation system, a night vision device for the commander, and the Inter Vehicle Information System (IVIS). Improvements to the M1, such as the 120mm gun and additional armor, are examples of pre-planned product improvements (P3I). P3I allows designers to anticipate what direction future modifications will take and makes allowances for them in the initial design. The current program to

California, 1994



Germany, 1945

upgrade the basic M1s to M1A2 standard illustrates the success of the P3I approach.

Horizontal technology integration (HTI) is another modernization effort. To date, the Army has focused on three enabling strategies—"Own the Night", "Battlefield Digitization", and "Combat Identification"—to improve capabilities across the force. HTI will also bring the 2nd Generation Forward Looking InfraRed night vision system to all existing platforms, including the M1 series, enhancing the Army's ability to "Own the Night". Other systems will be included in the digital Army through the use of appliqué kits. These kits will allow HTI improvements to be added to systems not scheduled for a major upgrade program.

THE MODERNIZATION OBJECTIVES

Modernization implies the development and acquisition, in all necessary types, of equipment of maximum efficiency, and the adoption of methods calculated to produce the most effective results from their coordinated use.

GEN Douglas MacArthur, 1934

The goal of the Army is to ensure land force dominance. Towards this end the Army has defined five capabilities, or modernization objectives: Project and Sustain; Protect the Force; Win the Information War; Conduct Precision Strikes; and Dominate the Maneuver Battle. This handbook is organized to reflect how the various systems achieve each capability.

CONCLUSION

America's Army relies on a technological edge...to overmatch our adversaries. To maintain this edge, we must continue to modernize.

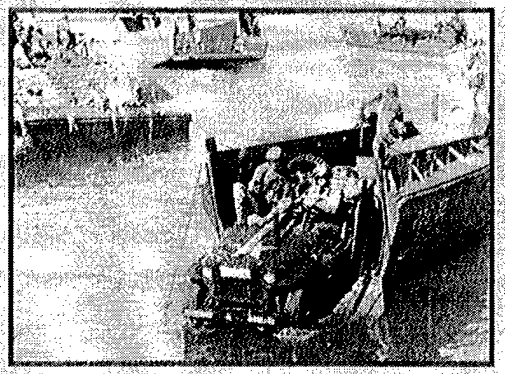
Secretary of the Army Togo West, 1994

This handbook describes the systems the Army needs and is currently acquiring or developing to maintain its edge. The critical focus in research, development, and acquisition is to guarantee that if and when U.S. soldiers go into combat, they have the best equipment available. History, and common sense, shows that the quality of the equipment is a major factor which, coupled with quality soldiers and leaders, will assure success on the battlefield. This handbook describes the equipment that will help save American lives.

"Th' hell this ain't th' most important hole in th' world. I'm in it."

Reprinted with permission of Bill Mauldin. ©1944 Bill Mauldin.

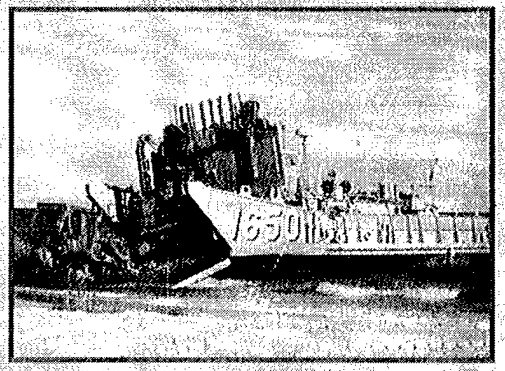
YESTERDAY: World War II changed the character of the Army to the expeditionary nature it maintains today. During the war, the Army sent 89 divisions overseas, with over 5.4 million soldiers, and supplied them with more than 126 million tons of equipment and supplies. *Primary strategic lifters: C-47 and Liberty Ship*



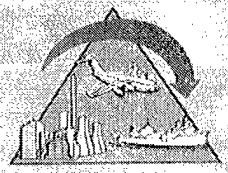
France, 1944

North Carolina, 1940

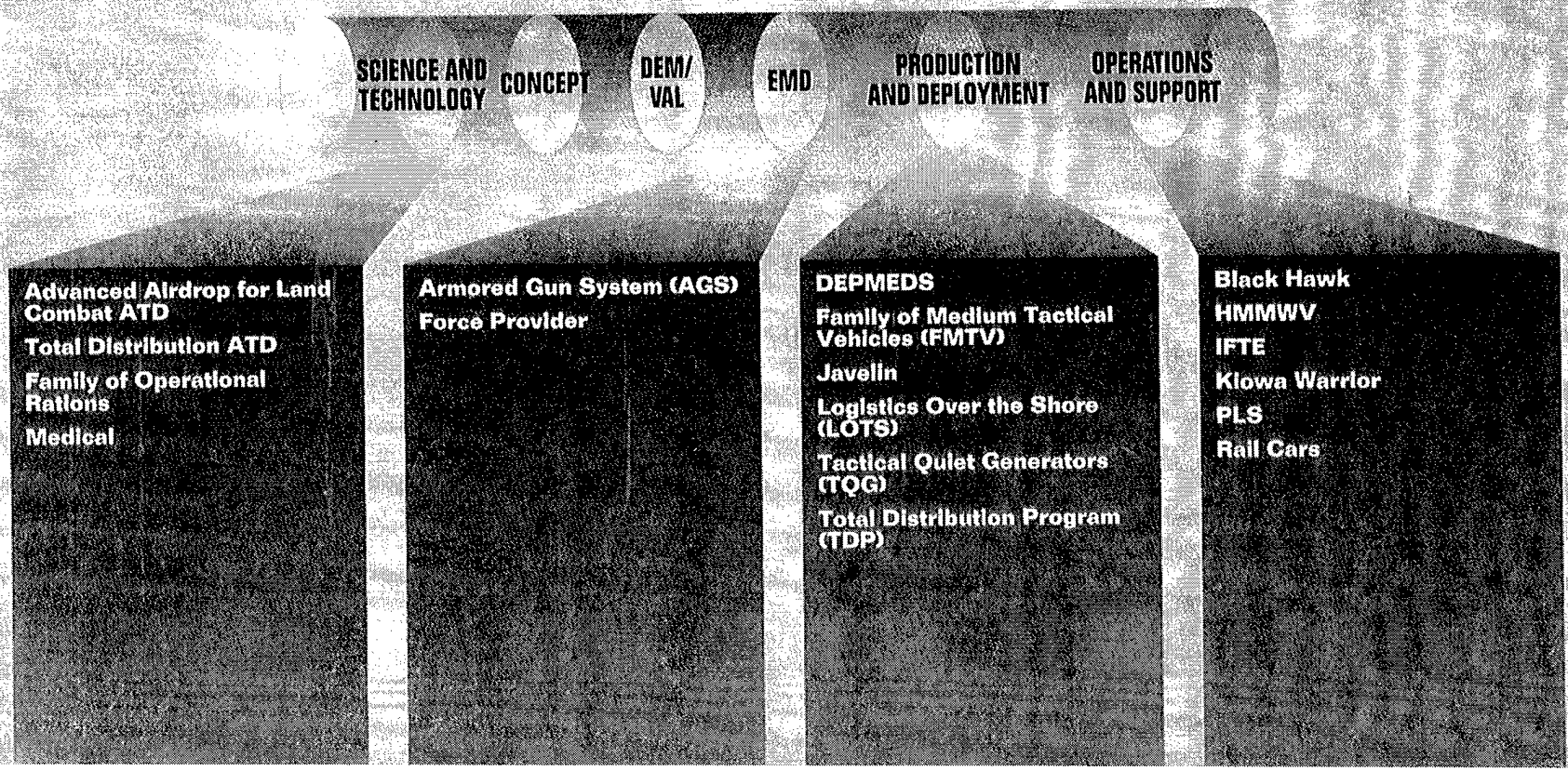
TODAY: Today's Army can deploy faster and with more firepower than at any time in the Army's history. The deployment time for the initial heavy maneuver force was significantly reduced with the activation of the Army's first afloat prepositioned brigade in 1994. Dramatic improvements in the firepower of early entry forces will begin this year with the fielding of Javelin. Further strategic lift enhancements are required for the Army to meet its deployment goals. *Primary strategic lifters: C-141 and Fast Sealift Ships*

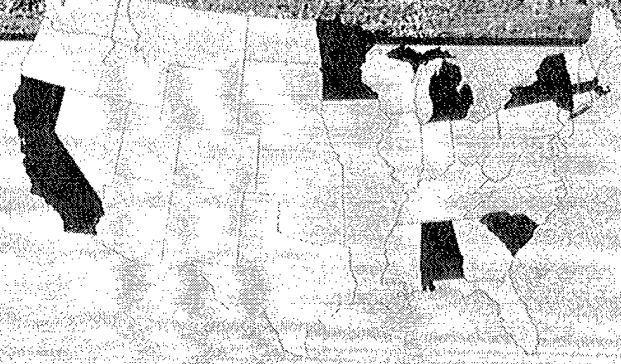


TOMORROW: The Army's ability to rapidly deploy and respond to crises will continue to improve as the Army enhances its strategic lift capability with Rail Improvements and LOTS. Fire power for light forces will be dramatically enhanced by the fielding of the Armored Gun System. The Army's ability to support its soldiers and perform humanitarian missions overseas will improve with the introduction of Force Provider and the Total Distribution Program. *Primary strategic lifters: C-17 and Bob Hope Class*



To be effective and credible, our CONUS-based Army must be able to project and sustain its forces anywhere in the world. Acquiring sufficient strategic mobility to rapidly deploy and sustain overwhelming combat power is an Army priority. The Army is pursuing initiatives to enhance its capabilities to project power. These include increasing the combat power of light forces, improving the deployability of heavy forces, increasing automation, and minimizing the size of support units that must be located in the battle areas.





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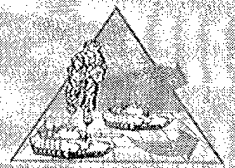
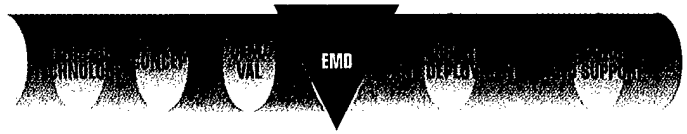


Dominate The Maneuver Battle



MISSION: The AGS will provide direct fire support to early deploying, light forces when tanks are not available.

CHARACTERISTICS: The AGS is a lightweight armored vehicle capable of supporting early entry forces in the absence of heavy armor. The AGS will replace the M551 Sheridan. It has significantly improved tactical mobility, lethality, and survivability. The AGS is the Army's only armored vehicle specifically designed for delivery by air. As such, it is considerably lighter than traditional main battle tanks and though well armed, it is not intended to fight other tanks alone. The AGS is capable of Low Velocity Air Drop (LVAD) or more conventional roll-on/roll-off delivery by airlift aircraft. A C-130 can carry one AGS, while the larger C-141, C-17, and C-5A can carry two, three, and five AGSs respectively.

Weight: LVAD Drop Package 42,000 lb; RO/RO < 44,000 lb
Range: 160km (LVAD configuration); 480 km (combat loaded)
Speed: 64 kph hard-surface roads; 40 kph secondary roads
Ordnance: Main gun (XM-35) 105 mm/30 rd, with autoloader
Crew: 3

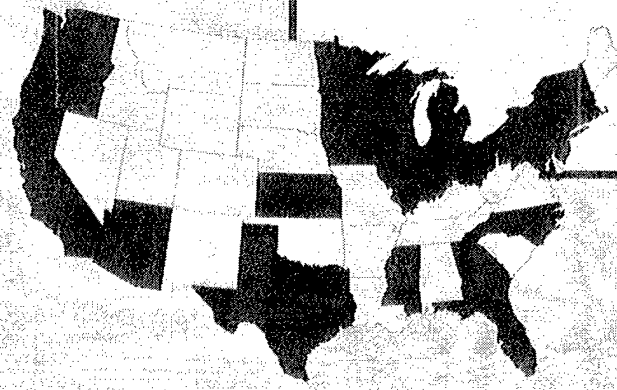
FOREIGN COUNTERPART: Russia: ASU-85

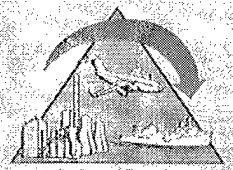
PROGRAM STATUS: Milestone I/II Review was completed in May 1992. The Engineering and Manufacturing Development contract was awarded to FMC Corporation, Ground Systems Division (now United Defense, LP), in June 1992 for a ballistic structure, six test vehicles, and technical data. A Critical Design Review was completed in September 1993. Six pre-production prototypes are undergoing technical testing in FY94-95.

PROJECTED ACTIVITIES: EUTE scheduled for January—May 1995; LRIP IPR scheduled for August 1995

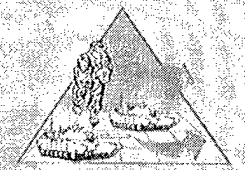
PRIME CONTRACTOR: United Defense (San Jose, CA; Annistion, AL; Aiken, SC)

*See appendix for list of subcontractors.





Project & Sustain



Dominate The Maneuver Battle

MISSION: The Black Hawk provides light utility and assault helicopter capability.

CHARACTERISTICS: The Black Hawk (UH-60) is a light transport helicopter that performs many missions in the Army. The Black Hawk is the primary helicopter for air assault, air cavalry, 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 because of its dramatic improvements in troop capacity and cargo lift capability compared to the UH-1 "Huey" it replaces. Now, an entire 11-man, fully equipped infantry squad can be lifted in one Black Hawk, and the troops can be transported faster and in most weather conditions. The Black Hawk also is the first utility and assault helicopter that adds to the Army's division-level mobility; for example, it can reposition a 105mm 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 to enable it to withstand multiple small arms hits, and its airframe is designed to progressively crush on impact to protect the crew and passengers in a crash. Ease of maintenance in the field was designed into the Black Hawk from the beginning.

	UH-60A	*UH-60L*
Max gross weight:	22,000 lb	22,000 lb
Cruise speed:	139 kt	150 kt
Endurance:	2.3hr	2.1 hr
Max range:	320 nm	306 nm
Crew:	2 pilots, 1 crew chief	2 pilots, 1 crew chief
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:

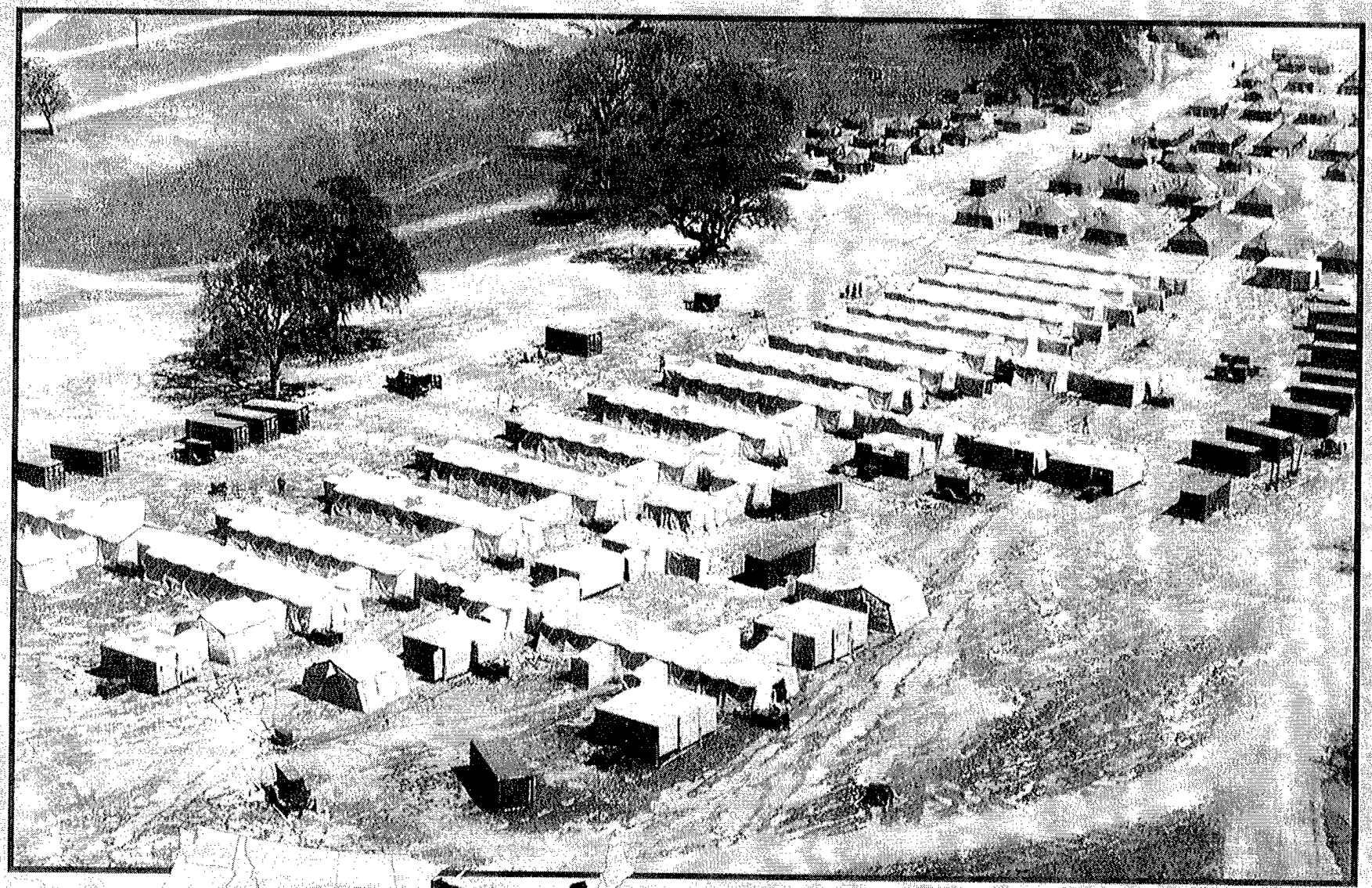
Russia:	HIP series aircraft
United Kingdom:	Lynx; EH-101
France:	Puma; NH90

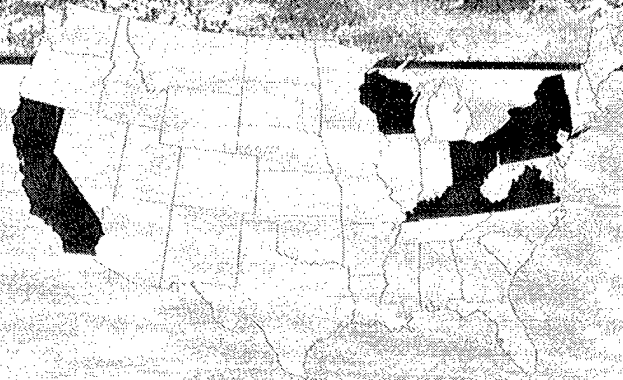
PROGRAM STATUS: The Army began fielding the UH-60 in 1978. Between 1978 and 1989 the Army procured UH-60A model aircraft. In October 1989, the propulsion system was upgraded, resulting in a model designation change from UH-60A to UH-60L. As of the end of the Fiscal Year 1994, the Army has procured 350 UH-60L models for a total UH-60 buy of 1330 aircraft. The Army currently is in the fourth year of a five-year, multi-year procurement contract calling for the delivery of 60 Aircraft per year.

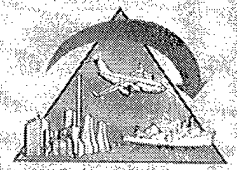
PROJECTED ACTIVITIES: Delivery of 5 aircraft per month in accordance with the multi-year procurement contract. Continued refurbishment and standardization of pre-1989 UH-60A models to bring those airframes to the most up to date A model configuration.

PRIME CONTRACTOR: Sikorsky Aircraft (Stratford, CT)—Airframe
General Electric (Lynn, MA)—Engine

*See appendix for list of subcontractors.







Project & Sustain

MISSION: The DEPMEDS family provides deployable hospitals with standard medical care equipment.

CHARACTERISTICS: The DEPMEDS family is composed of medical equipment packaged into standardized modules for use by all Services. There are four types of deployable Army hospitals under the Army's Medical Force 2000 reorganization: Forward-deployed Mobile Army Surgical Hospitals, Combat Support Hospitals, Field Hospitals, and General Hospitals. Each will comprise different configurations of standard DEPMEDS modules, such as operating rooms, laboratories, x-ray units, and wards. The DEPMEDS hospital sets standardize the use throughout the Army and DoD of the latest medical technology and equipment, expendable supplies, major nonmedical support equipment power units, Tent Extendible Modular Personnel Tents, tactical shelters, heating, and air conditioning. Standard modules improve medical operability and patient distribution. The hospital sets can be deployed under all climatic conditions. Fielding the 88 Army hospital sets will eliminate serious shortages of field medical equipment and achieve major advances in equipping the Total Army. Gaining units will receive their DEPMEDS equipment in one package under the Total Package Fielding concept. This is the largest Total Package Fielding effort ever undertaken by the Army Medical Department.

System characteristics vary by type of hospital set. All provide adequate but austere care, are maintainable and relocatable, have modular configuration and quad-service compatibility, and are transportable by strategic air.

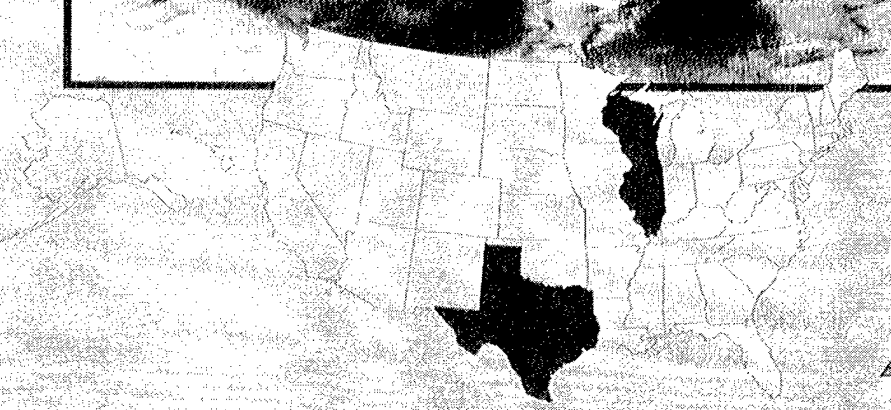
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The DoD Medical Standardization Board ensures compatibility among the Services. The Army program is managed by the DEPMEDS Project Manager, operating under the authority of the Secretary of the Army. Fielding began in 4QFY87. As of September 1994, 66 hospitals have been fielding and 96 minimum Essential Equipment Sets have been fielded.

PROJECTED ACTIVITIES: Initial fielding will be completed during FY95 with sustainment direct exchanges programmed to follow immediately thereafter.

PRIME CONTRACTOR: A large number of contractors are involved in providing the 3,400-plus medical and non-medical components of DEPMEDS. These components are assembled into modules and hospital sets by the Defense Logistics Agency, Defense Depot, Ogden, UT.

*See appendix for list of subcontractors.



Project & Sustain

MISSION: The FMTV will fill the Army's medium tactical wheeled vehicle requirements.

CHARACTERISTICS: The FMTV consists of a common truck chassis that is used for several vehicle configurations in two payload classes. 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 5-ton payload capacity and consists of the following models: cargo with and without materiel-handling equipment, tractor, wrecker, and dump truck. 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 overaged and maintenance-intensive trucks currently in the fleet.

	LMTV Cargo	*MTV Cargo*
Payload:	5,000 lb	10,000 lb
Towed load:	7,500 lb	21,000 lb
Engine:	Diesel	Diesel
Transmission:	Automatic	Automatic
Horsepower:	225	290
Drive:	4x4	6x6

FOREIGN COUNTERPARTS:

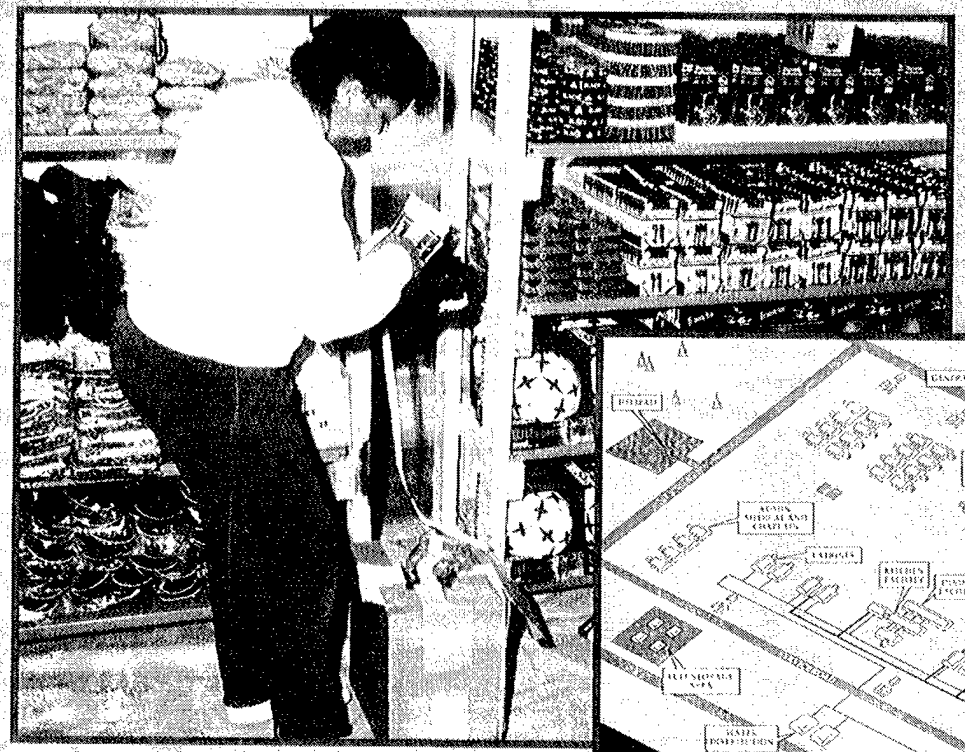
	LMTV	*MTV*
Russia:	ZIL-131; GAZ-66	URAL-375; 6A2 9301; KAW 4430 (same as 5-ton)
Italy:	Fiat 75PM	Fiat 6602
Germany:	Unimog U1100L	Mercedes 1017A, MAN 5-ton
France:	RVI Saviem TRM-2000	RVI Saviem TRM-4000
Spain:	Santana 2000	Peguso 3050
Austria:	Steyr 630M3	Steyr 1291M

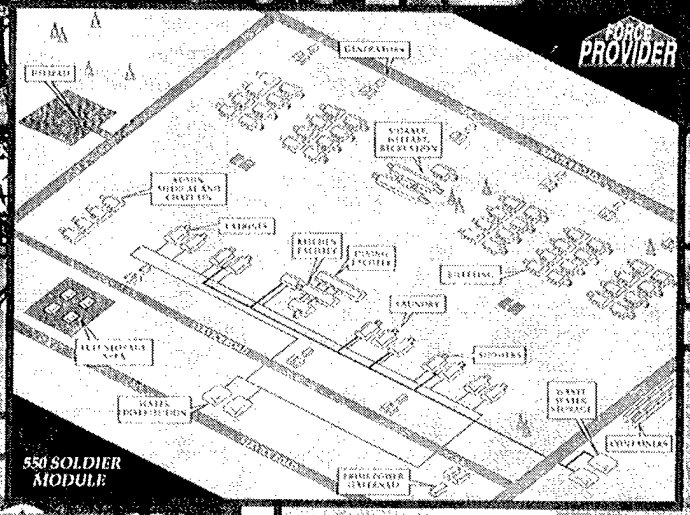
PROGRAM STATUS: The FMTV production contract was awarded on 11 October 1991. Production Qualification Testing (PQT) is ongoing. The program is currently in the Low-Rate Initial Production phase and will be limited to 200 per month.

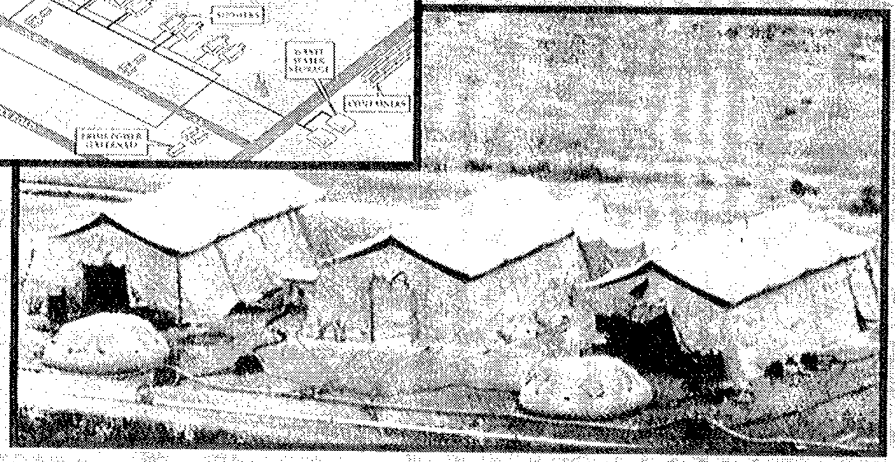
PROJECTED ACTIVITIES: Initial Operational Testing and Evaluation (IOTE) and Army Systems Acquisition Review Council (ASARC) will occur in 1995.

PRIME CONTRACTOR: Stewart and Stevenson Services (Houston, TX)

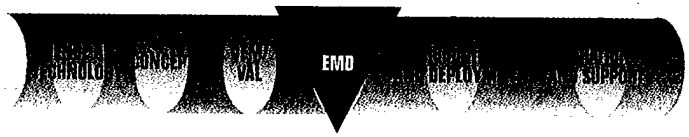
*See appendix for list of subcontractors.







Project & Sustain



MISSION: The FP will improve the quality of life for combat soldiers on extended operations in remote areas.

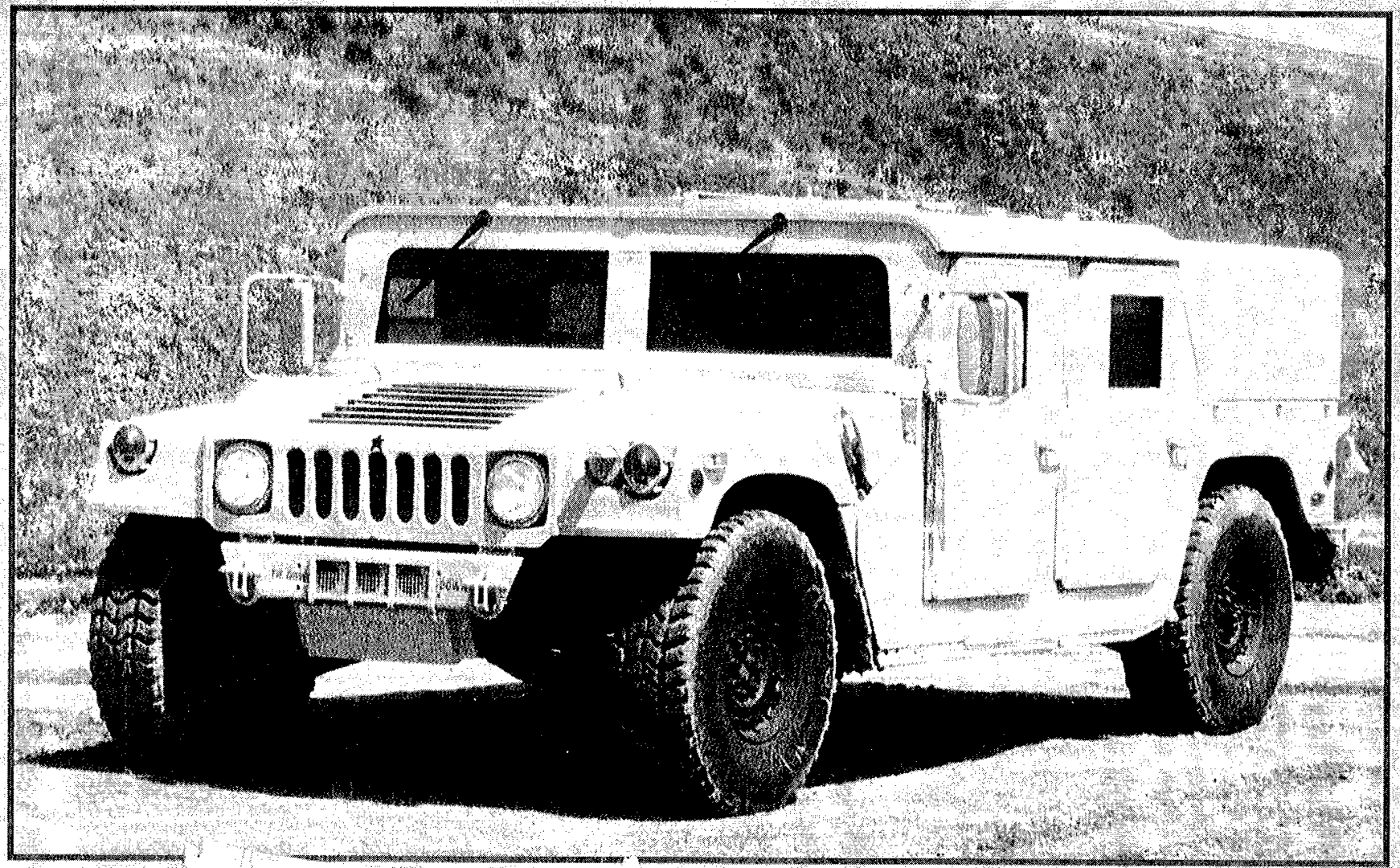
CHARACTERISTICS: The FP will provide a tent-based system with some containerized components to provide billeting, feeding, hygiene services, and morale and welfare activities. The FP is a Non-Developmental Item integration effort, and the components will consist of existing DoD equipment to the maximum extent possible. Equipment for this system will include tent-based billeting and dining areas, shower and sink units, latrines, laundries, and containerized kitchens. Other support equipment required for the FP includes power generation and distribution equipment, materiel-handling equipment, area lighting, and climate control. Additionally, the FP will provide a capability for theater of operations reception, reconstitution, humanitarian aid, and disaster relief missions.

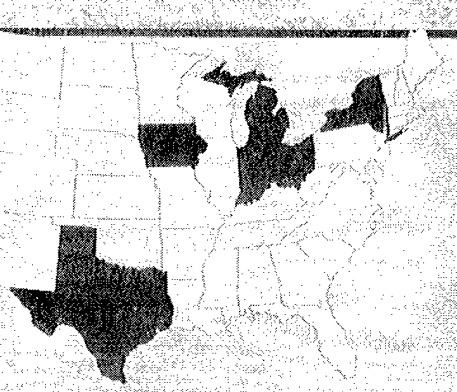
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The FP was type classified standard on 12 May 1994.

PROJECTED ACTIVITIES: Award Major End Item Contracts (February to April 1995).
Procure Secondary Items (May 1995 to November 1996).
Major Item Contract Deliveries (September 1995 to November 1996).
System Integration and Assembly (May 1995 to December 1996).

PRIME CONTRACTOR: TBD





Project & Sustain

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

MISSION: The HMMWV provides a common light tactical vehicle capability.

CHARACTERISTICS: The HMMWV is a light, highly mobile, diesel-powered, four-wheel-drive vehicle that uses a common 1.25-ton payload chassis. The HMMWV can be configured through the use of common components and kits to become a cargo/troop carrier; armament carrier, S250 shelter carrier, two—or four-litter ambulance, or TOW missile carrier. The HMMWV is a Tri-Service program that also provides vehicles to satisfy Marine Corps and Air Force requirements. The HMMWV program is complementary to the 1.25-ton Commercial Utility and Cargo Vehicle, a Non-Developmental Item program. Other models include a prime mover for the light howitzer, towed Vulcan system, and heavy variant shelter carriers. The HMMWV replaces the .25-ton Jeep, M718A1 Ambulance, .5-ton Gamma Goat, and M792 Ambulance.

Since its conception, the HMMWV has undergone numerous design and configuration updates and changes. The changes have included technological, environmental, operational, and safety improvements, such as increased payload to 4,400 lb, radial tires, 1990 EPA emission update, commercial bucket seats, and three-point seat belts. The HMMWV currently is being produced in the A1 model configuration. The U.S. Army recently has begun to field the Up-Armored and Scout HMMWVs. The Up-Armored (M1109) will be used by the Military Police and Scouts. The vehicle has 7.62 mm armor piercing protection around the perimeter, 155 mm overhead blast protection, and mine protection under the body. The Scout Vehicle will be configured with night vision devices, a Global Positioning Device, an MK19 grenade launcher, and SINCGARS radios.

In 1995, the HMMWV will be produced under a follow-on contract to the A2 configuration. The A2 configuration will include engine and transmission updated to the current, commercial, state-of-the-art 6.5L engine and four-speed electronic transmission. Additionally, a new, higher capacity (payload) vehicle will be introduced. The new vehicle will have a gross vehicle weight capacity of 11,500 lb and payload of 5,000 lb. It will be used initially for the Up-Armored vehicle to permit greater payloads than do the current configurations.

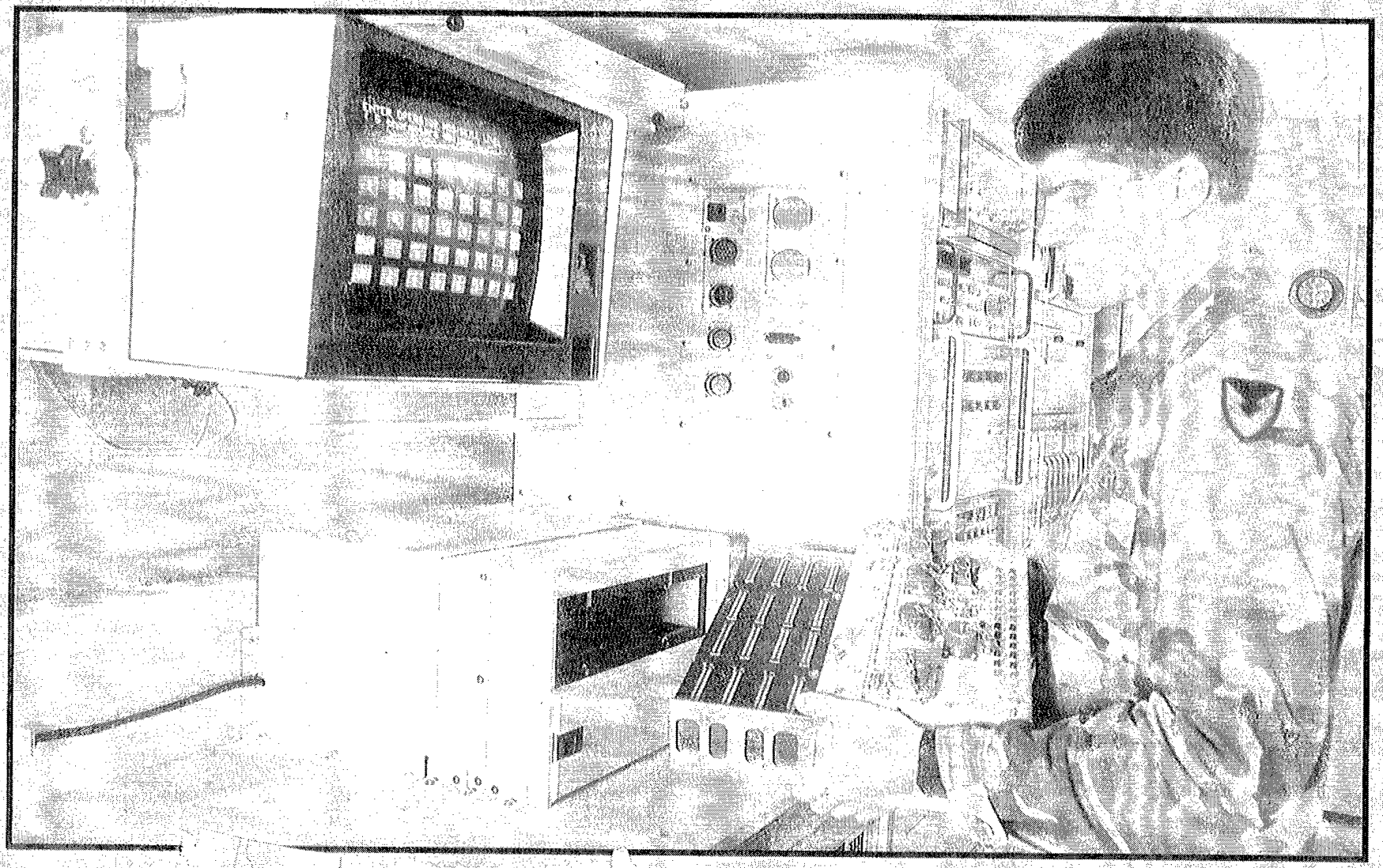
FOREIGN COUNTERPART: No know foreign counterpart.

PROGRAM STATUS: A new requirements contract will be awarded in 1995.

PROJECTED ACTIVITIES: Continued fielding as a platform to support other systems.

PRIME CONTRACTOR: AM General (South Bend, IN)

*See appendix for list of subcontractors.



Project & Sustain

MISSION: The IFTE provides the capability to isolate electronic faults in weapon systems.

CHARACTERISTICS: The IFTE is a modular Test, Measurement, and Diagnostic Equipment (TMDE) system that consists of four interrelated systems to provide generic Automatic Test Equipment (ATE) capability through all levels of maintenance. It allows the isolation of weapon systems faults to the electronic Line Replaceable Unit (LRU) at the Direct Support (DS) level, both on—and off-system. This supports rapid return to the battlefield. At General Support (GS) and Depot, IFTE further diagnoses an LRU to the Shop Replaceable Unit (SRU).

Two tactical systems, the AN/PSM-80, or Contact Test Set (CTS), and the AN/TSM-191, or Base Shop Test Facility (BSTF), provide on—and off-system support, respectively. The CTS also is the host for Electronic Technical Manuals (ETMs). Electro-Optical (EO) test capability for the CTS and BSTF is in development. The CTS is man-portable and augments supported systems Built-in-Test/Built-in-Test Equipment (BIT/BITE) to isolate weapon systems failure to the bad LRU. The BSTF consists of the AN/USM-632 Base Shop Test Station (BSTS) in an S-280 shelter mounted on a 5-ton truck. A second shelter and truck store Test Program Sets (TPS). TPS are the weapon systems-specific software that ATE uses to diagnose faults in major items or components. A 60 kW generator powers the BSTF. Base Shops will serve at both DS and GS. The two nontactical systems are the Automatic Test Program Set Support Environment (ATSE) and the Commercial Equivalent Equipment (CEE). The ATSE is the software tool used to develop a BSTF/CEE TPS. The CEE is a nonruggedized equivalent of the BSTF, designed for completion of TPS development and to support requirements at depots, contractor facilities, and special repair activities.

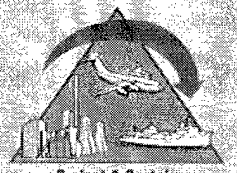
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The IFTE Full-Scale Production (FSP) decision took place in March 1992. Improvements identified at Initial Operational Test and Evaluation will be retrofitted to all BSTFs. First Unit Equipped (FUE) for the BSTF occurred in December 1992. FUE for the CTS occurred in September 1994.

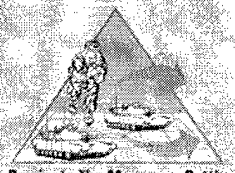
PROJECTED ACTIVITIES: The BSTF and the CTS will continue to be produced and fielded in FY95.

PRIME CONTRACTOR: Northrop—Grumman (Great River, NY)

*See appendix for list of subcontractors.



Project & Sustain



Dominate The Maneuver Battle

MISSION: The Javelin will provide a medium anti-tank capability to the infantry, scouts, and combat engineers.

CHARACTERISTICS: The Javelin is a man-portable, anti-tank system developed for the U.S. Army and U.S. Marine Corps. The system is highly lethal against tanks with 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 the stand-alone mode for battlefield surveillance and target detection.

The Javelin system will weigh less than 49.5 lb and will have a maximum range in excess of 2,000 m. 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 are 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 will replace the Dragon.

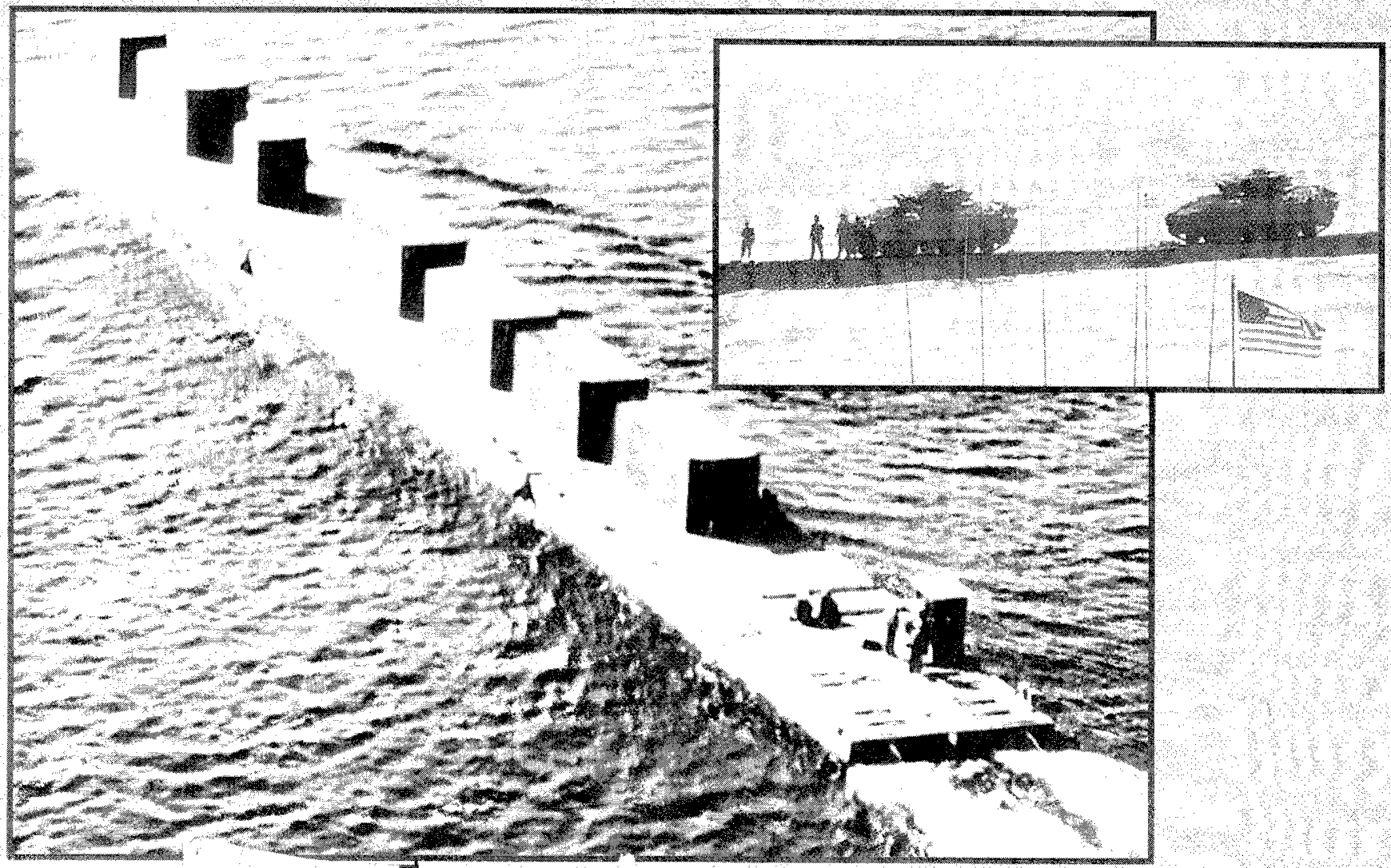
FOREIGN COUNTERPART: No other fire-and-forget systems exist, but similar systems are the Russian AT-7, the Swedish BOFORS BILL, and the French MILAN 2T.

PROGRAM STATUS: The first Low-Rate Initial Production (LRIP) contract was awarded in June 1994, with hardware deliveries expected to begin in October 1995.

PROJECTED ACTIVITIES: The second LRIP contract is planned for March 1995.
First Unit Equipped in June 1996.

PRIME CONTRACTOR: Texas Instruments/Martin Marietta Javelin Joint Venture (Lewisville, TX)

*See appendix for list of subcontractors.



Project & Sustain

MISSION: Causeway Ferry provides a cost-effective means of transporting rolling stock, containerized, and breakbulk cargo from ship to shore during Logistics Over the Shore (LOTS) operations or where the depth of water pier-side is not deep enough to accommodate sea-going ships.

CHARACTERISTICS: Causeway Ferry is made up of modules configured to International Standards Organization (ISO) standards for transport by container ships. The modules are assembled into 4 sections one of which is powered. Modules can be combined into other system configurations such as floating causeways, roll on/roll off discharge facility and the side-loading warping tugs which are used to emplace all the causeway systems. Causeway Ferry can operate at 6 knots in sea state 2 and surf conditions up to 5 feet with a full payload. Army and Navy Causeway Ferries are interchangeable at the section level.

	CF	*Section*	*Module*
Payload:	350 ton	100 ton*	—
Length:	320 ft	80 ft	40 ft
Width:	24 ft	24 ft	8 ft
Weight:	—	—	11 ton**

Fuel Capacity: 10 hr of continuous operations

*Payload of powered section is 50 short ton
**Non-powered module

FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: Causeway Ferry is in production. The initial production contract is for 6 systems. This is a Non-Developmental Item program.

PROJECTED ACTIVITIES: First Unit Equipped is scheduled for June 1995.

PRIME CONTRACTOR: Lake Shore (Iron Mountain, MI)

*See appendix for list of subcontractors.

Project & Sustain

Palletized Load System (PLS)

MISSION: The PLS is being deployed as the primary component of the Maneuver-Oriented Ammunition Distribution system (MOADS). It will perform line haul, local haul, unit resupply and other missions in the tactical environment to support modernized and highly mobile combats units.

CHARACTERISTICS: The PLS consists of a 16.5-ton payload prime mover (10x10) with an integral load-handling system, which provides self-loading and unloading 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 (CTIS), which significantly improves off-road mobility. PLS also will allow interoperability with the comparable British, German, and French systems, through the use of a common flatrack, as specified in the current quadripartite agreement. On the basis of direction provided by Congress in the FY90 Defense Appropriation Act, an intermodal flatrack (with features that enhance transportability and stacking) has been designed and will go into production later this year. A Container Lift Kit (CLK) also will be fielded to PLS trucks assigned to transportation and ammunition units and to forward support battalions. This provides PLS the capability to pick up and transport 20 ft 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.

Truck payload:	16.5 ton
Trailer payload:	16.5 ton
Flatrack dimensions:	8x20 ft
Engine type:	Diesel
Transmission:	Automatic
Number of driven wheels:	10
Range, integral fuel at gross combined weight:	225 mi

FOREIGN COUNTERPART: United Kingdom—Demountable Rack Off-Loading and Pick-Up System

PROGRAM STATUS: The PLS is a Non-Developmental item (NDI) program which has been executed through a five-year multi-year production contract awarded to Oshkosh Truck Corporation in September 1990. It entered low rate production in 1991 and was approved to enter full production in April 1993. The PLS First Unit Equipped occurred in February 1994 with units from the 1st Cavalry Division at Ft. Hood, TX. PLS fielding will continue through FY97.

PROJECTED ACTIVITIES: TRADOC is currently performing an analysis of follow-on uses for the PLS. The study explores the benefits of using PLS for the following missions: Corps distribution of other classes of supply, DEPMEDS Hospital and Medical Supplies, Aviation Intermediate Maintenance Units in Division/Corps, and Engineer Bridging. The PMO is currently developing tanker flatracks to transport water and fuel per Congressional direction and will soon begin the development of engineering application flatracks.

PRIME CONTRACTOR: Oshkosh Truck (Oshkosh, WI)

*See appendix for list of subcontractors.

MISSION: Move combat equipment for two brigades from the installation to the port of embarkation within 48 to 96 hours.

CHARACTERISTICS: Under the Mobility Requirements Study (MRS), flatcars are being pre-positioned at various government installations such as Ft. Stewart, Ft. Hood, and Ft. Benning.

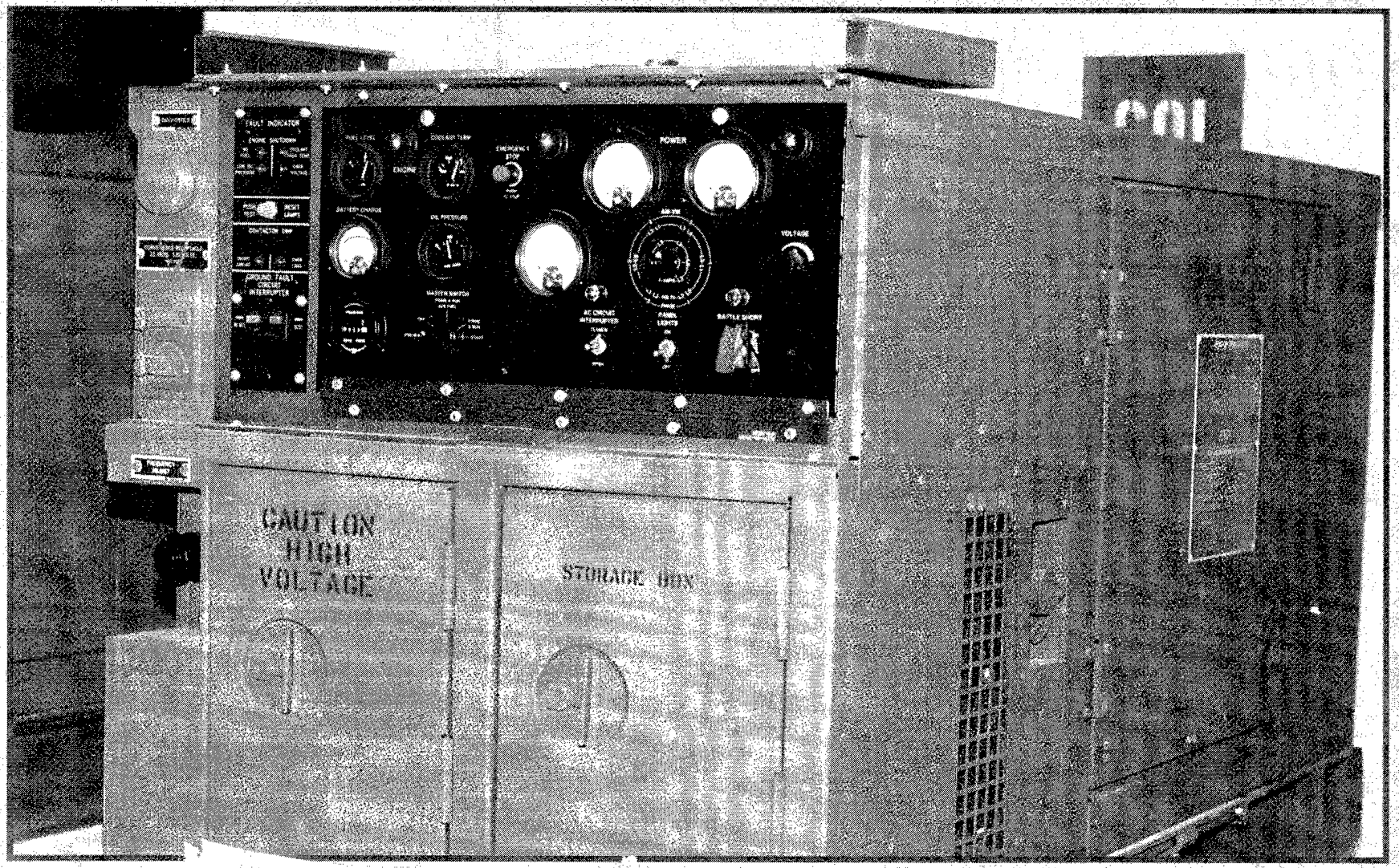
- 68 ft, 150 ton capacity flatcar
- 68 ft, 100 ton capacity flatcar
- 89 ft, 100 ton capacity flatcar
- 89 ft, bi-level car
- Trailer on Flatcar (TOFC)

FOREIGN COUNTERPART: Many nations have a comparable rail capability.

PROGRAM STATUS: Ninety-three 68 ft, 100 ton capacity flatcars were acquired with FY93 funds and ninety-four 89 ft, 100 ton capacity flatcars were also acquired with FY93 funds. An additional nine-three 68 ft, 100 ton capacity flatcars and an additional ninety-four 89 ft, 100 ton capacity flatcars were purchased with FY94 funds.

PROJECTED ACTIVITIES: During FY95 one hundred twenty-one 68 ft, 100 ton capacity flatcars and one hundred twenty-eight 89 ft, 100 ton capacity flatcars are to be purchased.

PRIME CONTRACTOR: Canadian National Railway, AMF Division (Montreal, Canada)—FY93 & FY94
FY95 Contractor TBD



Project & Sustain

Tactical Quiet Generators (TQG)

MISSION: The TQG provide lightweight, less detectable, and more survivable electric power to units and equipment in a field environment.

CHARACTERISTICS: The TQG are the new DoD standard family of tactical electric power sources. The 3 kW – 60 kW TQG provide DoD with "single fuel" sets that are more reliable, provide improved mobility (decreased weight), reduce noise and infrared (IR) signatures, are survivable in a nuclear environment, and provide quality electric power for command posts, C^3I systems, weapon systems, logistics and maintenance functions, and other battlefield support equipment. The new power generators will limit a threat force's ability to locate critical targets through reduced aural and thermal signatures.

	Current Fleet Performance	*TQG Requirements*
Aural signature:	79-85 dBA @25 m	70 dBA @7 m
Fuel:	GAS/DSL/JP4	JP8/DSL
Hertz:	DC/50/60/400	DC 60, 50/60, 400
HAEMP:	No	Yes
IR suppressed:	No	Yes
Reliability (MTBOMF):	140 – 180 hr	500 – 600 hr
Standard voltage connections:	Yes	Yes
Slave receptacle:	Ordnance	NATO

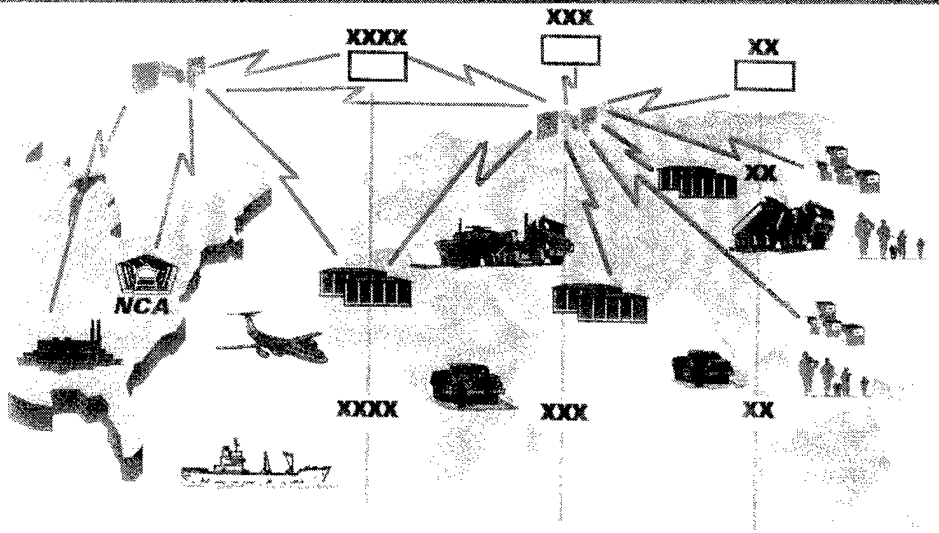
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The first unit equipped for the 5-60kW was Ft. Bragg in December 1993. 5-60kW generators were fielded to Ft. Drum, Ft. Campbell, Ft. Benning, Ft. Bragg, and Aberdeen Proving Ground during FY94. The 3kW is planned for initial fielding in FY96.

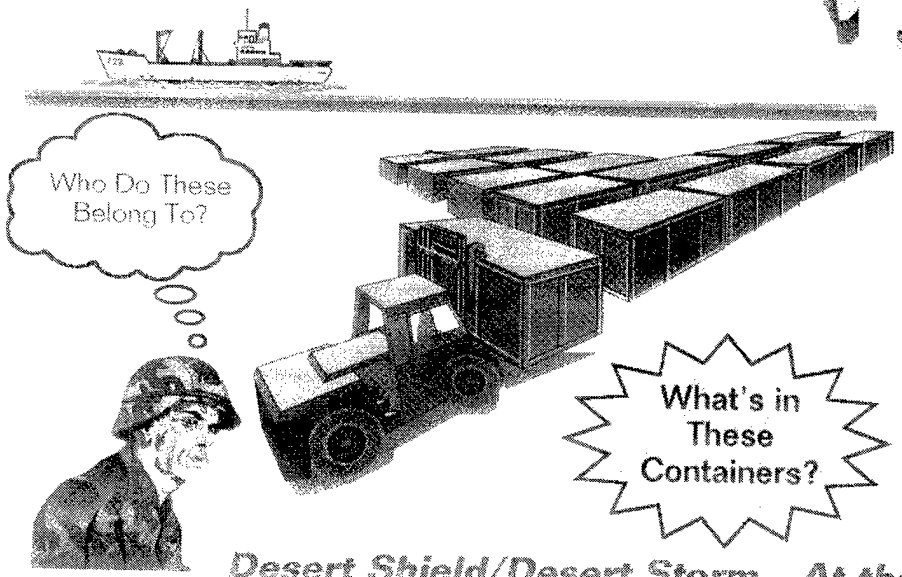
PROJECTED ACTIVITIES: During FY95, 5-60kW generators will be fielded to Ft. Huachuca, Ft. Gordon, Ft. Lewis, Ft. Hood, Ft. Bliss, and Ft. Knox.

PRIME CONTRACTOR: Libby (Kansas City, MO)—5 through 60kW
Dynamics (Bridgeport, CT)—3kW

Total Distribution Program

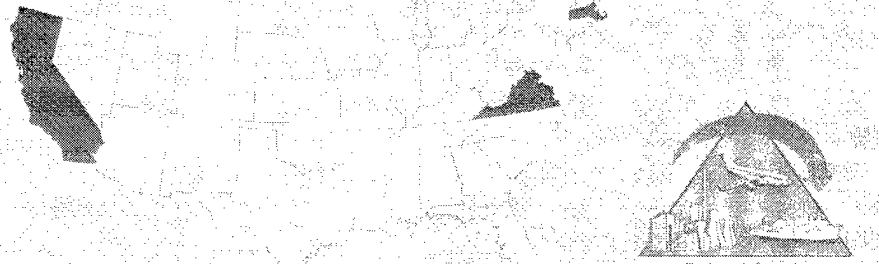


End To End Pipeline Visibility



- Fix Systemic Problems from Desert Shield/Storm
- Lay Foundation for Future

Desert Shield/Desert Storm – At the Port



Total Distribution Program (TDP)

MISSION: Correct deficiencies in the theater distribution process which surfaced during OPERATION DESERT SHIELD/STORM.

CHARACTERISTICS: The Deputy Chief of Staff, Logistics tasked the Stategic Logistics Agency (SLA) and the Combined Arms Support Command (CASCOM) to head a task force to identify, analyze and develop solutions to correct deficiencies in the theater distribution process occurring in OPERATION DESERT SHIELD/STORM. The Task Force Developed the Total Distribution Action Plan (TDAP) prescribing 140 issue/solution sets, and tasking responsible agencies for executing the actions. Twenty-four of the issues are designated as critical to the success of the program. The 140 issues/solution sets are consolidated into five overarching categories: Containerization and Packaging, addressing configuration of loads in CONUS, container throughput, and in-theater Materiel Handling Equipment (MHE) requirements; Distribution Management, encompassing maintenance of support relationships which change due to task organization, creating a theater distribution center, efficient/effective use of transportation assets, and delivery of materiel; Automation and Communication, addressing assured communication for logistics data transmission, hardware and software requirements, and integration of logistics information systems; Peace versus War Operations, covering battle rostering, peacetime relationships, and TPFDL issues; Total Asset Visibility/Intratransit Visibility, focusing on the need for source data automation, "inside the box" container visibility, correct/accurate shipping documentation, and worldwide item in-transit visibility.

FOREIGN COUNTERPART: Great Britain's restructure of military logistics under the 1990 Options for Change defense review which formed the Royal Logistics Corps (RLC). RLC is introducing computer and tracking systems to improve the materiel management capability and provide asset visibility.

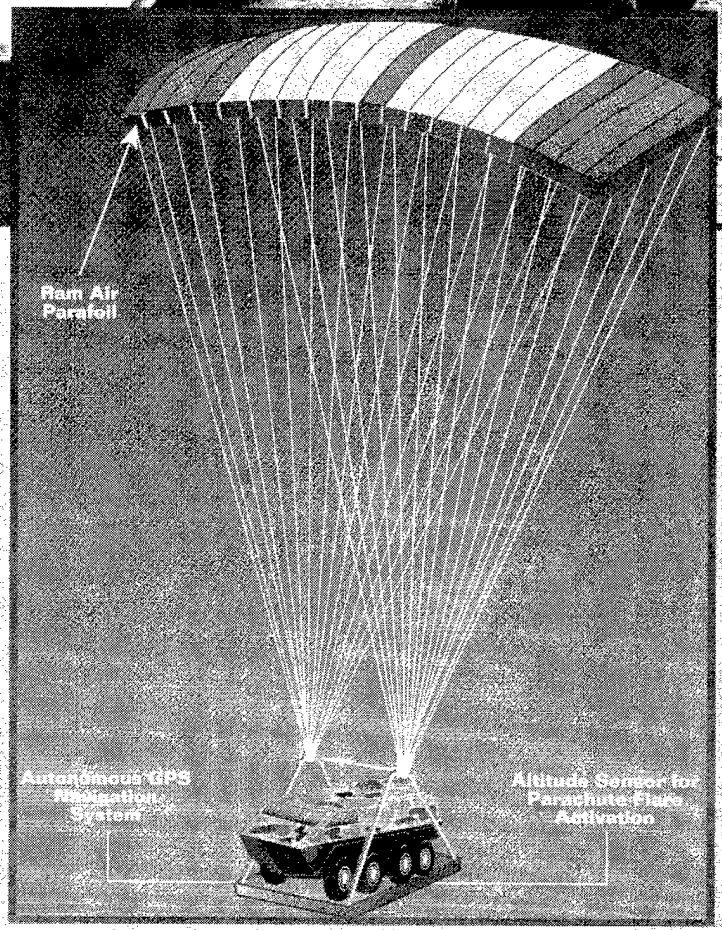
PROGRAM STATUS: The TDP has funds programmed to resolve TDP specific issues. The development/fielding of radio frequency tag infrastructure in conjunction with DLA's automated manifest system will improve TAV/ITV. System was tested in support of operations in Somalia and Haiti. CASCOM is working a Battlefield Distribution Campaign to focus on developing an enhanced in-theater distribution capability. The concept proposes, over the next two years, to convert our layered stockpiles and warehouses to a high velocity movement system from theater to port to foxhole. ISC is fielding a Mobile Gateway Van to allow logistics STAMISs to transfer data over MSE voice circuits, bypassing the TPN side of MSE. Tactical units can tie directly into unclassified MILNET, allowing logistics data communications back into the sustaining base. A total of 10 are to be built—two per corps, plus two which will be fielded for use at EAC level. The EAC units will be fielded by December 1994. Fielding of the remaining 8 is scheduled in FY95 and FY96. These are examples of the actions being implemented under the TDP to resolve army distribution issues.

PROJECTED ACTIVITIES: The TDP focuses on specific problems stemming from DESERT SHIELD/STORM with near and mid-term solutions. DoD and the Army both have long range logistics master plans in place to provide and evolutionary glide path to modernizing our logistics operations and infrastructure. The specific issues in the TDP will be resolved and the TDP as a separate program will cease to exist, but the broader principles underlying the TDP issues are being migrated into the ASLP and the DoD Logistics Long Range Plan so that the root causes of these problems are corrected and not repeated.

PRIME CONTRACTOR: Unisys Government Systems Group (Reston, VA)—Defense Transportation System integrator
SAVI Techology (Mountain View, CA)

*See appendix for list of additional contractors.

Self-Heating Group Ration



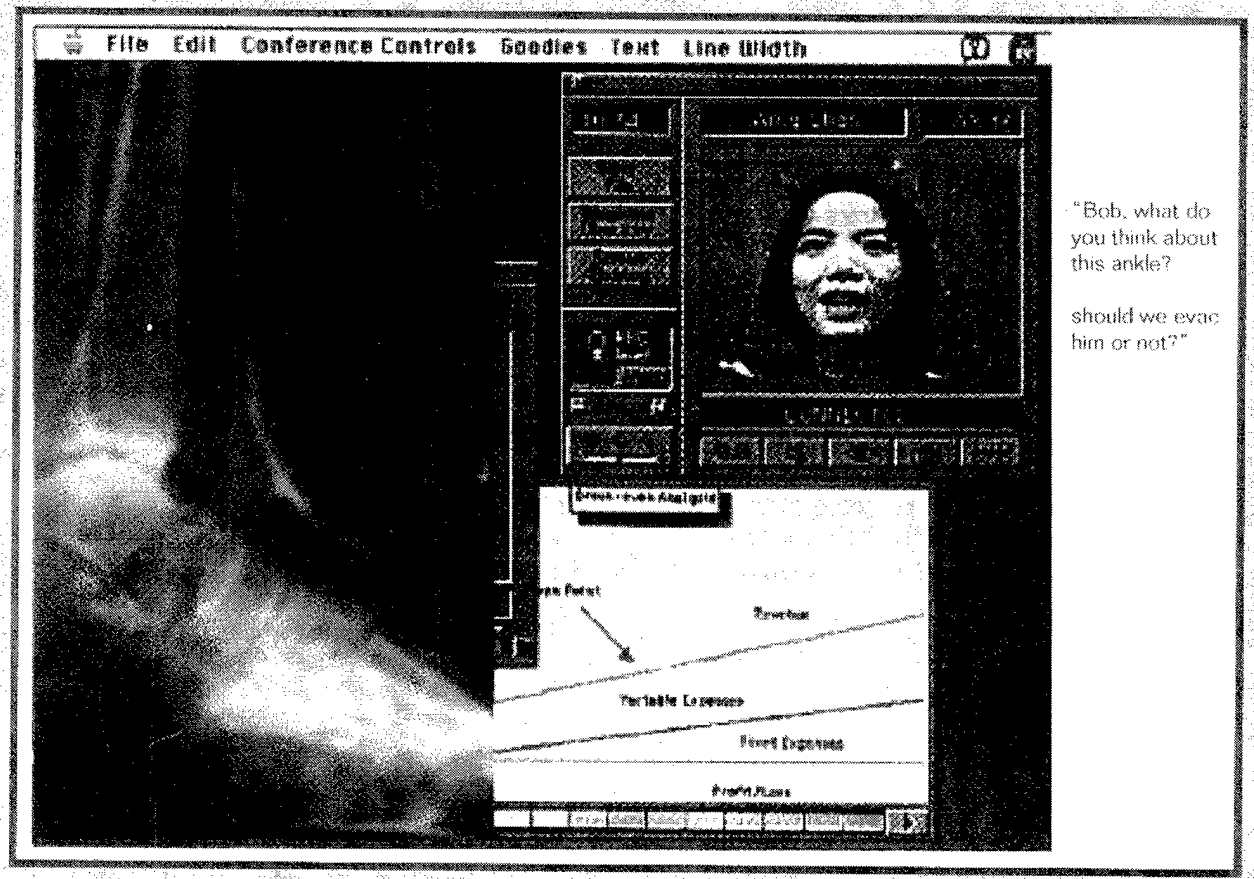
Advanced Airdrop for Land Combat ATD

OVERVIEW: The goal of the Army Science and Technology program in Project and Sustain is to integrate technologies that will improve the proficiency and effectiveness of tasks such as maintaining, arming, fueling, manning, and moving the soldier. In the Power Projection Army as it is emerging from the Cold War, the capability to rapidly deploy, both by air and sea, and sustain that deployment is paramount for the United States to continue to carry out its global commitments with decreased force structure. Key to these capabilities is a highly responsive logistics network, which exploits both technology and Non-Developmental Items to improve combat power effectiveness, with total asset visibility and light, highly mobile yet lethal weapons for the first-to-fight contingency forces. Improved combat medical care through real-time tele-imaging is also an essential contributor to manning and sustaining the force.

ADVANCED AIRDROP FOR LAND COMBAT ADVANCED TECNOLOGY DEMONSTRATION (ATD): To achieve the capabilities for rapid deployment of combat-essential payloads required for force projection of a lethal and sustainable early entry force, the Advanced Airdrop for Land Combat Advanced Technology Demonstration (ATD) will demonstrate the Guided Parafoil Air Delivery System (GPADS), an autonomously guided, high altitude, offset delivery airdrop system for precision delivery of military equipment, vehicles, and supplies. GPADS will provide the warfighter with a new capability, the ability to autonomously deliver payloads weighing up to 21 tons accurately (within 100 meters of the target) and from high altitude (25,000 feet) and offset distances. The high-altitude, standoff-delivery capability provided by GPADS will significantly reduce delivery aircraft vulnerability in currently non-permissive airdrop environments where small arms, anti-aircraft artillery, and man-portable missiles are prevalent threats. The delivery accuracy and precision provided by GPADS allow for smaller drop zones and reduced load dispersion on the drop zone, resulting in faster operational readiness and force projection. GPADS provides "Just In Time" resupply capability which will allow for pre-positioning of supplies ahead of rapidly moving combat forces and covert delivery of supplies to isolated units and special operations forces. GPADS comprises a large ram-air parafoil integrated with an autonomous GPS-based Guidance, Navigation and Control (GN&C) system. The guidance system, consisting of a microprocessor and sensors, provides control inputs to maneuver the parafoil along a pre-set navigational path to the target, programmed prior to the mission using mission planning software.

TOTAL DISTRIBUTION ATD: The Total Distribution (TD) ATD will integrate existing and emerging advanced, logistically relevant technologies and capabilities, such as Distributive Interactive Simulation (DIS), Microcircuit Technology for Logistic Applications (MITLA) tags, and the GPS Azimuth Determining System. For a planned operation, this capability will allow senior commanders to know in near real time the logistics requirements and the support capabilities available for conducting logistics course-of-action analyses. The TD ATD will interconnect and modify existing logistics applications software into a total distribution, user-friendly modular display system to support logistics situational awareness. The products of the TD ATD will support a capability to provide logistics situational awareness to the senior military leadership. In FY95, the TD ATD will participate and test its initial capabilities in the Prairie Warrior Advanced Warfighting Experiment (AWE). The TD ATD will be completed during FY97.

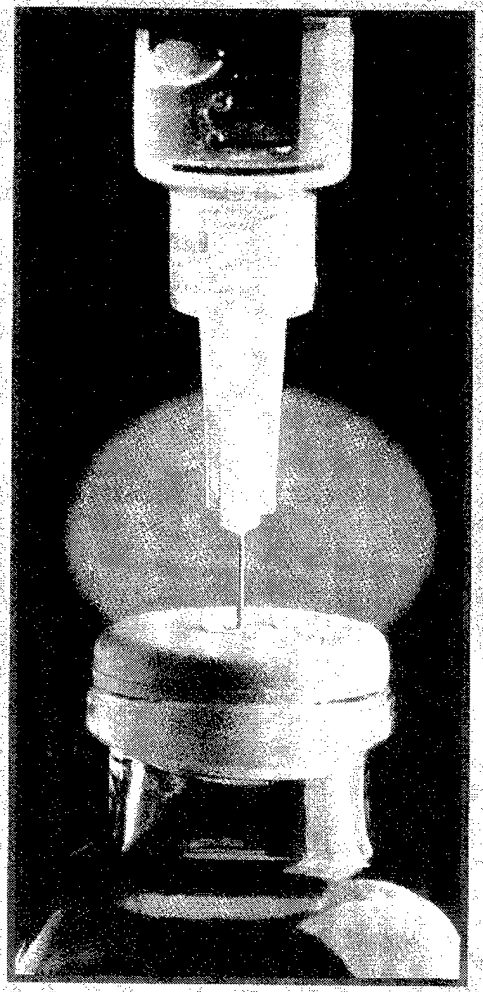
FAMILY OF OPERATIONAL RATIONS: The Family of Operational Rations (FOR) is scenario-driven, supports highly mobile and forward deployed troops, and is suitable throughout the world under all climatic conditions. The FOR represents a technologically advanced food system that consists of self-heating, ready-to-eat rations with extended shelf life, reduced cube/weight, and reduced packaging waste. This family includes an individual ration, the Self-Heating Individual Meal (SHIM), designed for use during periods of high-intensity conflict, and a group ration, the Self-Heating Group Ration (SHGR), designed to support consolidated groups of soldiers in remote areas and far forward without the need for equipment and with a minimum of cooks. The built-in heating mechanism in the polymeric tub containing the SHIM, when activated, will heat a meal in 10 minutes. The SHGR consists of A-ration-quality prepared foods packaged with an integral, water-activated heating mechanism that will provide hot food in 30 minutes and keep it warm for five hours. The FOR is linked to several Battle Lab Operational Capability Requirements and the U.S. Army Quartermaster Center and School's Vision of the Future. The FOR will benefit our warfighters by providing state-of-the-art rations with increased acceptability/consumption, resulting in improved mission performance, operational flexibility, and sustainability.



"Bob, what do you think about this ankle?

should we evac him or not?"

Telemedicine



Medical Countermeasures

Basic Medical Research

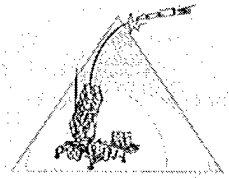
MEDICAL: The focus of Army medical research and development is on casualty prevention through protection from both battle and non-battle threats to health, maintenance, and amplification of individual capability by medical countermeasures that prevent/arrest disease progression and its manifestations, sustainment of optimum military operational capabilities, and provision of state-of-the-art casualty management.

Medical countermeasures (information, drugs, and vaccines) aim to protect the force from disease, illness, and injury, whether from natural sources, health hazards of our own combat systems, the combat environment, or aggressor weapons. Future products will include improved vaccines against chemical agents and new or improved vaccines against naturally occurring infectious diseases and threat biological weapons.

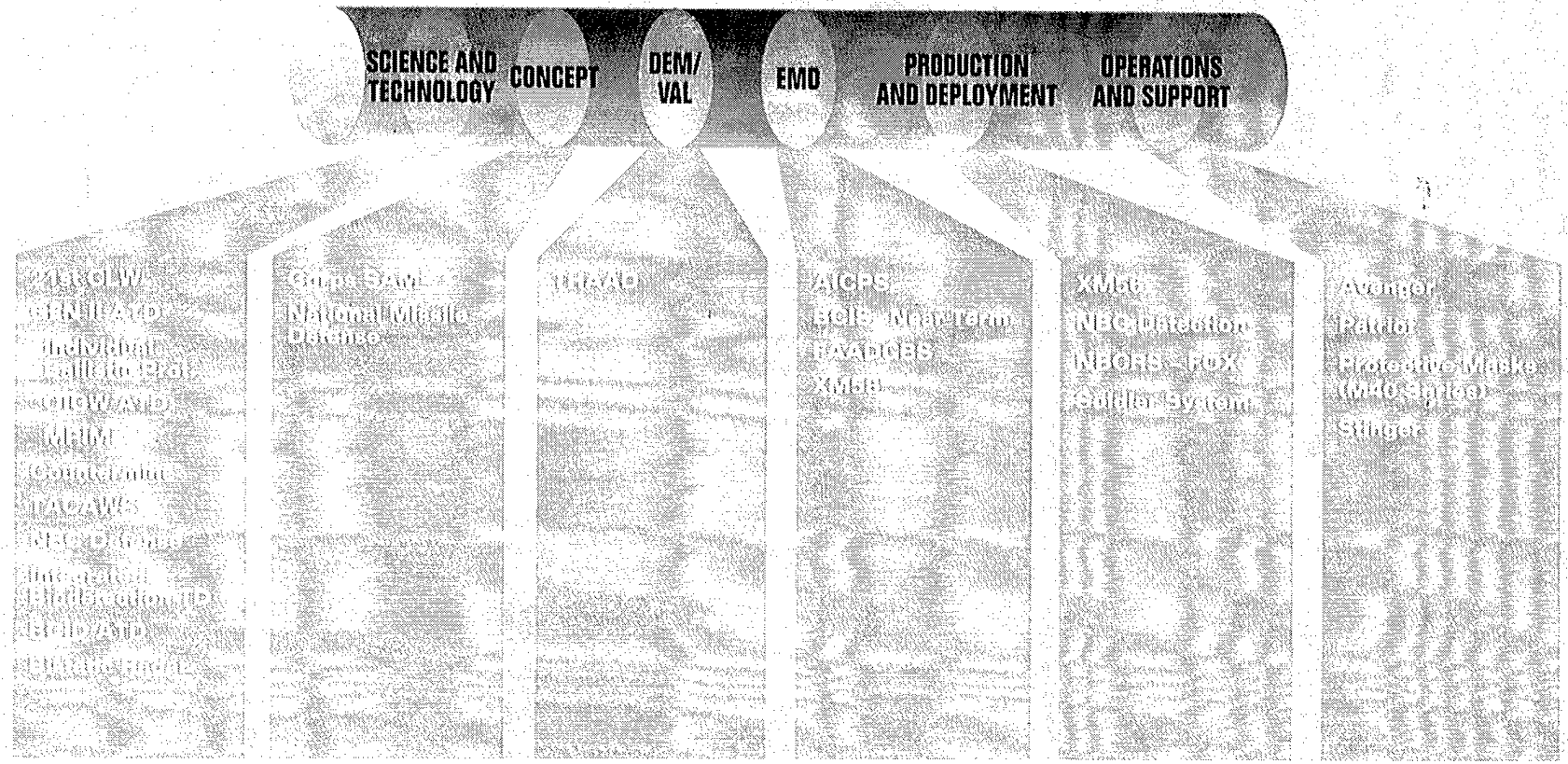
Sustainment of optimum military capabilities will be accomplished by protecting soldiers from climatic (i.e., heat, cold, altitude) and operational (i.e., high stress, continuous operations) hazards and by protecting performance, as well as health, from chemical, biological, and disease threats. Future products will include new anticonvulsants, treatment/antidotes for vesicant injuries, and non-obtrusive measures of physiological and psychological states.

Combat casualty care research has improved the prospects for soldiers wounded in combat. The care given in the first hour after being wounded—the "Golden Hour"—is the most important in determining survival. Because of improvements in far-forward care to support the wounded soldier during the critical "Golden Hour", and because of the increased speed of evacuation to definitive care, a wounded soldier has an excellent chance of reaching a military hospital and surviving his wounds. Success in developing new drugs, replacement fluids, wound stabilization materials, and artificial blood to manage shock and organ failure will improve support for the wounded soldier.

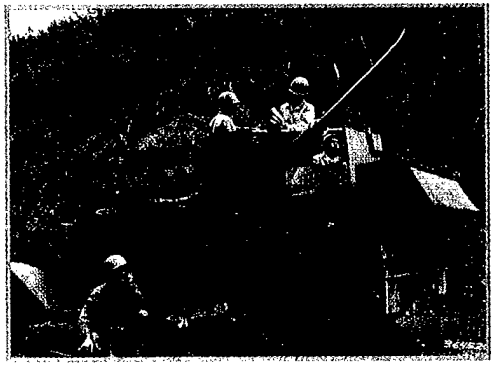
Telemedicine will use global telecommunications, digital technology, and video imaging to bring medical expertise out of the hospital and onto the battlefield to improve far-forward care. Miniaturization of powerful computing and telecommunications technologies will make possible a paperless, digital field hospital as a vital link between the medic on the battlefield and the medical expert in CONUS. Future products envisioned include advanced physiological monitoring and telerobotic, virtual-reality treatment mechanisms.



Protecting U.S. forces is a critical capability now and will be of even greater importance in the future. Effective counterfire systems are required to destroy threat armor and artillery forces. Protection from chemical and biological weapons must be improved as threat capabilities expand. Finally, as we learned from Operation Desert Storm, tactical missile defense of critical areas will be required in all foreseeable contingencies.



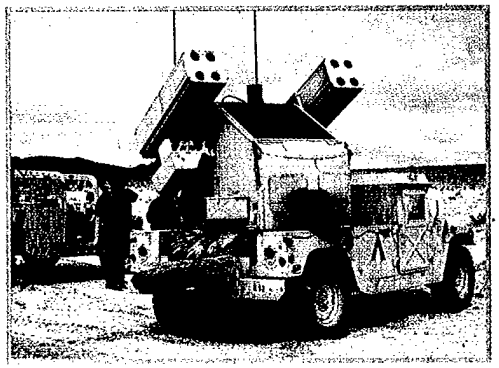
YESTERDAY: The use of large mechanized units fighting with integrated close air support during World War II first illustrated many of the combat identification problems that still complicate the battlefield today. Allied defenses against Nazi V-1 bombs and V-2 rockets, as well as against Japanese Kamikaze attacks, were primitive but foreshadowed the difficulties of future military operations. *Maximum range of best air defense system (M118 – 90 mm gun): 19 km*



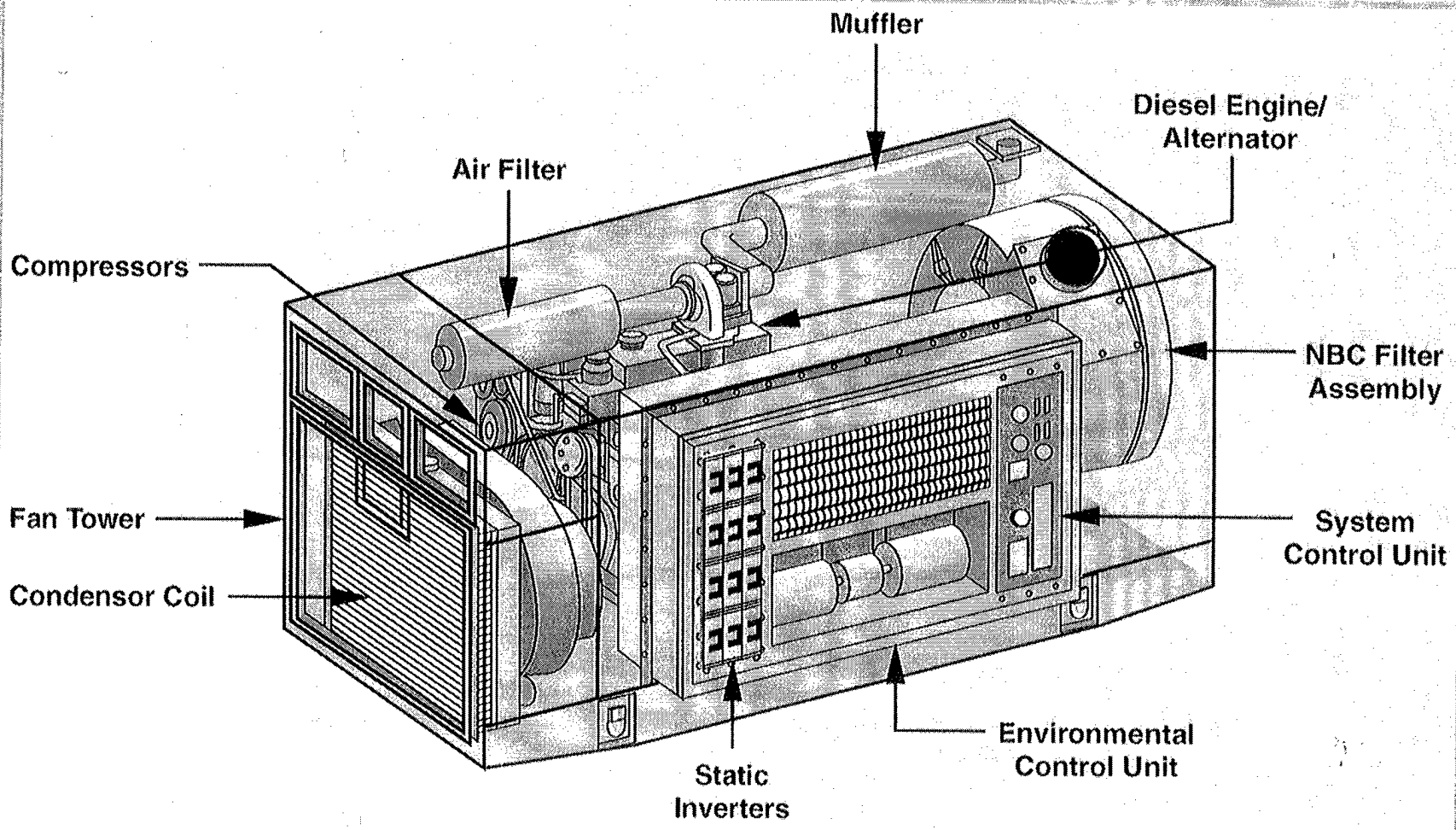
Southwest Pacific, 1945

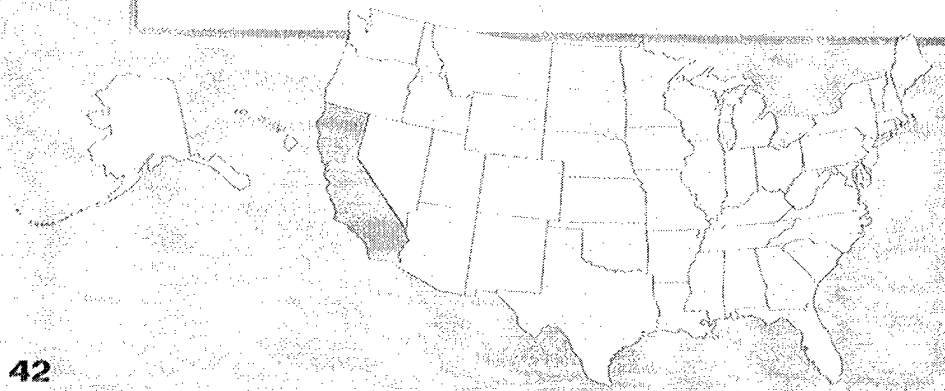
Texas, 1939

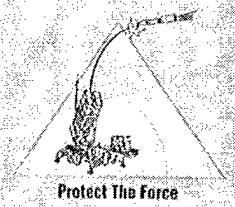
TODAY: Defending U.S. forces against tactical ballistic misiles, possibly equipped with nuclear or chemical warheads, continues to be a major developmental effort. Protecting the individual soldier from chemical and biological threats is improving as new protective masks and suits are fielded. Reducing fratricide continues to be a priority with the fielding of near-term solutions as we continue to improve our ability to reduce the fog of war. *Maximum range of best air defense system (Patriot): 37 km*



TOMORROW: The Army's ability to protect its soldiers in any contingency and in any theater will continue to improve with the fielding of new systems such as THAAD. The ability to reduce fratricide will improve as new combat identification systems are fielded. *Maximum range of best air defense system (THAAD): Capable of both endo—and exo-atmospheric intercepts.*


Muffler
Diesel Engine/
Alternator
Air Filter
Compressors
NBC Filter
Assembly
Fan Tower
System
Control Unit
Condensor Coil
Environmental
Control Unit
Static
Inverters




Protect The Force

MISSION: The AICPS provides pressurized, breathable air as well as environmental cooling/heating and exportable power for vans and shelters under all conditions.

CHARACTERISTICS: The AICPS is a fully integrated Collective Protection System that provides environmental control and breathable air at positive pressure to the enclosure in any climate or when challenged with current or future chemical or biological agents equipment. It reduces the filter change logistics burden by using a new-design, deep-bed carbon filter that is environmentally acceptable and has a minimum useful life of three years. The AICPS provides exportable power, over and above the power AICPS requires for filtration and environmental control. The AICPS is adaptable to a wide range of shelters and vans and offers a significant weight and volume reduction.

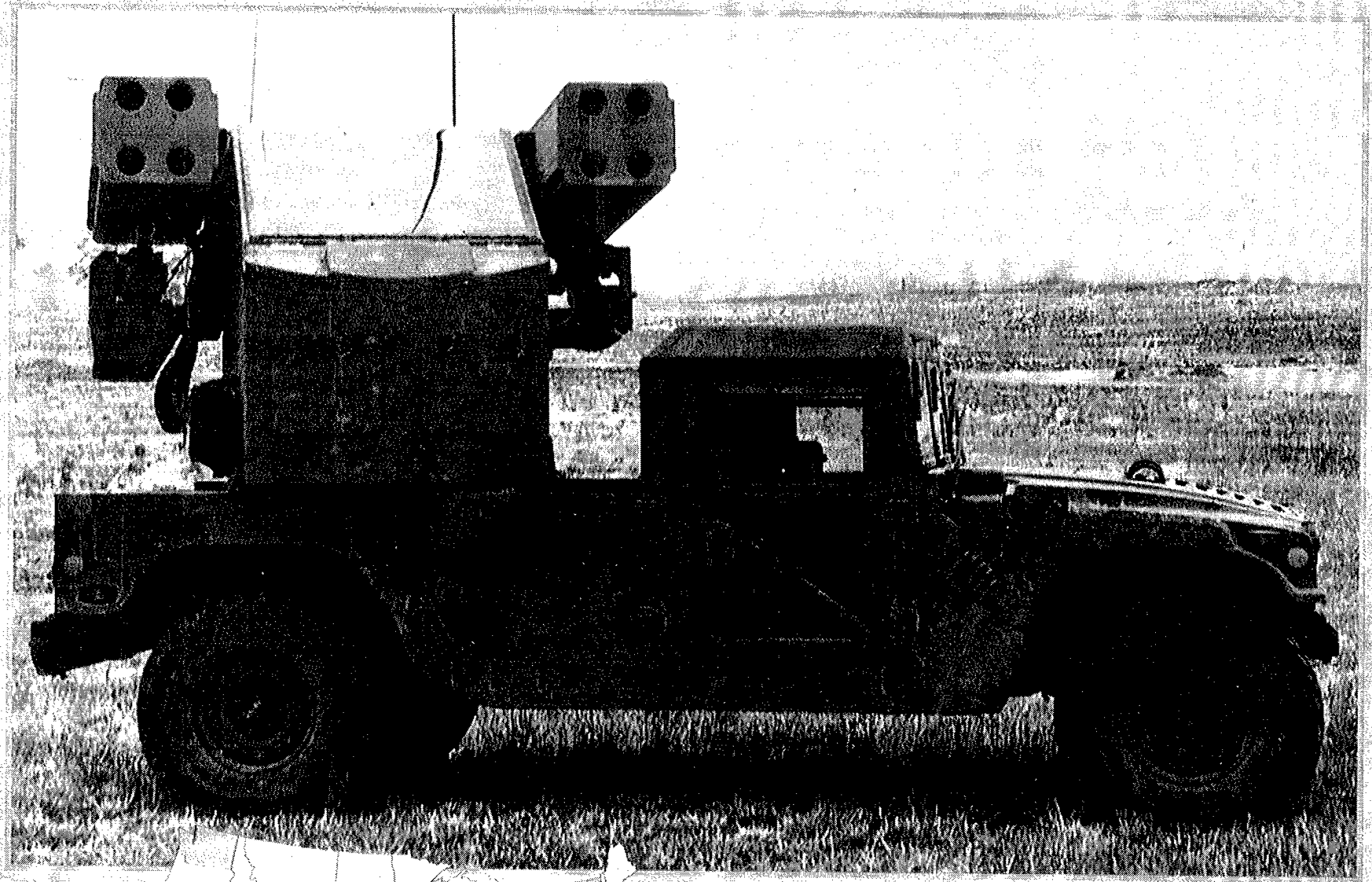
Parameter:	XM33 (Light)	XM32 (Medium)	XM31 (Heavy)
Airflow:	200 ft^3/min	200 ft^3/min	400 ft^3/min
Cooling/ Heating:	18,000 Btu/ 13,150 Btu	36,000 Btu/ 29,900 Btu	60,000 Btu/ 46,000 Btu
Exportable power:	5 kW	10 kW	10 kW

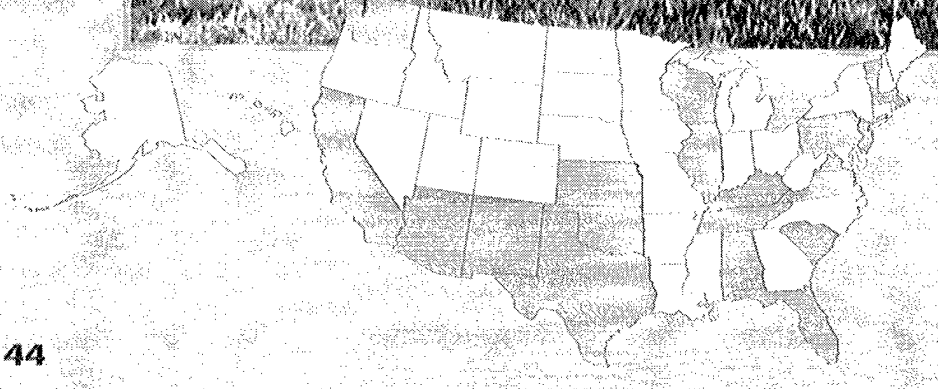
FOREIGN COUNTERPART: No known foreign counterpart.

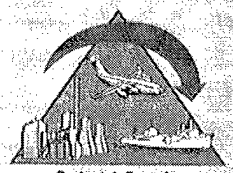
PROGRAM STATUS: The AICPS is currently in the Design/Development Phase. Contract was awarded in June 1994 as a single-phase, Engineering and Manufacturing Development effort. The development program will conclude with a Milestone III in the 2QFY98.

PROJECTED ACTIVITIES: Develop, manufacture, and test NBC filter prototype and fabricate system prototype.

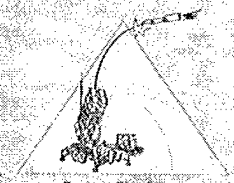
PRIME CONTRACTOR: Loral (Glendale, CA)







Project & Sustain



Protect The Force

MISSION: The Avenger provides mobile, short-range air defense protection.

CHARACTERISTICS: The Avenger system is a lightweight, highly mobile, and transportable surface-to-air missile and gun weapon system mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). Avenger is designed to counter hostile cruise missiles, unmanned aerial vehicles, and low-flying, high-speed, fixed-wing aircraft and helicopters attacking or transiting friendly airspace. Avenger fills the Line of Sight-Rear (LOS-R) portion of the Forward Area Air Defense System (FAADS). It has a two-man crew and can operate in day or night, clear or adverse weather conditions. The system incorporates an operator's position with displays, fire controls electronics, and the Standard Vehicle Mounted Launcher (SVML). The SVML supports and launches multiple Stinger missiles (Basic Stinger, Stinger-Post, or Stinger-RMP).

Armament: 8 ready Stinger missiles/.50 caliber machine gun
Sensors: FLIR/laser/optical
Chassis: Modified HMMWV
Fire control: Digital fire control computer/gyro-stabilized electronic turret

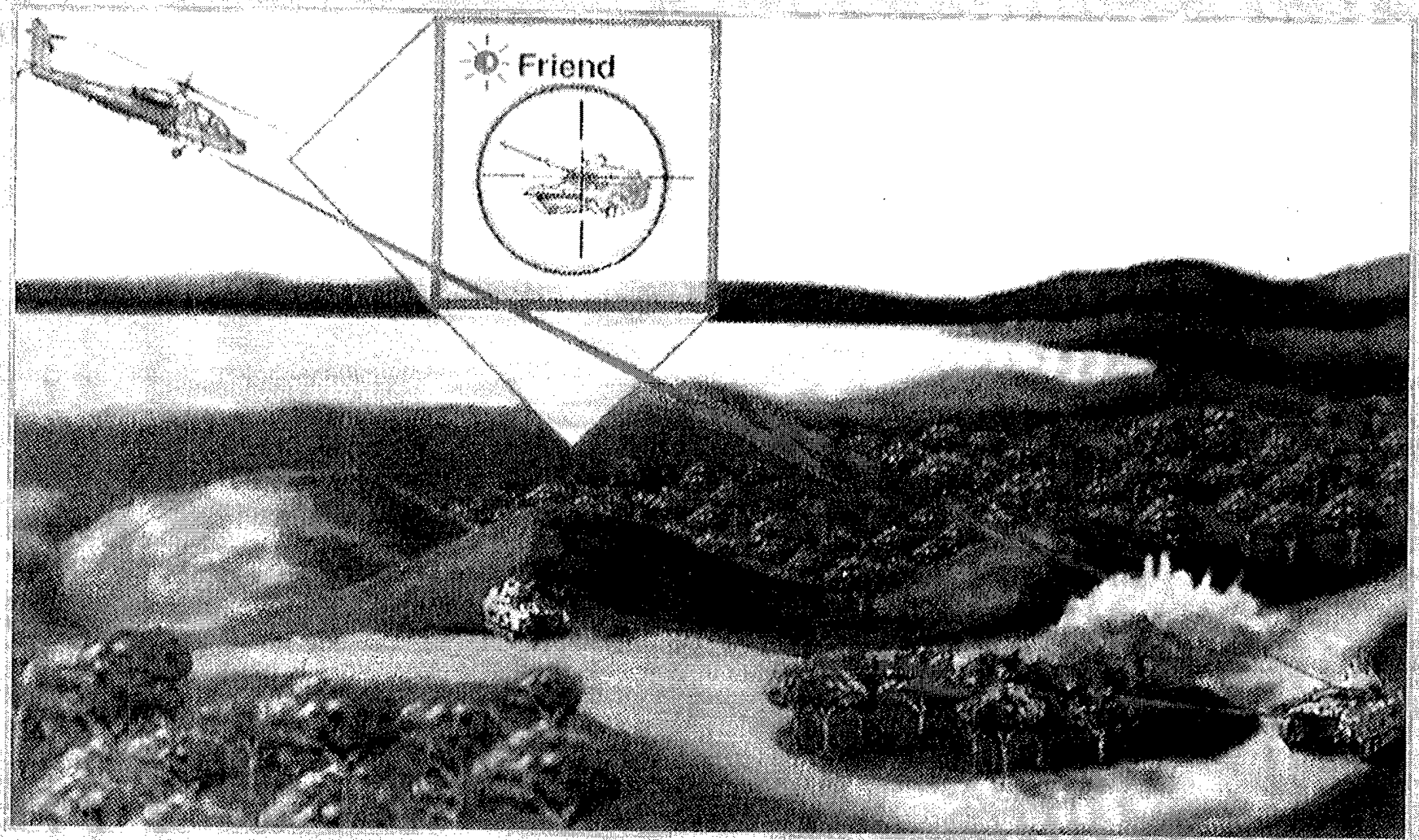
FOREIGN COUNTERPART: Russia: SA-9

PROGRAM STATUS: The initial production contract was awarded competitively to the Boeing Aerospace Company in August 1987. Avenger was Type-Classified Standard in February 1990 and began full-scale production in April 1990. A five-year, multi-year contract was awarded in February 1992 to procure fire units for the U.S. Army and U.S. Marine Corps. The program is preparing to conduct operational testing and evaluation of the Starstreak missile.

PROJECTED ACTIVITIES: Starstreak missile tests planned for 2Q to 3QFY95 (pending availability of missiles from UK).
FUE planned for the 82d Airborne Division in 2QFY95.
FUE for the 25th Infantry Division (Light) planned for 3QFY95.

PRIME CONTRACTOR: Boeing (Huntsville, AL; Oakridge, TN)

* See appendix for list of subcontractors.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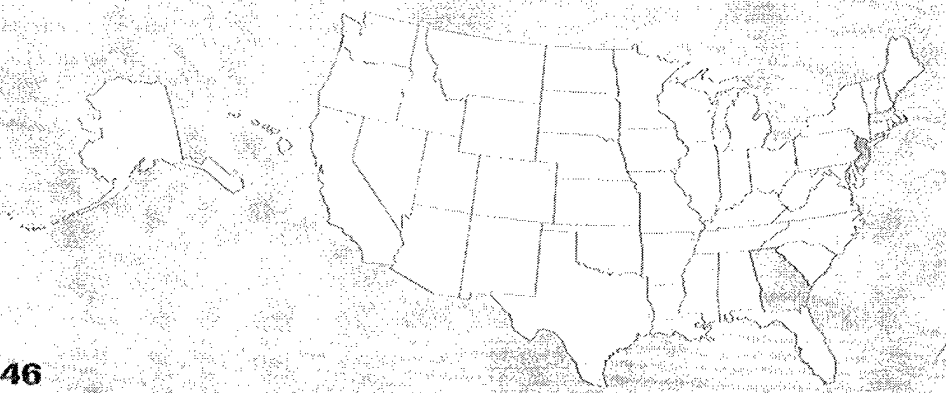
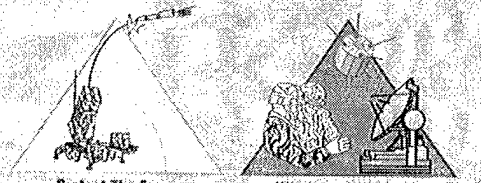



Protect The Force

Win Information War

MISSION: The BCIS will provide the materiel solution for minimizing battlefield fratricide incidents.

CHARACTERISTICS: The BCIS is a point-of-engagement, Millimeter-Wave (MMW), question-and-answer type of system that will greatly reduce the risk of fratricide during military operations. The BCIS will provide positive identification of friendly ground platforms and dismounted soldiers from both ground and air weapons platforms and dismounted soldiers. The BCIS, via its digital data link capability, will provide local situational awareness of information with sufficient position resolution and timeliness to support the fire/no-fire decision at the platform level and improve combat effectiveness. Weapons platforms that have a direct fire capability and/or are instrumental in initiating indirect fire missions will transmit an interrogating MMW signal toward the suspect target. Friendly platforms will respond automatically through their transponding component with its identification as a friend. The BCIS is an integral part of the Army's digitized effort for combat identification and is one of three Horizontal Technology Integration enabling strategies. It will be used by combat, combat support, and combat service support units within the CONUS contingency forces.

Operating frequency range:	MMW (ground-to-ground; air-to-ground) or UHF (air-to-ground)
Antenna coverage:	Directional (interrogator)
	Omni or 360 deg (transponder)
Range:	150 m–5,500 m (ground-to-ground)
	150 m–8,000 m (air-to-ground)
Target identification time:	< 1 sec

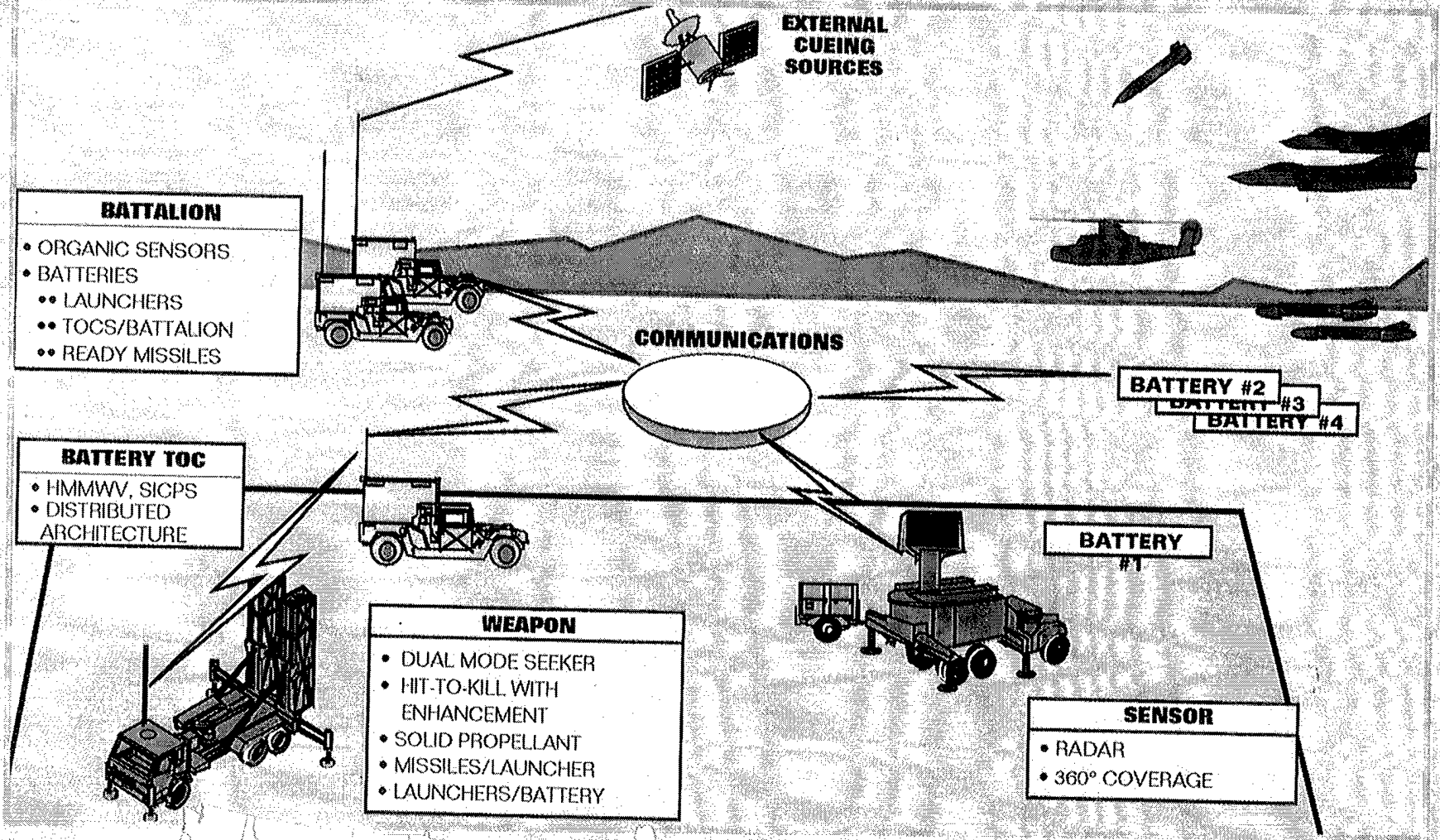
FOREIGN COUNTERPART: No known foreign counterpart.

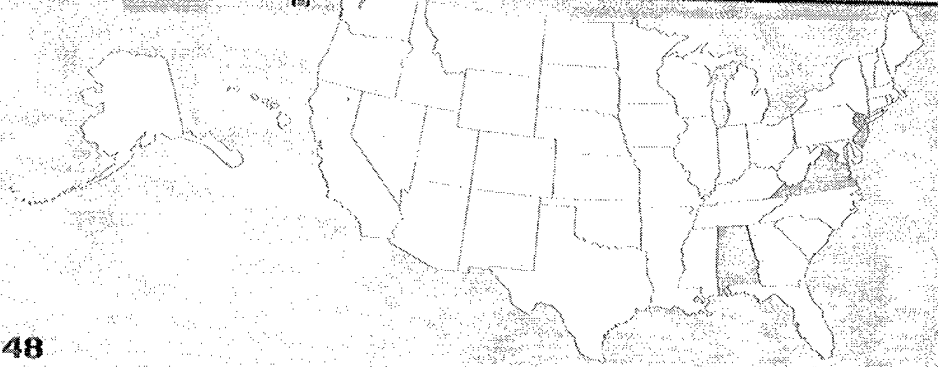
PROGRAM STATUS: The BCIS is currently in the Engineering and Manufacturing Development phase. Approximately 200 BCIS units will be manufactured during a Low-Rate Initial Production phase following developmental and operational testing.

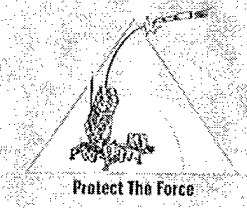
PROJECTED ACTIVITIES: Conduct Pre-Production Qualification Test in 3QFY95.

PRIME CONTRACTOR: TRW (Redondo Beach, CA)
Magnavox (Ft. Wayne, IN)

* See appendix for list of subcontractors.







Protect The Force

MISSION: The Corps SAM will provide low-to-medium altitude air and theater missile defense to the maneuver forces and other critical forward-deployed assets.

CHARACTERISTICS: The Corps SAM will fill the last remaining void in theater missile defense. The Corps SAM system will consist of missiles, launchers, sensors, Battle Management, and Command, Control, Communications, and Intelligence (BMC^3I) elements. It will be deployed/operated by both the Army and Marine Corps. The Corps SAM will provide a 360-degree defense against multiple and simultaneous attacks by a wide variety of tactical ballistic missiles and other air breathing threats that employ both conventional and unconventional warheads. Specifically, these threats include short-range tactical ballistic missiles, cruise missiles, unmanned aerial vehicles, and both fixed- and rotary-wing aircraft. The Corps SAM will be lightweight and modularly configured in order to be easily transportable and highly mobile. The Corps SAM plays a major role in support of force projection operations throughout a campaign by providing protection to both critical assets and maneuver forces from early entry through decisive operations. The Corps SAM system will be easily transportable by all strategic and tactical lift aircraft. The Corps SAM's mobility, modularity, and fully netted/distributed architecture provides continuous air defense of maneuver forces dispersed over great distances. Its flexibility permits rapid and continuous reconfiguration of system components to meet the demands of each mission. The Corps SAM will be compatible and interoperable with other systems expected to participate in joint/combined operations.

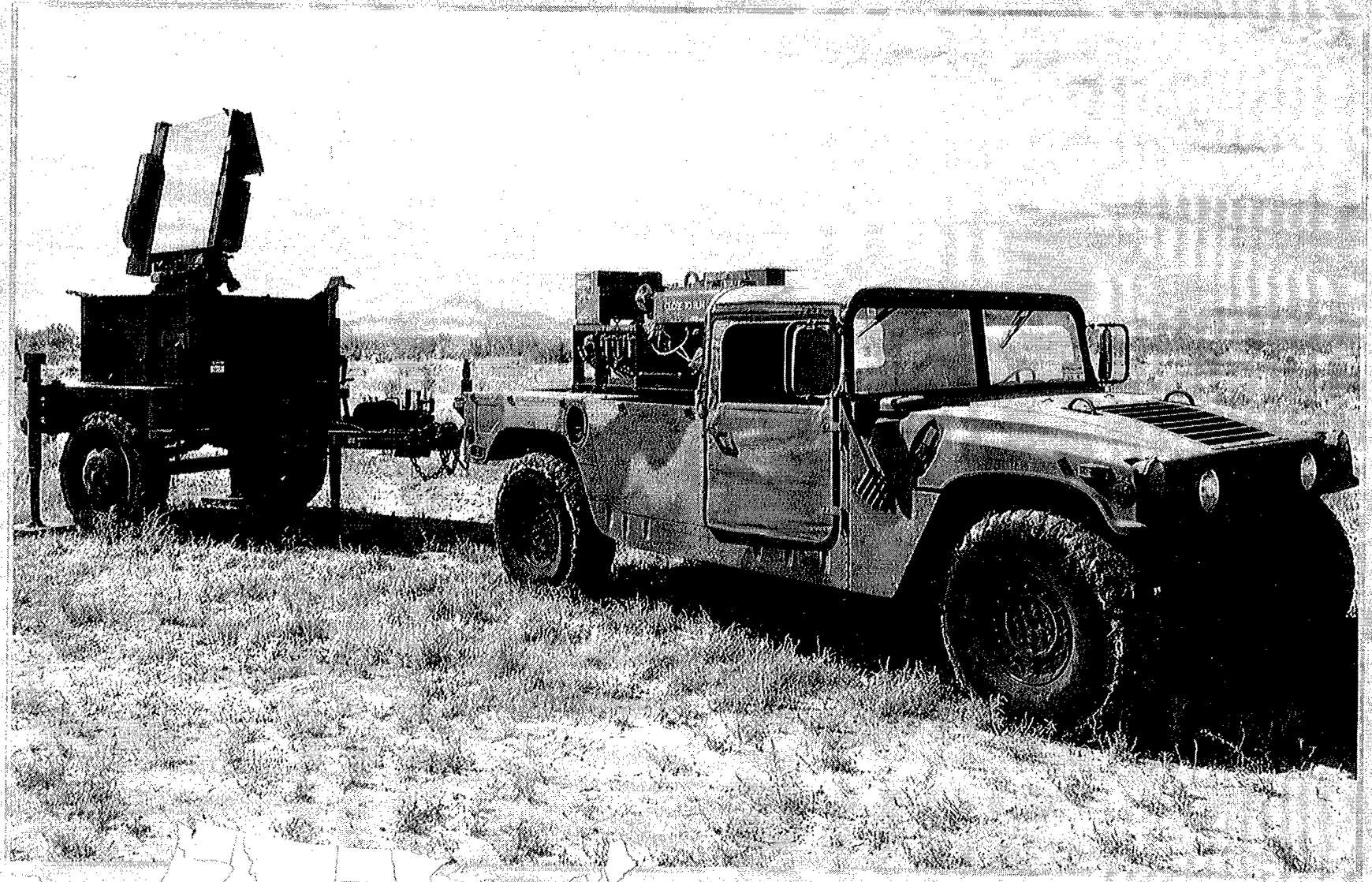
FOREIGN COUNTERPART: Germany: Taktisches Luftverteidigungs System (TLVS)

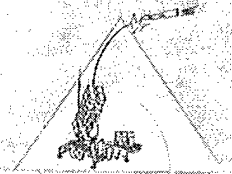
PROGRAM STATUS: The Corps SAM was approved by the Defense Acquisition Board (DAB) for entry into the Concept Exploration and Definition phase in August 1990. Extensive Government and industry studies and analyses have been conducted to define feasible and cost-effective concepts. These analyses were used to balance the requirements contained in the Corps SAM Operational Requirements Document that was approved by the ADCSOPS-FD in October 1993. Based on this requirement, Concept Development is planned to be conducted beginning in FY95. The DAB also directed the Corps SAM program to aggressively pursue international cooperation in the development of the Corps SAM system. Early discussions were conducted with 11 countries. Over the past year, the greatest potential for cooperation, and therefore the focus of the current discussions, had been with Germany. However, recent discussions among DEPSECDEF Deutch and his counterparts in Germany and France have resulted in a decision to pursue a trilateral cooperative program for the development of Corps SAM. Trilateral discussions are currently ongoing.

PROJECTED ACTIVITIES: Harmonize requirements, concept development statement of work, Memorandum of Agreement for trilateral program and execute concept development phase.

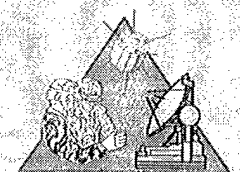
PRIME CONTRACTOR: TBD

* See appendix for list of concept studies contractors.





Protect The Force



Win Information War

MISSION: The FAAD GBS provides target acquisition and tracking capabilities for the FAAD system.

CHARACTERISTICS: The GBS consists of a radar sensor with its prime mover/power, Identification, Friend or Foe (IFF), and FAAD Command and Control Intelligence (C^2I) interfaces. The sensor is an advanced three-dimensional, battlefield, X-band, air defense, phased array radar with an instrumented range of 40 km. The GBS is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke, aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition and tracking. The GBS contributes to the digital battlefield by automatically detecting, tracking, classifying, identifying, and reporting targets (unmanned aerial vehiclels, rotary wing, and fixed wing aircraft). Targets can be hovering to fast moving, as well as from nap of the earth to the maximum engagement altitude of FAAD weapons. Very accurate and quick reacting, GBS acquires targets sufficiently forward of the Forward Line of Own Troops (FLOT) to improve FAAD weapon reaction time and allow engagement at optimum ranges. The GBS integrated IFF reduces the potential for fratricide of Army Aviation and Air Force aircraft. Highly mobile and reliable, the GBS Anti-Radiation Missile and Electronic Counter-Measures resistant performance support Army Corps and Divisional Air Defense operations across the full spectrum of conflict.

- X-band, phased-array, pulse Doppler
- Low-altitude, medium-range air defense sensor
- Detects fixed- and rotary-wing aircraft, cruise missiles, and UAVs at reduced ranges
- Azimuth: 360 deg; altitude: 0 – 4 km; range: 40 km
- Electronic Countermeasures (ECM) and Anti-Radiation Missile (ARM) resistant
- High mobility, transportability, and reliability
- Standard Army wheeled carrier (5-ton or HMMWV)
- Provides identification of friendly aircraft through IFF

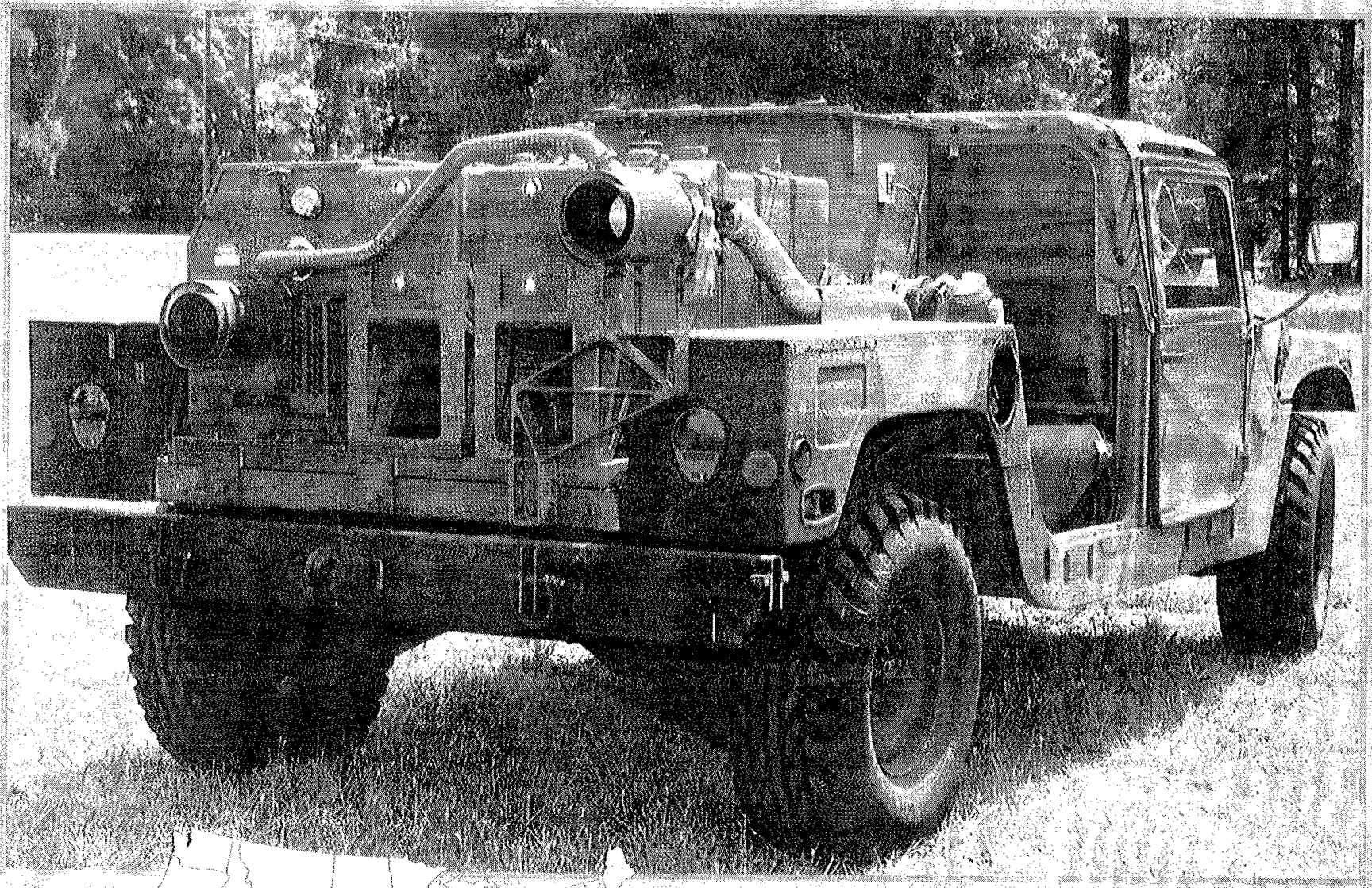
FOREIGN COUNTERPART: Russia: Straight Flush radar; Long Track radar

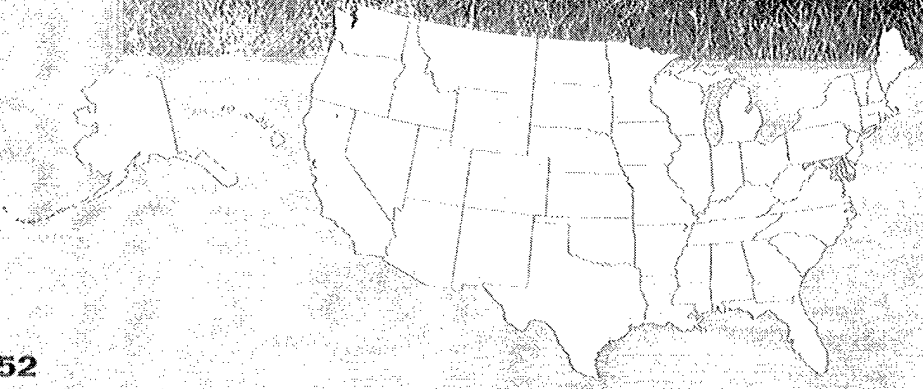
PROGRAM STATUS: The contract was awarded in 2QFY92. FAAD GBS is concluding the Engineering and Manufacturing Development phase, with a Milestone III Defense Acquisition Board (DAB) production decision scheduled for 3QFY95.

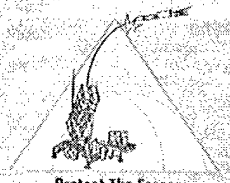
PROJECTED ACTIVITIES: Initial Operational Testing and Evaluation (IOT&E).
Low Rate Initial Production (LRIP) contract award.
Defense Acquisition Board Milestone III decision (Full Rate Production).
Pre-production fielding to the 24th Infantry Division (Mechanized).

PRIME CONTRACTOR: Hughes Aircraft (Fullerton, CA)

* See Appendix for list of subcontractors.







Protect The Force

MISSION: The mechanical smoke generator (XM56) provides large-area obscuration in the visual, infrared, and Millimeter-Wave (MMW) spectra.

CHARACTERISTICS: The XM56 is a large-area smoke generator system that is mounted on the HMMWV. The XM56 will obscure high-priority targets, such as airfields, bridges, and ammunition depots, as well as convoys and troop movements. The system is modular and uses a gas turbine engine as a power source to disseminate obscurants. The visual screening module is capable of vaporizing fog oil at a rate equal to the M157 smoke generator for up to 60 minutes. The infrared and MMW screening modules will be capable of disseminating a particulate material to provide 30 minutes of screening and will be developed under a P3I task.

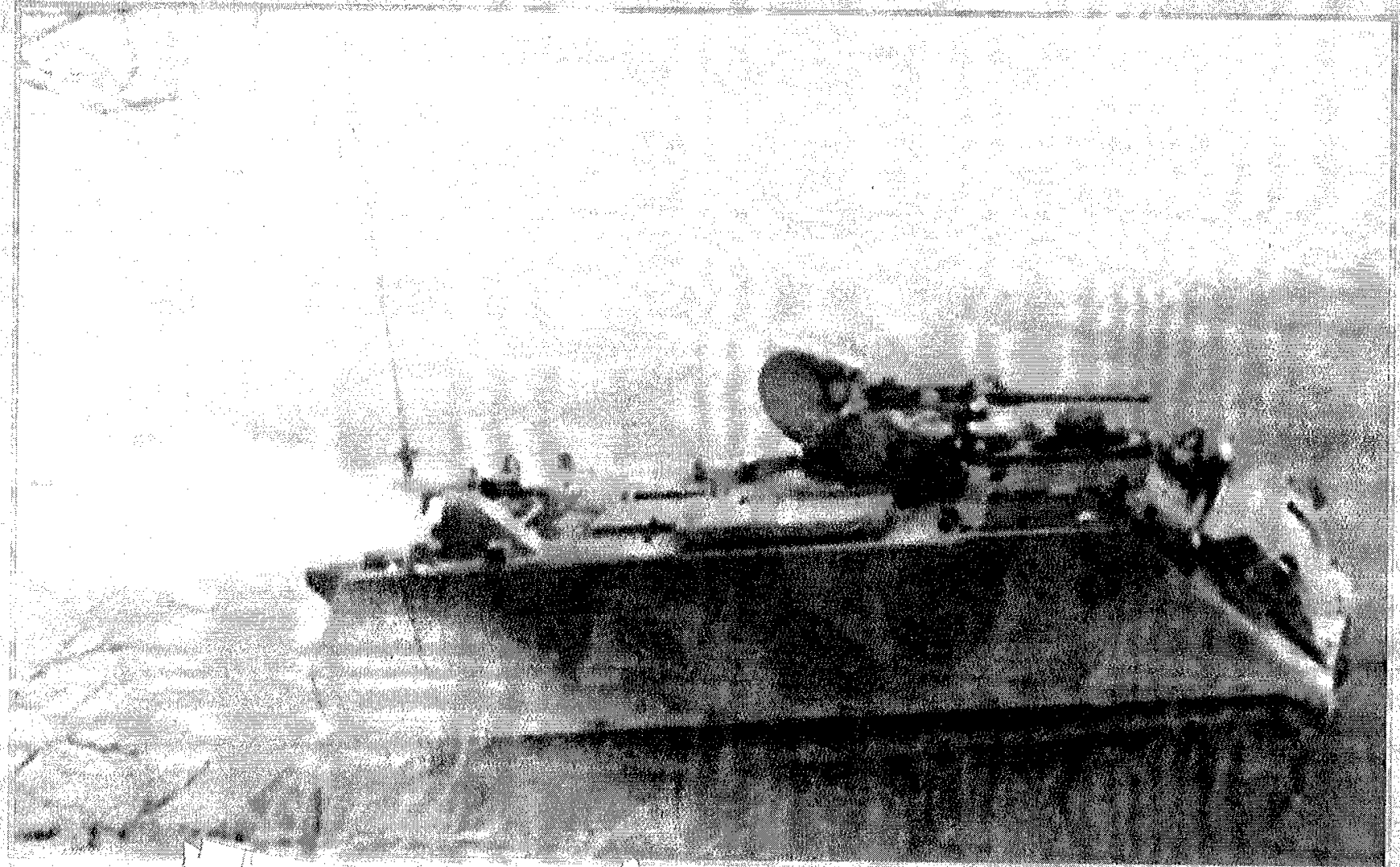
Gas turbine engine-powered	
visual screening (fog oil):	1.33 gal/min
	1 hr continuous
Infrared screening (graphite):	10 lb/min
	30 min continuous

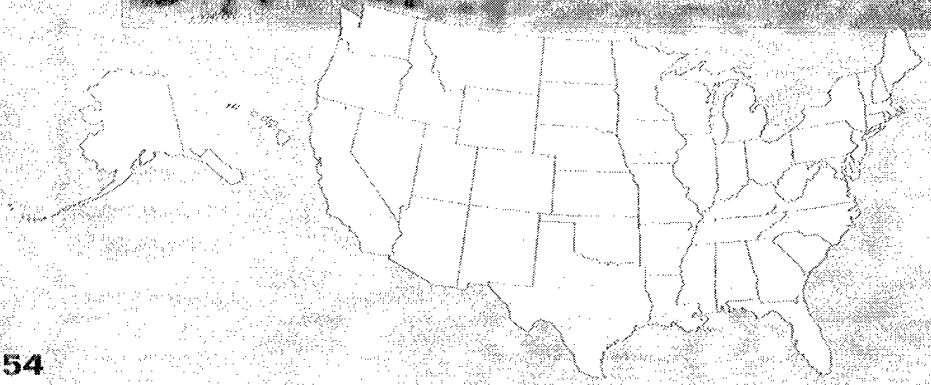
FOREIGN COUNTERPART: Countries using Soviet doctrine emphasize extensive use of smoke during tactical exercises. Many nations, especially those in the Middle East, are beginning to realize the benefits of smoke and have developed programs in this area.

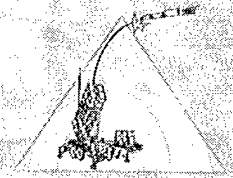
PROGRAM STATUS: The XM56 was type classified standard in September 1994. Production solicitation has been prepared. Fielding will begin in FY97.

PROJECTED ACTIVITIES: A competitive production contract will be awarded in FY95.

PRIME CONTRACTOR: MRC Division of Chamberlain Manufacturing (Hunt Valley, MD)







Protect The Force

MISSION: The mechanical smoke generator (XM58) system enhances the maneuver commander's ability to deploy his forces. Six vehicles are organized into two squads, led by the platoon leader in the seventh vehicle. The XM58 smoke platoon is task organized to the brigade or divisional commander, who will use them to conceal ground maneuver forces, breaching, river crossing, and recovery operations. Three platoons are assigned to the mechanized smoke company and one platoon to the division chemical company.

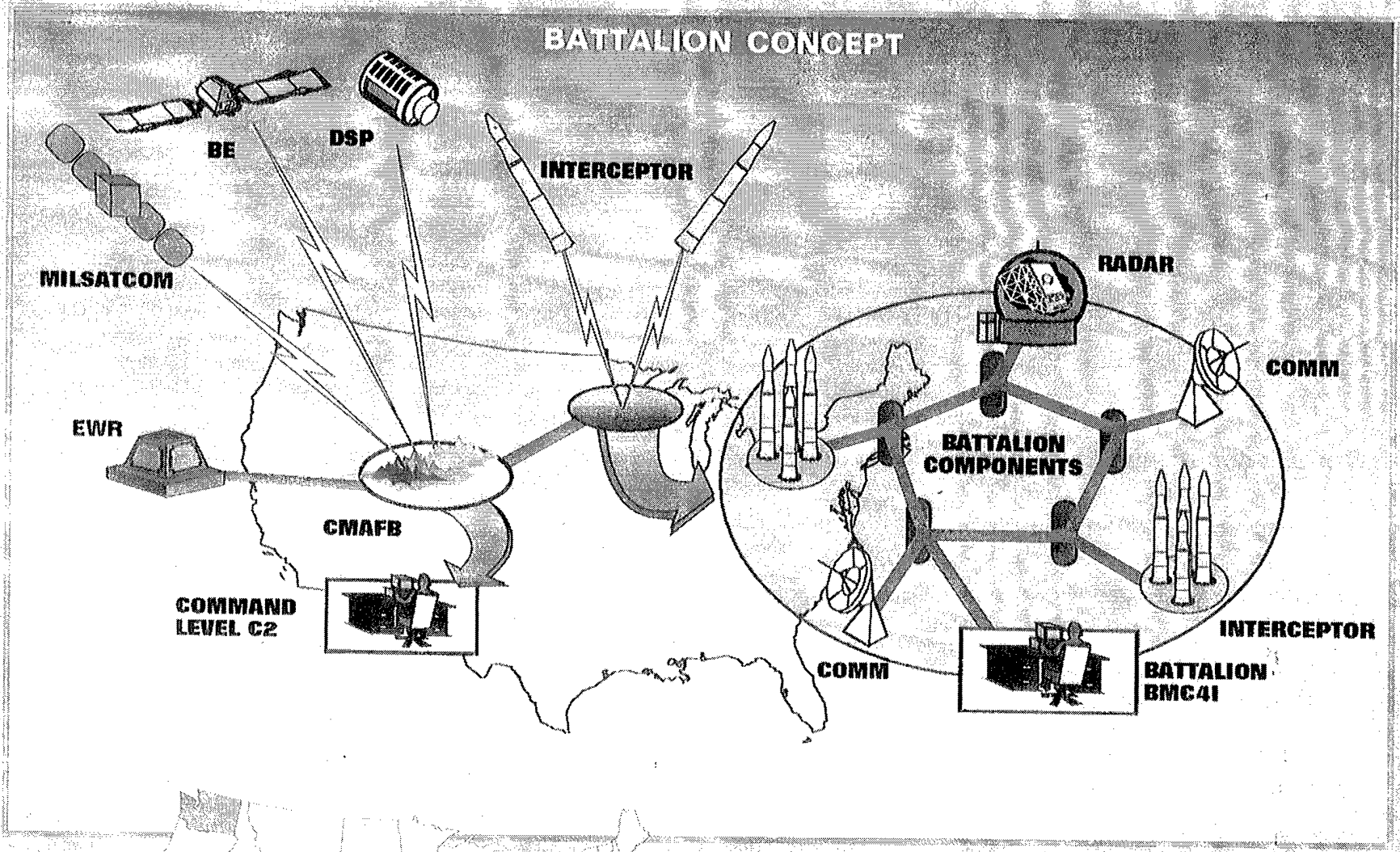
CHARACTERISTICS: The XM58 consists of a mechanized smoke generator system mounted in a modified M113A3 Armored Personnel Carrier. The carrier incorporates the Reliability Improvement of Selected Equipment (RISE) configuration that includes an upgraded engine and transmission, external fuel tanks, and new driver's station. The 250 hp Detroit Diesel powerpack provides a 20.3 hp/ton ratio at a combat loaded weight of 27,000 pounds. This is sufficient to maintain mobility with the M1 and M2/M3 vehicles the XM58 supports. The smoke generator system provides up to 90 minutes of visual and 30 minutes of infrared obscuring screens. A 30-minute MMW obscuring capability will be added as a product improvement. The system includes the AN/VAS-3 Driver's Thermal Viewer that allows it to see through its own smoke clouds and a Gas Particle Filter Unit for operating in an NBC-contaminated environment. A crew of three will operate the XM58 system.

FOREIGN COUNTERPART: Countries using Soviet doctrine emphasize extensive use of smoke during tactical exercises. Many nations, especially those in the Middle East, are beginning to realize the benefits of smoke and have developed programs in this area.

PROGRAM STATUS: The XM58 program is currently in the Engineering and Manufacturing Development phase. Pre-production Qualification Testing at Combat Systems Test Activity in Aberdeen, MD, and Dugway Proving Ground, UT began in August 1994.

PROJECTED ACTIVITIES: Complete development testing in January 1995.
Initial Operational Test and Evaluation in April 1995.
Type classification is scheduled for August 1995.

PRIME CONTRACTOR: TBD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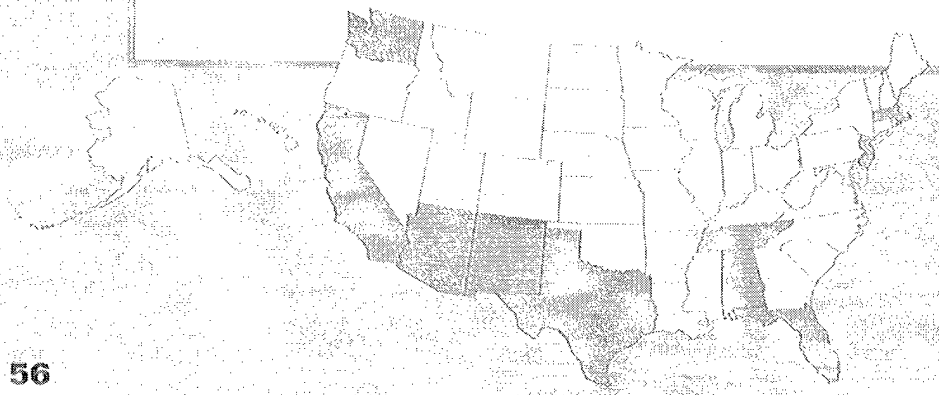
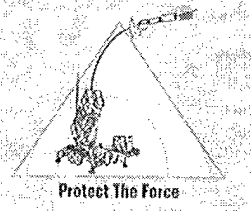



Protect The Force

MISSION: To protect the United States from limited ICBM attacks by reducing the lead time to deploy a treaty compliant single site system capability.

CHARACTERISTICS: The National Missile Defense (NMD) system will operate with external Early Warning (EW) sensors (Space and Missile Tracking System, DSP and EWR) and the United States Space Command (USSPACECOM) Command and Control Center via Command-Level Battle Management Command Control and Communications (BMC^3). The Army elements of the NMD System include ground based exoatmospheric hit-to-kill interceptors, a ground based, phased array, national defense radar (for surveillance, track, object classification and kill assessment) and Battalion BMC^3 (Bn BMC^3) (for human-in-control, engagement planning, top level decision making and system communications).

A NMD engagement is initiated based on early warning sensors detecting and designating hostile ICBM launches and transmitting the tracking data through the Command-Level BMC^3 to the Bn BMC^3. Using data from surveillance and tracking systems including the ground based radar, the Bn BMC^3 identifies the hostile reentry vehicles, plans the engagement, provides weapons release authorization and sends launch commit parameters to a specific interceptor. After launch and burning of the booster, a kill vehicle separates and repositions itself pointing the seeker field-of-view to the predicted target position. The on-board computer receives additional target updates from the Bn BMC^3 based on surveillance data and executes "blind" 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 a combination of target object map, provided by the Bn BMC^3 based on radar and EW sensor data, and on-board target selection capabilities. After target designation, the kill vehicle tracks the target executing "end game" maneuvers to achieve a direct impact kill. The intercept is monitored by the radar and EW sensors for final kill assessment or further battle management action, if required.

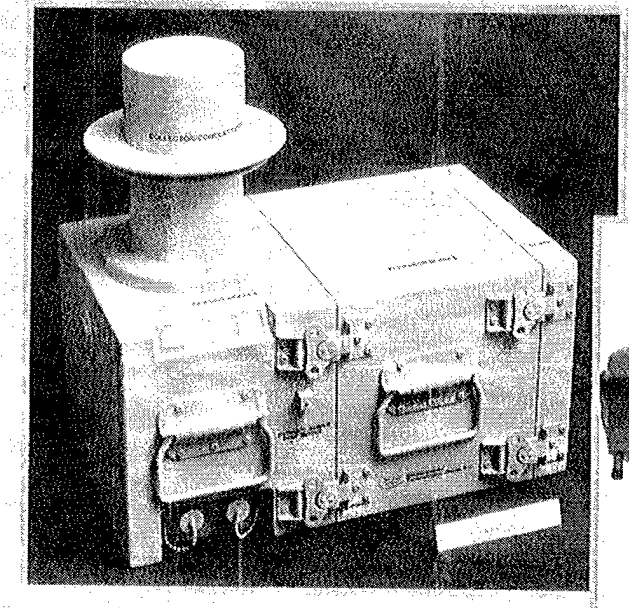
FOREIGN COUNTERPARTS: Russia: Moscow ABM System

PROGRAM STATUS: The Army-executed portion of the Ballistic Missile Defense Organization-sponsored NMD Technology Readiness Program is structured around development and demonstration of existing mature technologies for the establishment of a defense contingency capability that could be acquired and deployed on very short notice. The Exoatmospheric Kill Vehicle (EKV) program will resolve technology issues and validate the kill vehicle performance for development of the interceptor. The EKV program will advance in complexity from seeker flights through prototype kill vehicle flights. The NMD radar will evolve from the TMD-GBR into a Radar Technology Demonstrator (RTD) which will demonstrate critical long-pole technology areas such as discrimination, kill assessment and target object mapping. The Battalion BMC^3 will leverage off the THAAD program, utilize existing algorithms, develop NMD unique algorithms and utilize real-time digital simulation to resolve critical issues.

PROJECTED ACTIVITIES: EKV sensor flight tests (two) in FY96; EKV intercept tests in FY97, 98 and 99; BMC^3 on-line (FY97) and in-line (FY98) during EKV tests; RTD on-line during FY98 EKV test; and integrated radar, interceptor and BMC^3 flight test in FY99.

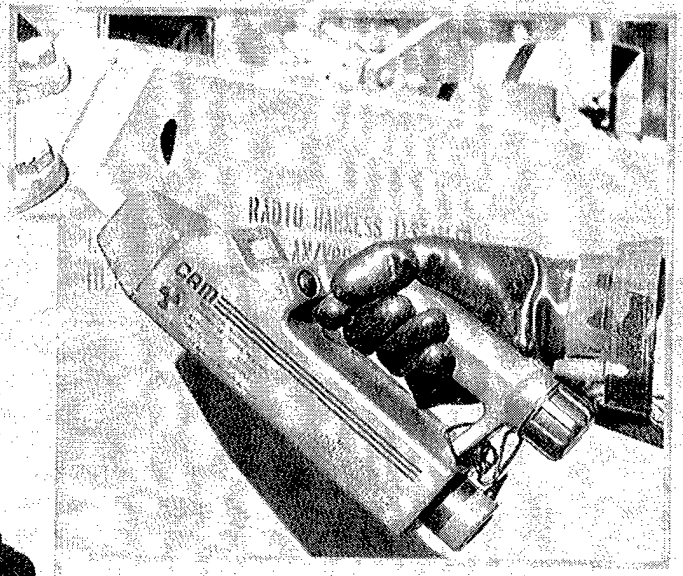
PRIME CONTRACTOR: EKV Contractors are Hughes Aircraft and Rockwell International. The Payload Launch Vehicle (PLV) contractor is Lockheed Missiles and Space Company. The RTD contractor is Raytheon. A request for proposal for the BMC^3 effort is being prepared.

* See appendix for list of subcontractors.

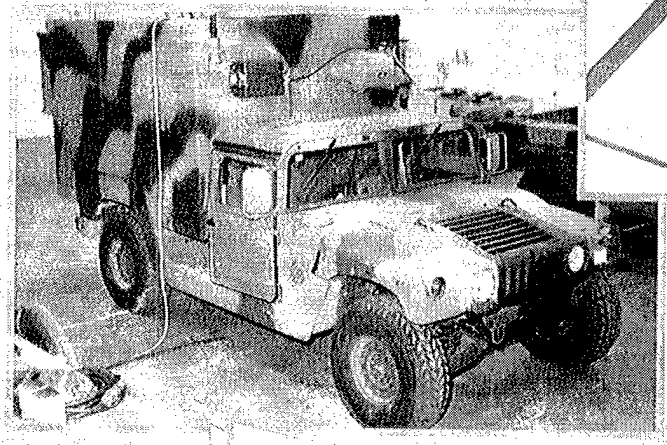


Bio-Chemical Detector

Chemical Agent Monitor



XM21 Remote Sensing Chemical Agent Alarm



Biological Integrated Detection System

AN/PDR-77 Hand-Held Radiac and Accessories

MISSION: NBC detection provides battlefield-essential early warning and monitoring capabilities.

CHARACTERISTICS: There are four pillars of NBC defense: detection, avoidance, protection, and decontamination. U.S. doctrine stresses contamination avoidance when the scheme of maneuver permits. Detection is key to avoidance and timely protection measures. Monitoring devices are important to survey and decontamination operations. A strong NBC early detection, warning, and monitoring capability will save lives on the contaminated battlefield and sustain combat power by preventing performance degradation from protective posture and minimizing decontamination requirements.

FOREIGN COUNTERPART: Many nations still have an extensive chemical and biological weapons arsenal. These weapons are becoming especially widespread in third world countries.

PROGRAM STATUS: The United States currently is developing or producing NBC detection and monitoring equipment. The AN/PDR-77 detects and measures alpha, beta, gamma, and x-ray radiation. It currently is being fielded. The Biological Integrated Detection System (BIDS) is a system of biological detectors. The BIDS will have detectors, weather sensors, collective protection, and direct communication to Division Headquarters, enabling continuous monitoring and rapid alarm notification to field commanders. A Joint Program Office for Biological Defense was established, with the Army accepting the lead. The DoD Biological Defense Program consists of both medical (vaccines) and nonmedical (detection) assigned programs for all services. The Remote Sensing Chemical Agent Alarm, XM21, detects and warns U.S. forces of toxic chemical agent attacks. The XM21 has been type classified for low-rate production. The Chemical Agent Monitor (CAM) is a post-attack monitor employed in both monitoring and survey missions to determine the effectiveness of decontamination procedures and the limits of a contaminated area. The CAM has completed production in the United States.

PROJECTED ACTIVITIES: Complete Type Classification for Pocket Radial, Advanced Airborne Radial, and XM21 Remote Sensing Chemical Agent Alarm.
Initiate production planning of improved CAM.
Initiate full rate production of the XM21 Remote Sensing Chemical Agent Alarm.

PRIME CONTRACTOR: Nuclear Research (Dover, NJ)
Battelle (Edgewood, MD)
Brunswick (Deland, FL)
Environment Technologies Group (Baltimore, MD)
Graseby Ionics (Watford, Herts, UK)

MISSION: The NBCRS will detect, identify, and mark areas of NBC contamination and report accurate information to supported commanders in real time.

CHARACTERISTICS: The NBCRS (XM93 and XM93E1) are wheeled armored vehicles equipped with a fully integrated NBC detection, warning, and communication capability. They collect soil, water, and vegetation samples for later analysis; mark areas of nuclear and chemical contamination; and transmit, in real time, NBC information to unit commanders in the area of operation. The hazards to the NBCRS crew are minimized through the inclusion of vehicle NBC collective protection, providing overpressure with heating and cooling for crewmen.

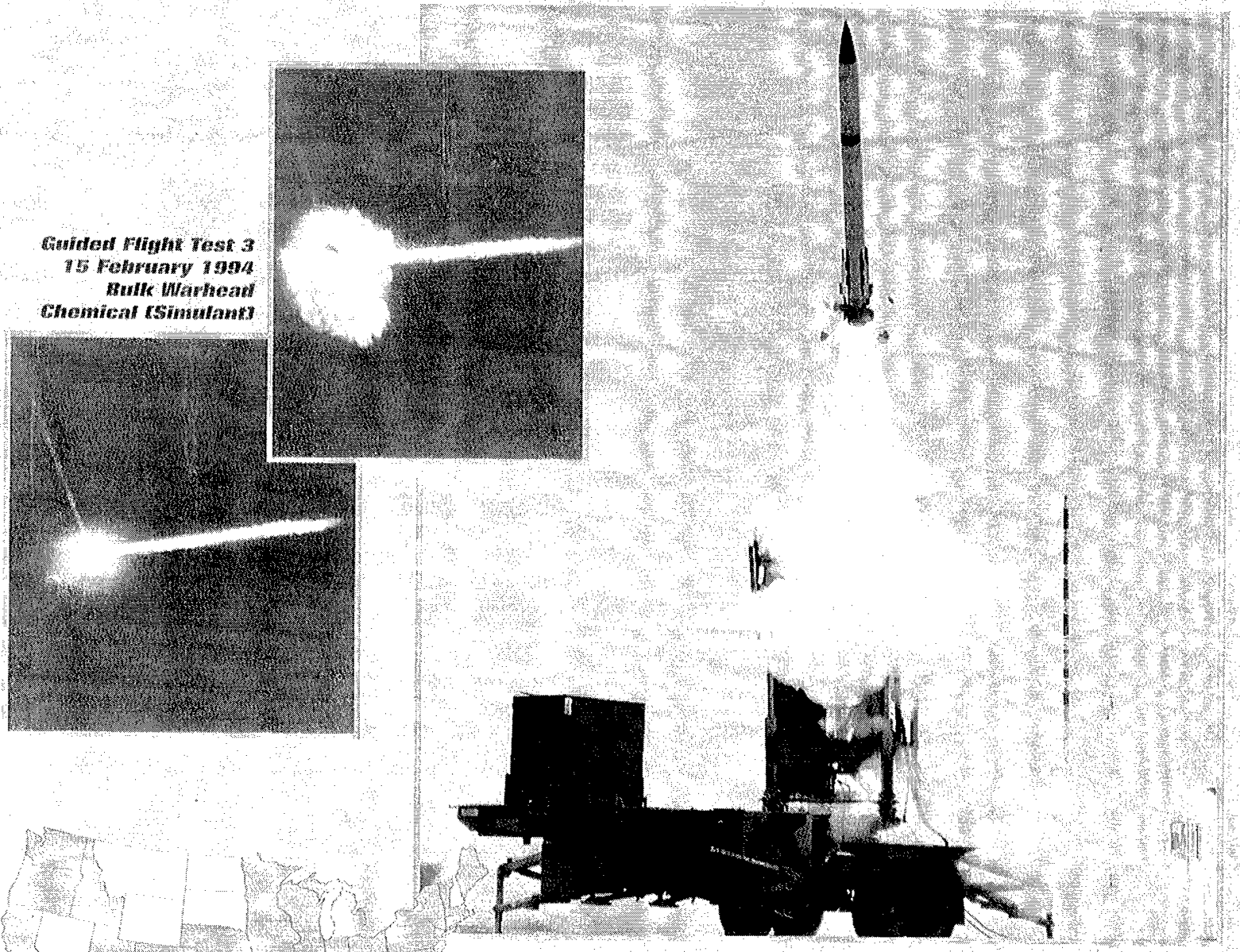
Body style: 6-wheel, armored-collective protection
Engine: V8 Diesel—320 hp
Weight: XM93: 18.7 ton; XM93E1: 20.2 ton
Speed: 65 mph
Range: 500 mi
Crew: XM93: 4 soldiers; XM93E1: 3 soldiers

FOREIGN COUNTERPART: Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH. China also has a NBC reconnaissance vehicle.

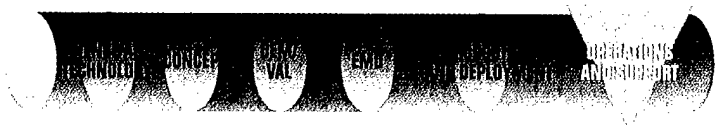
PROGRAM STATUS: The NBCRS is a German Non-Developmental Item (NDI) program consisting of four phases: (1) Proposal Evaluation and Shoot-Off phase, during which proposals were evaluated, competition conducted, and a winner selected; (2) XM93: Interim System Production phase, which provides 48 contractor-supported (FY90 – 08, FY91 – 15, FY92 – 25) interim systems for urgent fielding (additionally, for Operation Desert Storm, the German Government donated 60 German XM93 NBCRSs to the U.S. Government. Fifty systems were fielded with the Army forces and 10 with the Marine Corps during Operation Desert Storm. These systems have been redeployed worldwide primarily in CONUS and USAREUR); (3) System Improvement phase to design, fabricate, and test the XM93E1 NBCRS to satisfy all Required Operational Capabilities (ROC) requirements; (4) A Block I modification program to upgrade all XM93 NBCRSs to the XM93E1 configuration.

PROJECTED ACTIVITIES: Type classification standard of the XM93E1 in January 1995.

PRIME CONTRACTOR: General Dynamics (Detroit, MI)
Thyssen Henschel (Germany)



Guided Flight Test 3
15 February 1994
Bulk Warhead
Chemical (Simulant)



MISSION: The Patriot Missile System provides high- and medium-altitude defense against aircraft and tactical ballistic missiles. Patriot Advanced Capability-3 (PAC-3) missile will provide an advanced anti-tactical missile capability to the current fielded system.

CHARACTERISTICS: The combat element of the Patriot Missile System is the fire unit, which consists of a radar set, an Engagement Control Station (ECS), Equipment Powerplant (EPP), an Antenna Mast Group (AMG), and eight remotely located launchers. The single-phased-array radar provides all tactical functions of airspace surveillance, target detection and track, and missile guidance. The ECS provides the human interface for command and control of operations. Each firing battery launcher currently contains four ready-to-fire missiles, sealed in canisters, which serve a dual purpose as shipping containers and launch tubes. Patriot's fast reaction capability, high firepower, ability to track 50 targets simultaneously with a maximum range of 37 nautical miles, and the ability to operate in a severe electronic countermeasures environment are features not available in previous air defense systems. The PAC-3 upgrade program will incorporate 16 advanced hit-to-kill missiles into two of the eight launchers per firing battery, thus increasing fire power and ballistic missile defense capabilities. The primary mission of the PAC-3 missile is to kill both maneuvering and non-maneuvering tactical ballistic missiles. The PAC-3 missile will also have a capability to counter cruise missiles and aircraft

FOREIGN COUNTERPART: Russia: SA-10 and SA-12

PROGRAM STATUS: Patriot has completed fielding to U.S. forces and is deployed in CONUS, Europe, Korea, and Southwest Asia. U.S. missile production deliveries include Patriot Anti-Tactical Missile (ATM) Capability-Level 2 (PAC-2). The PAC-3 comprises system improvements that will result in a time-phased series of system hardware and software changes designed to improve performance against an evolving threat, meet user needs, and correct existing system deficiencies in a timely, affordable manner. Germany, the Netherlands, Italy, Japan, Saudi Arabia, Kuwait, and Israel are currently participating in Patriot acquisition programs. Discussions with other interested allies for Patriot acquisition are ongoing.

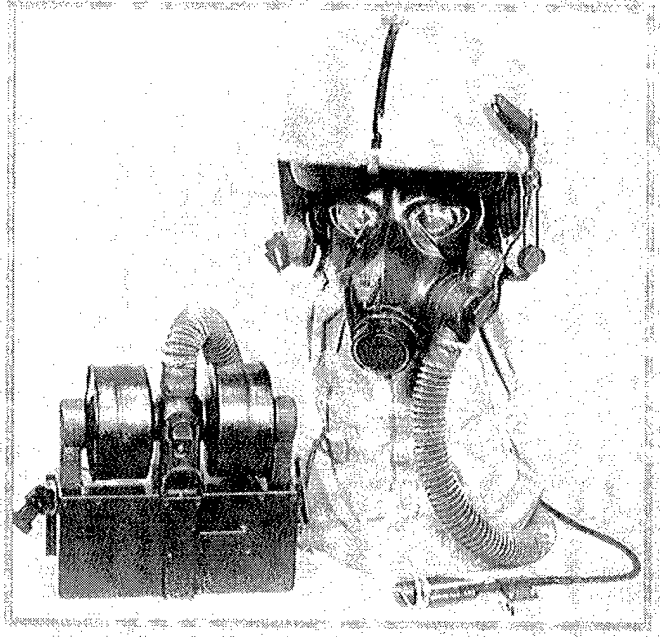
PROJECTED ACTIVITIES: The PAC-3 missile is a key component of overall system improvements with a projected 1QFY95 milestone for entering Engineering and Manufacturing Development (EMD).

PRIME CONTRACTOR: Raytheon (Bedford, MA)
Loral (Grand Prairie, TX)

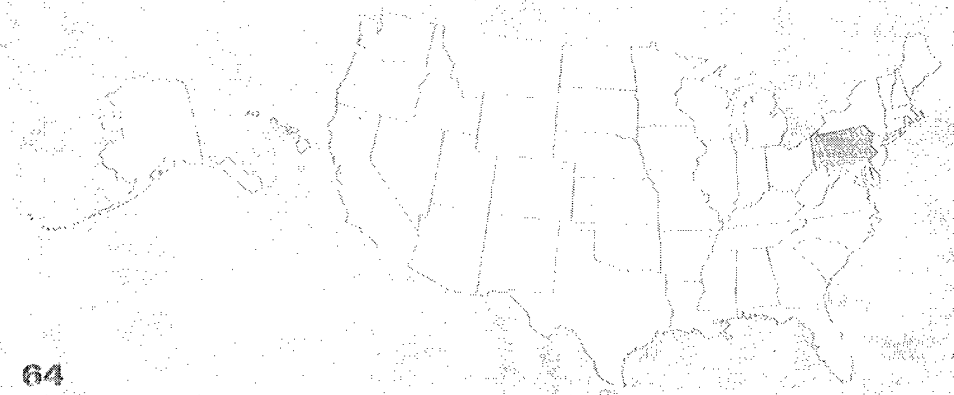
* See appendix for list of subcontractors.

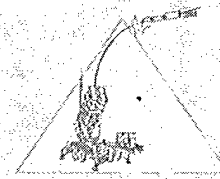
M40 Chemical/Biological Field Mask

M42 Chemical/Biological Combat Vehicle Masks



M43 Aviator Mask





Protect The Force

MISSION: The M40 series masks provide respiratory, eye, and face protection against toxic agents. The XM45 mask will provide rotary wing aircrewmen with a less burdensome mask.

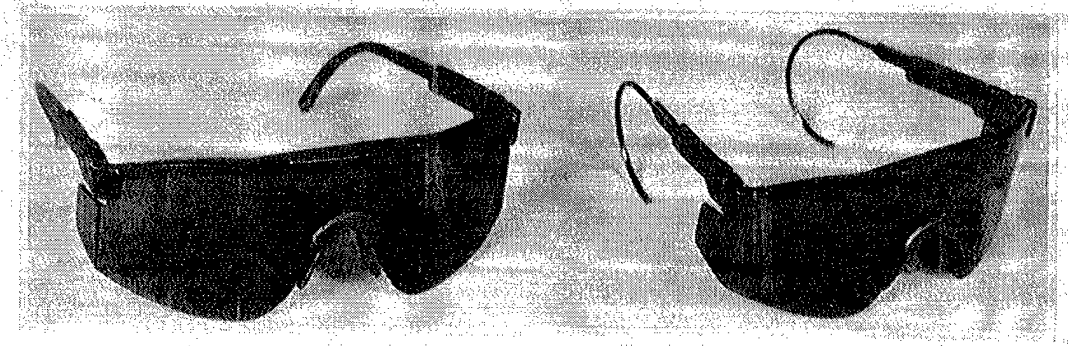
CHARACTERISTICS: The M40, M42 and XM45 masks, which comprise the M40 series, have a silicone rubber facepiece with in-turned periphery, binocular eye lens system, and elastic head harness. The M40 series is designed to protect the wearer against Chemical/Biological (CB) agents, toxins, radioactive fallout particles, and battlefield contaminants. The M40 is the CB field mask that replaces the M17 series and M9 series masks. Surety sites use the M40 with special Toxic Agent Protection (TAP) hood. The M42 is the CB combat vehicle mask, which replaces the M25 series. The M40 series mask features include front and side voicemitters, drink tube, clear and tinted outserts, and a filter canister with NATO-standard threads. The canister on the M42 combat vehicle crewman mask is attached to the end of a hose and has an adapter for connection to the Gas Particulate Filter Unit. The M42 also has a built-in microphone for wire communication. The M40 and M42 masks are issued with a butyl-coated fabric hood to protect the wearers' head and neck areas. The M40 special-purpose hood is a heavyweight, butyl-coated fabric with a double skirt and is compatible with the M3 TAP suit. M40A1 and M42A1 masks were type classified in October 1992. The A1 masks have a quick-doff hood/second skin for and an improved nosecup.

FOREIGN COUNTERPART: Britain: S10

PROGRAM STATUS: Production of both M40 and M42 masks is currently ongoing at both ILC and MSA facilities. Fielding is complete at Army Materiel Command (AMC) surety sites and has begun with Forces Command (FORSCOM) units with anticipated completion in FY94. Fielding of the five remaining Major Commands (MACOM) will continue as scheduled.

PROJECTED ACTIVITIES: Conduct developmental activities and testing of the XM45 aircrew mask.

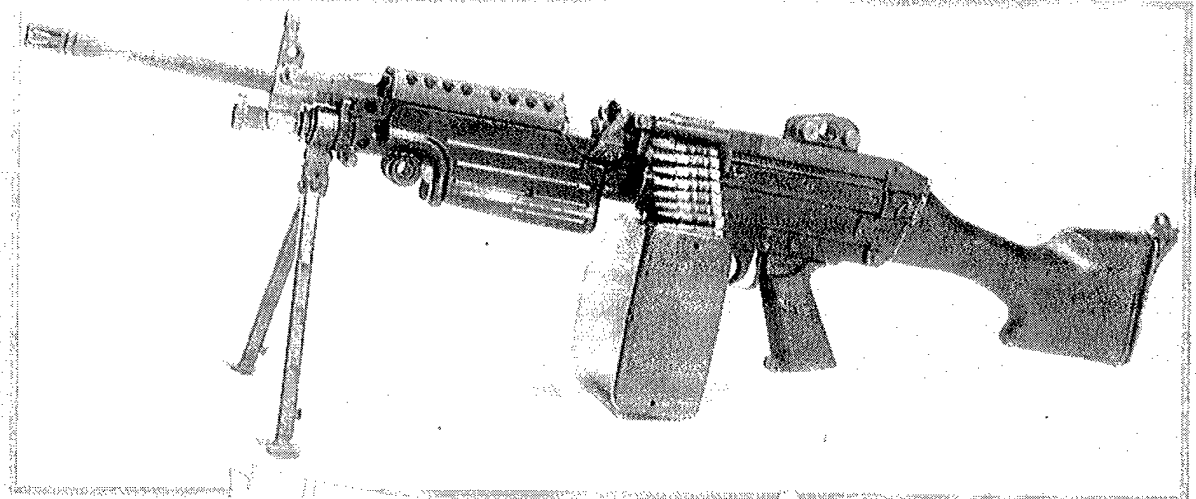
PRIME CONTRACTOR: ILC Dover (Dover, DE)
Mine Safety Appliance (Pittsburgh, PA)
FY95 contractor TBD

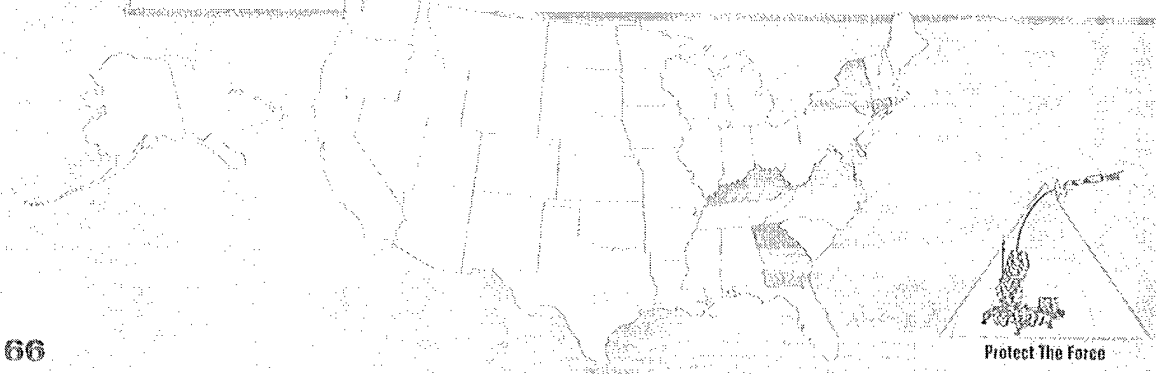


Laser Eye Protection (SPECS)

Second Generation Extended Cold Weather Clothing System

M249 Assault Pack





Protect The Force

MISSION: The soldier system's mission is to provide the soldier with everything he wears, carries, and consumes in combat.

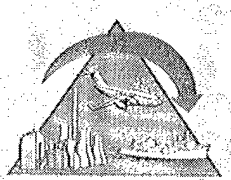
CHARACTERISTICS: The soldier system includes improved individual equipment, weapons, clothing, C^4I, and subsistence items, to enhance his overall effectiveness and survivability on the battlefield. Soldier system items include several related programs that respond to changing threat requirements and advances in state-of-the-art technology.

Soldier Modernization is the basis for soldier system efforts. It provides a cohesive plan for the coordinated development of soldier system items and is the roadmap for near-term, mid-term, and far-term efforts. In the near term, one key element of the soldier support and modernization process is the Soldier Enhancement Program (SEP). SEP projects are primarily modified non-developmental items and are focused in four general areas: weapons and munitions, combat Clothing and Individual Equipment (CIE), communications and navigation aids, and food, water and shelter. SEP projects include Enhanced Load Bearing Vest, Inconspicuous Body Armor, Second Generation Extended Cold Weather Clothing System (ECWCS), Armor Crew/Infantry Protective Mask, Medium Machine Gun, Modular Weapon System, M249 Vehicle Mount, Fighting Position Excavator, Lightweight Video Reconnaissance System, Lightweight Leader Computer, Monocular Night Vision Device, Stabilized Binoculars, Individual Soldier Enhanced Ration, and Small Unit Shower. Mid-term research and development CIE efforts are focused on the design of lighter-weight equipment, ballistic and laser eye protection, and improved chemical protective clothing that takes advantage of the latest technology and advanced materials. These efforts concentrate on Self-contained Toxic Environmental Protective Outfit (STEPO), Joint Service Lightweight Integrated Chemical Suit Technology (JSLIST), and improved laser eye protection. Other key elements include the Land Warrior (LW), Air Warrior (AW), and Mounted Warrior (MW) systems. LW is a first generation integrated fighting system for dismounted combat soldiers. It enhances soldiers' battlefield capabilities through the development and integration of Army components and technologies into a cohesive, timely, and cost-effective system. LW subsystems include an individual soldier computer, global positioning system (GPS), and communications system; enhancements to CIE; integrated headgear with heads-up display and image intensifier; improved chemical/biological mask; and modular weapon system with thermal sight and infrared laser aiming light. Similar efforts have been started for mounted and air crew personnel. AW and MW efforts are being defined. Far-term efforts include the 21st Century Land Warrior (21CLW), which will identify less mature technologies to meet longer-term soldier deficiencies. Emphasis will be on the design of lightweight equipment and high technology areas in computer, communications, and night vision devices.

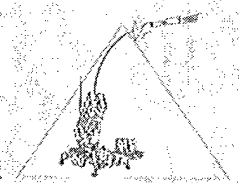
PROGRAM STATUS: There are approximately 100-125 projects per year in various stages of R&D for the soldier system (CIE/SEP/Land Warrior). Land Warrior (LW) reached a Milestone I/II on 26 August 94.

PROJECTED ACTIVITIES: During FY95 the Land Warrior RFP will be completed and released to industry. LW contract award is scheduled for July 1995. In CIE/SEP, there will be about 25 items type classified, 15 items transitioning to production, and 19 items in production.

PRIME CONTRACTOR: Simulation Technologies, (Columbus, GA)
Allied Signal, (Hartford, CT)
The Grandoe Corporation (Gloversville, NY)
E.I. Dupont Denemours (Wilmington, DE)
Progressive Technologies (Fairfax, VA)
Foam Design, (Lexington, KY)



Project & Sustain



Protect The Force

MISSION: Stinger provides short-range air defense protection.

CHARACTERISTICS: Stinger is a shoulder-fired, infrared missile system that homes in on the heat emitted by either jet or propeller-driven, fixed-wing aircraft or helicopters. The Stinger system employs a proportional navigation system that allows it to fly an intercept course to the target. Once the missile has traveled a safe distance from the gunner, its main engine ignites and propels it to the target. It can attack much faster targets than Redeye and can destroy aircraft from any aspect. A follow-on seeker (Stinger-Post) improved the capability of the system in certain infrared countermeasures environments. Stinger-Reprogrammable Microprocessor (RMP) further enhances the performance in infrared countermeasures environments and provides the capability for software upgrades to the missile as the threat evolves. Stinger has been proliferated on a number of platforms in the forward area, including MANPADS, Avenger, Kiowa, Kiowa Warrior, and LAV-AD.

Guidance: Passive infrared and ultraviolet homing
Speed: Supersonic
Navigation: Proportional with lead bias
Weight: 34.5 lb
Diameter: 2.75 in
Length: 60 in

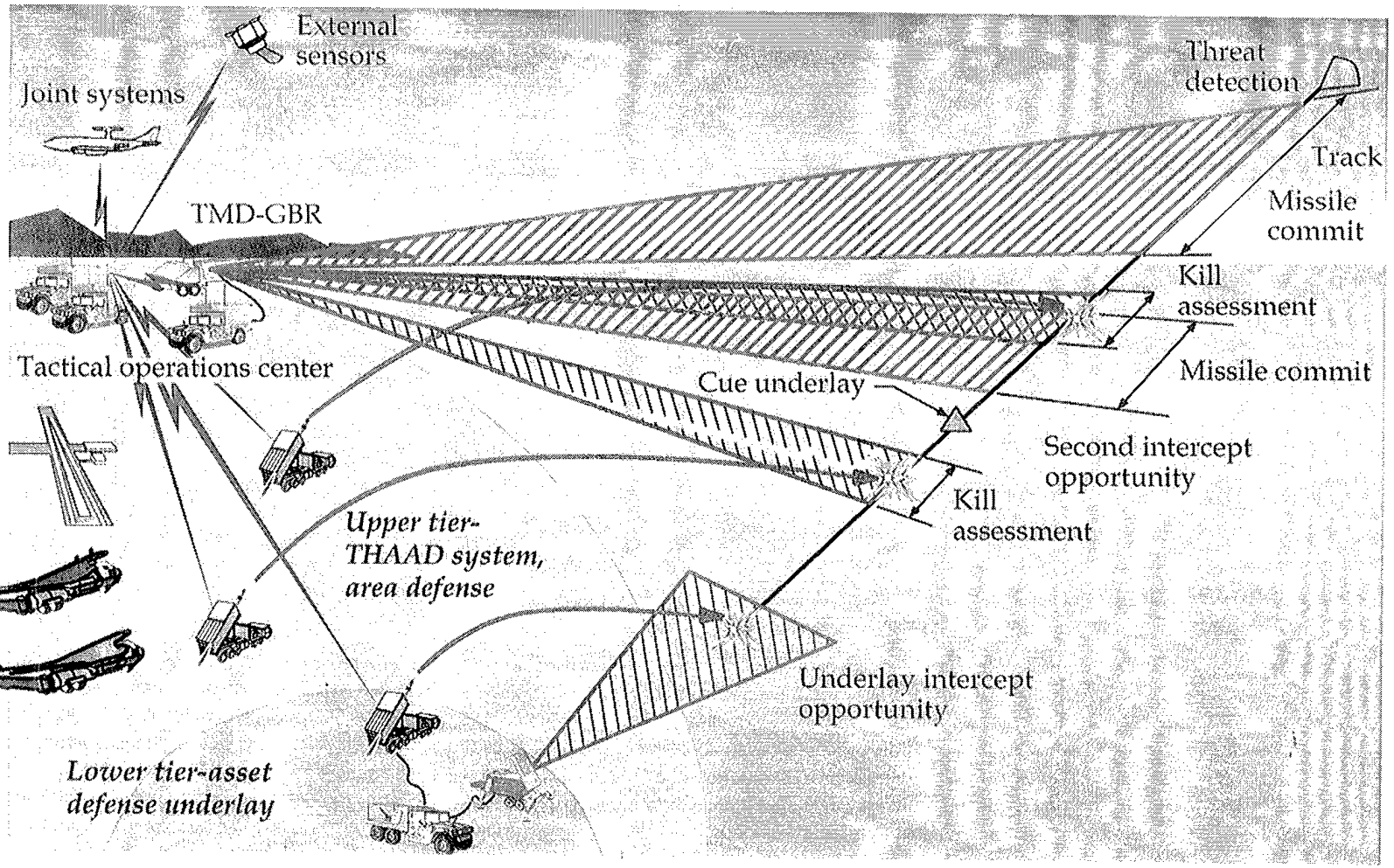
FOREIGN COUNTERPART: Russia: SA-7, SA-14, and SA-16 Britain: Blowpipe, Javelin
Sweden: RBS-70

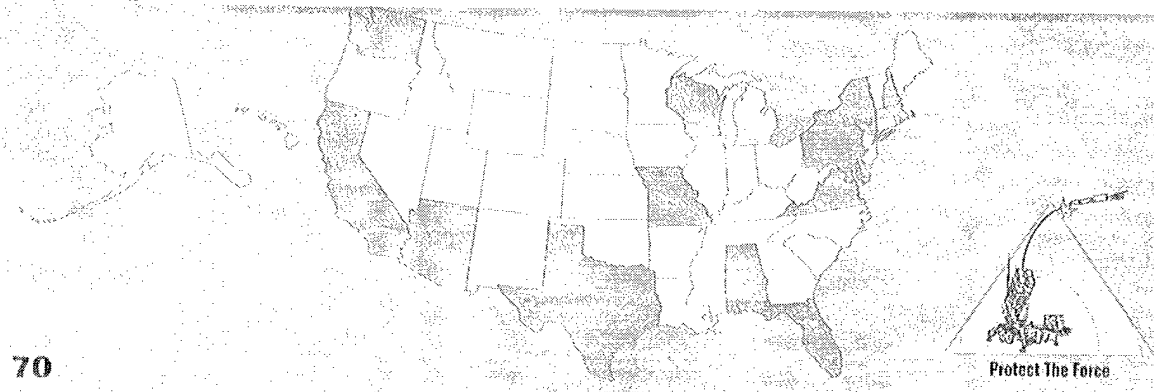
PROGRAM STATUS: Stinger-RMP is currently in production. Basic Stinger was operationally deployed to Germany in 1981, and production has been completed. Stinger-Post entered production in FY83 and was deployed in FY87. Stinger-RMP entered development in September 1984; transition to production began in November 1985, and initial deliveries began in FY89; fielding began in FY90. Stinger-RMP production was accelerated to meet Desert Shield/Storm requirements. Further improvements to Stinger-RMP performance are being developed under a Block I product improvement program scheduled for production cut-in by FY95 and retrofit to fielded systems by FY96. The FY93 buy allows the Army to avoid a costly break in the production line prior to initiation of the Block I upgrade program. The Army has initiated the Block I Stinger improvement program to extend service life and develop improvements to increase its accuracy and resistance to countermeasures, its effectiveness against low observable targets (UAVs and cruise missiles) and standoff helicopters in clutter, and to eliminate the need for super-elevation (a safety hazard when Stinger is fired from a hovering helicopter).

PROJECTED ACTIVITIES: ATAS First Unit Equipped (FUE) scheduled for USAREUR in 4QFY95.
Block I GTV firings scheduled for 3Q to 4QFY95.

PRIME CONTRACTOR: Hughes (Tucson, AZ; Pomona, CA; Farmington, NM)

* See appendix for list of subcontractors.


External sensors
Joint systems
Threat detection
Track
TMD-GBR
Missile commit
Kill assessment
Tactical operations center
Cue underlay
Missile commit
Second intercept opportunity
Kill assessment
Upper tier-THAAD system, area defense
Underlay intercept opportunity
Lower tier-asset defense underlay



Protect The Force

Theater High Altitude Area Defense/Ground-Based Radar System

MISSION: THAAD provides high-altitude air defense of mature and non-mature theaters against tactical ballistic missiles, including weapons of mass destruction.

CHARACTERISTICS: The THAAD system will consist of missiles, launchers, Battle Management/Command, Control, Communication, Computers, and Intelligence (BM/C^4I) elements, Ground Based Radar (GBR), and support equipment. The missile will be a hypervelocity, kinetic energy weapon that will ensure destruction of its target by directly colliding with it. The launcher will be a Palletized Loading System (PLS) truck and will have two to three times the firepower of current air defense systems. The BM/C^4I system is the THAAD Tactical Operations Center, which is housed in truck-mounted shelters. These units will interface and coordinate with the Theater Air Defense C^2 system and control THAAD engagement and force operations. The TMD—GBR will be integrated into the THAAD system to perform critical radar functions such as acquisition, track, discrimination, and engagement assessment. The GBR will also support passive defense and attack operations by providing impact point predictions and launch point estimations. The THAAD system will be fully transportable by current military airlift aircraft. Once arriving in theater, the system will be mobile on unimproved roads and highways. These capabilities will allow THAAD to be rapidly deployed to any theater on short notice and with minimal transport resources.

The THAAD system is a Theater Missile Defense (TMD) weapon system designed to intercept short- and intermediate-range missile threats that increasingly will employ sophisticated warhead technologies. The THAAD system will augment existing and other planned TMD capabilities at a higher altitude. The THAAD system also provides the capability to destroy enemy missiles at ranges and altitudes sufficient to avoid damage due to debris or chemical agent fallout. Because of its hit-to-kill guidance approach, the system provides a high degree of lethality compared to existing systems with fragmentation warheads.

FOREIGN COUNTERPART:

	THAAD	*GBR*
France and Italy:	SAAM; SAMP/N; SAMP/T	Russia: Hen House; Dog House; and Try Adds radars
Germany:	MSAM	

PROGRAM STATUS: The THAAD program is currently in the Demonstration and Validation (DEM/VAL) phase. The contract for DEM/VAL was awarded on 4 September 1992. Completion and delivery of a User Operational Evaluation System (UOES) prototype is scheduled for FY97.

PROJECTED ACTIVITIES: Flight testing is scheduled to begin in 2QFY95.
DEM/VAL flight tests will provide interceptor and system data to support the Milestone decision at the end of 1996.

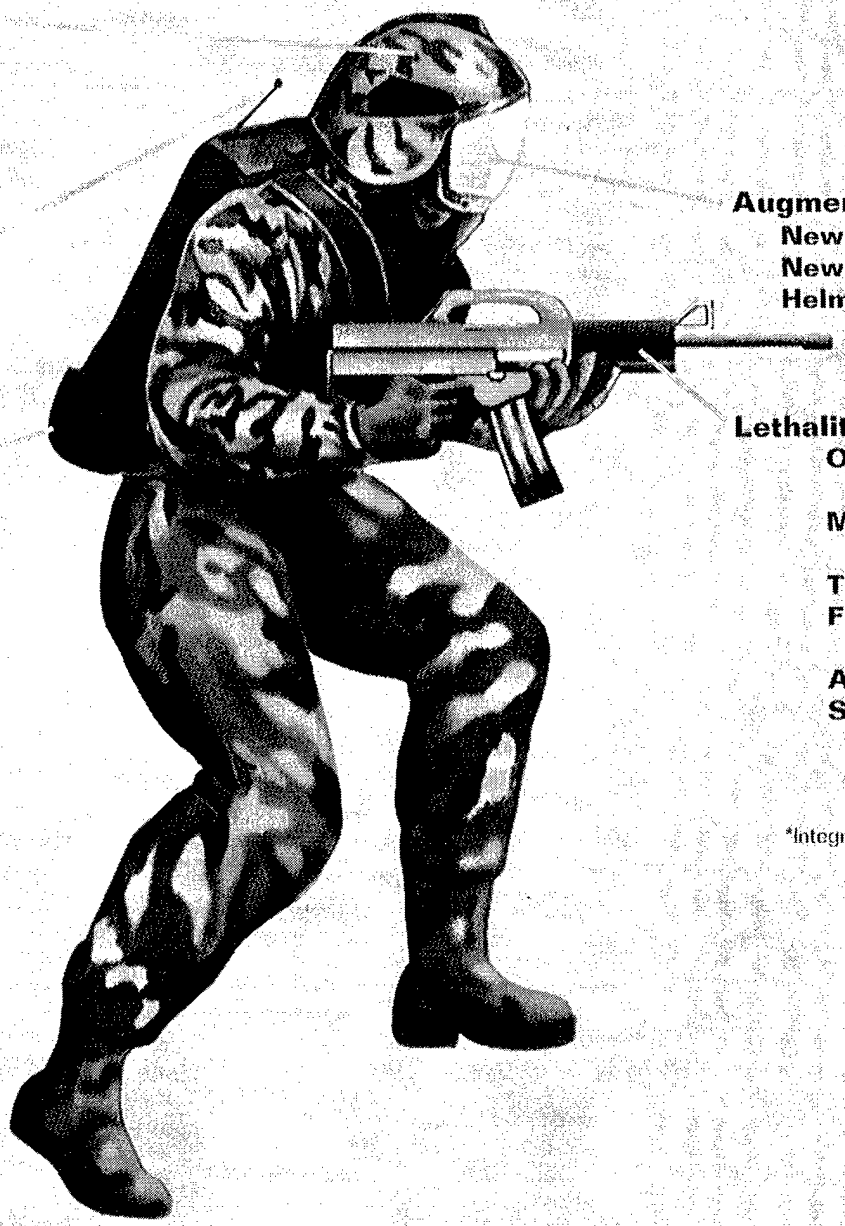
PRIME CONTRACTOR: Lockheed (Sunnyvale, CA)—THAAD
Raytheon (Wayland, MA)—GBR

* See appendix for list of subcontractors.

Life Support
- Ballistic Protection
- Laser Flash Protection
- Microclimate Cooling
- Chemical Detection*
- Mine Detection
- Medical Sensors*
- Individual Power

Individual C^3
- Voice Communications*
- Combat Identification
- Image Transfer*
- Individual Position/Navigation

Computer
- Software Modules*



Augmented Day/Night Vision
- New Night Vision Goggles
- New I2 Video
- Helmet-Mounted Display*

Lethality
- Objective Individual Combat Weapon*
- Multi-Purpose Individual Munition
- Thermal Weapon Sight*
- Forward (Observer/Forward Air Controller*
- Aiming Light*
- Small Arms Fire Control*

*Integrated into Data Network

Data Network Provides Situational Awareness, C^2, and Target Handover

OVERVIEW: The goal of the Army Science and Technology program in Protect the Force is to provide technologies to identify, locate, and classify high-priority targets and direct weapon systems for engagement. Tomorrow's soldier, whether mounted or on foot, must have the benefit of the best protection available, not only from enemy fires, but also from inadvertent friendly rounds and from the ever-present environment. The Army, in a combined arms scenario, must have the means to detect and neutralize battlefield obstacles, identify friendly forces, quickly deploy defense against weapon of mass destruction, and bring countervailing fire to bear on enemy weapons, both mobile and fixed. It must be able to overwhelm the enemy with minimum casualties in the presence of a heavily armored threat and smart weaponry. Improved target acquisition, accelerated positive identification, and missile engagement technologies provide the leap-ahead capabilities required to meet the ever-increasing threat.

21st CENTURY LAND WARRIOR (21CLW): The 21st Century Land Warrior (21CLW) Top-Level Demonstration (TLD) brings the following elements together in one demonstration scheduled for FY98: the Generation II Soldier—(GEN II) Advanced Technology Demonstration (ATD) as the core and technical/operational integrating element, the Objective Individual Combat Weapon ATD, the USMC Forward Observer/Forward Air Controller ATD, the Advanced Image Intensifier ATD, the Advanced Man-Portable Sensors for the Dismounted Warrior Technology Demonstrations (TD), the Multipurpose Individual Munition TD, the Mine Detection TD, the Microclimate Cooling Demonstrations, the Individual Portable Power Demonstrations, and the Combat Identification for the Dismounted Soldier Demonstrations (CIDS). The major focus of 21CLW is twofold: (1) to provide total situational awareness and (2) to provide near real-time automated targeting via personal warrior communications linked to the force structure via a data network and sensors to the dismounted U.S. Army Infantry, the U.S. Marines Corps (Infantry), and the U.S. Special Operations Forces. This should result in linkage and integration of the individual warrior to the total force, increased controlled dispersion, and overmatching lethality and survivability. It is the intention of this TLD to leverage the industrial/commercial telecommunications and microelectronics explosion, making lightweight, man-portable, communications data-networking and sensor modules possible.

GEN II will demonstrate an affordable, integrated, modular individual fighting system that is optimized for use by operational soldiers. GEN II ATD will demonstrate improved individual soldier and small-unit operational effectiveness afforded by the modular systems' integration of the following technologies: rugged, miniaturized Command, Control, Communications, Computers, and Intelligence (C^4I) components networked to a soldier's tactical computer; indirect night vision sensor/high resolution helmet-mounted display (40—FOV, 1280 x 1024 baseline); secure intra-squad voice and data radio; thermal sight with integrated eye-safe laser rangefinder and compass; soldier combat ID interrogator/transponder; advanced lightweight power sources; microclimate cooling; medical and chemical monitoring; small arms ballistic protection; and integrated respiratory protection. Key exit criteria include: accurate weapon engagement from fully unexposed positions; integrated protection from fragments, small arms, and indirect flechette up to 20% lighter than Ranger Body Armor; near real-time automated target hand-off; rapid weapon engagement with probability of hit of 0.5 at 500 meters; increased situational awareness and tempo; soldier linkage to Combined Arms Command and Control digitized net; and real time integrated GPS navigation.

Individual Ballistic Protection science and technology is designed to improve the individual combatant's survivability. The improved protective systems will offer increased protection against multiple ballistic threats, including fragmenting munitions and small arms, while minimizing the physiological burden (weight, bulk, and heat stress) imposed by current ballistic protective items. The resultant technologies are expected to increase combat effectiveness through a significant reduction of combat casualties from ballistic threats. New individual protective systems will be applicable to military forces in combat and world-wide peacekeeping scenarios, as well as to civilian law enforcement.

The Objective Individual Combat Weapon (OICW) ATD is the next generation "individual" weapon and is one of a family of three weapons envisioned to replace the current inventory of small arms weapon systems (others include the Objective Crew Served Weapon (OCSW) and Objective Personal Defense Weapon (OPDW). This ATD will demonstrate the potential of the OICW to provide an overmatch against threat infantry soldiers, as required in the Army Small Arms Master Plan. This ATD will

M
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involve realistic operational assessment with troops and key in on the soldier's ability to acquire and defeat targets. The performance potential of the OICW will be assessed against the baseline M16A2/M203 or the modular weapon. Measures of effectiveness include: probability of hit, probability of incapacitation, kills per combat load, and cost per kill. The interface of the OICW to the 21CLW will be assessed in the concurrent 21CLW TLD. The technologies exploited to achieve the overmatch capability include high strength, ultra light-weight materials, high tech miniaturized fusing, explosively driven air bursting projectiles, electronic ranging, ballistic computation, reticle displacement, video sighting and sophisticated fire control devices.

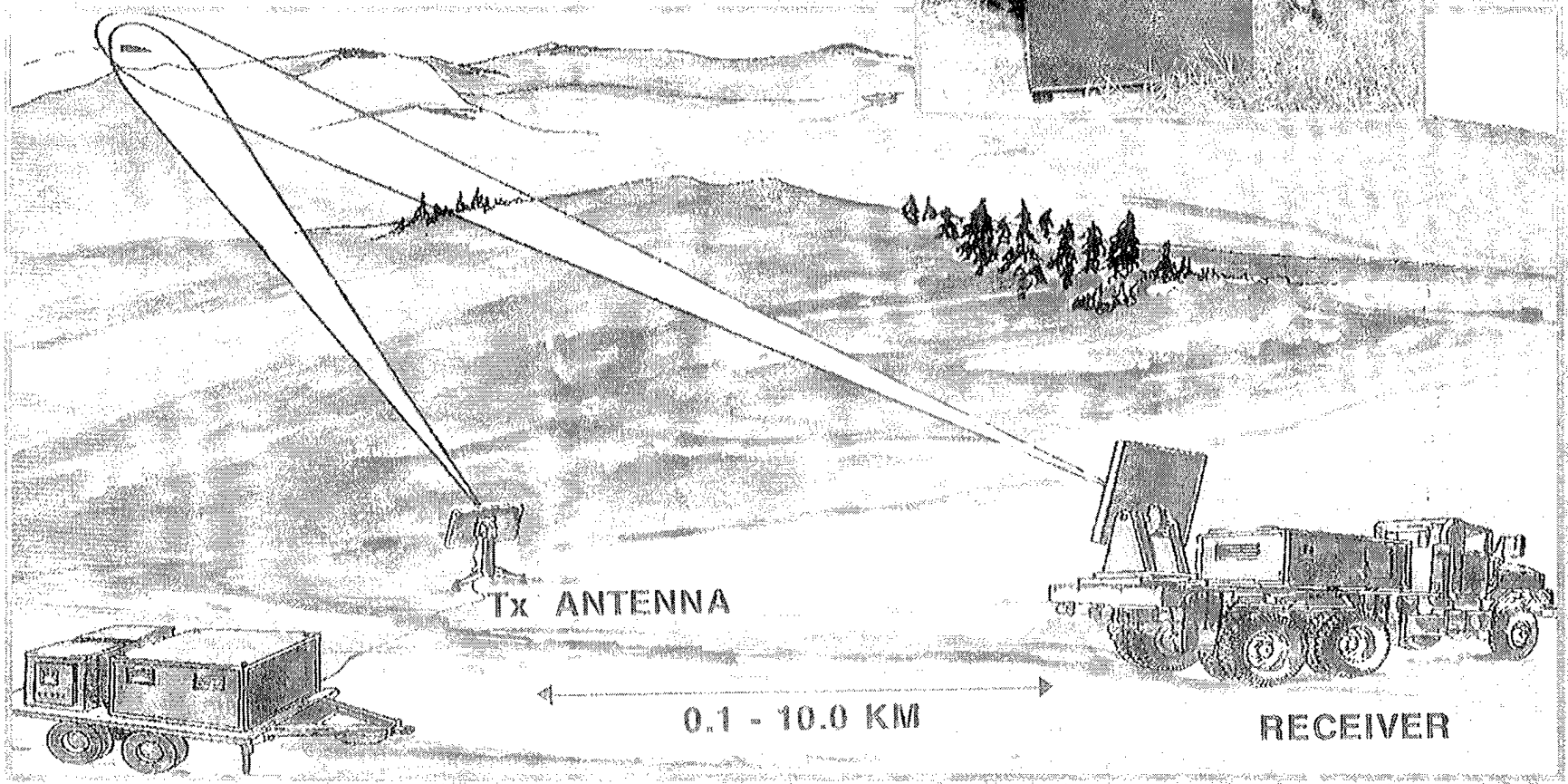
The Multi-Purpose Individual Munition/Short-Range Anti-Tank Weapon (MPIM/SRAW) effort provides for a technology demonstration of a lightweight, shoulder-fired, multiple purpose weapon. The objective of the demonstration is to integrate the MPIM warhead with the USMC SRAW propulsion system and demonstrate the capability to defeat a variety of targets while also being able to be safely fired from an enclosure. It will enhance soldier lethality by providing the infantry with one weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The system will have tremendously increased lethality over the current shoulder-fired systems as well as being multiple target capable. System design will allow for growth, service life extension, and technology insertion to support the U.S. Army mission of crisis response to regionally based threat.

COUNTERMINE ACTD: Operation Desert Storm highlighted the capabilities in landmine warfare possessed by hostile countries. The Army will aggressively exploit novel mine neutralization and detection technologies to counter both anti-personnel and anti-armor mines possessed by potential adversaries. Neutralization technologies include dispersed explosives, magnetic signature silencing, and wide-area neutralization devices. The detection technologies rely on novel uses of ground-penetrating radars and thermal imagers to detect both non-metallic and metallic mines. These technologies will provide a more rapid fielding of a next generation countermine solution and will leverage industry efforts.

The Joint Countermine Advanced Concept and Technology Demonstration (ACTD) will demonstrate a seamless amphibious and land warfare countermine operational capability from sea to land by coordinating Army, Navy, and Marine Corps technology demonstrators, prototypes and fielded military equipment. Demonstration I, planned for FY97, focuses on near-shore capabilities of assault, reconnaissance, breaching and clearing with emphasis on in-stride detection and neutralization of mines and obstacles. The Army is the lead for Demonstration I. It includes joint Army/Marine Corps technology demonstrations in mine detection technology for the Army's future close-in man-portable mine detector, with the capability to detect both metallic and non-metallic mines (Close-In Man-Portable Mine Detection ATD); vehicle-mounted detection of metallic and non-metallic mines; and countermeasures to top-attack mines (Off-Road Smart Mine Detection ATD) in support of conventional minefield breaching and clearing operations. These technologies are applicable to other military applications such as unexploded ordnance and range clearing, duds on the battlefield, and demining. Demonstration II, planned for FY98, will emphasize technologies of clandestine surveillance and reconnaissance as described in the FY94 Navy Mine Warfare Plan and will demonstrate the elements of the seamless transition of countermine operations from sea to land. The Navy is the lead for Demonstration II. As part of the ACTD, the operational user will develop and evaluate doctrine, tactics, techniques, and procedures during the CM ACTD. Select items of equipment and simulations will remain with the operational user for a two-year extended evaluation.

THE ARMY'S COMBINED ARMS WEAPON SYSTEM (TACAWS) PROGRAM: TACAWS demonstrates lightweight, multi-role missile technology in support of ground-to-ground and ground-to-air, missions. The missile system demonstration includes the integration of guidance, control, propulsion, airframe, and warhead technologies capable of performing in high clutter/obscurants, adverse weather environments, and under countermeasure conditions. Missile control and guidance system technology will explore capabilities such as lock-on before/lock-on after launch, fire-and-forget, guidance, signal and image processing, and wideband secure data links. Demonstrated missile system performance (i.e., weight, range, kill ratio, speed, lethality) must be optimized to exceed current baseline parameters of ground-to-ground TOW, and ground-to-air Stinger. TACAWS technology supports HMMWV, Avenger, and Armored Systems Modernization. A follow-on TACAWS ATD will demonstrate the integration on a rotorcraft of the TACAWS for ATA/ATG engagements.

Bistatic Radar for Weapons Location

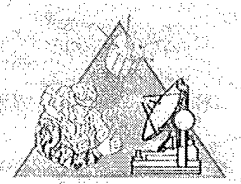


NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DEFENSE: The NBC defense science and technology program has three broad goals: (1) research efforts to be technologically and scientifically capable of developing timely countermeasures; (2) protection of the individual soldier; and (3) adequate treatment of casualties. Specifically, these program goals include material for individual physical and medical protection, collective protection, contamination avoidance, and decontamination. Individual protective equipment will offer increased respiratory proteotion against current and emerging NBC threats while providing improved weapon systems interface and minimizing the physiological burden imposed by NBC protective equipment. The medical chemical defense program will provide new pre-treatment antidotes and topical skin protectants for chemical warfare agents and novel therapies for chemical agent casualties. The medical biological defense program will provide medical countermeasures to deter, constrain, and defeat the use of biological threats and agents, as well as advanced diagnostic devices. Improved casualty care practices doctrine will increase the return-to-duty rate for troops exposed to chemical and biological agents, thus adding to force sustainment. The emphasis of the contamination avoidance component of NBC defense includes development of multi-agent sensors and detectors to provide real-time detection and identification of chemical and biological agents. Additionally, detectors will be more compact so they may be placed on a variety of platforms and will not have large space and power requirements. The decontamination component consists of an absorbent decontamination system for personal equipment, which will reduce mission turn-around time, decrease the logistics burden, and extend useful life of equipment.

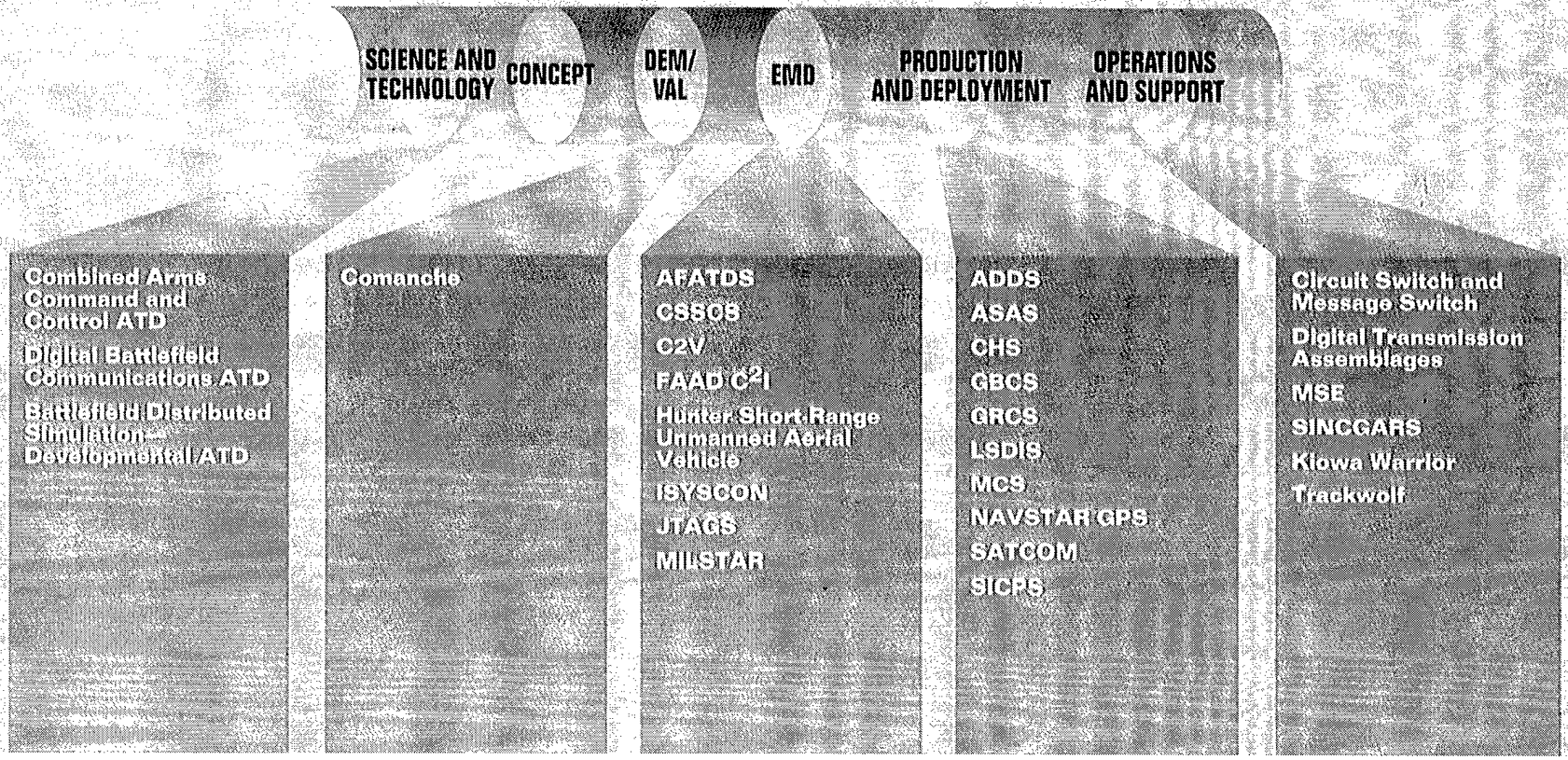
INTEGRATED BIODETECTION TECHNOLOGY DEMONSTRATION: The Integrated Biodetection Technology Demonstration (TD) focuses on demonstrating and integrating state-of-the-art point and standoff biodetection technologies into an integrated battlefield detection system (display) to provide early and rapid warning against a widespread biological agent attack. Point biodetection technologies will be integrated into the Biological Integrated Detection System and next generation biosensors. Standoff biodetection technologies, using active laser detection, ranging and mapping, will be integrated into the Biological Standoff Detection System. Goals are to provide increased decision cycles for Commanders and enhance overall force mobility and survivability for heavy and light forces.

BATTLEFIELD COMBAT IDENTIFICATION (BCID) ATD: The Battlefield Combat Identification (BCID) ATD will demonstrate new capabilities for solving the combat identification deficiencies underscored by Operation Desert Storm. This effort will leverage existing technologies and pursue new ones to demonstrate system concepts in the FY96 through FY98 timeframe to solve the ground-to-ground and air-to-ground battlefield identification problems. Emphasis will be on covert and secure operation. Performance enhancements options, cost reducing changes and extensions to additional platforms of the near-term, active, cooperative friend ID system (BCIS) will be demonstrated. Software changes to BCIS will also demonstrate timely, local situational awareness capability at platoon level and as an input into the hierarchical command and control network. Advanced techniques for improved hostile target ID, leveraging target acquisition assets will also be pursued. Integrated target ID and situational awareness will be demonstrated with a seamless architecture to be implemented as part of the digitized battlefield. Displayed information will be available at various echelons from weapon platforms up to maneuver commanders, thus increasing combat effectiveness and reducing fratricide.

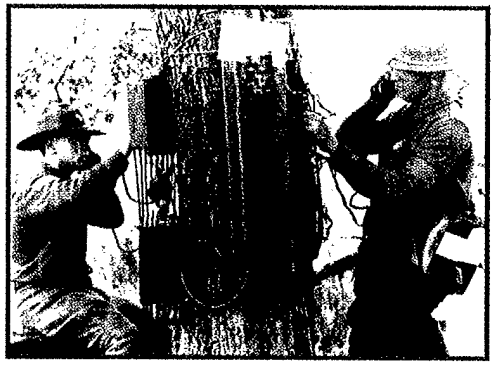
BISTATIC RADAR FOR WEAPONS LOCATION ATD: The Bistatic Radar for Weapons Location ATD will employ bistatic radar (transmitter and receiver are physically separated) techniques to detect, locate, and classify enemy mortar, artillery, and rockets for weapons location. Bistatic radar offers the following significant advantages over conventional monostatic radars: significantly enhanced crew survivability, covert passive receiver, jamming resistance, and receiver immunity to Anti-Radiation Missile threat.



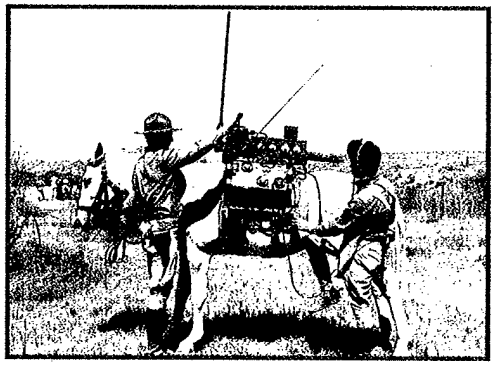
Information is power. On the battlefield, information is deadly power. A key factor in modern warfare is the ability to collect, process, and use information on friendly and adversarial forces. To win the information war, the Army will employ a wide array of electronic warfare systems to disrupt, deny, and damage threat information-gathering systems. Then, while the threat is blind, we will use our sensors to accurately locate targets, disseminate that information through digitization, and engage and destroy these targets.



YESTERDAY: In World War II, tactical forces relied on wire and radio, but as warfare became more mobile, the commanders dependence on good communications increased dramatically. Tactical intelligence was limited to reports from friendly troops and limited signal intelligence. The division commander frequently lacked a clear picture of the battlefield. *Corps commander's view of the battlefield: 0 – 25 km*

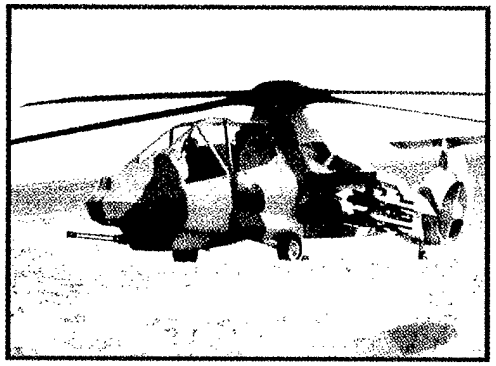


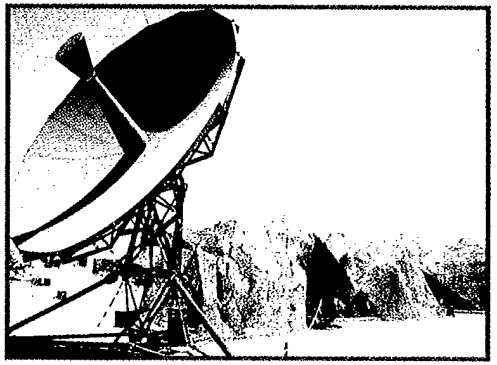
Louisiana, 1940



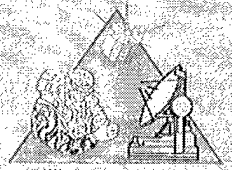
Texas, 1941

TODAY: The Army still uses wire and radio, but they have been augmented by new systems such as MSE. Satellites have revolutionized the ability of units to communicate world-wide, as well as intelligence gathering and navigation. The commander's picture of his own situation has improved with systems like GPS, SINCGARS, and MSE, while UAVs and Guardrail have dramatically improved the intelligence picture. *Theater—wide view of the battlefield: Available to Corps commander*

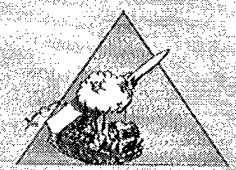




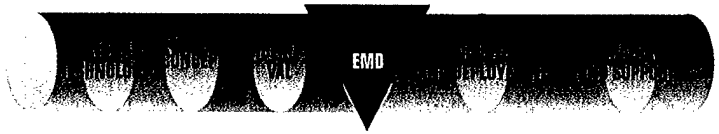
TOMORROW: The information environment will improve substantially due to further improvements in communications technology and further advances in intelligence gathering and dissemination with systems like JSTARS and Comanche. The improved capabilities of these systems will allow commanders to maintain superior situational awareness of both friendly and adversarial forces. Digitization will also allow this information to flow down to levels that never before had access, in real time. *Theater—wide view of the battlefield: Available to brigade commanders and below*



Win Information War



Conduct Precision Strikes



Advanced Field Artillery Tactical Data System (AFATDS)

MISSION: The AFATDS will provide the multiservice (Army and Marine Corps) automated Fire Support Command, Control, and Communications portion of the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS) and supports the close and deep battle fire support requirements of Army doctrine.

CHARACTERISTICS: The AFATDS will provide 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. The AFATDS will receive the Air Tasking Order from CTARS and automatically process it for use in fire support operations. The AFATDS uses non-developmental, ruggedized, Common Hardware/Software (CHS) which include the PARISC and Intel 486 systems. The AFATDS software is being developed in modular, object-oriented Ada computer code. Each successive version implements additional functionality and interoperability. The system will fully automate fire support tasks as follows: Version 1, 19 percent; Version 2, 46 percent; Version 3, 100 percent.

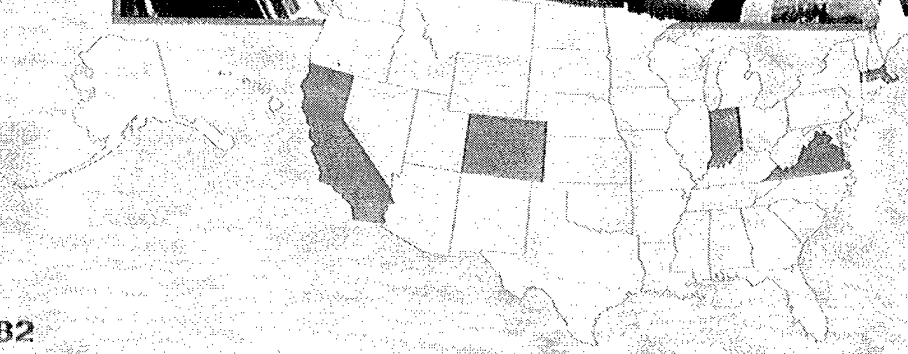
FOREIGN COUNTERPART: The AFATDS will be interoperable with British, French, and German Fire Support systems. An automated artillery tactical command and control system was previously fielded by the former Warsaw Pact, which provided digital linkage from battery to brigade or regiment level for fire planning, targeting, logistics, and terrain management calculations.

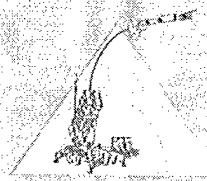
PROGRAM STATUS: Version 1 detailed design, coding, and integration, are completed, and testing is ongoing. Version 1 Force Development Test and Experimentation FDTE was conducted with the 1st Cavalry Division in February 1994. Version 2 development was placed on contract in October 1993.

PROJECTED ACTIVITIES: Complete Government technical testing in February 1995.
Mini-FDTE in May 1995.
IOTE with 1st Cavalry Division in July – September 1995.
Milestone III production decision due December 1995.

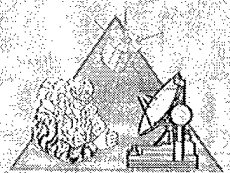
PRIME CONTRACTOR: Magnavox (Ft. Wayne, IN)

*See appendix for list of subcontractors.





Protect The Force



Win Information War

All Source Analysis System [ASAS]

MISSION: The ASAS is the Intelligence Electronic Warfare (IEW) subelement of the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS). The ASAS will provide combat leaders the all source intelligence needed to view the battlefield and more effectively conduct the land battle.

CHARACTERISTICS: The ASAS provides a tactically deployable Automatic Data Processing (ADP) system with a capability to receive and correlate data from strategic and tactical intelligence sensors and sources, produce enemy situation displays, rapidly disseminate intelligence information, nominate targets, manage collection requirements, and provide operations security support. The ASAS is designed to operate in a joint environment across the spectrum of conflict.

FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The ASAS is an evolutionary acquisition program with three development blocks to reach the objective system. Block I provides an initial capability, which is being fielded to 11 selected priority units and the training base during FY93 – 95. Block II Engineering and Manufacturing Development started in 1QFY94. The Block II streamlined development program will build upon Block I, upgrade capabilities, and transition ASAS to the ATCCS common hardware/software open systems architecture. Block III will be primarily a software upgrade, which will provide the objective ASAS capability. Block III development starts in FY99.

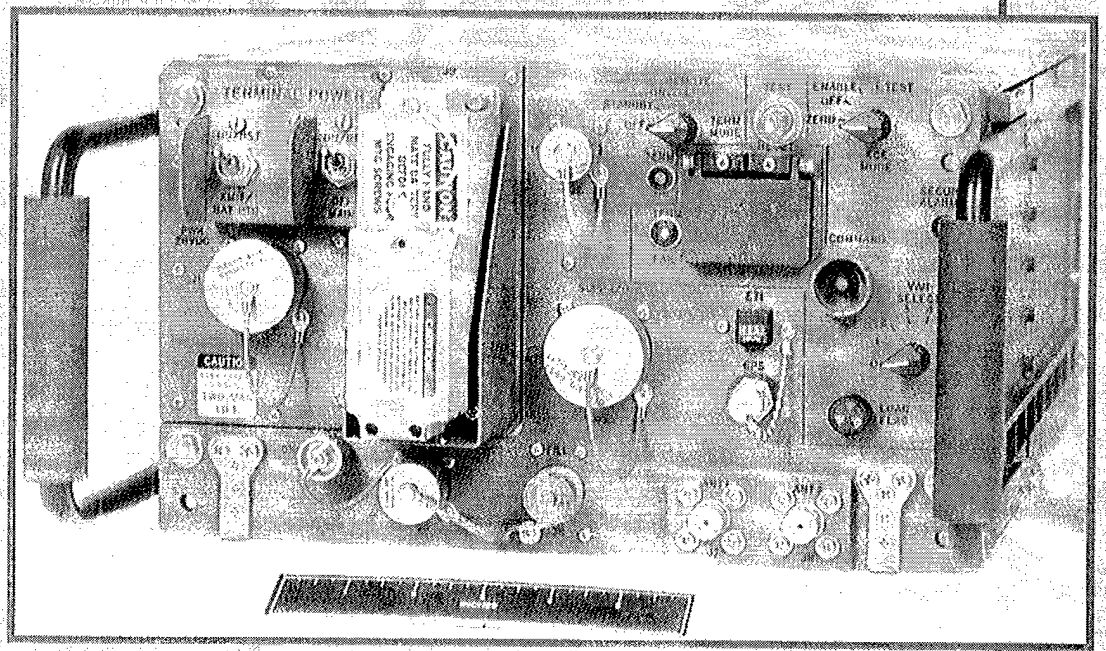
PROJECTED ACTIVITIES:
Complete Block I fieldings (24th Infantry Division (Mechanized), 101st Airborne (Air Assault) Division, and 2nd Infantry Division).
Procure and field 7 unit sets of ASAS—Extended (ASAS-E).
Procure training workstations.
Continue E&MD of ASAS Block II software.
Participation in JWID 95.
Buy CHS—II GFE.

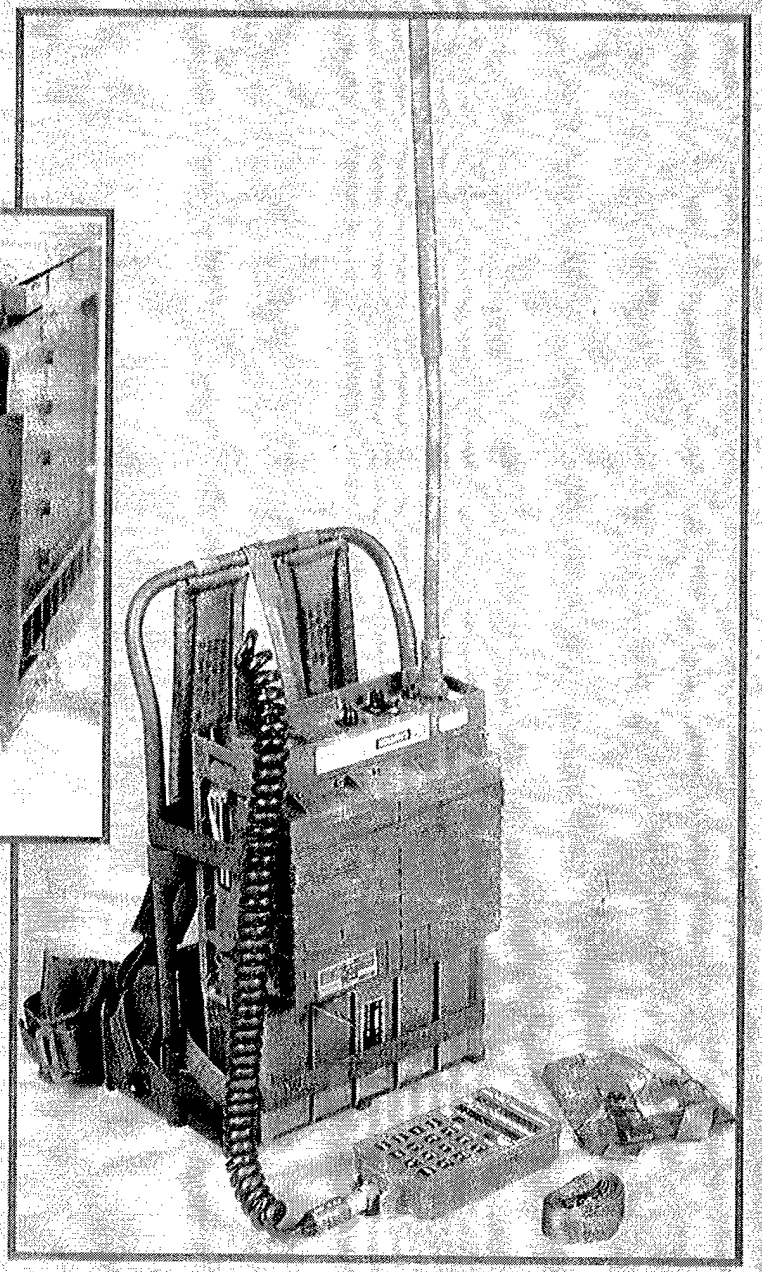
PRIME CONTRACTOR: Martin Marietta (Pittsfield, MA)—Prime Contractor for Block II

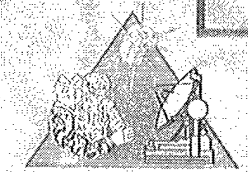
* See appendix for list of subcontractors.

Enhanced Position Location Reporting System (EPLRS)

Joint Tactical Information Distribution System (JTIDS)







Win Information War

Army Data Distribution System (ADDS)

MISSION: The ADDS functions to provide a tactical distribution system designed specifically to support the needs of the multitude of computers being fielded as part of the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS), and other battlefield automated systems.

CHARACTERISTICS: The ADDS consists of two major products: the Enhanced Position Location Reporting System (EPLRS) for medium-speed data distribution and the Joint Tactical Information Distribution System (JTIDS) for high-speed data distribution. The ADDS uses Time Division Multiple Access (TDMA) communications architecture to avoid transmission contention. Frequency hopping, error detection and correction with interleaving, and spread spectrum technology provide jam resistance. The EPLRS consists of a Net Control Station (NCS-E), which is used to manage up to 250 EPLRS Users Unit (EPUUs). The EPUU is a radio that can be configured as a Manpack Unit (MPU), a Surface Vehicle Unit (SVU), and an Airborne Vehicle Unit (AVU). The Army portion of the JTIDS program is the JTIDS class 2M terminal, which is a computerized radio integrated into host Army Air Defense Command and Control Systems to provide near-real-time, high-volume data communications. The EPUU (28 lb manpack size) and JTIDS terminal (83 lb rack mounted) will be operated by the user of the host computer.

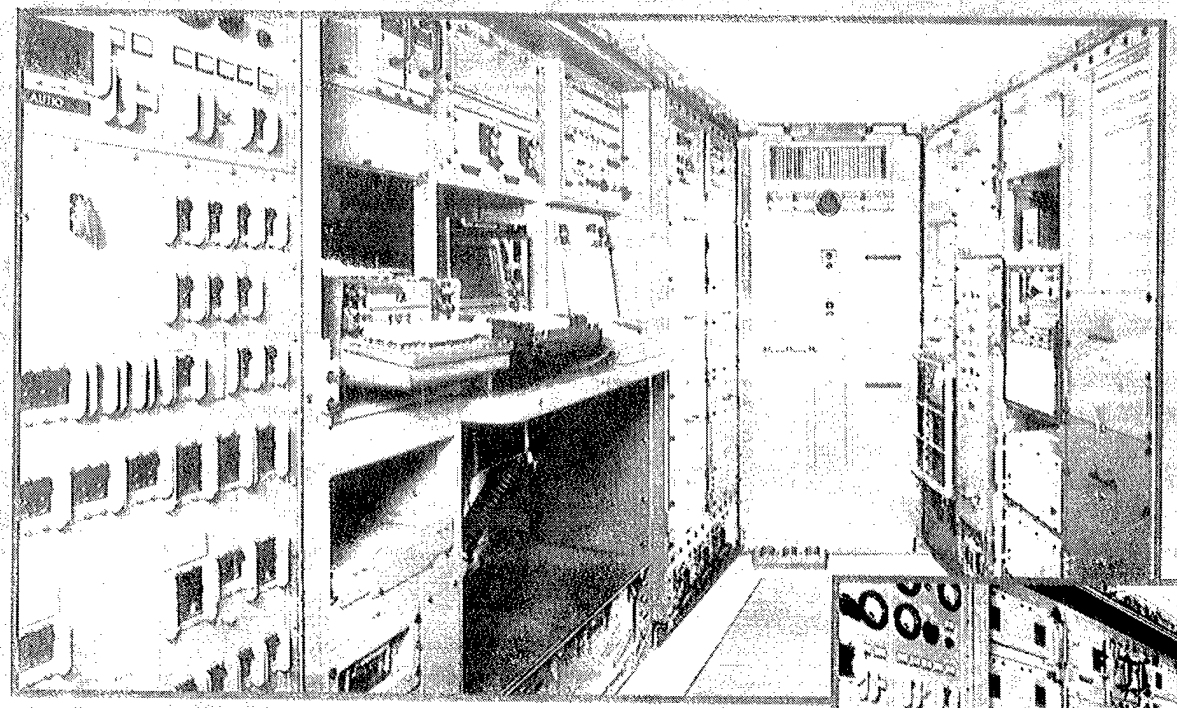
FOREIGN COUNTERPART: No known foreign counterpart. JTIDS is a joint and multinational system that will be interoperable with NATO units.

PROGRAM STATUS: The EPLRS is in Low-Rate Initial Production, the IOTE was completed in August 1994. The JTIDS has completed engineering development and system technical testing for the Class 2M Terminal. A Limited User Test for the Class 2M Terminal was conducted at Ft. Bliss.

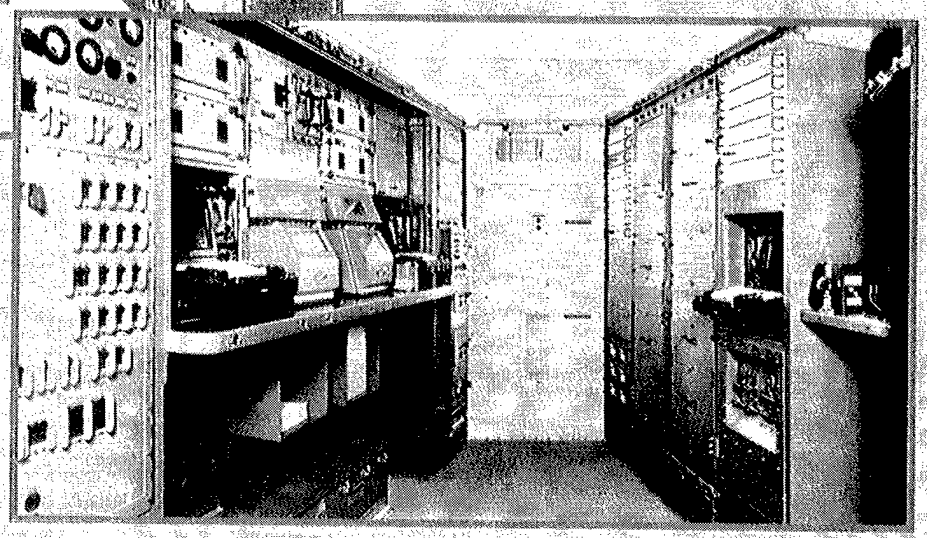
PROJECTED ACTIVITIES: Follow-on Limited Production Decision scheduled for February 1995.

PRIME CONTRACTOR: Hughes (Fullerton, CA and Forrest, MS)—EPLRS
GEC-Marconi (Totowa, NJ and San Marcos, CA)—JTIDS

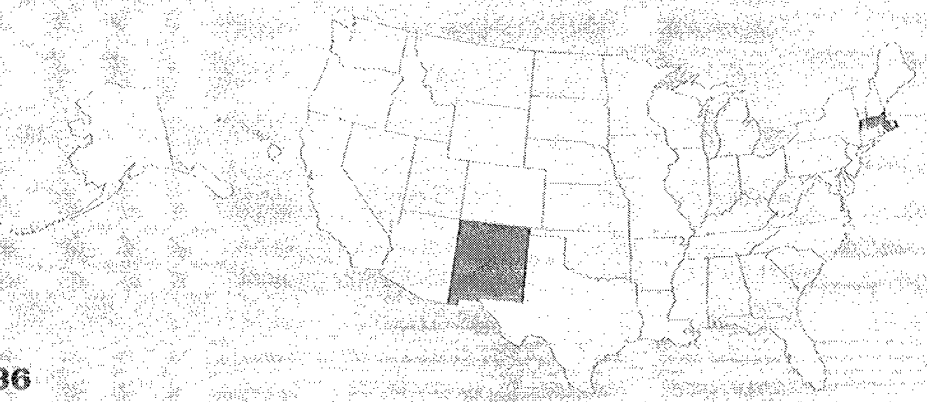
* See appendix for list of subcontractors.

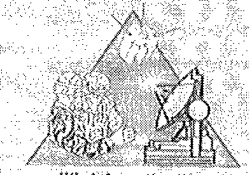


Nodal Control Mobile Subscriber Access Circuit Switch (AN/TTC-39D)



Message Switch (AN/TYC-39A)





Win Information War

MISSION: The mission of this equipment is to provide automatic switching service-interconnecting analog and digital users-between tactical and Defense Communication System (DCS) switches and between U.S. and NATO national switches.

CHARACTERISTICS: The AN/TTC-39A/D system is the heart of the multichannel switched network and is a highly efficient means of connecting telephones, message traffic, and data users in both a secure and nonsecure mode in the area network at Echelons Above Corps (EAC). The AN/TYC-39 system provides corps and theater echelons with tactical, automatic store, and forward-record traffic capability. The EAC extension system is based on Mobile Subscriber Equipment (MSE) identical switches: the AN/TTC-46 (LEN) and AN/TTC-48 (SEN). The AN/TTC-39 circuit switch family consists of three fielded versions. The "A" model switches are an S-280, 744-line analog/digital switch with integral COMSEC and a downsized, modified S-250, 324-line analog/digital switch. Both provide up to 7,500 calls-per-hour service, 5-level precedence, conference, and many other subscriber features. The "D" model is an S-280, 708-line analog/digital switch that incorporates the same affiliation and flood search routing as provided in MSE. A packet switch (PS) overlay provides a data transfer capability similar to that in MSE. Most "A" features are still available in the "D" model. The AN/TYC-39 message switch family consists of three fielded versions. All are in S-280 shelters. There are dual-shelter, 50-line switch and single-shelter, 24—and 48-line switches. All are tactical, automatic store, and forward switches that provide service for both strategic (R) and intelligence (Y) communities. The switches provide interface with inventory, TRI-TAC, and Automatic Digital Network (AUTODIN) equipment with precedence, security, and other subscriber features.

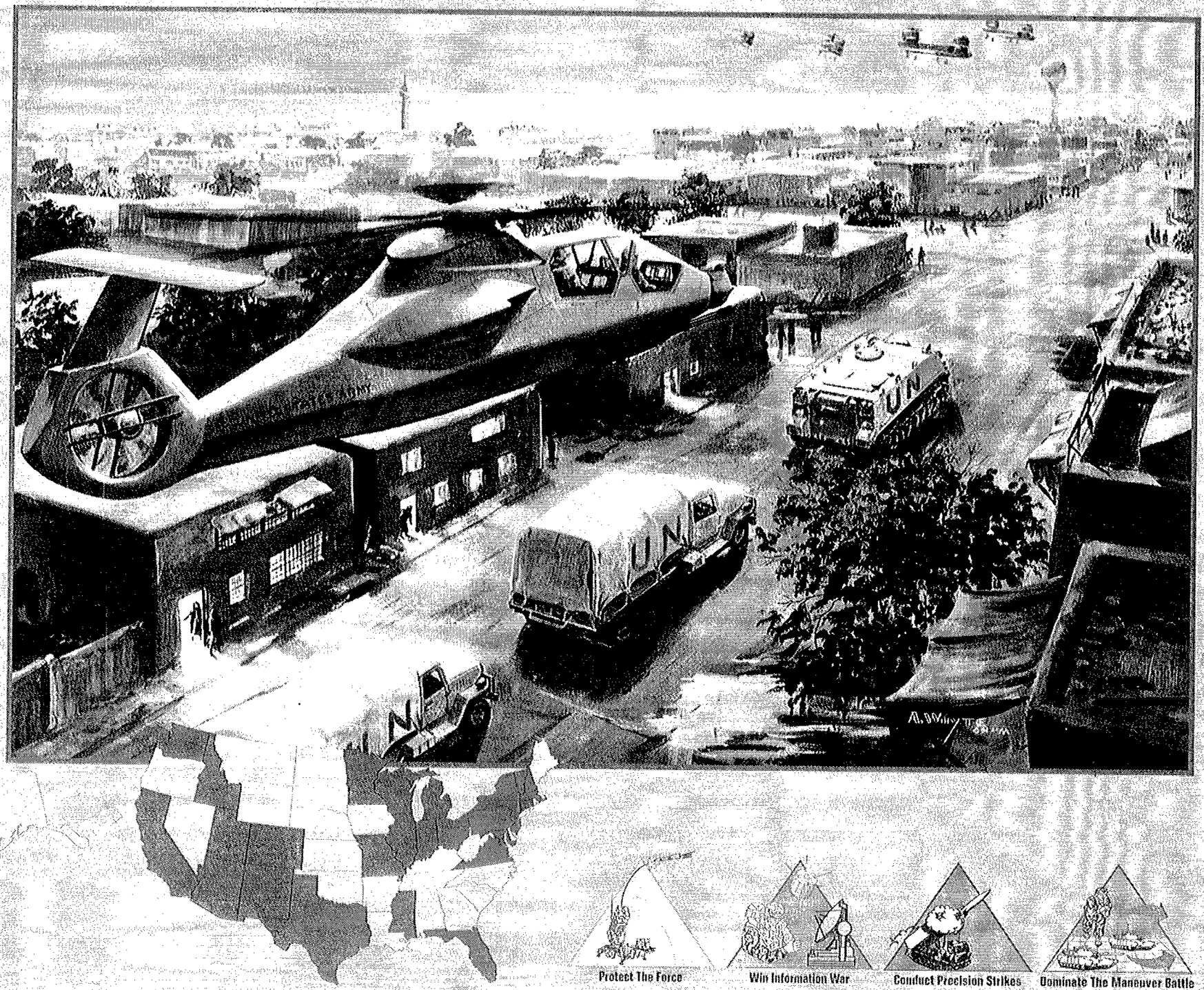
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The circuit and message switches are currently deployed and were initially authorized for production in FY80. Both switches are currently in product improvement phases. The circuit switch "A" model has been fully fielded to the Army, Air Force, and Joint communities. The "D" model with PS fielding is finishing in USAREUR and continues in CONUS. Fielding in Korea begins in 3QFY94. The message switch is currently in the initial production of a product improvement, which will result in an "A" model. The fielding of the "A" model is anticipated to begin in FY94.

PROJECTED ACTIVITIES:
Exercise FY95 option to the Routing Improvement Production Contract.
Implement ECP for Packet Network Management Center.
Award contract for Flyaway Message Switch.
Award contract for AN/TTC-39D downsizing.

PRIME CONTRACTOR:
GTE (Taunton, MA)
Laguna Industries (Albuquerque, NM)

* See appendix for list of subcontractors.



Protect The Force

Win Information War

Conduct Precision Strikes

Dominate The Maneuver Battle

MISSION: The Comanche will provide armed reconnaissance for attack helicopter and air cavalry units.

CHARACTERISTICS: The Comanche (RAH-66) is the Army's next generation of armed reconnaissance helicopter. It also is the first helicopter developed specifically for this role. The Comanche will significantly expand the Army's capability to conduct reconnaissance operations in all battlefield environments, adverse weather, and during the day or night. In addition to its improved capabilities, the Comanche allows greater flexibility for deployment. Its 1,260 nautical miles self-deployment range and smaller size will improve Army aviation's rapid strategic deployment. The Comanche will replace three types of helicopters (AH-1, OH-58, and OH-6) that currently perform the armed reconnaissance mission.

Weight: 7,765 lb (weight empty)
Crew: 2 pilots (single-pilot operable)
Speed: 175 kt (cruise)
Endurance: 2.5 hr (plus 20-minute reserve)
Armaments: Air-to-ground and air-to-air missiles

Mission Equipment Package: Turret-mounted cannon, night-vision pilotage system, helmet-mounted display, electro-optical target acquisition and designation system, aided target recognition, and integrated displays. Each aircraft will have Longbow capability and provisions for additional stores.

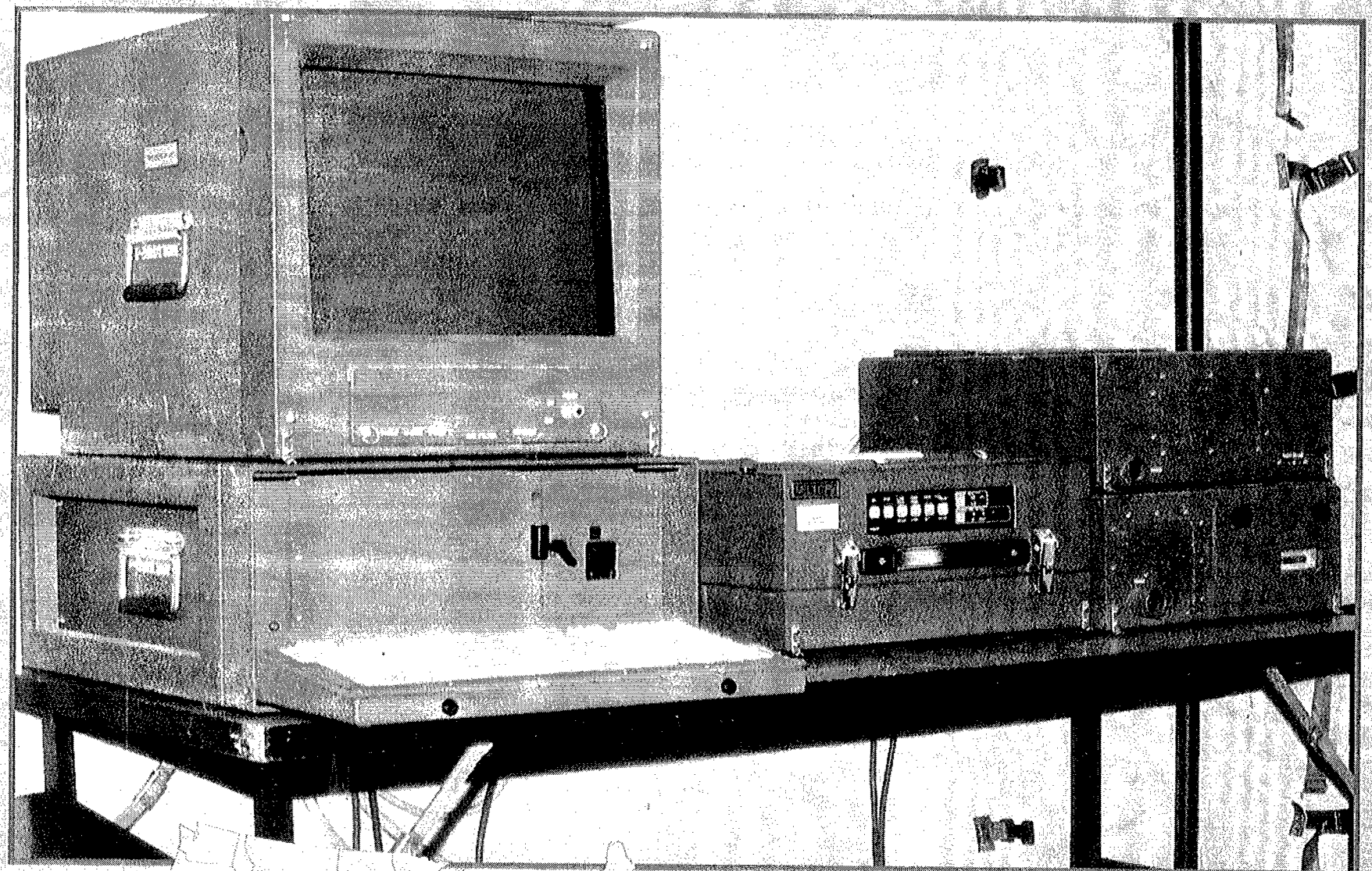
FOREIGN COUNTERPART: Russia: Hokum Italy: A-129 South Africa: Rooivalk

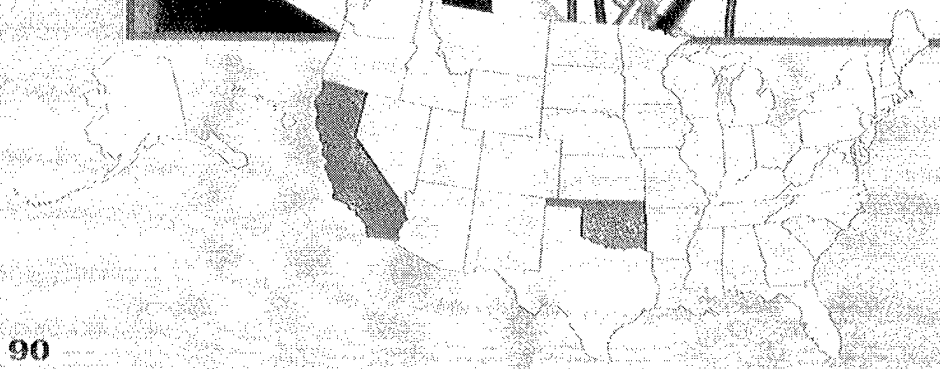
PROGRAM STATUS: In an attempt to reduce outyear funding shortfalls, Team Comanche is investigating various streamline options to reduce costs and eliminate inefficiencies.

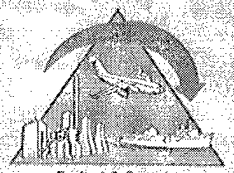
PROJECTED ACTIVITIES: Roll-out of first prototype is scheduled for June 1995.
First flight is scheduled for November 1995.

PRIME CONTRACTOR: Sikorsky Aircraft (Stratford, CT)—System
GMC-Allison (Indianapolis, IN)—Engine

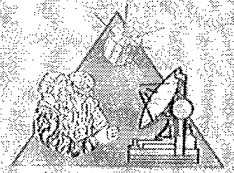
* See appendix for list of subcontractors.



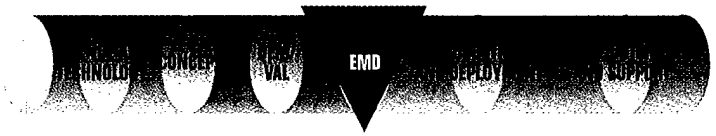




Project & Sustain



Win Information War



MISSION: The CSSCS will provide timely situational awareness and force projection information to determine capability to support current operations and sustain future operations. The CSSCS will rapidly collect, store, analyze, and disseminate critical logistics, medical, financial and personnel information.

CHARACTERISTICS: The CSSCS is a computer software system designed to assist commanders and their staffs in planning and executing logistics operations. CSS commanders and their staffs currently are participating in the force-level planning and decision making processes through a manual effort of gathering, correlating, and analyzing volumes of technical data from the existing Standard Army Management Information Systems (STAMIS). The CSSCS can extract summary information from the CSS STAMIS, accept input from other elements of the CSS community, and exchange information with other automated systems to evaluate CSS information with respect to the force-level commander's tactical courses of action. The CSSCS is the service support component of the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS). The CSSCS will be organic to CSS units and headquarters staffs within the maneuver brigades, separate brigades, armored cavalry regiments, divisions, corps, and echelons above corps. The CSSCS will comprise Transportable and Lightweight Computer Units (TCUs and LCUs) procured through the Project Manager (PM)—Common Hardware/Software (CHS), Common ATCCS Support Software (CASS), and CSSCS-unique software. The CSSCS will be housed in the family of Standardized Integrated Command Post Systems (SICPS) provided by PM CHS.

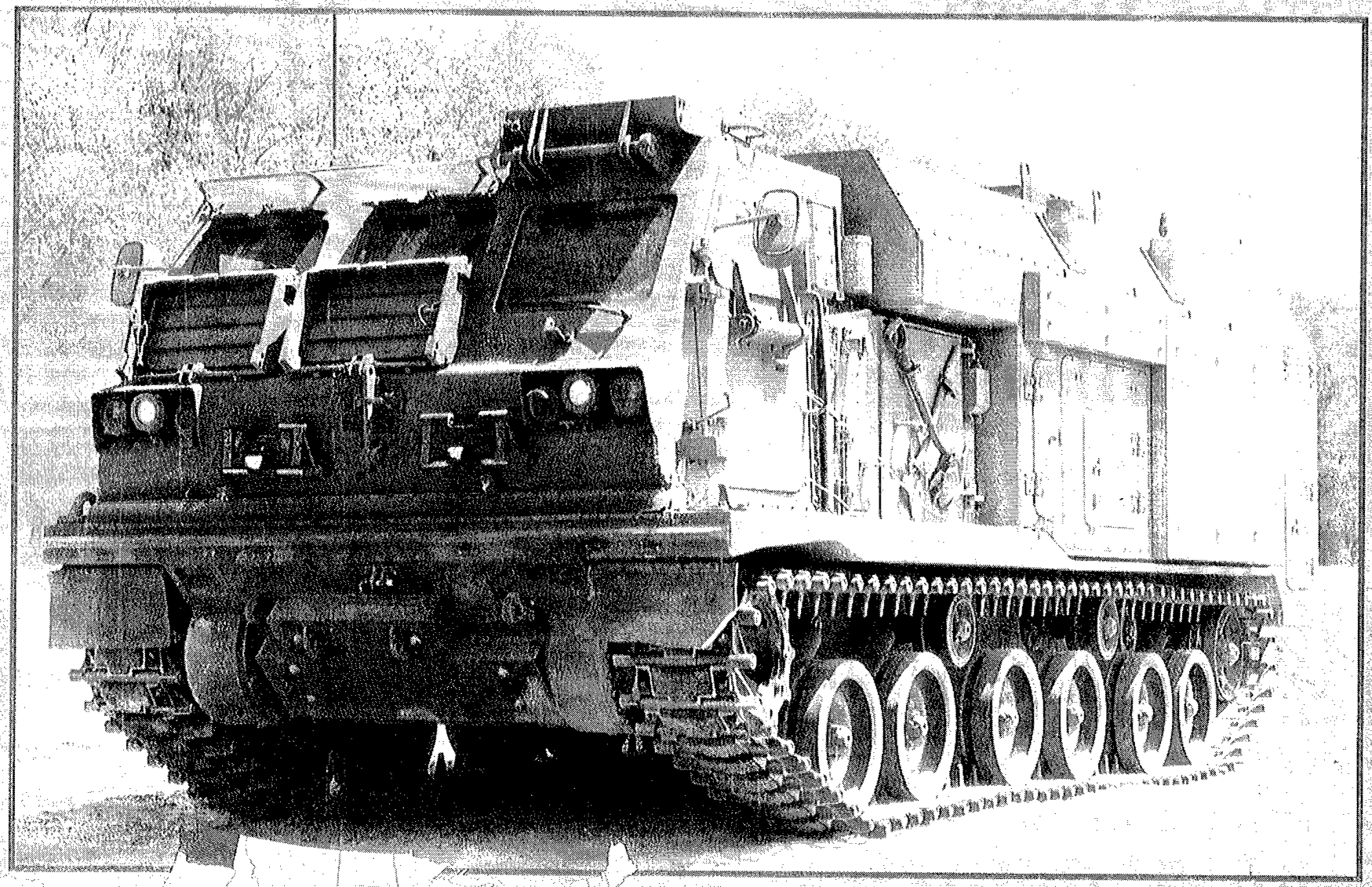
FOREIGN COUNTERPART: Great Britain, Canada, and Australia are monitoring the status of CSSCS development.

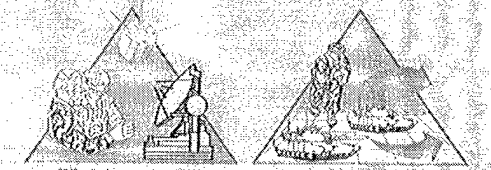
PROGRAM STATUS: The CSSCS is currently in the Engineering and Manufacturing Development phase. Program development has been structured to evolve over five versions. Version 1 was the subject of an experiment during 1QFY89, which baselined initial capabilities and the processing architecture. Version 2 established automated interfaces with selected CSS STAMIS and the Maneuver Control System (MCS), and provided initial Division-level CSS functional applications software on ATCCS CHS. Version 2 was completed in January 1991. In February 1991, TRW was awarded the software development contract for Versions 3 and 4. Version 3 will provide the Army with an integrated ATCCS capability. Improvements and added capabilities for all echelons will continue in Versions 4 and 5. Version 4 will be tested and completed by the end of FY96. Version 5 is scheduled to be tested and completed in FY99.

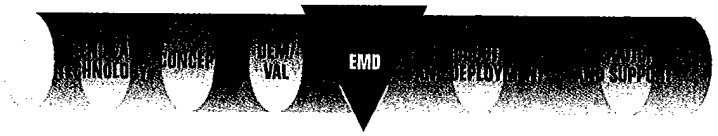
PROJECTED ACTIVITIES: Version 3 fielding begins in March 1995.

PRIME CONTRACTOR: TRW (Carson, CA)

* See appendix for list of subcontractors.




Win Information War
Dominate The Maneuver Battle



MISSION: The C2V will provide a fully tracked, armored vehicle that will ensure a mobile, responsive, and survivable command and control platform for the heavy force. The C2V will provide battalion – corps level command and control capabilities in support of mobile operations and will accommodate the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS).

CHARACTERISTICS:

Weight:	57,000 lb (66,000 lb max capacity)
Crew:	8
Transportability:	C-5/C-17
Speed:	38 mph
Range:	275 mi
Maximum grade:	60 %
Fording depth:	40 in
NBC protection:	Full collective over pressure protection (shirt-sleeve environment)
Cooling:	40,000 Btu/hr
Electrical power:	43 kW
Antenna:	10m telescoping mast

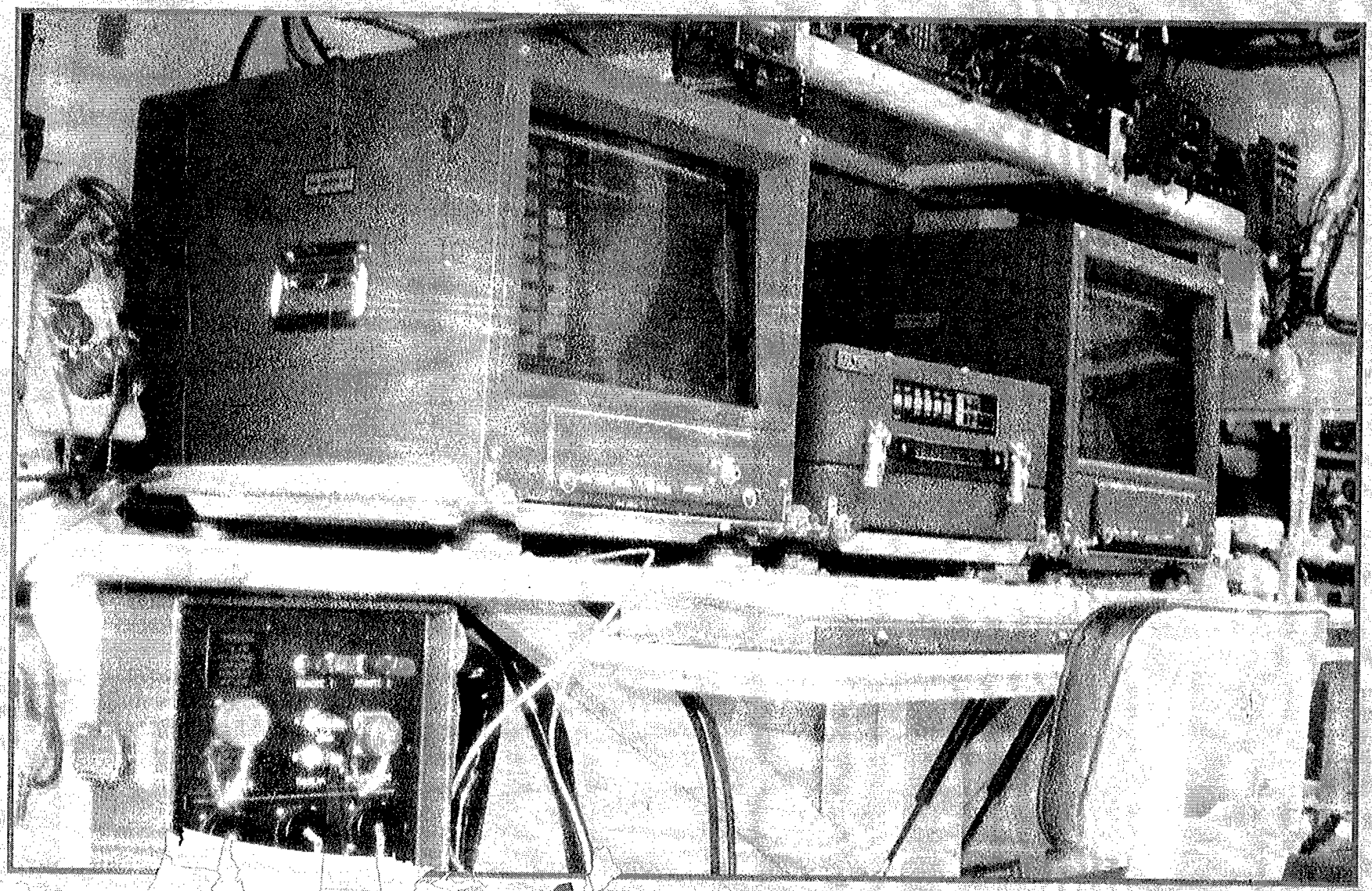
FOREIGN COUNTERPART: No known foreign counterpart.

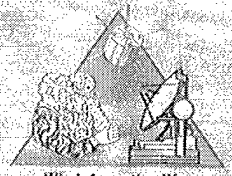
PROGRAM STATUS: The C2V program achieved Milestone (MS) 0 in March 1993 and a combined MS I/II in December 1993. During REFORGER 92, CINC USAREUR conducted demonstrations of the C2V concept using two prototypes as division—and brigade-level command post vehicles. These vehicles were refurbished and used as brigade command post vehicles in the April 1994 National Training Center rotation. In addition, an advanced prototype vehicle, built by United Defense, LP (UDLP), has been used in contractor testing and user experimentation. The EMD phase was initiated following the December 1993 review. On 26 September, 1994 PEO CCS awarded a competitive contract to LWDL for the integration of the Mission Module System while PEO ASM will award sole source to UDLP the contract for the vehicle and chassis.

PROJECTED ACTIVITIES:
Delivery of first EMD vehicle scheduled for July 1995.
Contractor testing of first EMD vehicle from July to September 1995.
Logistics Demonstration from September to October 1995.
Government Testing commences in October 1995.
Anticipated Fielding Date in 1999.

PRIME CONTRACTOR: United Defense (San Jose, CA)

* See appendix for list of subcontractors.




Win Information War

MISSION: CHS is the Army's program to equip all five Battlefield Functional Areas (BFAs)-from Corps to foxhole- with common hardware/software. The program's mission is to improve interoperability and lower life-cycle costs by standardizing battlefield command and control (C^2) automation through centralized buys of Non-Developmental Items (NDI), standardized protocols, and reusable common software.

CHARACTERISTICS: Four hardware versions are available to meet the specific needs of each BFA (hand-held [HTU], portable [PCU], transportable [TCU], and lightweight computer [LCU]).

	HTU	*PCU*	*TCU*	*TCU*	*LCU*	*HCU(2)*	*TCU(2)*	*HTU(2)*
Processor:	80c286	68020	68040	RISC	80486	RISC	RISC	80c486DX-SL
MHz clock:	6 or 12	16	25	99	25/33/66	50	85	
MIPS:	0.5 or 1	2	22	124	10/14/20	129.4	112.5	
RAM:	2 – 6 mb	4 – 20 mb	8 – 128 mb	80 – 400 mb	8 – 32/8 – 32/8 – 128 mb	32 – 512 mb	16 – 256 mb	4 – 32 mb
CHS/LCU software:	UNIX/ POSIX	SQL DBMS/SBMS	LAN SW/ LAN SW	GKS Graphic/ GUI	Uniplex/ Motiff			

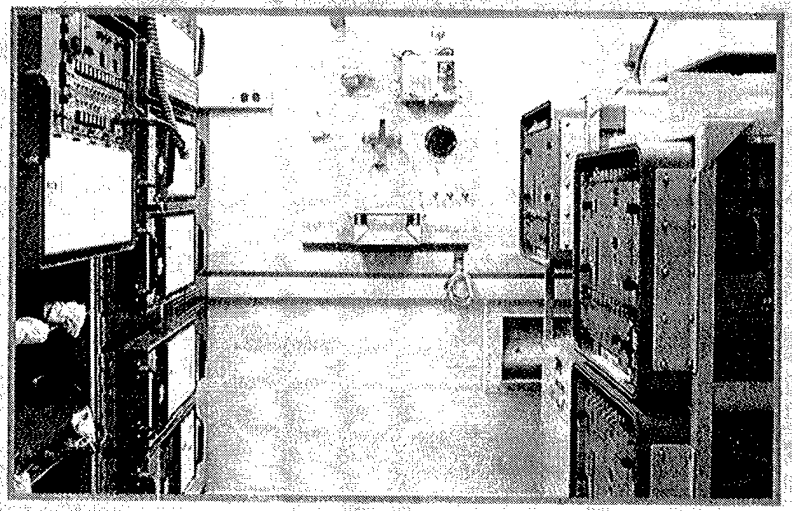
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The CHS contract has been extended to August 1995. CHS-2, which is a follow-on to the CHS-1 contract, was awarded to GTE September 15, 1994.

PROJECTED ACTIVITIES: Test, accept, and deliver initial CHS-2 HW/SW.
Continue execution of common HW/SW upgrades.

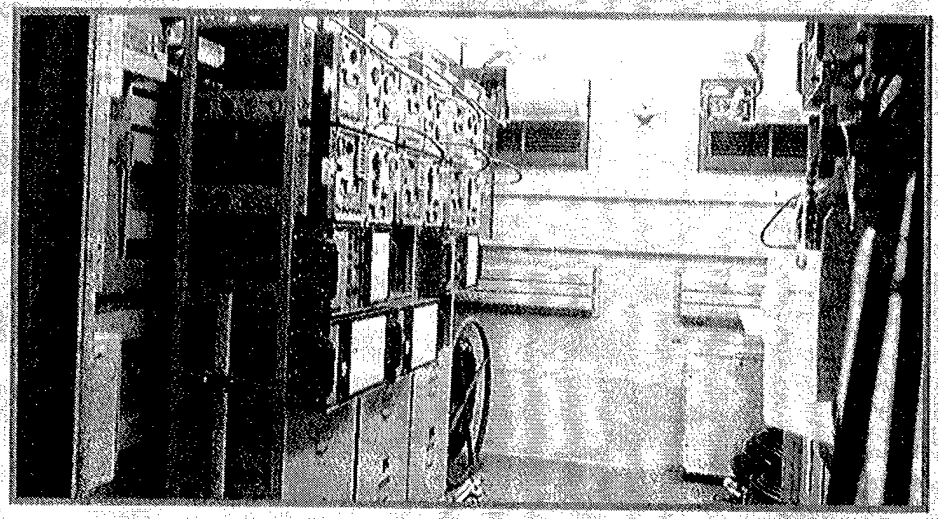
PRIME CONTRACTOR: GTE (Taunton, MA)

* See appendix for list of subcontractors.

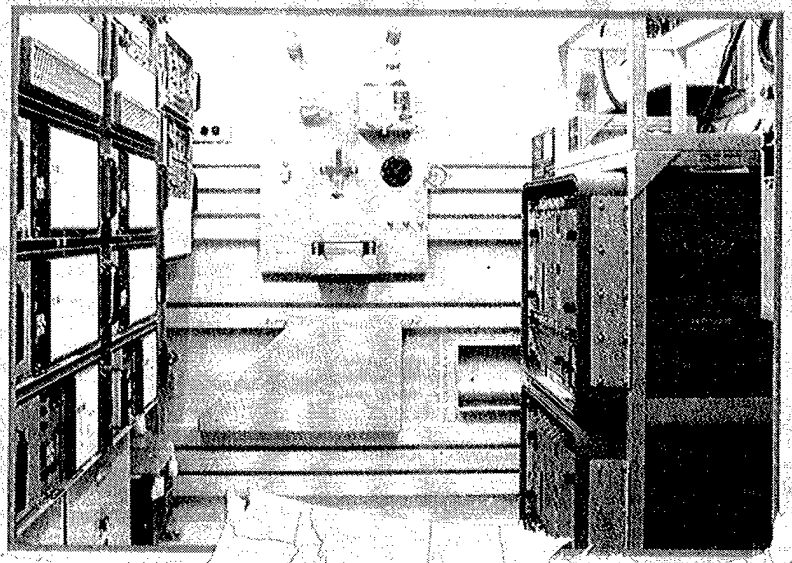


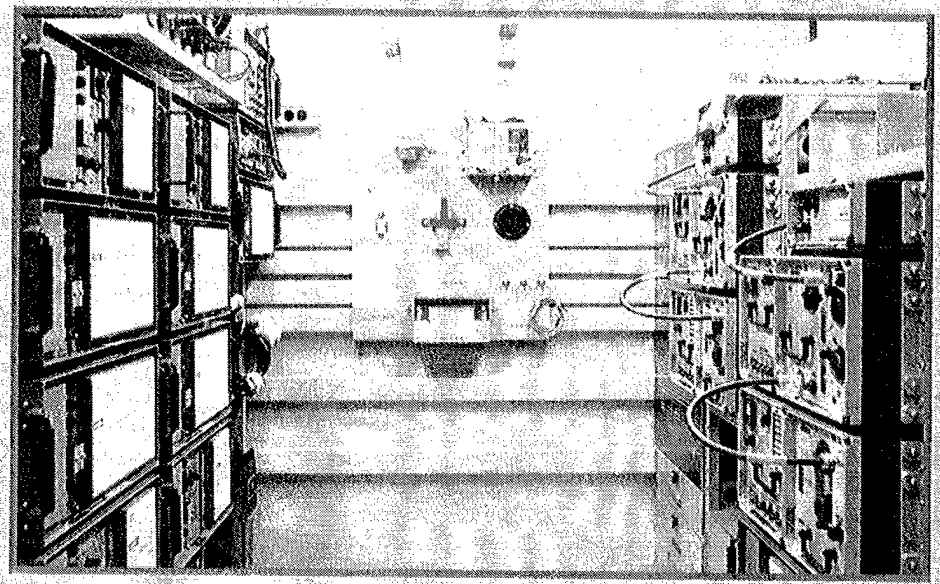
Radio Terminal Set (AN/TRC-173)

Radio Repeater Set (AN/TRC-174)

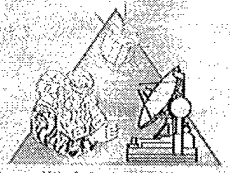


Radio Terminal Set (AN/TRC-175)





Radio Repeater Set (AN/TRC-138A/B)



Win Information War

MISSION: This equipment represents a family of high-capacity, digital radio systems that link circuit and message switches into communications networks supporting telephone and message traffic at the theater-tactical level. They also provide the transmission path for linking extension switches at subscriber locations into the main switching network.

CHARACTERISTICS: The Digital Transmission Assemblages provide a series of radio relay and radio terminal equipment in a variety of sizes, capabilities, and characteristics. The following provides a listing of the available systems.

AN/TRC-173	(fullsize)	Radio Terminal Set: Single Shelter (S-280C)
AN/TRC-173A	(downsize)	Radio Terminal Set: Single Shelter (S-749)*
AN/TRC-173B	(HMMWV)	Radio Terminal Set: Single Shelter (S-805G)
AN/TRC-174	(fullsize)	Radio Repeater Set: Single Shelter (S-280C)
AN/TRC-174A	(downsize)	Radio Repeater Set: Single Shelter (S-749)*
AN/TRC-174B	(HMMWV)	Radio Repeater Set: Single Shelter (S-805G)
AN/TRC-175	(fullsize)	Radio Terminal Set: Single Shelter (S-280C)
AN/TRC-175A	(downsize)	Radio Terminal Set: Single Shelter (S-749)*
AN/TRC-175B	(HMMWV)	Radio Terminal Set: Single Shelter (S-805G)
AN/TRC-138A	(fullsize)	Radio Repeater Set: Single Shelter (S-280C)
AN/TRC-138B	(downsize)	Radio Repeater Set: Single Shelter (S-749)*
AN/TRC-138C	(HMMWV)	Radio Repeater Set: Single Shelter (S-805G)

*S-749 is essentially an S-280C shelter reduced in length from 12 ft to 7 ft

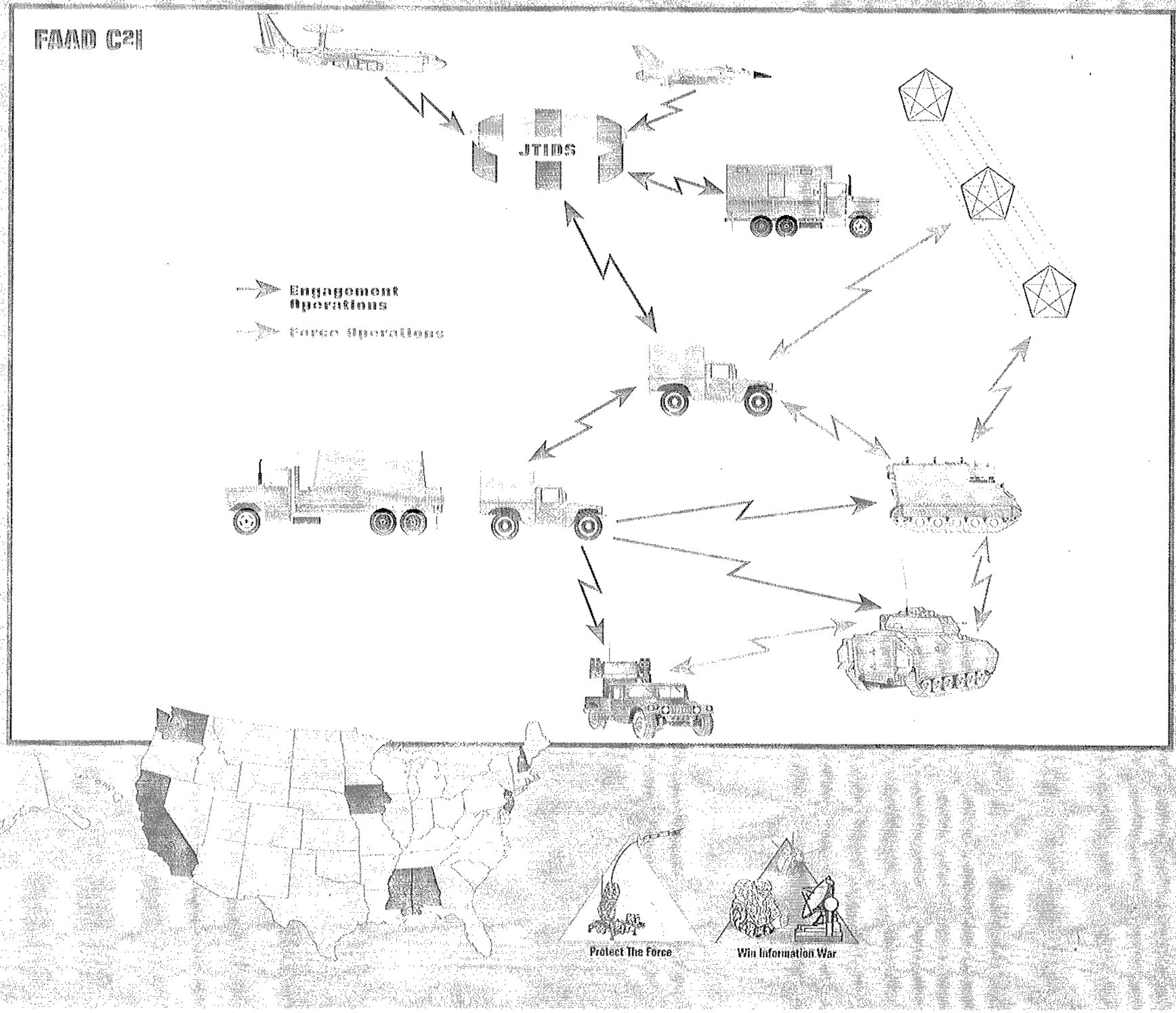
FOREIGN COUNTERPART: No known foreign counterpart.

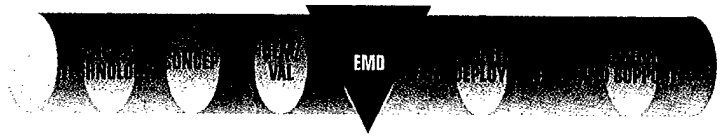
PROGRAM STATUS: Fielding was begun in FY88 and is expected to be completed in FY95. Production was completed in FY93, and set assembly is expected to be completed in FY94. A new generation of assemblages is currently being tested by Laguna Industries. These are known as the High Mobility DGM Assemblage (HMDA) and are transported on two heavy HMMWVs.

PROJECTED ACTIVITIES: HMDA First Article Test completion in 1Q95.
HMDA Award Option Year 1 in 1Q95.
HMDA production deliveries scheduled to begin in 2Q95.
HMDA felding begins in 4Q95.

PRIME CONTRACTOR: Laguna Industries (Laguna Pueblo, NM)

* See appendix for list of subcontractors.


FAAD C2I
JTIDS
Engagement Operations
Force Operations
Protect The Force
Win Information War



Forward Area Air Defense Command, Control and Intelligence (FAAD C2I)

MISSION: The FAAD C2I will provide an automated means of providing timely target data to FAAD weapons, to protect friendly aircraft, and to facilitate management of the air battle.

CHARACTERISTICS: The system consists of non-developmental computers, displays, printers, and communication systems that are common to the Army Tactical Command and Control System (ATCCS), non-developmental ground sensors, and the requisite software. The system will be fully integrated with other FAAD elements and the ATCCS, which is transitioning to the Army Battle Command system (ABCS). The initially deployed light system will use the Single Channel Ground and Airborne Radio System (SINCGARS) for data transfer, while the objective heavy system will use the Army Data Distribution System (ADDS). The system will provide an automated exchange of Air Defense Artillery command information, dissemination and acknowledgment of Air Defense Artillery air battle management data, air track, and remote sensors. The system consists of multiple subsystems for deployment to various echelons of command. The subsystems are tailored to the functions to be performed and vary in size and complexity from the fire unit laptop processor to the Air Battle Management Operation Center (ABMOC) Common Hardware Software (CHS) computers. The fire unit subsystem consists of a simplified, hand-held terminal unit weighing approximately 8 lb with battery, cables, and carrying case. The ABMOC is in a standard, integrated command post shelter (rigid wall).

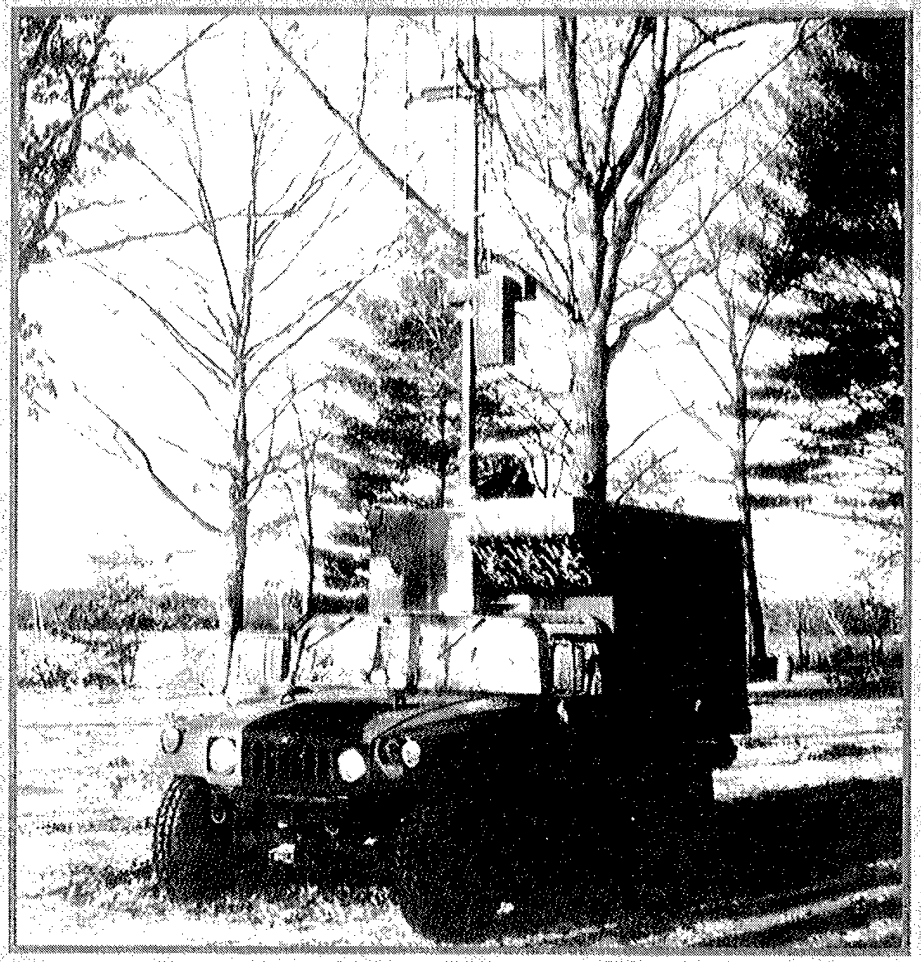
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The FAAD C2I system is currently in the Engineering and Manufacturing Development phase. The basic development effort consists primarily of software development, which is being developed incrementally. Block I successfully completed all contractor and Government testing and was fielded to the 101st Airborne (Air Assault) Division on 30 September 1993. Block II is scheduled for fielding in 4QFY95. Block III (objective) will be fielded in FY99. It is currently envisioned that the system will ultimately be fielded to five heavy divisions, five light and special divisions, one ACR, one LCR, five corps missile battalions, AMC (PDSS), and a training base. Fielding will occur between FY94 and FY99.

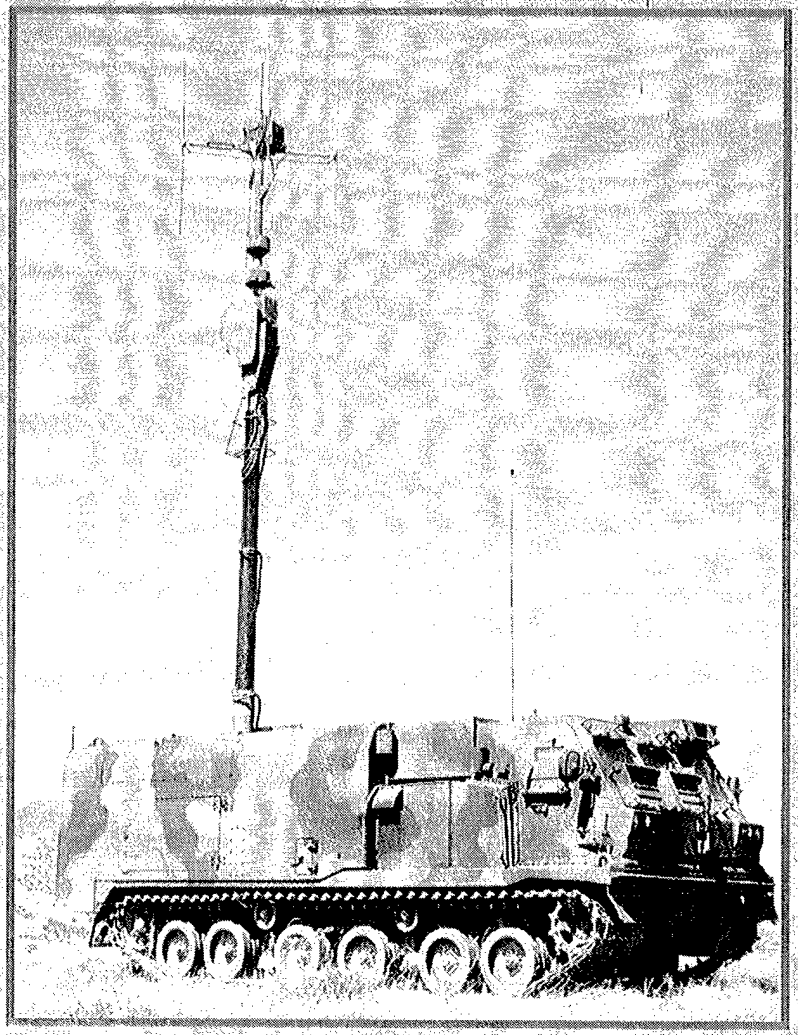
PROJECTED ACTIVITIES:
Full Rate Production (Block II) Milestone III DAB in April 1995.
Complete fielding (Block I) to 2nd Infantry Division in May 1995.
Complete fielding (Block II) to 24th Infantry Division (Mechanized) in July 1995.
Complete fielding (Block I) to 10th Infantry Division (Mountain) in September 1995.

PRIME CONTRACTOR: TRW (Redondo Beach, CA)

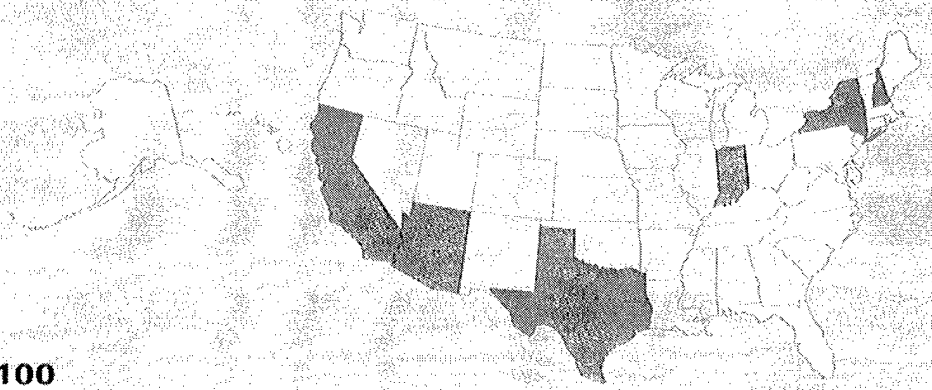
* See appendix for list of subcontractors.

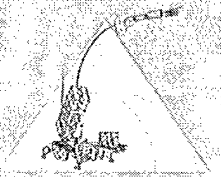


Ground-Based Common Sensor—Light

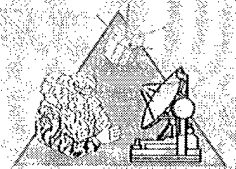


Ground-Based Common Sensor—Heavy





Protect The Force



Win Information War

Ground-Based Common Sensor (GBCS)

MISSION: The Ground-Based Common Sensor–Light (GBCS-L) and the Ground-Based Common Sensor–Heavy (GBCS-H) are mounted signals-intercept and emitter-location systems that search, intercept, locate, identify, and provide electronic countermeasures against enemy communications and noncommunications emitters.

CHARACTERISTICS: Both GBCS-L and GBCS-H are elements of the Intelligence Electronic Warfare Common Sensor (IEWCS) program and interoperate with Advanced Quickfix to locate and acquire targets beyond the Forward Line of Own Troops (FLOT). GBCS-L is HMMWV mounted, while GBCS-H is mounted in an Electronic Fighting Vehicle System (EFVS), which uses a Bradley variant chassis. Situation development information is transmitted to the Technical Control and Analysis Element (TCAE) of the All Source Analysis System (ASAS), and targeting information is transmitted through the TACFIRE system to their respective users. Both GBCS-L and GBCS-H are being built with "open systems architecture" to accommodate rapid technology insertion to keep pace with changes in threat characteristics worldwide across the spectrum of conflict in the post-cold war era. The light and heavy variants of the IEW-GBCS have the same common sensor subsystems as the Advanced Quickfix.

Vehicular operation:	All terrain
Mission operation:	24 hr
Intercept, locate:	HF, VHF, UHF, SHF, L, S, C, X, KU, K, KA
Jam:	HF, VHF
Setup/teardown time:	10 min/3 min
Roll-on, roll-off (RO-RO):	C-130, C-141 (GBCS-L); C-5 (GBCS-H)

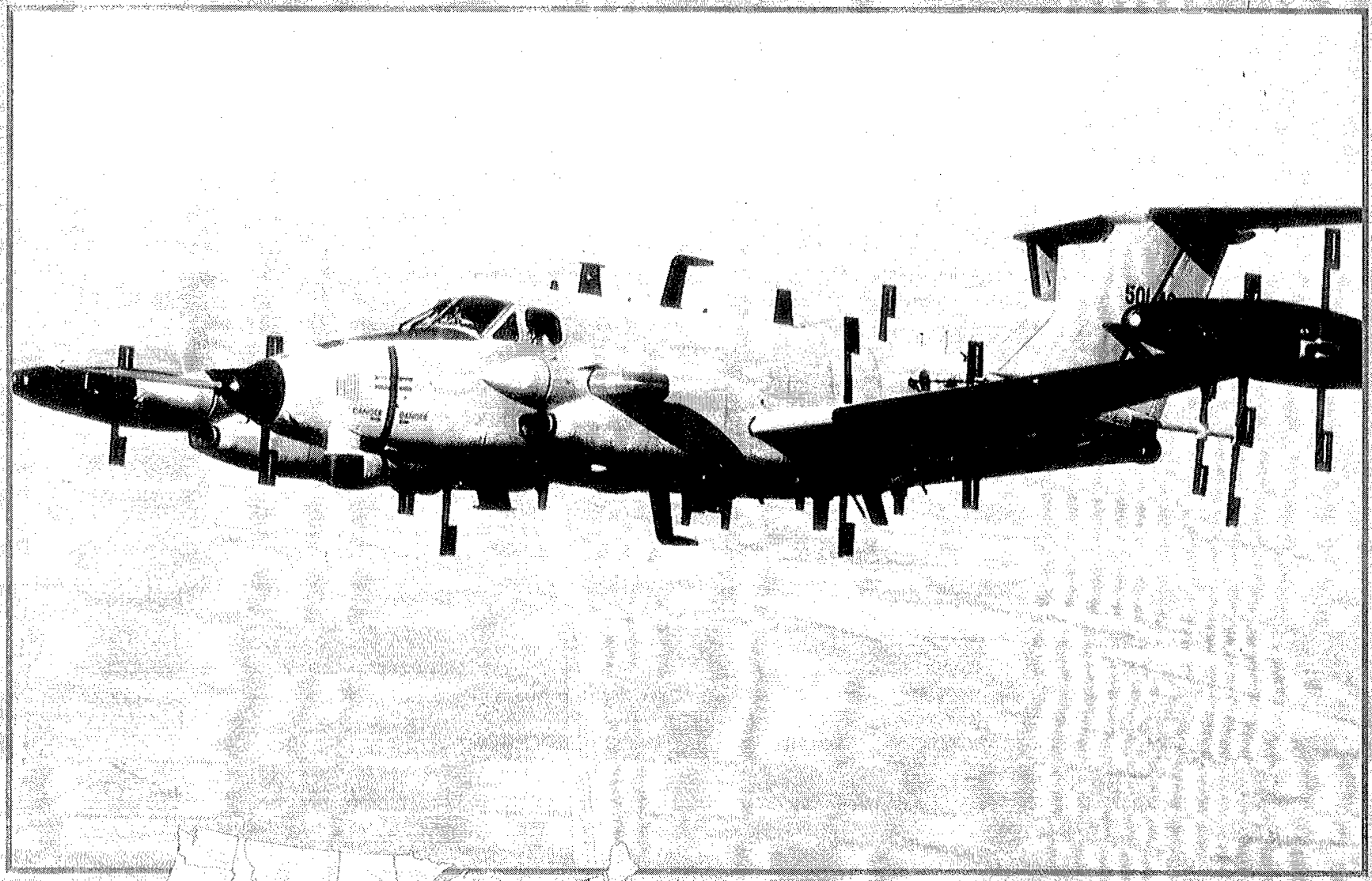
FOREIGN COUNTERPART: No known foreign counterpart.

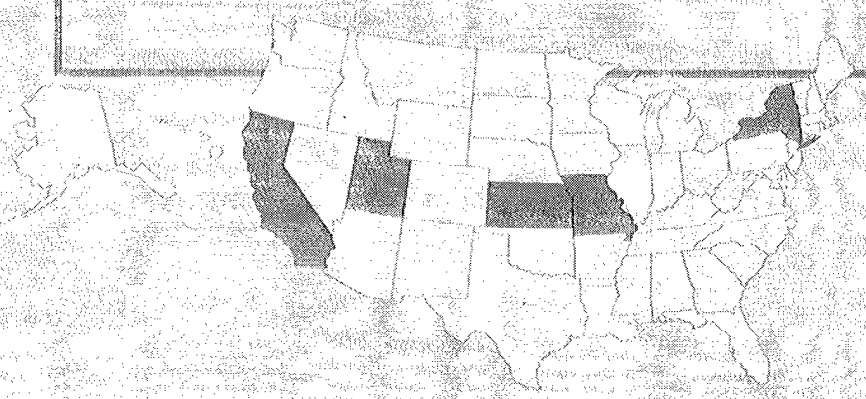
PROGRAM STATUS: Both light and heavy variants are in the Engineering and Manufacturing Development phase. A Customer Test occurred in August 1994. Technical Testing and User Testing will begin in FY95 and continue into FY96.

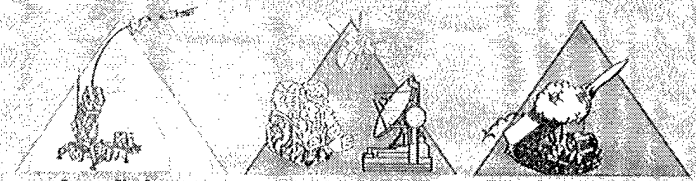
PROJECTED ACTIVITIES: An integrated GBCS-Light, GBCS-Heavy and Advanced QUICKFIX consolidated Development and Customer Test is scheduled for 2QFY95.

PRIME CONTRACTOR: ELECTROSPACE Systems (Richardson, TX)

* See appendix for list of subcontractors.






Protect The Force
Win Information War
Conduct Precision Strikes

Guardrail Common Sensor (GRCS)

MISSION: Guardrail's function is to provide a fixed-wing communication and electronic emitter intercept and direction-finding system. Guardrail operations support corps, division, and Joint Land Force Component commanders in precision strike operations, winning the information war, and digitization of the battlefield by providing timely information via the Commander's Tactical Terminal.

CHARACTERISTICS:

	RU-21H	*RC-12D/H*	*RC-12K/N/P*
Mission weight/payload:	10,200/1,126 lb	14,200/1,600 lb	16,000/2,000 lb
Cruise speed:	176 kt	200 kt	250 kt
Endurance:	4 hr	5(+) hr	5(+) hr
Max range:	1,000 naut mi	1,200 naut mi	1,200 naut mi

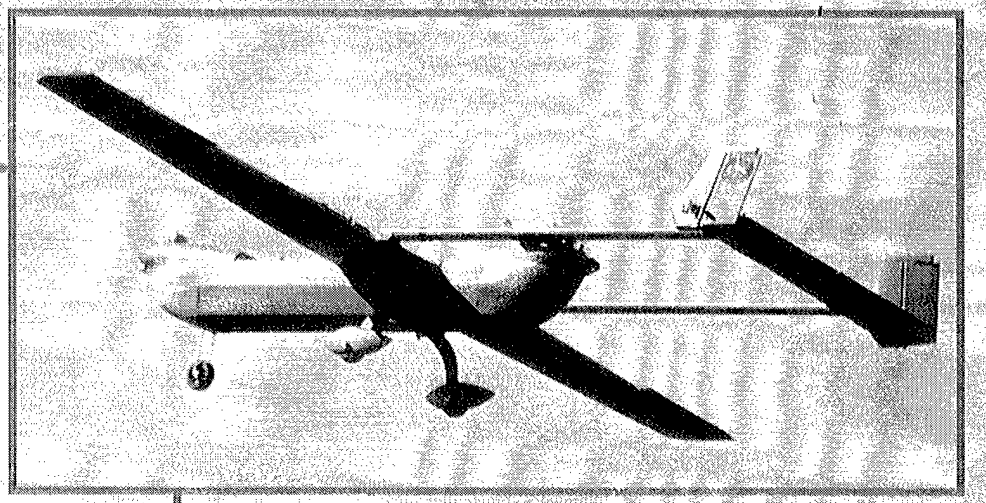
FOREIGN COUNTERPART: Numerous countries possess airborne electronic warfare systems, but none achieves the direction-finding accuracy of the Guardrail system.

PROGRAM STATUS: The Guardrail systems currently in service include the Guardrail V (RU-21H aircraft), the Guardrail Common Sensor Minus (RC-12H aircraft), and the Guardrail Common Sensor (RC-12K/N/P aircraft). Guardrail Common Sensor (GRCS) combines the Improved Guardrail V (IGRV) Communication Intelligence (COMINT) sensor package with the Advanced Quicklook electronics signals (ELINT) intercept, classification, and direction-finding capability, and a Communication High Accuracy Airborne Location System (CHAALS). GRCS (Minus) was fielded to Korea in 1988. The first GRCS system was fielded to Europe in 1991, and the second has been fielded to XVIII Corps in 1994 with a remote relay capability that allows forward deployment of aircraft while the ground processing facility remains in CONUS. The last GRCS system is in the Engineering and Manufacturing Development phase and will be fielded in FY97. GRCS shares technology with the Ground-Based Common Sensor, Airborne Reconnaissance Low, and other airborne systems.

PROJECTED ACTIVITIES:
System 1 Final Acceptance.
System 2 Critical Design Review.
Complete and incorporate Advanced Quicklook in Systems 1,2, & 4.
Completion of System 1 post-fielding upgrades and acceptance.
Direct Airborne Satellite Relay upgrades.

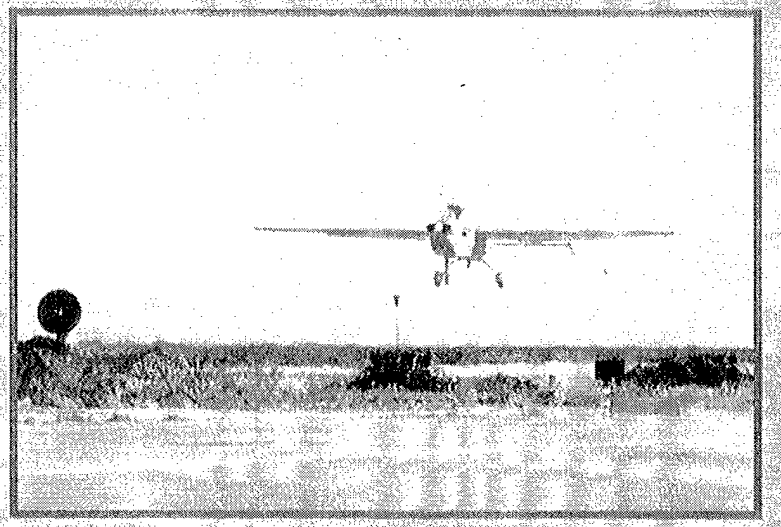
PRIME CONTRACTOR:
ESL (Sunnyvale, CA)—System
Beech Aircraft (Wichita, KS)—Airframe

* See appendix for list of contractors.

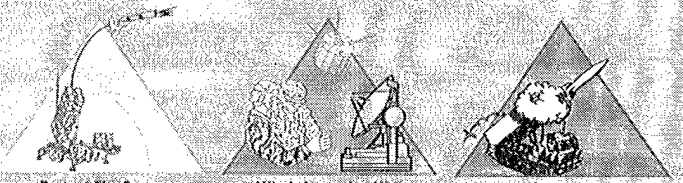


Hunter

Hunter Ground Data Terminal (GDT)



Hunter



Hunter Short-Range Unmanned Aerial Vehicle (UAV)

MISSION: The Hunter Short-Range Unmanned Aerial Vehicle (UAV) will provide Reconnaissance, Surveillance, and Target Acquisition (RSTA) to U.S. Army corps and divisions and to U.S. Marine Corps expeditionary brigades in excess of 150 km beyond the Forward Line of Own Troops (FLOT) and Navy datum points, day or night, and in limited adverse weather conditions.

CHARACTERISTICS: The Hunter is the baseline system for the family of UAVs. Hunter is intended for use in environments where real-time information feedback is needed, manned aircraft are unavailable, or excessive risk or other conditions render use of manned aircraft less than prudent. The Hunter system consists of a Mission Planning Station (MPS) and two Ground Control Stations (GCS); Remote Video Terminals (RVT); eight Air Vehicles (AV), Modular Mission Payloads (MMP), Ground Data Terminals (GDT), and launch and recovery equipment. The Mission Planning and Control Station (MPCS) (the MPS and two GCS) collects, processes, analyzes, and distributes digitized battlefield information by interfacing with present and planned Service Command, Control, Communications, and Intelligence (C^3I) systems. Flight and mission commands are sent to the AV(s) from the MPCS. RSTA imagery and AV position data are sent by downlink either through airborne relays or directly to the MPCS or RVTs located in tactical operations centers. Mission capability will be enhanced as advanced mission payloads become available, maximizing battlefield digitization to increase the effectiveness of other weapon systems.

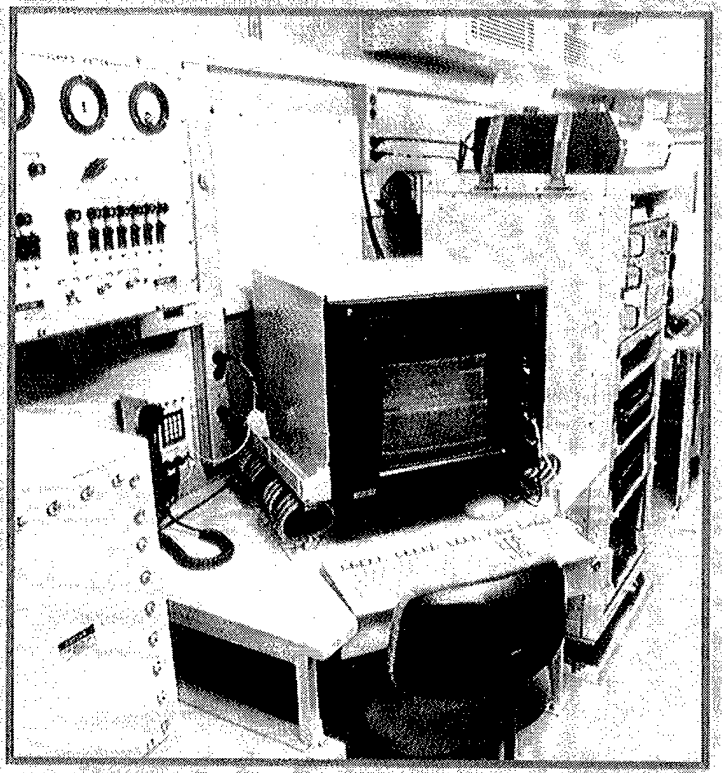
FOREIGN COUNTERPART: Israel has considerable experience with UAVs; however, requirements and specifications of Hunter make it unique.

PROGRAM STATUS: Effort is ongoing to upgrade sensor platforms, navigation sub-systems, software (Ada) conversion, heavy fuel engine, and an automated launch and recovery system. Approval was given in the FY95 Appropriation to a modification for a shipboard integration effort for Navy use. The first system intended for operational use was delivered for acceptance in October 1994.

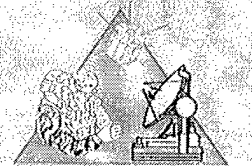
PROJECTED ACTIVITIES: A Maturation and Operational Risk Reduction Phase has been included in FY95 in cooperation with the contractor, developer/producer and user community.
IOT&E is scheduled for late FY95.

PRIME CONTRACTOR: TRW (San Diego, CA)
IAI (Tel Aviv, Israel)

Operations Shelter (AN/TYQ-30(V)1)



Automatic Data Processing Shelter (AN/TYQ-30(V)1)



Win Information War

Integrated System Control (ISYSCON)

MISSION: The ISYSCON provides an automated, theater-wide system that Signal units can use to manage multiple tactical communications systems in support of battlefield operations.

CHARACTERISTICS: The ISYSCON facility will provide an automated, integrated method for managing the tactical communications network, establish an interface with each technical control facility in the Army Tactical Command and Control System (ATCCS) architecture, and enable automation-assisted configuration and management of a dynamic battlefield. A change to the requirements document has added planning and management of satellite resources as a requirement. The ISYSCON has been selected as the network management system for joint task force use. The spectrum management software has been designated as part of the migration system for DoD use. An ISYSCON (V)1 at TSC (A), brigade, and division signal battalions consists of a shelter on a HMMWV, two extension tents, two servers, four client workstations, and peripherals. An ISYSCON (V)2 at an area signal battalion consists of a shelter on HMMWV, one extension tent, two servers, two client workstations, and peripherals. An ISYSCON (V)3 at each node consits of a shelter on HMMWV, one server, one client workstation, and peripherals. ISYSCON is being developed using an evolutionary approach, products will be delivered in phases that coincide with the echelon/communications capability supported. Phase 0/1 = Echelon Corps and Below, Phase 2 = Echelons Above Corps, Phase 3 = ADDS and Nodal capability, Phase 4 = MILSATCOM.

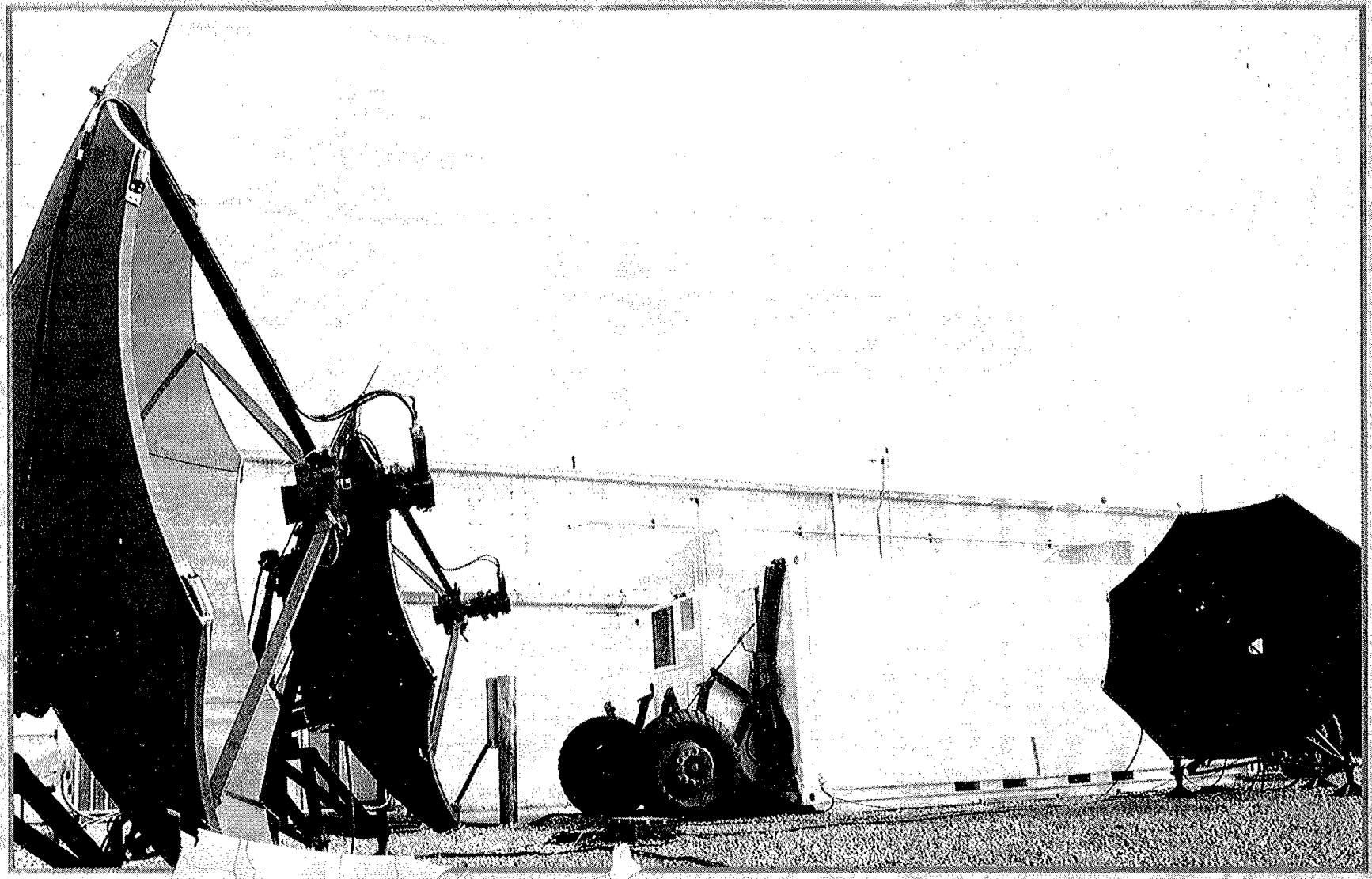
FOREIGN COUNTERPART: No known foreign counterpart.

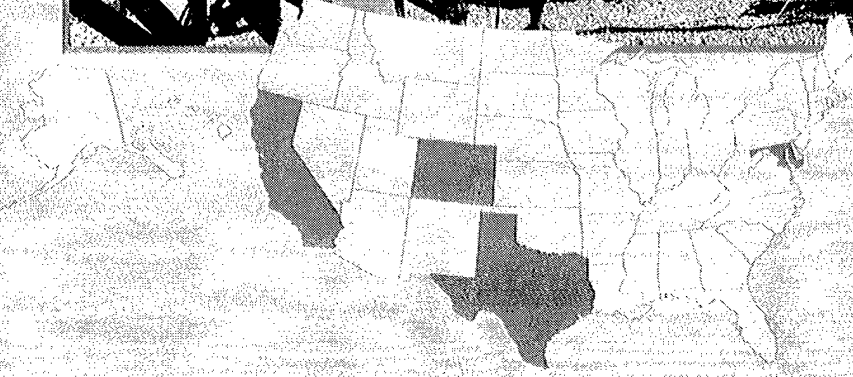
PROGRAM STATUS: The ISYSCON is currently in development. Prototype testing is scheduled for FY95 and FY96. A production contract award is scheduled for 2QFY96.

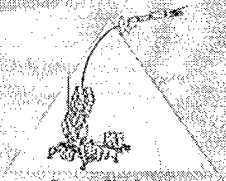
PROJECTED ACTIVITIES: Preliminary Design Review for Phase 0/1 is scheduled for 1QFY95.
Critical Design for Phase 0/1 is scheduled for 2QFY95.
The start of software integration for Phase 0/1 is scheduled for 4QFY95.

PRIME CONTRACTOR: GTE (Taunton, MA)

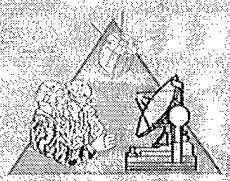
* See appendix for list of subcontractors.



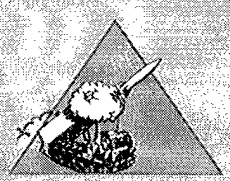




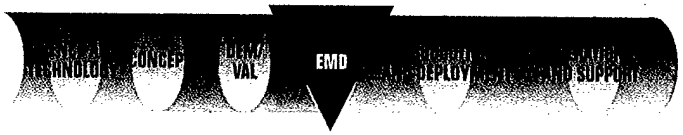
Protect The Force



Win Information War



Conduct Precision Strikes



MISSION: The JTAGS will receive and process data in theater from space-based sensors and disseminate warning, alerting, and cueing information on Tactical Ballistic Missiles (TBMs), Slow Walkers, and other tactical events of interest.

CHARACTERISTICS: The JTAGS is a theater-tactical ground station contained in an 8- by 20-ft ISO shelter. The system is transportable by C-141 aircraft and can be operational within hours. For redundancy, during contingency situations, the system is deployed in pairs. It is envisioned that the system will be jointly operated during crisis situations. To reduce cost and accelerate fielding, JTAGS uses commercial off-the-shelf hardware with minor modifications to enhance transportability and deployment options. This system is being developed to interface with major existing and planned communications systems.

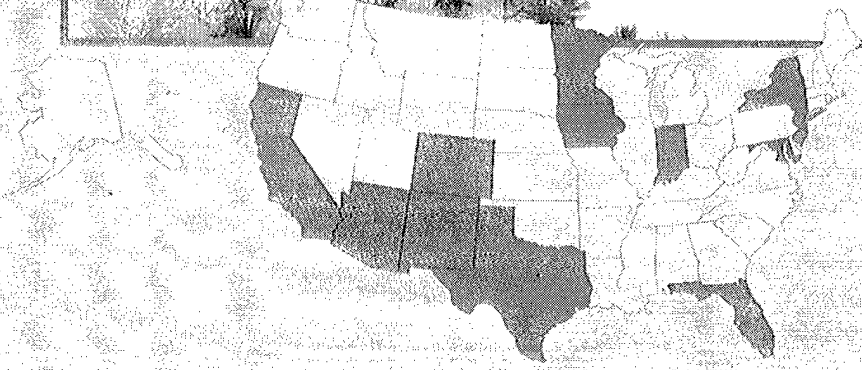
FOREIGN COUNTERPART: No known foreign counterpart.

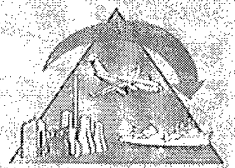
PROGRAM STATUS: The JTAGS is a Program Executive Office Missile Defense, ACAT III managed program and is a joint interest effort with the Navy. The program has transitioned from a BMDO/USASSDC Advanced Technology Demonstration to a formal acquisition program. The technical feasibility of JTAGS was validated by the Tactical Surveillance Demonstration proof-of-principle prototype, which was successfully tested at White Sands Missile Range. A transportable prototype was delivered during FY93 and underwent developmental and operational testing during 4QFY93 and 1QFY94. Both prototypes are currently available for contingency operations. A successful MS II IPR decision was held on 6 May 1994 which approved entry into EMD. The EMD contract with production options was awarded on 8 July 1994. The two EMD prototypes are scheduled for delivery seven and nine months after contract award. Current plans project production units to be fielded in the late FY96 timeframe.

PROJECTED ACTIVITIES: EMD testing to begin 2QFY95 and end 4QFY95.
Software Design Document available 4QFY95.
System/Segment Interface Control Specification available 4QFY95.

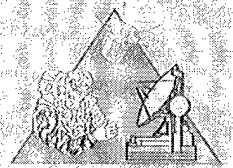
PRIME CONTRACTOR: Aerojet (Azusa, CA; Colorado Springs, CO)

* See appendix for list of subcontractors.

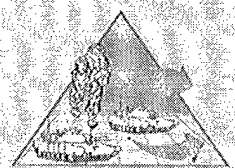




Project & Sustain



Win Information War



Dominate The Maneuver Battle

MISSION: The Kiowa Warrior fills the armed scout role for attack helicopter and air cavalry units.

CHARACTERISTICS: The Kiowa Warrior (OH-58D) currently is the only practical armed reconnaissance aircraft in the Army inventory until RAH-66 fieldings begin early in the next decade. The OH-58 performs reconnaissance, security, command and control, target acquisition/designation, and defensive air combat missions. The Kiowa Warrior adds armed reconnaissance, light attack, and Multipurpose Light Helicopter (MPLH = rapid deployment, troop lift, cargo, and Medevac) capabilities to the basic OH-58 Kiowa mission. The OH-58D has a Mast-Mounted Sight that houses a Thermal-Imaging System, Low-Light Television, and a Laser Rangefinder/Designator. A highly accurate navigation system permits precise target location that can be handed off to other engagement systems via the Airborne Target Handover System. The Laser Designator can provide autonomous designation for the laser HELLFIRE or for other laser-guided precision weapons. Air-to-Air Stinger (ATAS) provides security against threat aircraft. The armed retrofit program began in FY91 and provides air-to-ground weapons and other improvements to previously produced OH-58Ds.

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

FOREIGN COUNTERPART:

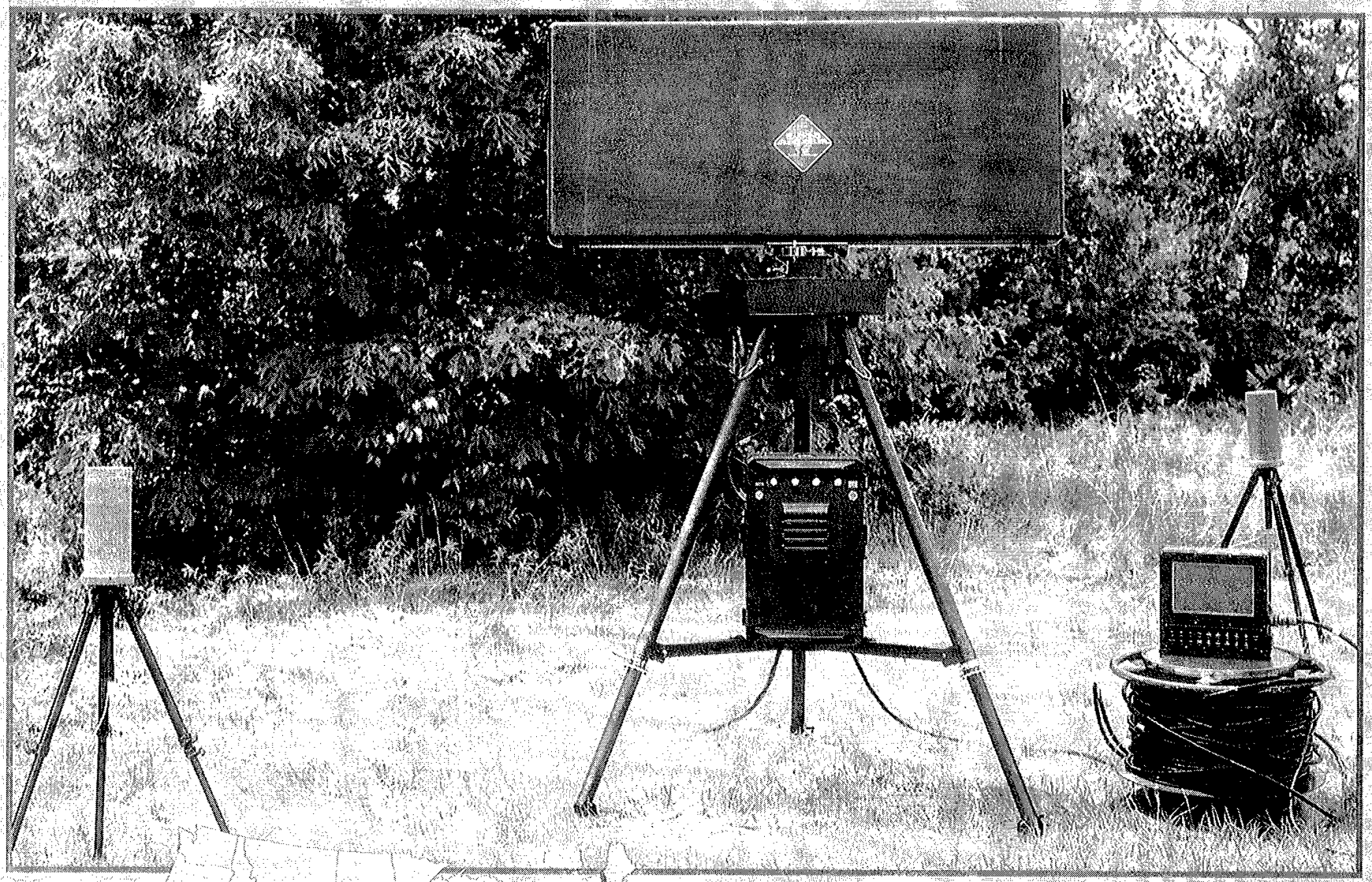
Germany:	BO-105
France:	Gazelle, Allouette
Russia:	HINDs, HIPs, Hoplites

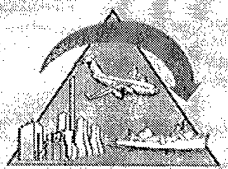
PROGRAM STATUS: The OH-58 Kiowa is in the 12th year of production. Kiowas began retrofit/remanufacture in FY93 for the Armed Kiowa Warrior version. There have been 315 aircraft accepted through August 1994. Aircraft deployments include the training bases at Fort Rucker and Fort Eustis, and operational units in CONUS, USAREUR, and Korea. The procurement objective is currently 383, with a total Army requirement of 507 aircraft. Deliveries will end in September 1997. Armed retrofit is scheduled to conclude in FY98.

PROJECTED ACTIVITIES: 38 aircraft will be retrofitted to Kiowa Warrior.
17 aircraft will be remanufactured to Kiowa Warrior.

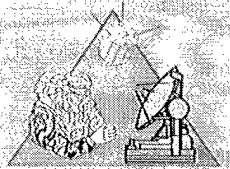
PRIME CONTRACTOR: Bell Helicopter (Ft. Worth, TX)

* See appendix for list of subcontractors.





Project & Sustain



Win Information War

Light and Special Division
Interim Sensor (LSDIS)

MISSION: The LSDIS provides short-range, low-altitude airspace surveillance coverage over the supported force.

CHARACTERISTICS: The LSDIS system consists of the radar, a commercial 1.5 kW generator, and a FAAD C^2I interface. LSDIS is modularly designed, easy to operate, and easy to maintain. These characteristics are essential to a highly mobile force that must deploy rapidly in response to contingency missions. It provides detection of moving fixed- and rotary-wing targets, as well as hovering helicopters, at reduced ranges. These capabilities allow it to be employed either autonomously or integrated with FAAD C^2I on the modern battlefield.

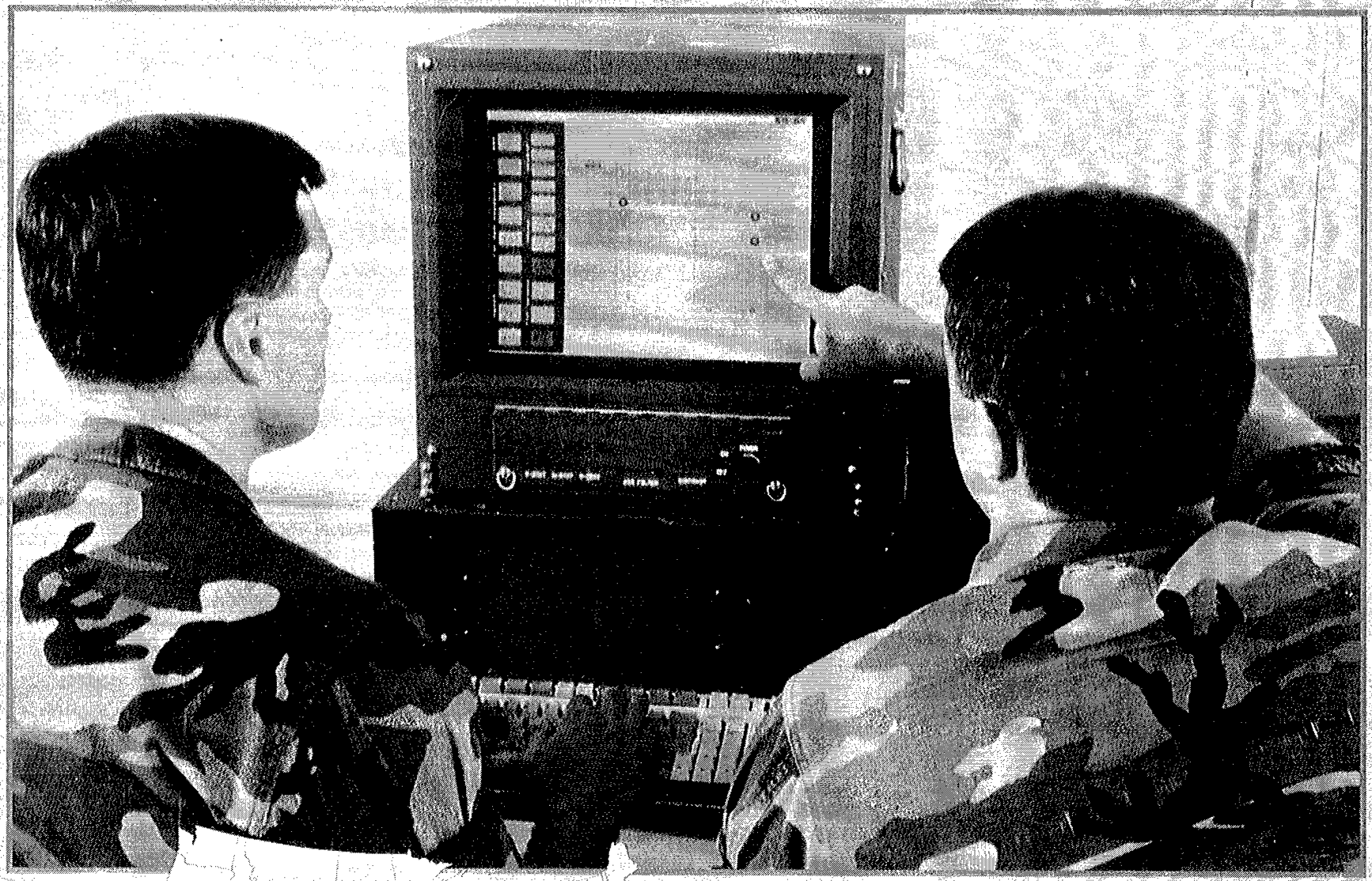
- Short-range air defense sensor
- Continuous volume surveillance of aircraft
- Azimuth: 360 deg; altitude: 0 – 3 km; range: 20 km
- Ruggedized, airdroppable, sling load, and HMMWV transportable
- Simple, reliable, lightweight
- FAAD C^2I interface

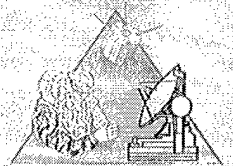
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The contract was awarded in 3QFY91. It is fielded by the 101st Airborne (Air Assault) Division. The next fielding is planned for 3QFY95.

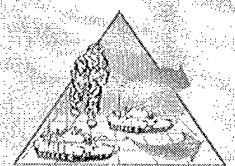
PROJECTED ACTIVITIES: Fielding to 2nd Infantry Division, 10th Infantry Division (Mountain), and 82nd Airborne Division.
Transition to Level II Management under Weapon System Management Division, MICOM.

PRIME CONTRACTOR: Lockheed-Sanders (Nashua, NH)





Win Information War



Dominate The Maneuver Battle

Maneuver Control System (MCS)

MISSION: The MCS provides Army tactical commanders and their staffs (corps through battalion) automated, on-line, near-real-time systems for planning, coordinating, and controlling tactical operations.

CHARACTERISTICS: MCS is the key component that integrates the primary Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS), in a single system. Non-Developmental Item (NDI) equipment and Common Hardware will be used with the MCS. Additionally, the Common Hardware will be fielded with the Standardized Integrated Command Post Systems (SICPS) (M1068, M998 Soft Top, and Rigid Wall Shelter).

NDI Analyst Console (AC) weight:	318 lb
Tactical Computer Processor (TCP) weight:	798 lb
Common Hardware TCU weight:	89 lb
LCU weight:	27.5 lb

FOREIGN COUNTERPART: No known foreign counterpart.

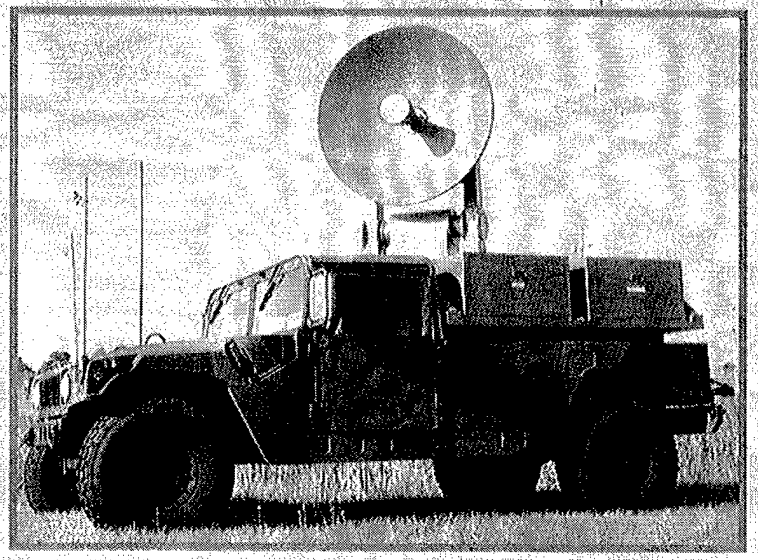
PROGRAM STATUS: NDI deliveries began in FY89 (III Corps) and were completed in FY93. Common Hardware fielding began in FY94. Currently, MCS Version 10.03.1G software is fielded to all heavy Army units with NDI.

PROJECTED ACTIVITIES: Release Request for Proposal MCS Block IV is scheduled in 4QFY95.
MCS Initial Operational Test and Evaluation (IOTE) is scheduled for November 1995 – January 1996.
Application software will be prototyped until Block IV products become available.

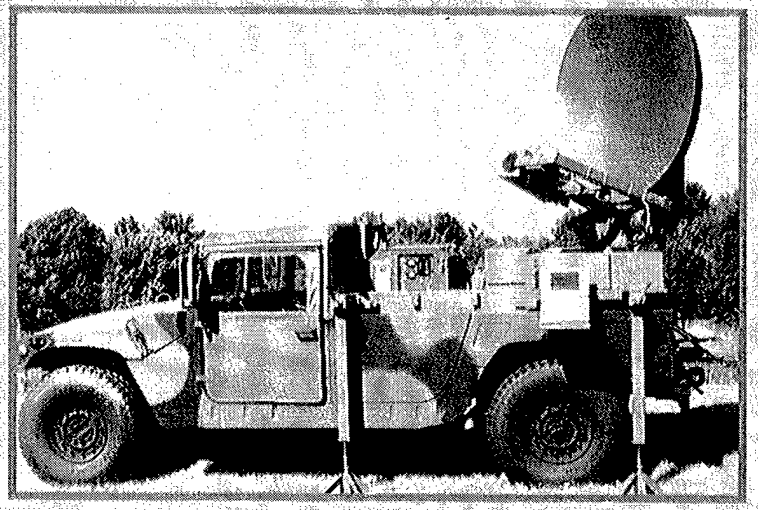
PRIME CONTRACTOR: Block IV products—TBD

* See appendix for list of subcontractors.

SCAMP



SMART-T MILSTAR



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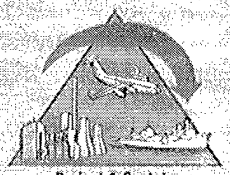
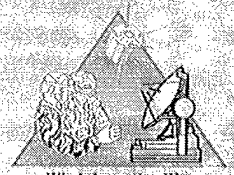
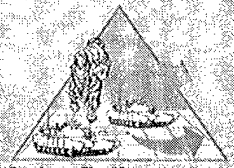


Project & Sustain



Win Information War



Dominate The Maneuver Battle

MISSION: MILSTAR satisfies Army tactical warfighter and JCS-validated command, control, communications, and intelligence requirements supporting the President, National Command Authority (NCA), Military Departments, and the Intelligence Community.

CHARACTERISTICS: The terminal equipment uses various DoD Satellite Communications (SATCOM) systems, including the Fleet Satellite/Air Force Satellite (FLTSAT/AFSAT), Navy Ultra-high frequency Follow-On (UFO) satellite, and MILSTAR system. This equipment supports the Army operations concept by providing uninterrupted communications beyond the line-of-sight capability for our advancing tactical forces. The MILSTAR system consists of mobile tactical satellite communications terminals and fixed strategic terminals.

PROGRAM STATUS:

SMART-T:

- FY95 program reassessment approved by AAE on 26 October 94
- Acquisition strategy and approved Acquisition Program Baseline remain intact.
- Competitive contractors have completed 22 months of effort.
- Downselect for Low Rate Initial Production scheduled for FY96.

SCAMP:

- FY95 program restructure approved by AAE on 26 Oct. 94.
- Competitive procurement scheduled for FY96.

PROJECTED ACTIVITIES:

SMART-T:

- Conduct development test of EDM terminals.
- Prepare production procurement package for FY96 production award.

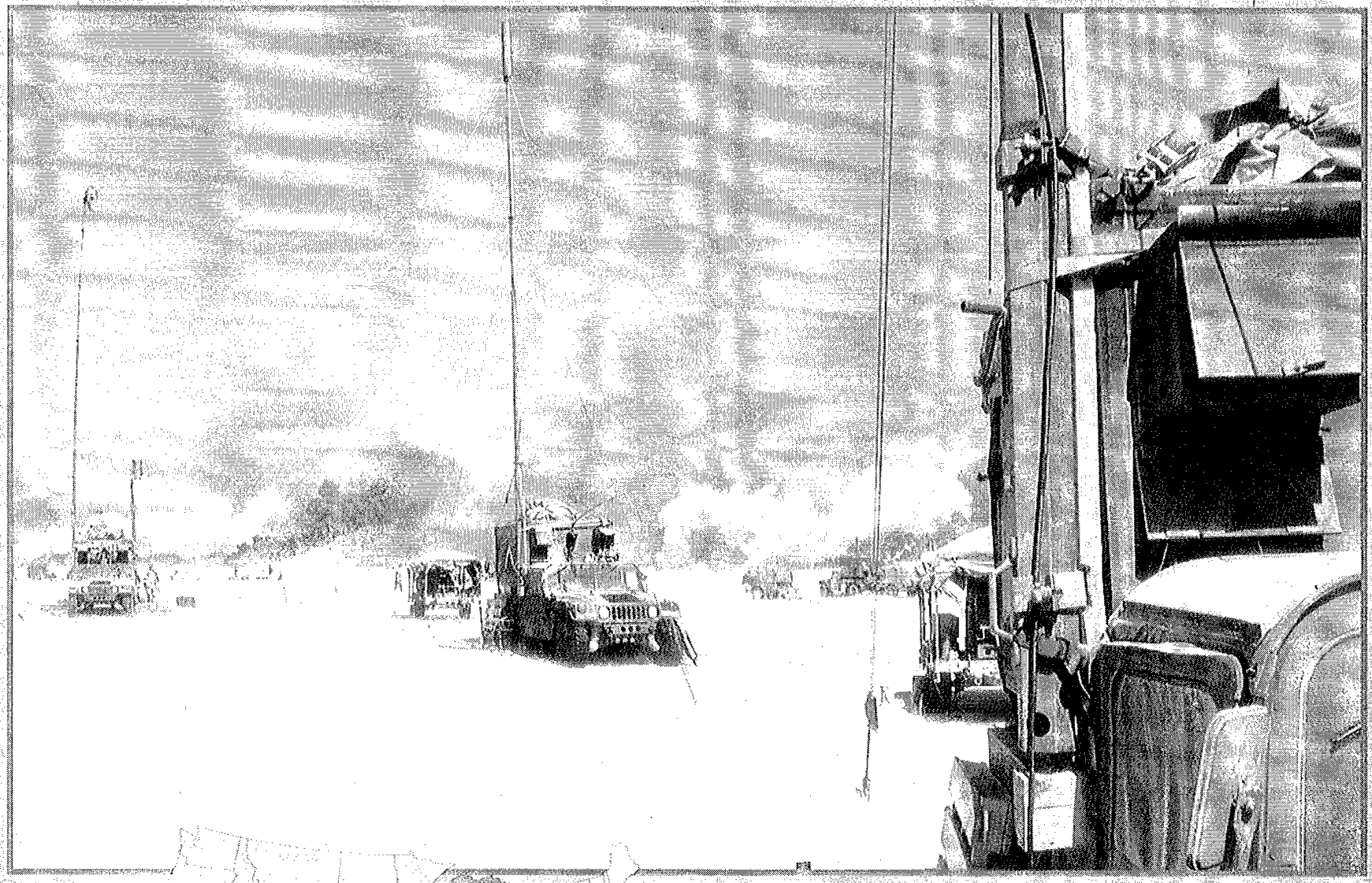
SCAMP:

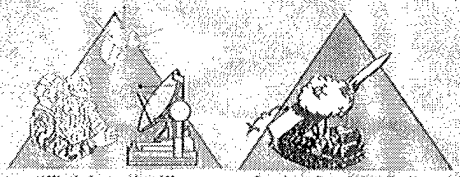
- Restructure program for competitive FY96 production award.

PRIME CONTRACTOR:

CommQuest (Enchinitas, CA)
Rockwell (Richardson, TX)
Raytheon (Marlboro, MA)
Harris (Melbourne, FL)
TRW (Redondo Beach, CA)

*See appendix for list of subcontractors.





Win Information War

Conduct Precision Strikes

Mobile Subscriber Equipment (MSE)

MISSION: MSE provides the tactical U.S. Army commander with a secure, automatic, highly mobile, quickly deployable, survivable, tactical communications system capable of passing data, facsimile, and voice traffic throughout the division and corps area of operations.

CHARACTERISTICS: The major items of equipment are integrated into five functional areas. Subscriber Terminals provide the voice and data elements to interface with other functional areas of the MSE system. Mobile Subscriber Access radiotelephone terminals permit mobile and stationary users to automatically communicate secure voice and data throughout the tactical area of operations. Wire Subscriber Access allows non-radio users entry to the MSE system through concentrations of automatic switching equipment. Area coverage of the battlefield from mobile or fixed locations is achieved through secure automatic switching, continuous coverage, and the ability of commanders and staff to retain the same telephone number regardless of location. System Control provides an automated Corps-wide MSE system management capability, which is itself mobile, moving with the elements it controls.

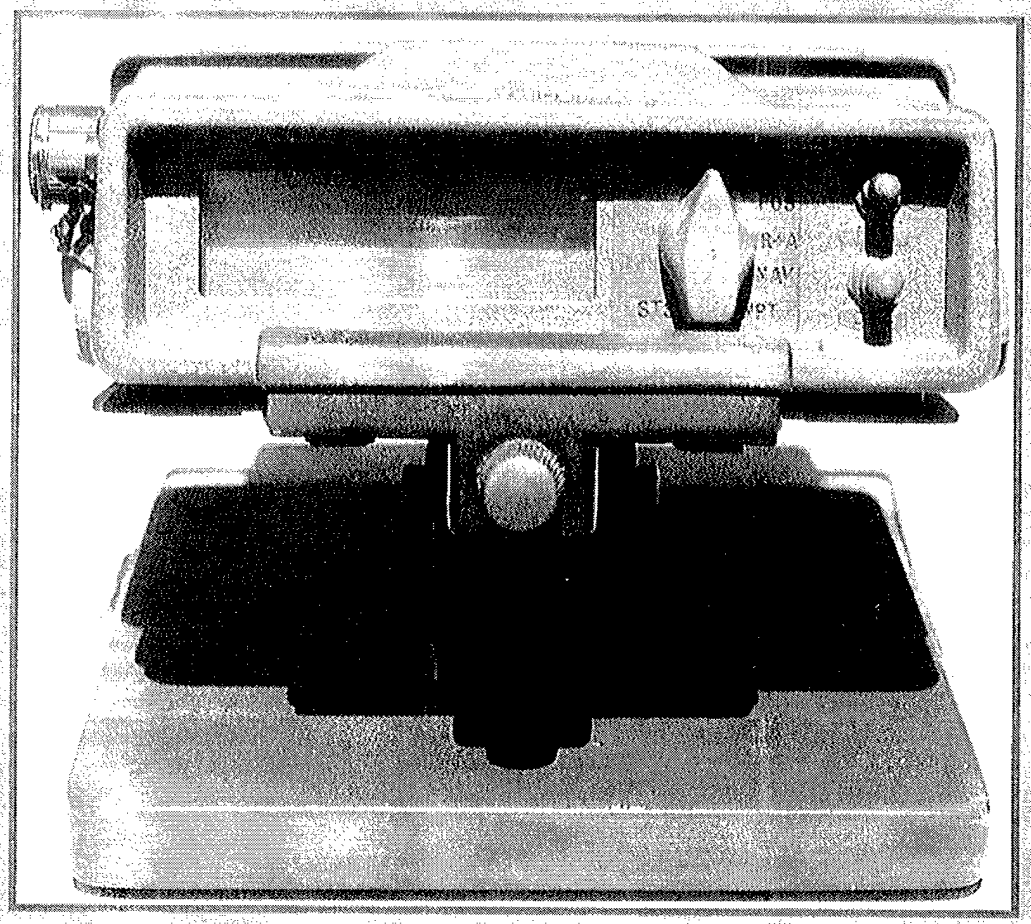
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: All Signal Battalions scheduled to receive MSE have been successfully fielded. Final unit fielding was completed in November 1993. An approved System Improvement Plan (SIP) is in place to provide technological upgrades that will improve system performance and extend the life of the equipment.

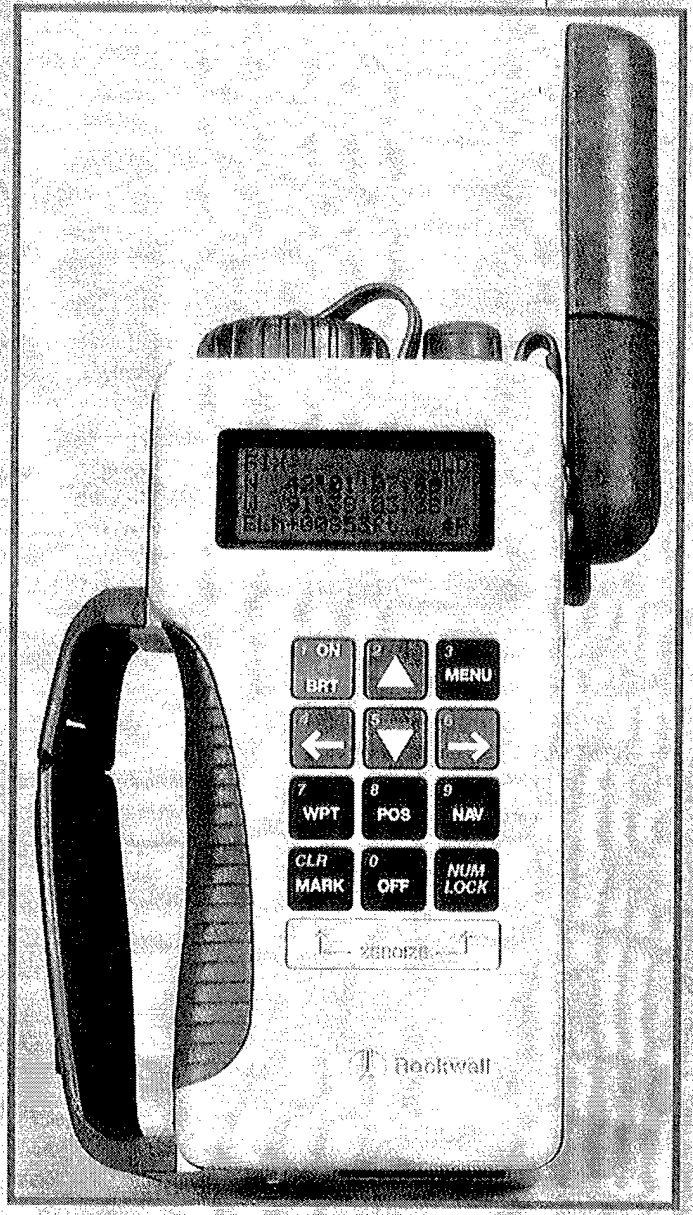
PROJECTED ACTIVITIES:
Packet improvements for Network Management Centers.
Training device upgrades.
Routing improvement hardware.
Continue Equipment Management Tool and Network Management Tool development.
Procure Strategic/Tactical Secure Voice Terminals.

PRIME CONTRACTOR:
GTE (Taunton, MA)
AM General (Livonia, MI)
Gould (El Monte, CA)

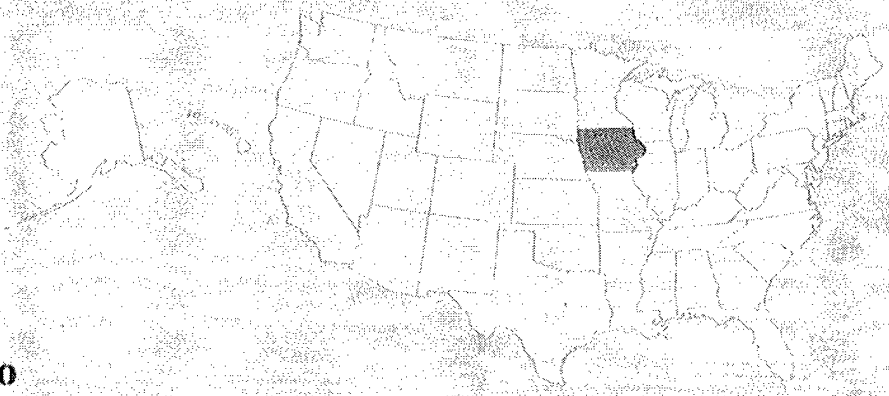
*See appendix for list of subcontractors.

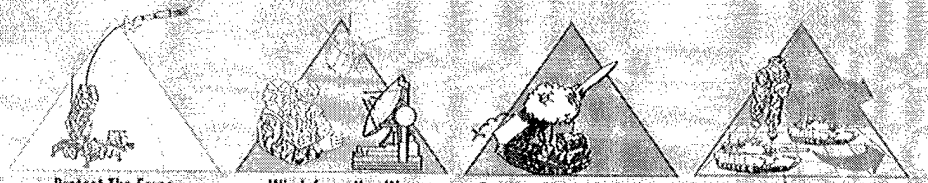


Small Lightweight GPS Receiver



Precision Lightweight Receiver





NAVSTAR Global Positioning System (GPS)

MISSION: The mission of NAVSTAR GPS is to provide accurate, continuous, all-weather, common grid, worldwide navigation, positioning, and timing information to land, sea, air, and space-based users.

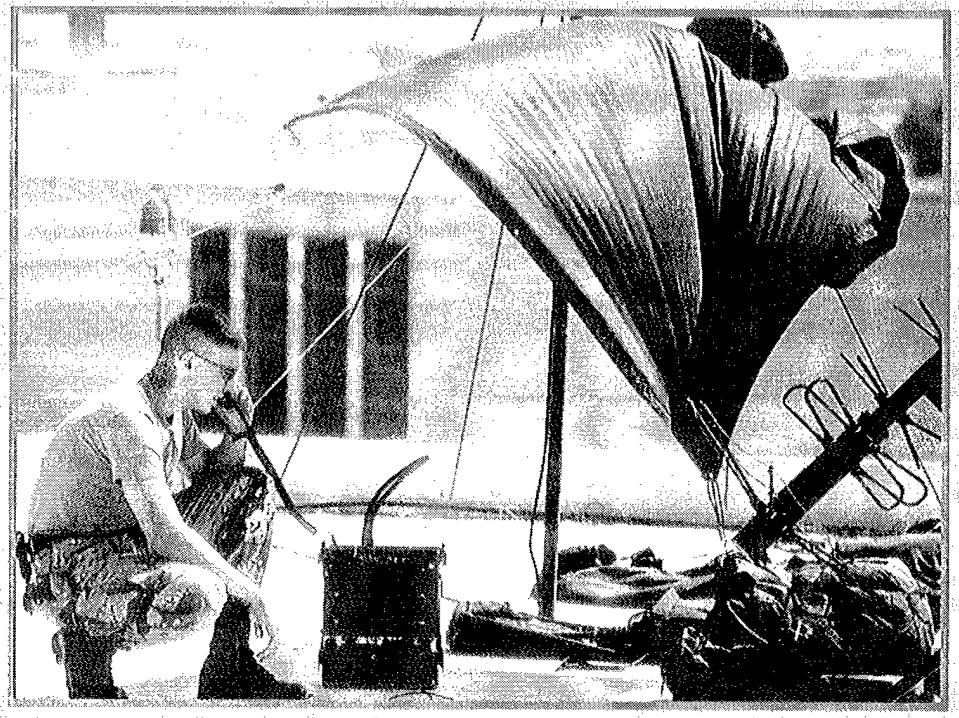
CHARACTERISTICS: The NAVSTAR GPS is a joint Army, Navy, and Air Force program, with the Air Force as the lead service. GPS is a space-based navigation, three-dimensional positioning, and time-distribution system. The GPS has three segments: a space segment, consisting of 24 satellites; a ground control segment; and a user segment. The Army is the lead service in the Joint Program Office (JPO) for the manpack/vehicular and low-to-medium dynamic aircraft receivers. The user segment consists of receiver configurations for manpack/vehicular, low-to-medium and high-dynamic aircraft and seacraft applications. The GPS receiver is a passive device that will be deployed extensively at all echelons and with Army aircraft.

FOREIGN COUNTERPART: The Russians have developed a similar system, GLONASS, but insufficient data are available to permit a meaningful comparison to GPS.

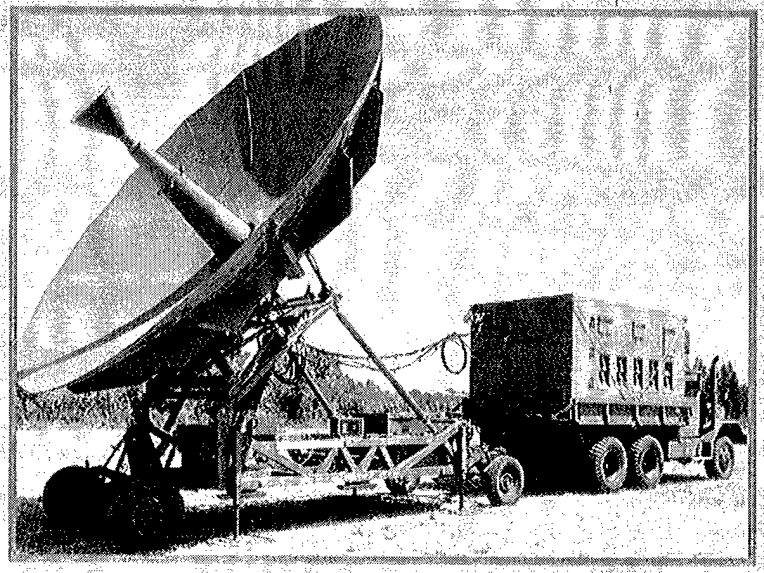
PROGRAM STATUS: The JPO conducted an off-the-shelf, non-developmental item procurement of the Precision Lightweight GPS Receiver (PLGR), an inexpensive ground set. The PLGR contract was awarded to Rockwell International in March 1993, with initial production sets delivered in late FY93. The PLGR has been type classified standard. The PLGR procurement will satisfy most other Army ground applications and replace the previously deployed AN/PSN-8 and AN/VSN-8, once sufficient assets are available. During Desert Shield/Desert Storm, waivers were obtained from ASD(C^3I) for the Army to acquire more than 8,000 commercially available sets, called the Small Lightweight GPS Receiver (SLGR), as an interim capability until the PLGR is deployed. As SLGRs are displaced by PLGRs, it is planned that the SLGRs will be reallocated. Program Manager (PM) GPS is exploring alternatives for functional substitutes for the 2-channel Air Set, AN/ASN-149: the Miniaturized Airborne GPS Receiver (MAGR), Air PLGRs, and embedded solutions for remaining aircraft GPS requirements.

PROJECTED ACTIVITIES: Option 2 Award for PLGR in January 1995.
PLGR fieldings in 1995 to 24th Infantry Division (Mechanized) and 1st Cavalray Division.
Option Award for MAGR in March 1995.

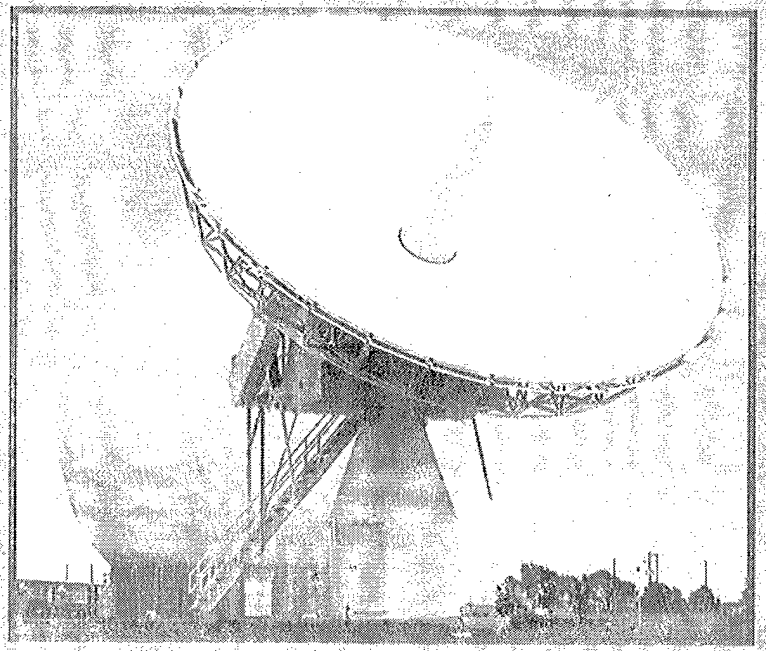
PRIME CONTRACTOR: Rockwell International (Cedar Rapids, IA)



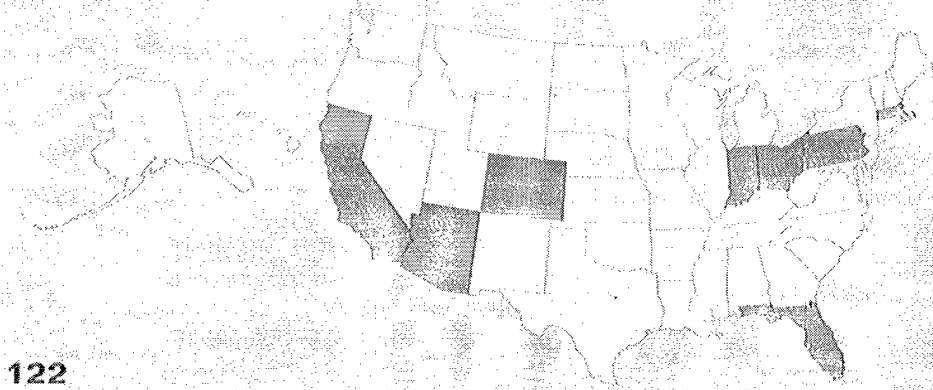
SATCOM Tactical Manpacks



SATCOM Tactical Terminals



SATCOM Strategic Terminals



MISSION: The mission of SATCOM is to satisfy JCS-validated command, control, communications, and intelligence requirements supporting the President, Commander in Chief (CINC), National Command Authority (NCA), Military Departments, Intelligence Community, and NATO.

CHARACTERISTICS: Fixed strategic, theater, and mobile tactical satellite communications terminals characterize SATCOM. The satellite equipment uses all DoD SATCOM systems, including the Fleet Satellite/Air Force Satellite (FLTSAT/AFSAT) system and the Defense Satellite Communications System (DSCS).

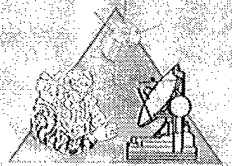
PROGRAM STATUS: The Army is procuring commercial Non-Developmental Item (NDI) terminals and related equipment in support of contingency force and Special Operations Forces (SOF) unit requirements for use on FLTSAT/AFSAT. Efforts to embed Communications Security (COMSEC) and develop a demand-assigned, multiple-access capability to increase the capacity of the existing system are underway. For the strategic DSCS, the Army will continue to modify its large fixed-site facilities, provide digital equipment upgrades, and expand the control subsystem to enhance satellite and communications payload control operations.

PROJECTED ACTIVITIES: Complete First Article Test on AN/PSC-5 (EMUT) in July 1995.

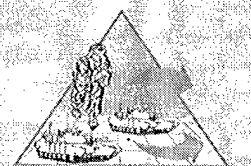
PRIME CONTRACTOR:

General Electric (Valley Forge, PA)
Motorola (Scottsdale, AZ)
Harris (Melbourne, FL)
Titan (San Diego, CA)
Loral (Colorado Springs, CO)
Cincinnati Electronics (Cincinnati, OH)
Magnavox (Ft. Wayne, IN)
Trivec Avant (Huntington Beach, CA)

* See appendix for list of subcontractors.



Win Information War



Dominate The Maneuver Battle

Single Channel Ground and Airborne Radio System (SINCGARS)

MISSION: The SINCGARS provides commanders with a reliable, easily maintained combat net radio for command and control and provides Electronic Counter-Countermeasures (ECCM) against threat electronic warfare.

CHARACTERISTICS: SINCGARS configurations include manpack, vehicular (both low and high power), and airborne models. Communications Security (COMSEC) is integrated in currently produced versions of the ground and airborne models.

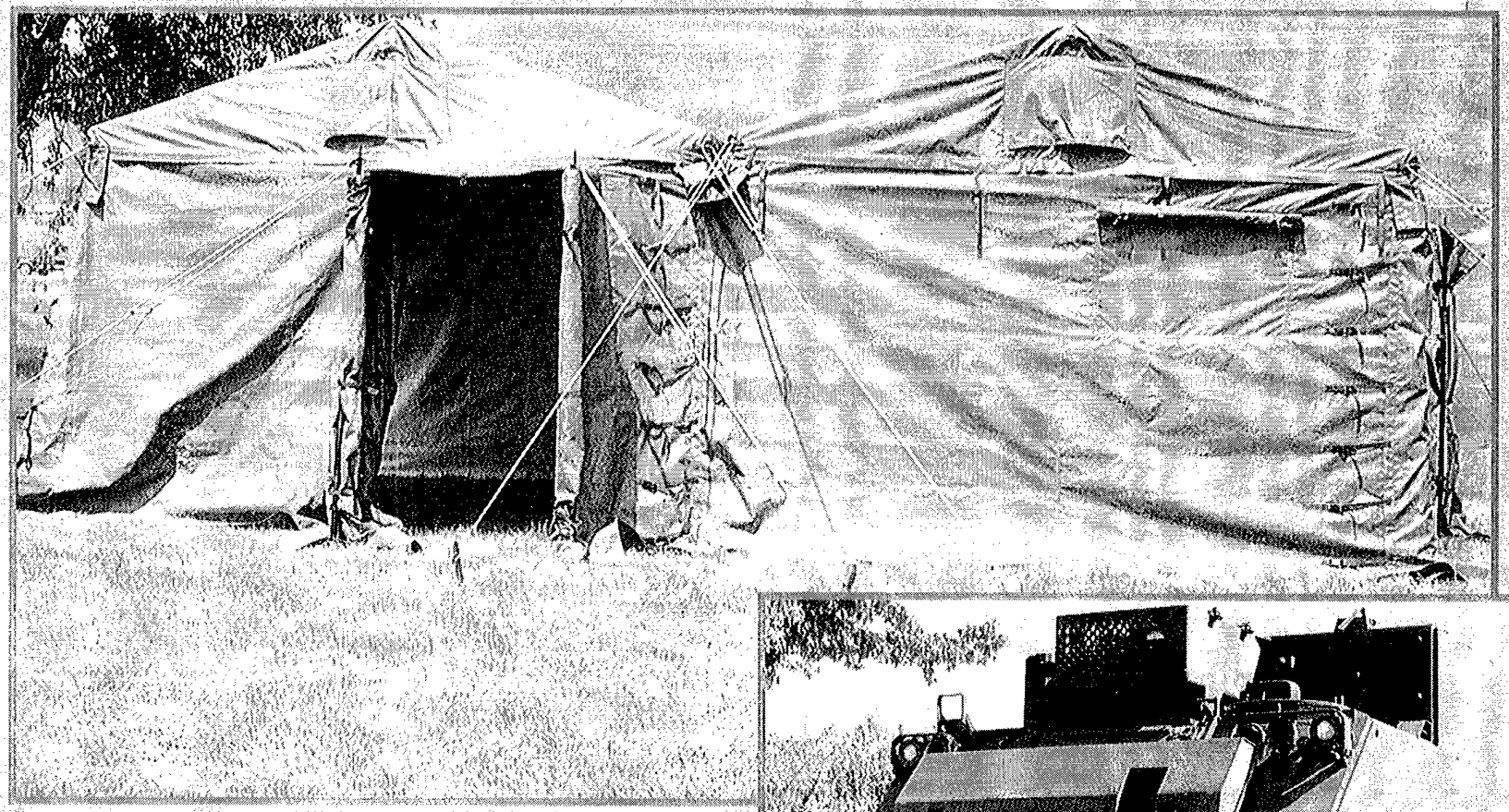
Weight:	22.5 lbs w/battery and COMSEC
Frequency range:	30.000 to 87.975 MHz
Channels:	2,320
Range:	8 – 35 km

PROGRAM STATUS: First source (ITT) SINCGARS ground radios passed First Article Tests in January 1988, and production deliveries began immediately. A Follow-On Test and Evaluation (FOTE) was successfully completed in May 1988 on the non-Integrated Communications Security (non-ICOM) version of the radio. An Initial Operational Test and Evaluation (IOTE) and FOTE were successfully completed on the ICOM radio in November 1990. Award for Option 3 for 16,000 radios was made in June 1989. Option 4 for 16,000 radios was awarded in 1QFY91, completing the first-source contract of 44,100 ground radios. Subsequently, a new contract for first-source production was awarded for 16,000 radios in March 1992, with another 16,000 radio award in FY93. ITT is also the sole producer of the airborne SINCGARS, with contracts awarded for almost 6,361 units. A second-source of ground radios (General Dynamics) was selected in July 1988 and awarded a firm fixed price, base year contract for 400 radios. Second-source First Article Test was successfully completed in July 1992, and IOTE was successfully completed in February 1993. General Dynamics was awarded a Low-Rate Initial Production contract for an additional 7,500 ground radios. A second-source, full-scale production award for 12,000 radios was made in August 1993. Annual dual source limited competition began in FY94, with award in April 1994 of 17,053 units to ITT and 11,369 units to GDLS. FY95 limited competition awards are expected to be made in March 1995 for System Improvement Program (SIP) radios. These radios will provide improved data capability, improved forward eror correction for low speed data modes, automated interface in the Automated Common User System and a Global Position System (GPS) interface. Annual dual source limited competition will continue in FY96. In FY97, a multiyear production buyout for the remaining Army Acquisition Objective (AAO) quantities is being considered. The program office has fielded more than 60,000 radios to the training base and Army units in EUSA (Korea), USARPAC, USAR, USAREUR, USARNG, and CONUS.

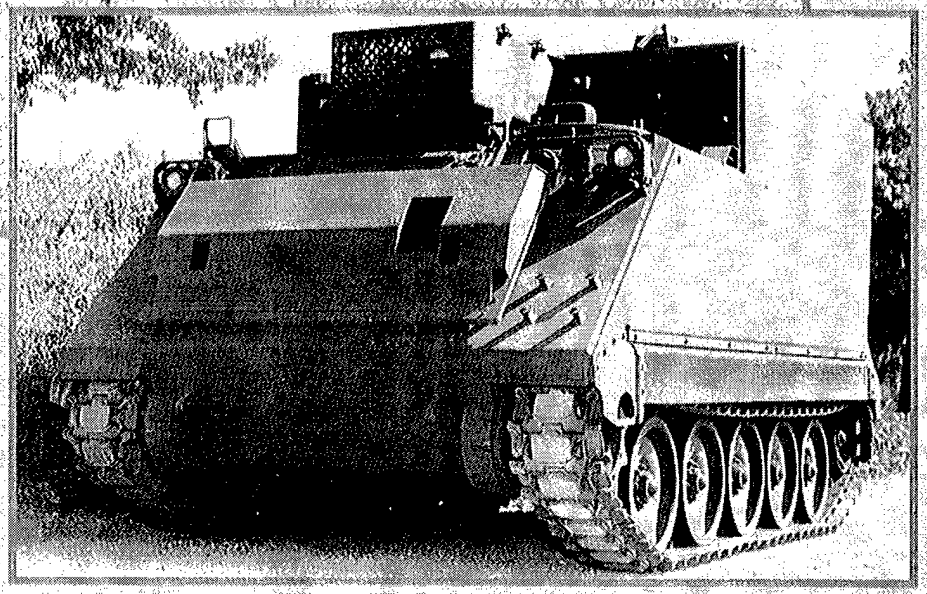
PROJECTED ACTIVITIES: Dual source limited competition awards will be made for SIP radios in 2QFY95.
Fieldings to USAREUR will begin in 4Q95.

PRIME CONTRACTOR: ITT (Ft. Wayne, IN)
General Dynamics (Tallahassee, FL)
Talla-Comm (Tallahassee, FL)

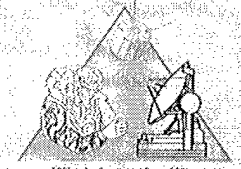
* See appendix for list of subcontractors.



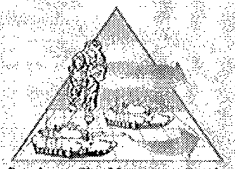
Tent CP



Track Vehicle CP



Win Information War



Dominate The Maneuver Battle

Standardized Integrated Command Post System (SICPS)

MISSION: The SICPS is a family of command post facilities developed to house the Army Tactical Command and Control System (ATCCS) across all battlefield functional areas. Variants of SICPS consist of a tent Command Post (CP), a Rigid Wall Shelter CP, a Track Vehicle CP (M1068), a 5-Ton Expanded Van CP, and a Soft Top HMMWV CP(M998).

CHARACTERISTICS: Tent CP: 11 ft x 11 ft with interchangeable sidewalls, any of which can be removed for combining two or more tents together; supported by a three-piece aluminum frame; fielded with two tables, two mapboards, and a fluorescent light set. The Tent CP can be attached to any of the other SICPS variants by replacing one sidewall with an interface wall. The tent also is part of the Rigid Wall Shelter (RWS), Track Vehicle, and Soft Top HMMWV CPs.

Rigid Wall Shelter CP: Mounts on the HMMWV shelter carrier and is integrated with a 5 kW power unit, a 9,000 Btu/hr air conditioner, collective chemical/biological protection, command and control (C^2) equipment racks, power and signal import/export panels, intercom, and operator seats.

Track Vehicle CP: Modification of existing M577 tracked vehicles and addition of an AM installation kit will provide C^2 equipment racks, power and signal import/export panels, operator seats, and a SICPS tent.

5-Ton Expanded Van CP: Installation kit for existing unit vehicles to provide radio and signal equipment racks, power and signal import/export panels, power and signal wiring, and one to four computer workstation racks.

Soft Top HMMWV CP: Installation kit for existing unit vehicles to provide C^2 racks, power and signal import/export panels, and a SICPS tent.

FOREIGN COUNTERPART: No known foreign counterpart.

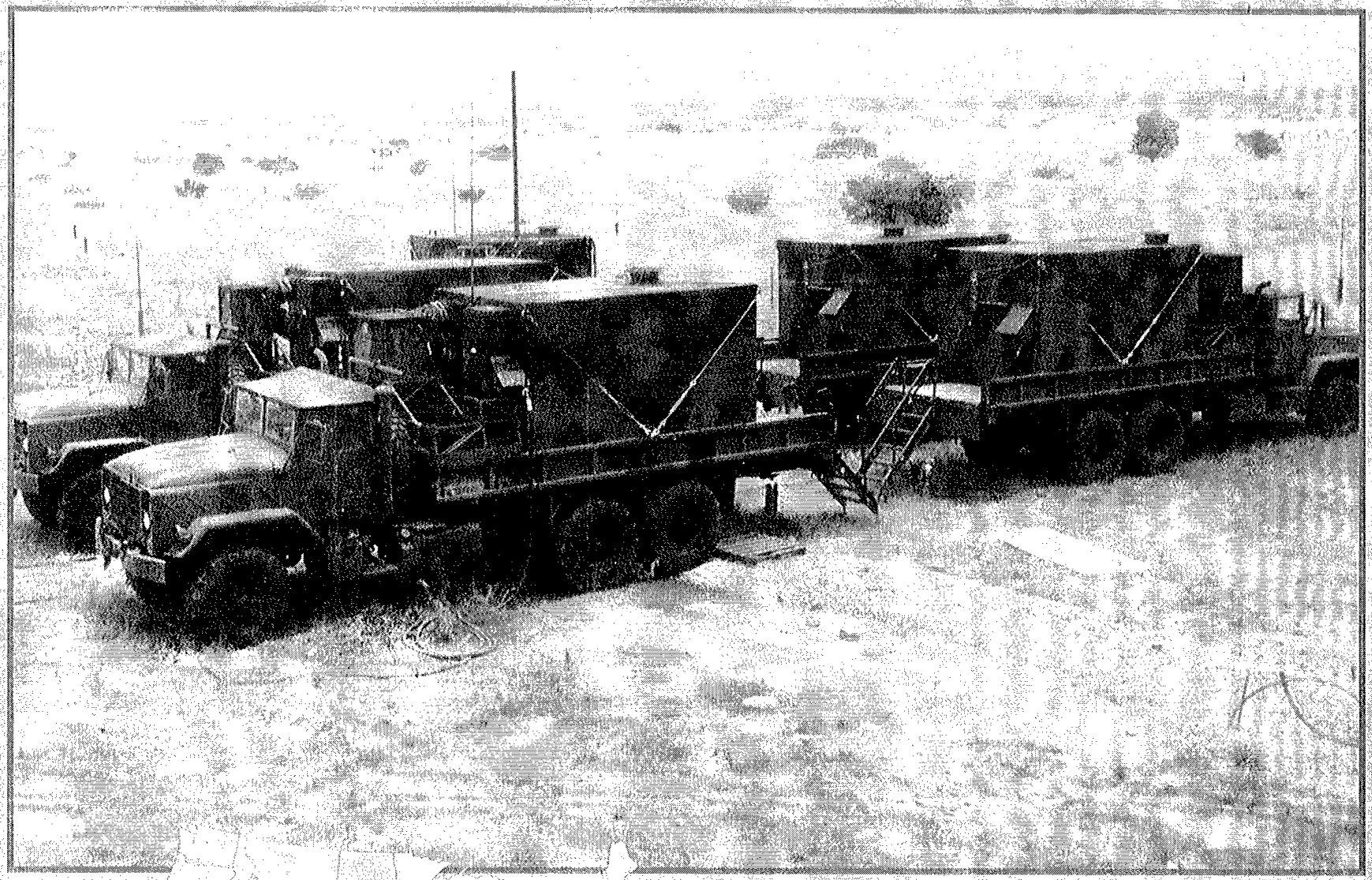
PROGRAM STATUS:

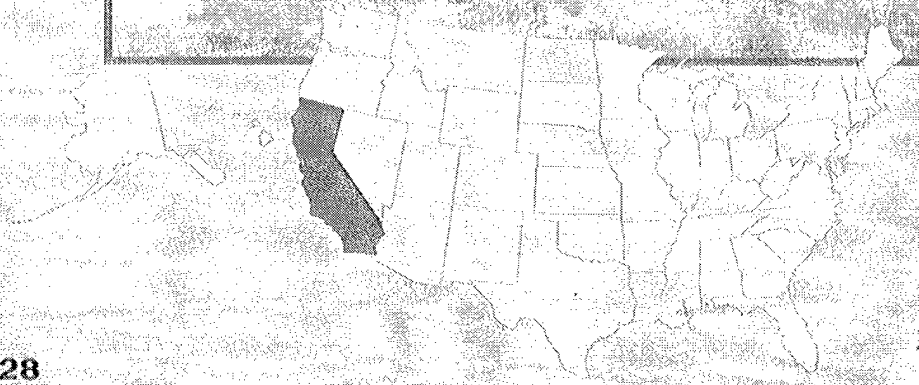
Tent CP:	Type Classified Standard—8 February 1990. The production contract was awarded in August 1991.
Rigid Wall Shelter CP:	A limited production contract was awarded in August 199; technical testing is ongoing for P3I RWS.
Track Vehicle CP:	A limited production contract was awarded in June 1992 .
5-Ton Expanded Van CP:	In development.
Soft Top HMMWV CP:	In development.

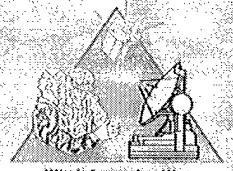
PROJECTED ACTIVITIES: Provide SICPS Rigid Wall Shelters, Track Vechicle, 5-Ton, and Soft Top platforms to support BFA requirements.

PRIME CONTRACTOR: Camel (Knoxville, TN)
United Defense (San Jose, CA)
Brunswick (Marion, VA)
Gichner Systems Group (Hunt Valley, MD)
Letterkenny Army Depot (Letterkenny, PA)
Tobyhanna Army Depot (Tobyhanna, PA)

* See appendix for list of subcontractors







Win Information War

MISSION: The AN/TSQ-152 Special Purpose Receiving System (Trackwolf) provides Commander, U.S. Army Europe, with an organic capability to intercept, locate, exploit, or initially target sources of threat HF voice communications.

CHARACTERISTICS: Trackwolf is a high-frequency (HF) sky wave, intelligence, and emitter location system. This ground-based system can be tailored extensively—from a large, fully capable mobile COMINT field station to a small, elusive, four-vehicle field configuration—to meet a wide range of mission objectives, giving early, reliable, and critical intelligence to the theater commander before initiation of hostilities.

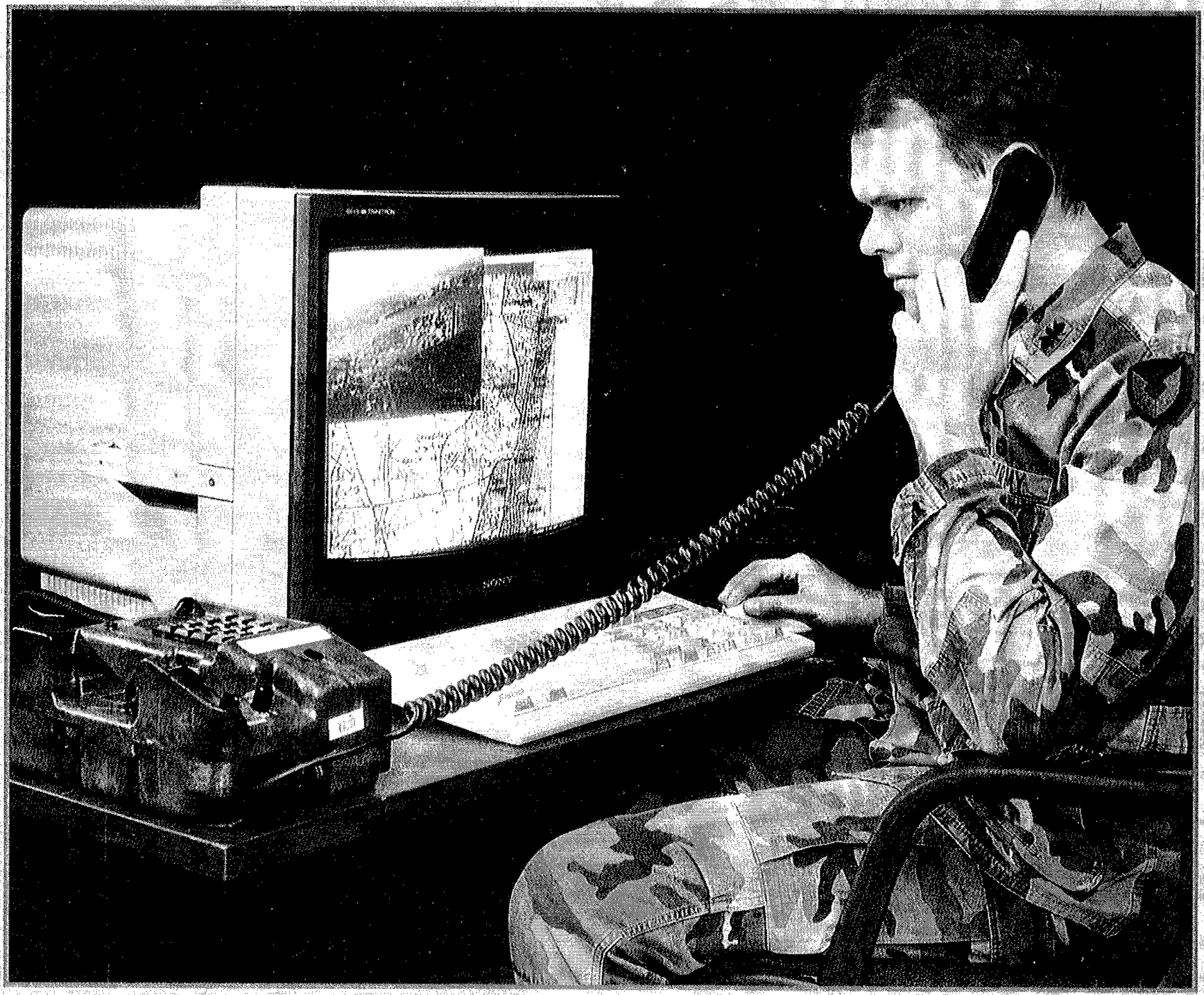
The Trackwolf system comprises two separate interactive subsystems: a Collection and Processing Subsystem (CPS) and a Direction-Finding Subsystem (DFS). The CPS consists of command and control, receiving system, and collection analysis shelters. The DFS consists of a Net Control Station (NCS) collocated with the CPS and three remotely located DF outstations that communicate by landline or HF radio. Trackwolf has two primary missions: signals intercept (performed by the CPS) and direction finding (performed by the DFS). The CPS normally is located in the theater rear area approximately, 200 kilometers behind the Forward Line of Own Troops (FLOT). The system supports Echelons Above Corps commanders by supplying intelligence information to the theater-level All Source Analysis System (ASAS). It communicates with the ASAS at Divisions and Corps through the Single Source Processor—SIGINT (SSP-S) link. The DFS is capable of both netted Direction-Finding and Single-Station Location (SSL) operations. The CPS is modular, with all components linked together via a Fiber Optical Digital Data Local Area Network (LAN). This allows systems to be tactically sized to meet contingency operational requirements across the spectrum of conflict, ranging from field station operations to rapid deployment Corps operations. The hardware within the CPS is a combination of new Non-Developmental Item (NDI) and older field station components. The software is the NDI Conventional Signal Upgrade (CSU) used in field stations.

FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: Trackwolf was fielded in 4QFY92, and the formal material release was completed in 1QFY94. A material change program to fix shortfalls identified in testing began in FY94. Procurement of a downsized Trackwolf (Enhanced Trackwolf) began in March 1994 and will continue until March 1996.

PROJECTED ACTIVITIES: Procure and field a satellite communications capability for the Direction Finding Subsystem outstations.
Field a capability that provides interconnectivity between Trackwolf, Navy, and National Security Agency direction finding nets.

PRIME CONTRACTOR: Technology for Communications International (Fremont, CA)

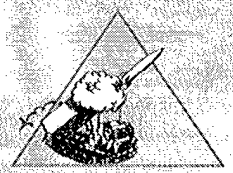


OVERVIEW: The goal of the Army Science and Technology program in Win the Information War is to effectively integrate military and commercial technologies by incorporating simulation and global communications. Today, both commercial and military communication capabilities must be automated and global in scope. In all future conflicts, the Army must have a seamless, worldwide exchange of information linked with local communications and sensing systems. These must be cost effective, surge capable, digitized, robust communications, that are fully integrated from space to soldier.

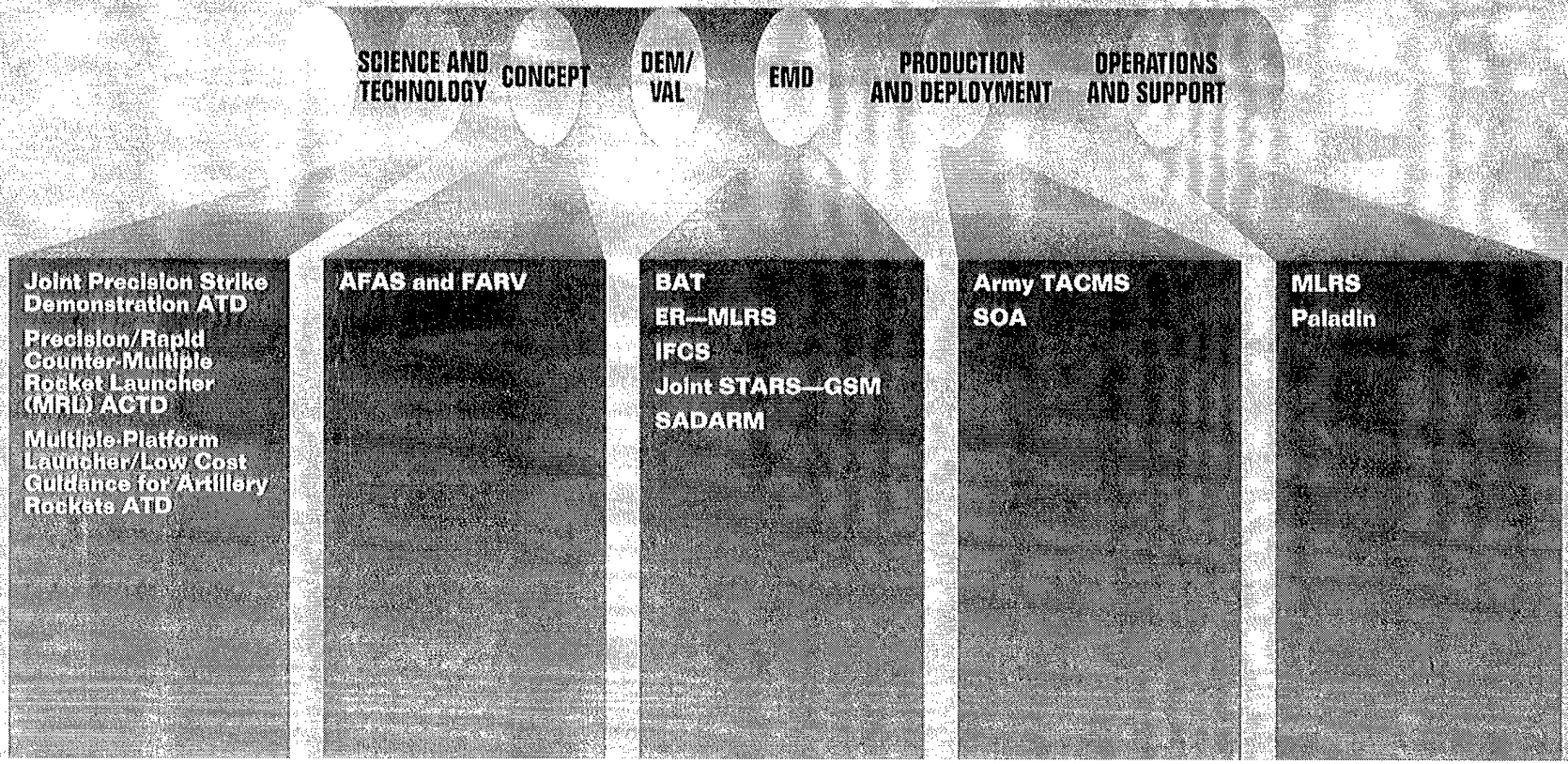
COMBINED ARMS COMMAND AND CONTROL (CAC^2) ATD: The Combined Arms Command and Control (CAC^2) Advanced Technology Demonstration (ATD) will develop an information architecture that will be used to interface to legacy and future communication systems and will demonstrate shared situation awareness with the battlefield combat identification system for brigade and below. The CAC^2 ATD will use Distributed Interactive Simulation (DIS) to validate the functional requirements resulting from the front end analysis. System performance will be used to evaluate the effectiveness of the new brigade information architecture and to recommend modifications. A CAC^2 advanced warfighting live demonstration at the Mounted Battlespace Battle Lab will be conducted using helicopters, tanks, fighting vehicles, and fire support equipment. CAC^2 addresses situational awareness via automated friendly/enemy situation reporting at each platform, horizontal integration of situation awareness, semi-automated target handover and integrated force synchronization decision aids to the company level.

DIGITAL BATTLEFIELD COMMUNICATIONS ATD: The Digital Battlefield Communications program will exploit emerging commercial communications technologies to supplement and in some cases, replace "legacy" military communication systems currently unable to keep pace with the rapidly increasing demand for communication bandwidth and global coverage in support of the Digitized Battlefield and split-based operations. It will evolve an integrated communications infrastructure utilizing commercial protocols and standards to achieve global interoperability. Commercial ATM technology will be integrated into tactical communications networks to provide "bandwidth on demand" to support multimedia information requirements of the warfighter. Commercial satellite PCS and direct Video Broadcast services will be evaluated in Warfighter demonstrations to determine tactical utility. A Radio Access Point (RAP) will be prototyped and tested to extend ATM services to forward tactical units. Modeling and simulation will be used to design and evaluate a high capacity on the move trunk radio capable of supporting 45-155 MBps trunks for ATM switching.

BATTLEFIELD DISTRIBUTED SIMULATION—DEVELOPMENTAL (BDS-D) ATD: The Battlefield Distributed Simulation Developmental (BDS-D) ATD is established to define and demonstrate an accredited, standard, system-design architecture required for achieving a real-time, warfighter-in-the-loop, wide area network virtual simulation capability for synchronously linking geographically separated simulators' sites in a combined arms, synthetic battlefield environment. The synthetic battlefield environment will be extensively used by the Army's Louisiana Maneuvers, Training and Doctrine Command (TRADOC) Battle Labs, Army laboratories, and research, development, and engineering centers for the early examination and testing of science and technology concepts, tactics/doctrine, procedures, system upgrades, and next generation/future systems. The deliverables are: (1) real-time combined arms battlefield; (2) functional, logical, and temporal interfacing of dissimilar simulators and simulations with different fidelity levels and from different manufacturers; (3) methods and computational approach for fully functional computer-generated forces of both friendly and opposing forces; and (4) addition of night, weather, obscurants, electromagnetic and infrared signatures and effects, dynamic, interactive terrain, and special effects technology. BDS-D technology will transition to the Army's two-pronged distributed interactive simulation strategy in support of acquisition and training, identified as the BDS-D Version 2 and beyond and Combined Arms Tactical Trainer (CATT) programs.

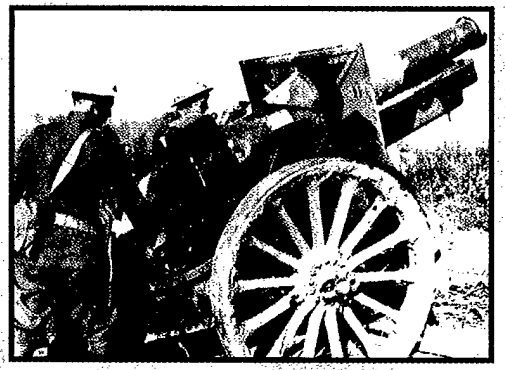


The army will locate, attack, and destroy the threat's capability to wage war well in advance of friendly lines. This requires precision deep attacks against threat maneuver formations and his logistical and command lines of communication while simultaneously denying him safe sanctuaries. Paramount to achieving this objective are: real-time, near-perfect intelligence, coupled with concentrated, coordinated strikes by weapons systems using smart and brilliant munitions.



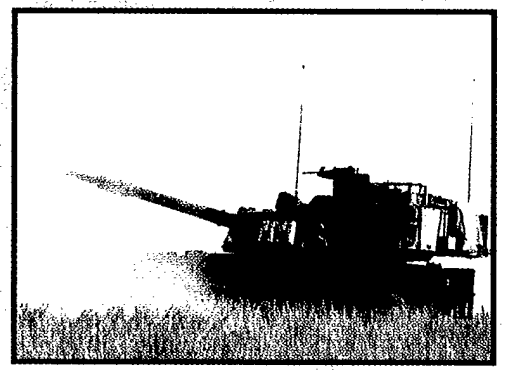
YESTERDAY: Advances in radio communications allowed World War II artillery to coordinate directly with maneuver elements. This increased the flexibility of fire support dramatically. Improved radio reliability also allowed light aircraft to be used to acquire targets and correct fire. Range of primary division gun (M101A1—105 mm): 11.2 km

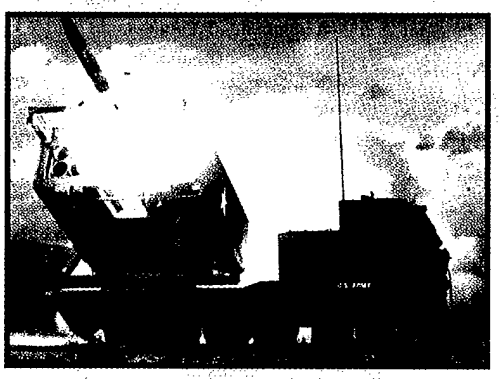
Maryland, 1941



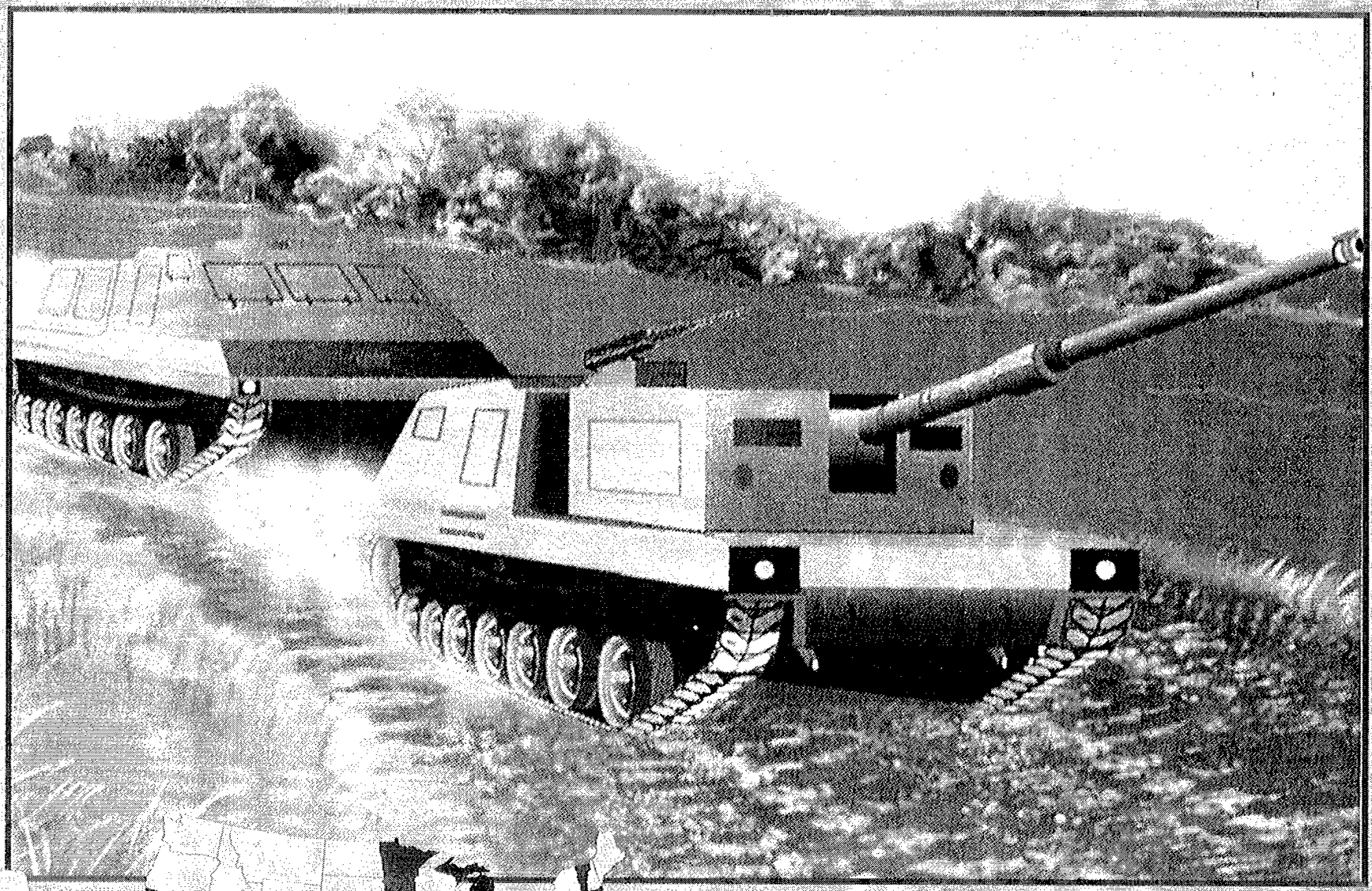
France, 1918

TODAY: Technological advances have allowed substantial improvements in range, types of munitions, and digital communications links. The GPS, now mounted on each Paladin allows greater flexibility and shorter response time. Furthermore, the Army has finished fielding the MLRS marking a successful return to the use of rockets and missiles for fire support. Range of primary division gun (Paladin—155 mm): 30 km





TOMORROW: New propellant technologies, like the Regenerative Liquid Propellant Gun (RLPG), will allow U.S. forces to engage the enemy at considerably longer ranges. Brilliant submunitions for both gun and missile systems will be fielded, allowing a single round to acquire and engage multiple targets. Digitization will further improve response time and help to avoid fratricide. Range of primary division gun (AFAS—155 mm RLPG): 40 – 50 km



Advanced Field Artillery System and Future Armored Resupply Vehicle

Conduct Precision Strikes

Dominate The Maneuver Battle

Advanced Field Artillery Systems and Future Armored Resupply Vehicle

MISSION: The Advanced Field Artillery System (AFAS) and the Future Armored Resupply Vehichle (FARV) will be the indirect fire support "system of systems", providing direct and general support fires to maneuver forces on the future battlefield.

CHARACTERISTICS: The AFAS is a 155 mm self-propelled howitzer system that will provide a significant increase in artillery survivability/lethality, mobility, and operational capability and effectiveness through use and integration of advanced technology in its subsystems and combat components. The AFAS will deliver unprecedented firepower capabilities at extended ranges. Some of the AFAS critical technologies and capabilities include a Regenerative Liquid Propellant Gun (RLPG), XM46 insensitive liquid propellant, autosettable multi-option fuze, automated ammunition-handling system, enhanced survivability, and improved mobility. The FARV is an armored resupply vehicle that will provide the foundation for resupply of ammunition and fuel for the AFAS. Inserting high-payoff technologies in robotics, automation, expert systems, vetronics, and improved ammunition propulsion into the resupply process, the FARV will provide the necessary ammunition to meet the expected firing rates; meet the goals for autonomous operations; and capitalize on cost and operational advantages of component commonality. FARV critical technologies and capabilities include a teleoperated docking arm, automated ammunition resupply system, automated fuel transfer system, and improved mobility. These systems, when fielded, will displace the M109A6 Paladin self-propelled howitzer and M992 field artillery ammunition supply vehicle in rapidly deployable and forward-deployed forces.

AFAS		*FARV*	
Range:	40+ km (assisted)	Automated rearm:	12 rd/min
Rate of fire:	10 – 12 rd/min	Automated refuel:	132 – 190 L/min
Multiple round,		Range:	450 km
simultaneous impact:	4 rd (1 AFAS)	Speed:	48 mph highway; 30 mph cross country
Ammo storage:	60 fuzed rd	Ammo storage:	130 – 200 fuzed rd
Crew:	3 (operable by 1)	Crew:	3

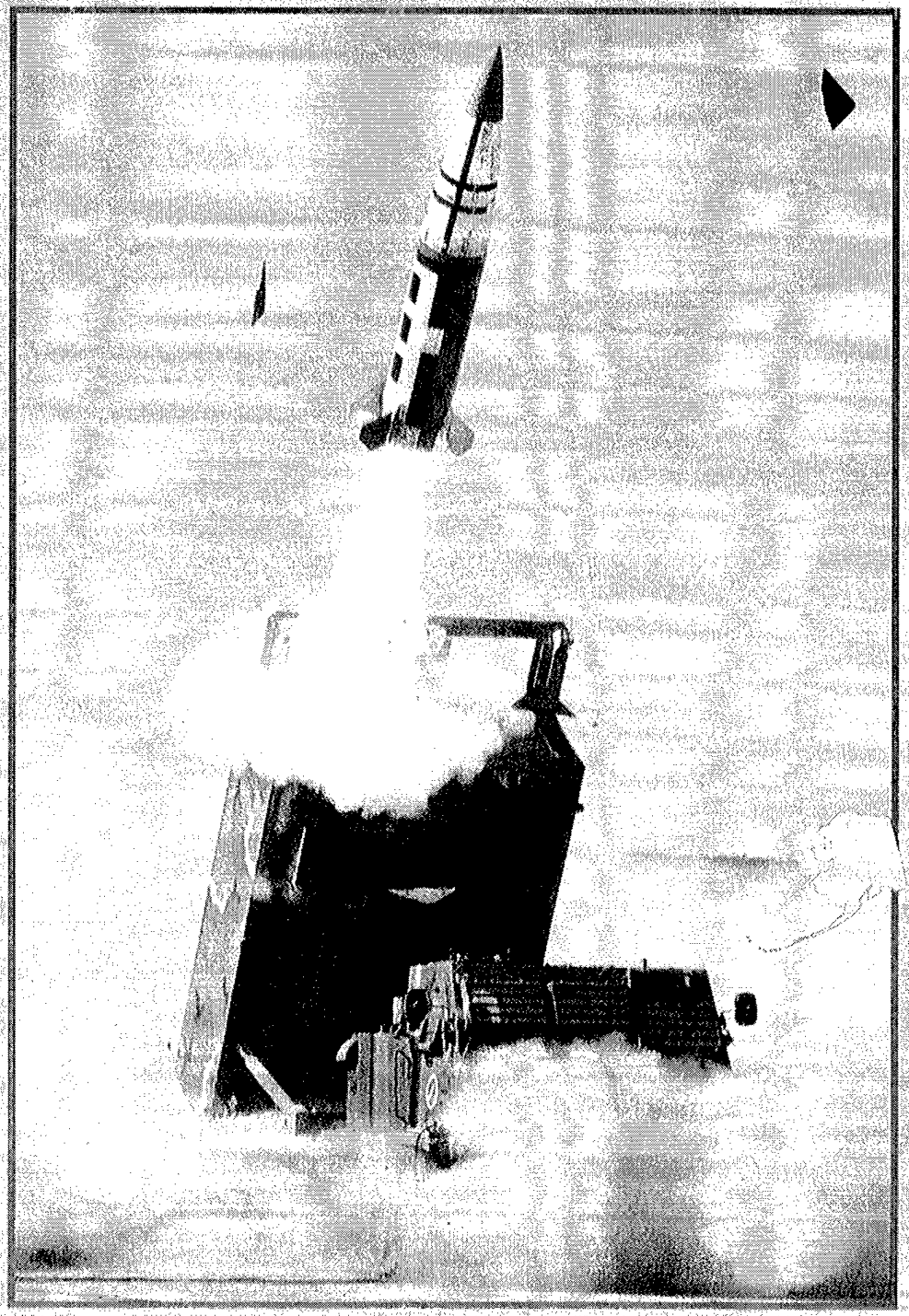
FOREIGN COUNTERPART: No known foreign counterpart.

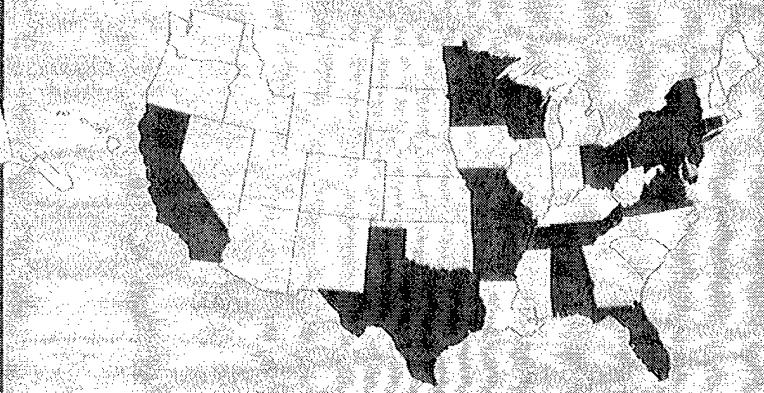
PROGRAM STATUS: In 1991, the Army selected Liquid Propellant (LP) as the propellant of choice for its 21st century artillery weapon system. In 1992, the Army successfully completed LP firings at Yuma Proving Grounds, Arizona; demonstrated fuze and projectile compatibility; demonstrated high output and quality LP manufacturing process; and successfully demonstrated the firing of a multi-option fuze for artillery. In 1993 and 1994, the Army fabricated and assembled a RLPG weapons hardstand which demonstrated 12 rounds per minute automated ammunition handling, azimuth and elevation slew rates, pointing accuracy and integrated technical and tactical fire control; fabricated and assembled an Automotive Test Rig with a LV100, 1500 horsepower engine, electric drive and self-cleaning air filter; fabricated and assembled a four-man reconfigurable crew module which demonstrated man machine interface, full audio, video and data collection capabilities; successfully pumped LP at greater than rates (60+ gallons/minute); and demonstrated ammunition transfer rates of 12 rounds per minute. Currently, both systems are in the Concept Exploration and Definition phase of development and are scheduled for a Milestone I Defense Acquisition Board review 1QFY95.

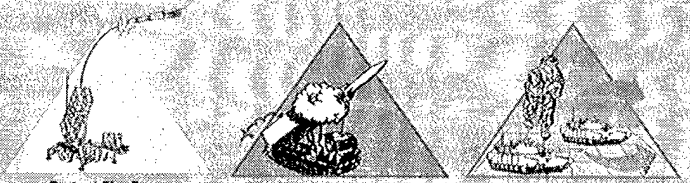
PROJECTED ACTIVITIES: DEM/VAL contract award scheduled for June 1995.

PRIME CONTRACTOR: United Defense, (Minneapolis, MN)

* See appendix for list of subcontractors.







Protect The Force

Conduct Precision Strikes

Dominate The Maneuver Battle

Army Tactical Missile System (Army TACMS)

MISSION: The Army TACMS Blocks I and IA provide long-range, surface-to-surface fire support.

CHARACTERISTICS: The Army TACMS Blocks 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 Army TACMS is used to attack tactical surface-to-surface missile sites, air defense systems, logistics elements, and command, control, and communications complexes. Army TACMS missiles are fired from the Multiple Launch Rocket System (MLRS) modified M270 launcher and are capable of engaging targets at ranges well beyond the capability of existing cannons and rockets.

The Army TACMS Block IA, with enhanced Global Positioning System (GPS) accuracy, will have approximately twice the range of the Army TACMS. The Army TACMS includes Guided Missile and Launching Assembly: M39; Trainer, Launch Pad Container: M68; Training Set, Guided Missile System: M165; Trainer, Test Device, Guided Missile: M78; Modified M270 Launcher; and the Army TACMS Missile Facilities.

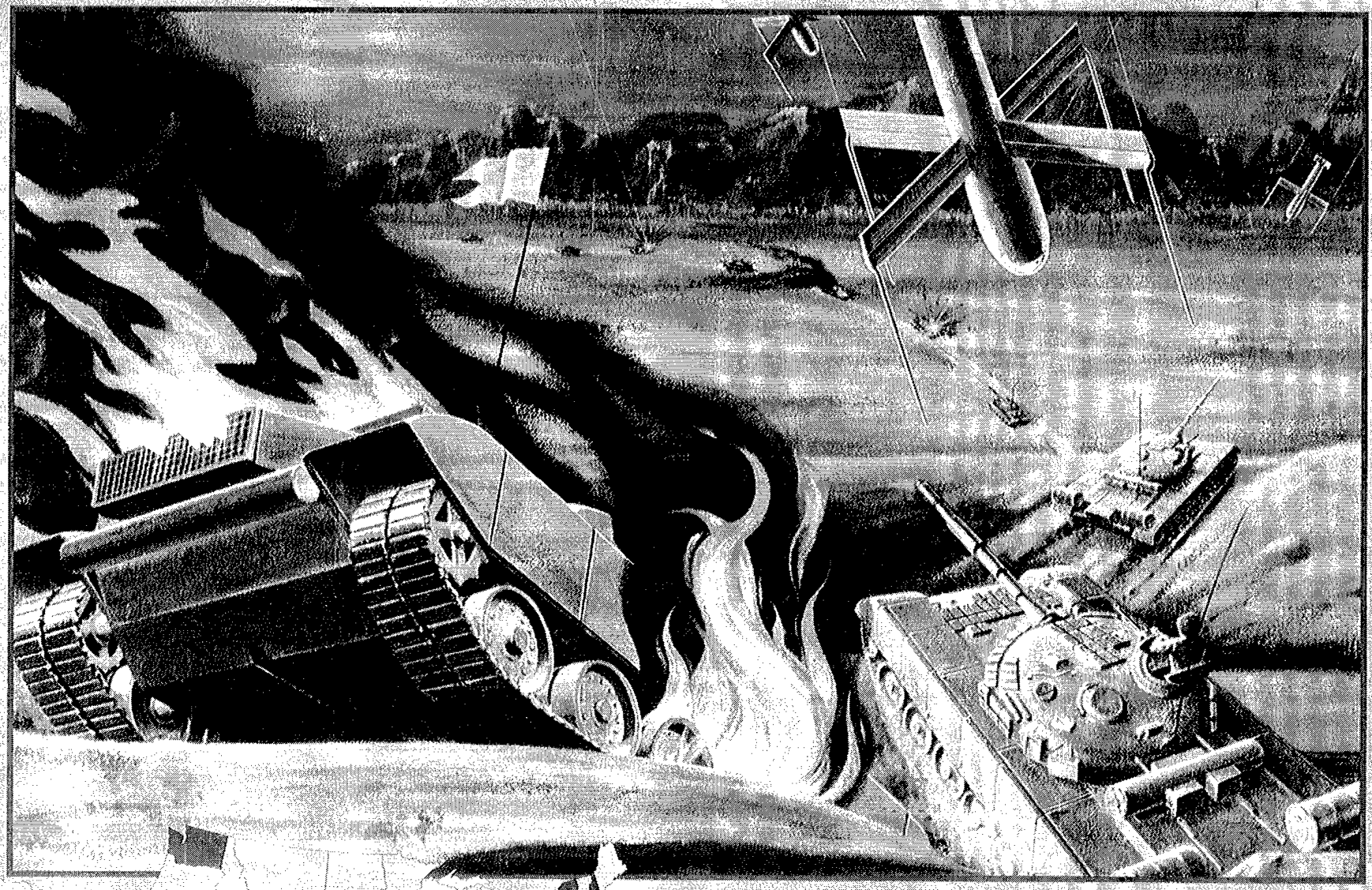
FOREIGN COUNTERPART: Russia: SCUD variants; SS-21
Israel: Jericho

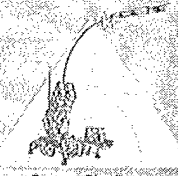
PROGRAM STATUS: In December 1993, a contract was awarded for 255 missiles, Full-Rate Production (FRP) IV. Army TACMS is currently in its fourth year of FRP. The current Procurement Objective for Blocks I and IA is 1,647 missiles. Army TACMS is the first weapon system to be fielded in the modernization program for a "system of systems" deep fires suite, and it saw combat action in Southwest Asia during Desert Storm. The modifications to be cut into production for the Army TACMS Block IA will be fully developed during the Engineering and Manufacturing Development (EMD) phase, which began in FY94.

PROJECTED ACTIVITIES: Block I continues in FRP in FY95 and Block IA continues in EMD in FY95.

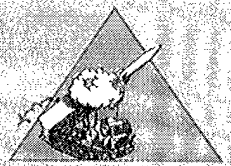
PRIME CONTRACTOR: Loral (Dallas, TX; Horizon City, TX; Camden, AR)

* See appendix for list of subcontractors.

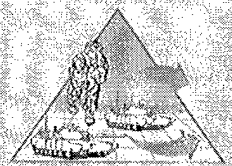




Protect The Force



Conduct Precision Strikes



Dominate The Maneuver Battle

Brilliant Anti-Armor Submunition (BAT)

MISSION: The BAT will provide an autonomous anti-armor capability for the Army TACMS missile.

CHARACTERISTICS: The BAT is a self-guided submunition that uses acoustic and infrared sensors to autonomously locate, attack, and destroy moving tanks and other armored vehicles. These sensors provide the autonomous capability that makes this submunition "brilliant." BAT submunitions can be carried deep into enemy territory by a delivery vehicle, then dispersed over a target to selectively attack and destroy it.

Length:	36 in
Diameter:	5.5 in
Weight:	44 lb
Seekers:	Acoustic and infrared
Payload:	Tandem-shaped warhead
Guidance:	Autonomous
Delivery vehicles:	Army Tactical Missile System (Army TACMS)—Block II

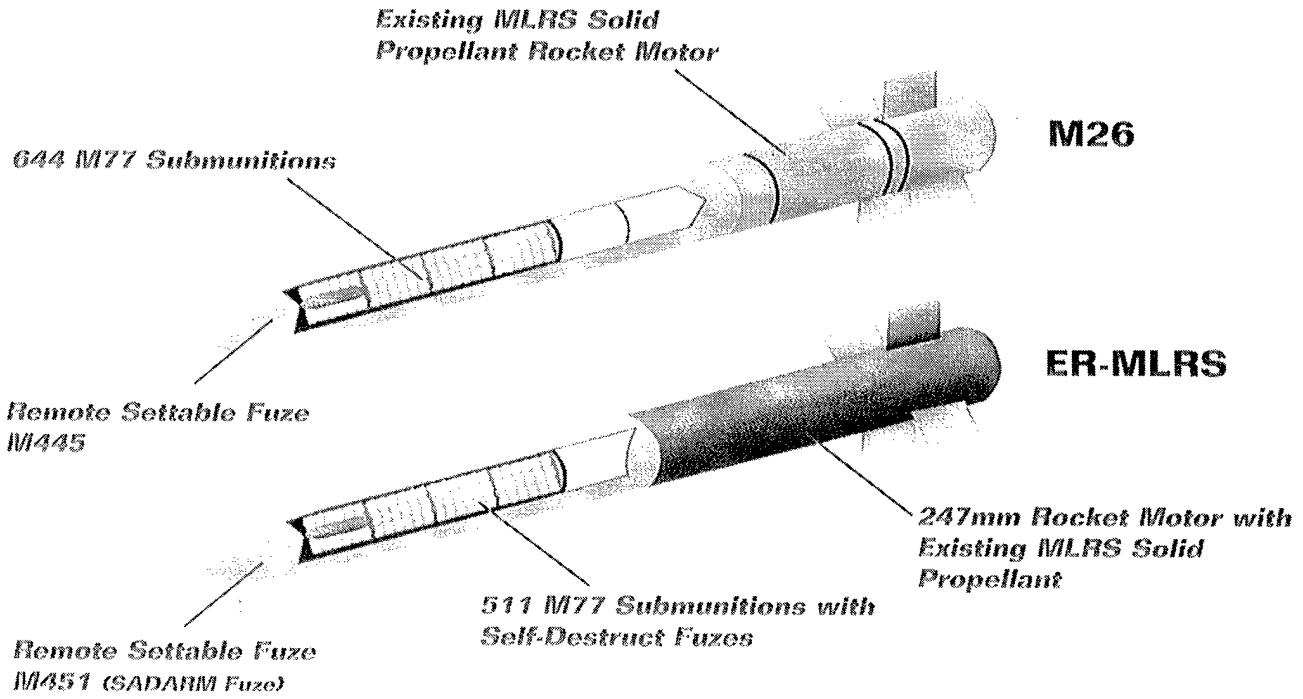
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The BAT is in the Engineering and Manufacturing Development (EMD) phase. The BAT system was approved by the Defense Acquisition Executive for entry into EMD on 5 June 1991. The program was initiated in 1985 and has matured under extensive development and testing. (These efforts have successfully demonstrated the system's capability to autonomously acquire, track, and impact moving armor targets with the necessary accuracy and lethality.) As a result of the decision to terminate the Army's participation in the Tri-Service Standoff Attack Missile (TSSAM) program, the BAT program has been restructured with Army TACMS—Block II as the carrier.

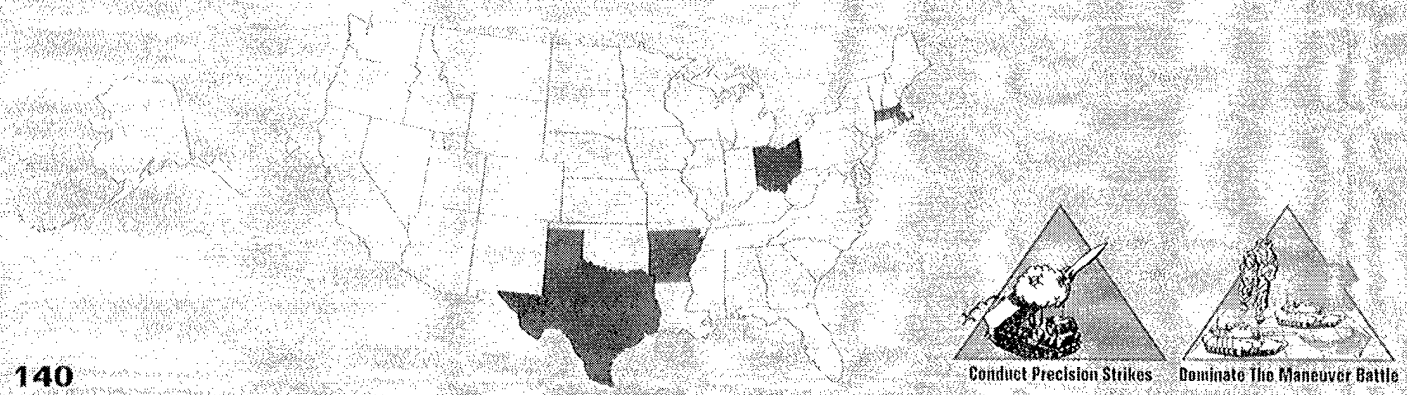
PROJECTED ACTIVITIES: Continue EMD program.
Conduct carrier integration activities and other studies.
Conduct test range and target operations, maintenance, and improvements.

PRIME CONTRACTOR: Northrop-Grumman (Hawthorne, CA; Perry, GA)

* See appendix for list of subcontractors.



Extended Range Rocket versus Basic System Rocket



MISSION: The ER-MLRS will provide longer range rockets, with lower submunition dud rates, for the MLRS.

CHARACTERISTICS: The ER-MLRS is a free-flight, area-fire, artillery rocket designed to complement the capabilities of the MLRS. Its mission is to engage targets beyond the range of the existing MLRS up to 50 km. The development program includes the addition of a low-level wind measuring device on the M270 launcher to sustain accuracy and effectiveness at longer ranges, and the incorporation of a self-destruct fuze on the submunitions to increase safety for friendly maneuver forces.

Warhead: Dual-Purpose Improved Conventional Munitions (DPICM)
Propulsion: Solid

FOREIGN COUNTERPART: Several foreign multiple launch rocket systems have a range of 50 km or greater.

PROGRAM STATUS: Following 11 successful firings during an Independent Research and Development program and a Milestone II review, the program entered the Engineering and Manufacturing Development phase in November 1992. The successful hardware Preliminary Design Review held in June 1993 resulted in a decision that the design was mature enough to support 12 actual early flights of production-like variants in May – July 1994. The ballistic algorithm flight test program began in August 1994 and is on schedule with no technical difficulties.

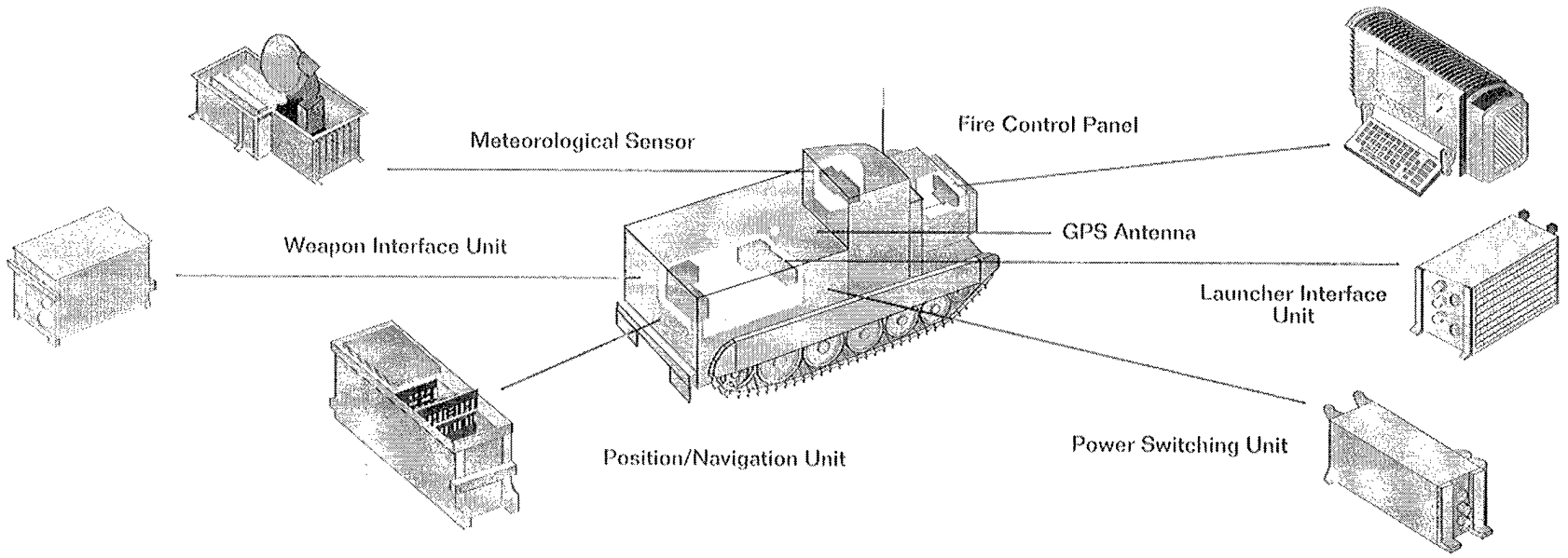
PROJECTED ACTIVITIES: Flight testing will continue throughout FY95.

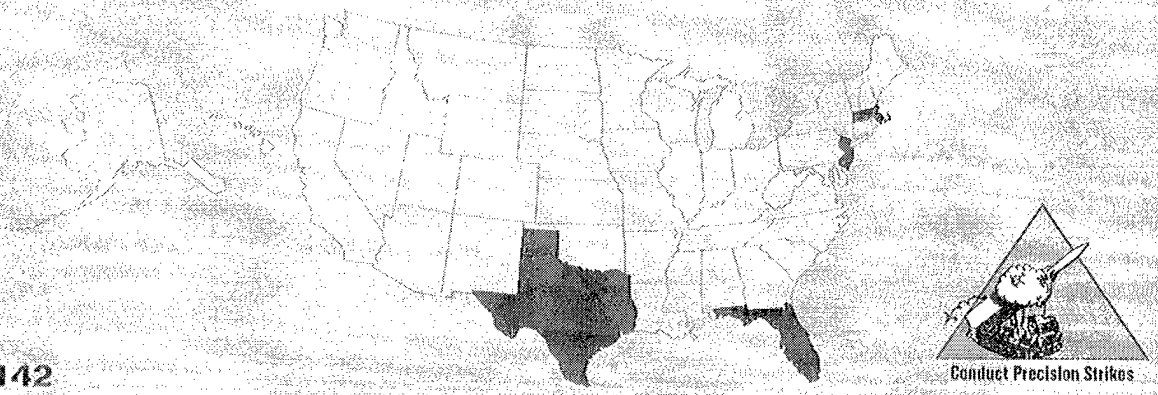
PRIME CONTRACTOR: Loral (Dallas, TX; Camden, AR)

* See appendix for list of subcontractors.

Extended Range—Multiple Launch Rocket System (ER-MLRS)

IFCS LAUNCHER





MISSION: The IFCS will correct present and future supportability problems resulting from electronic component obsolescence in the existing design.

CHARACTERISTICS: The IFCS is a modern distributed system comprising multiple processors that are capable of performing separate and distinct functions although coupled through a system architecture designed to provide total system functionality. IFCS hardware consists of seven new Line Replaceable Units (LRUs): Fire Control Panel, Power Switching Unit, Launcher Interface Unit, Weapon Interface Unit, Position/Navigation Unit, Meteorological Sensor Electronics Unit, and the Meteorological Sensor Transceiver. IFCS software is being developed with Ada code.

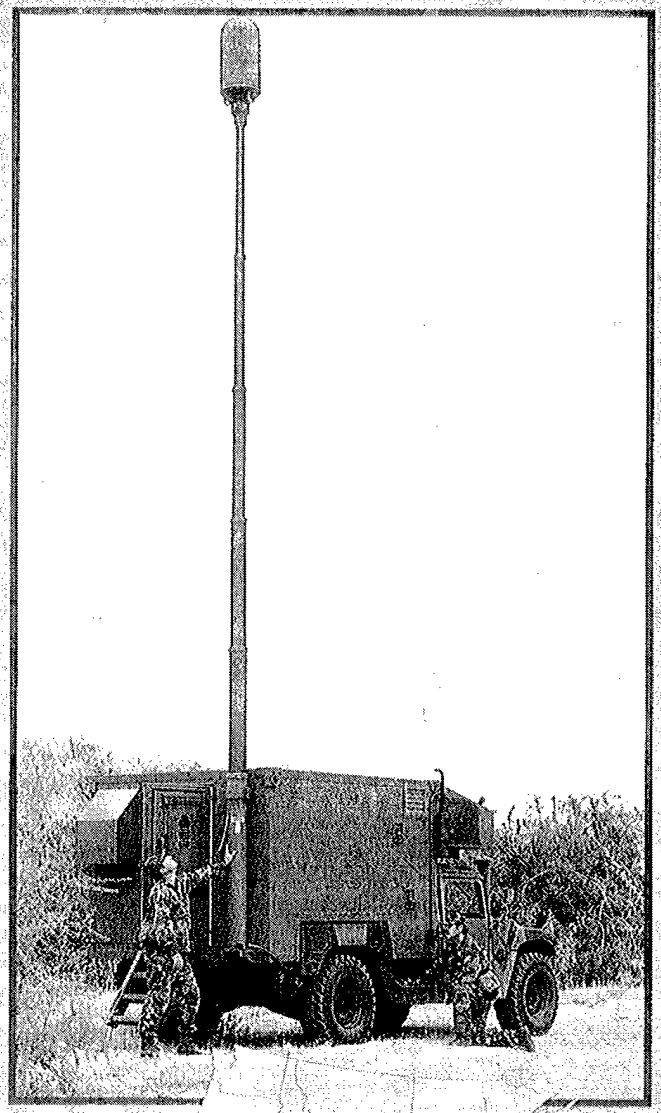
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The IFCS is an ACAT III program with a 60-month EMD phase ending in FY97. Field retrofits begin in FY00.

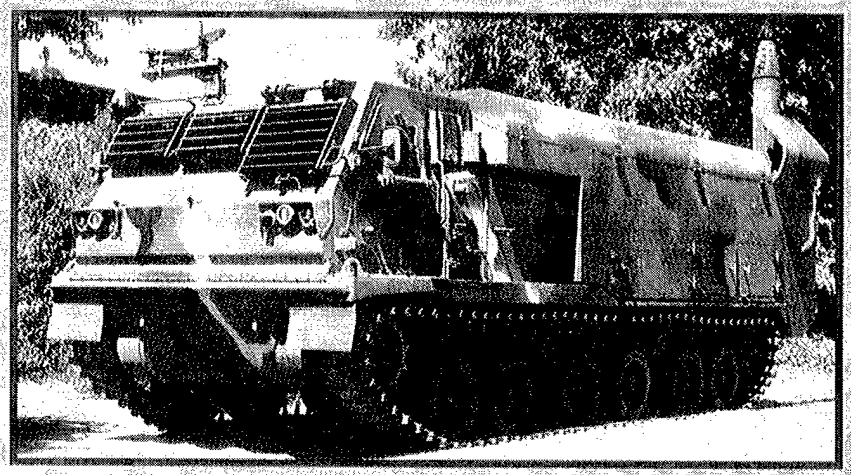
PROJECTED ACTIVITIES: Software Critical Design Review (May 1995).

PRIME CONTRACTOR: Loral (Dallas, TX)

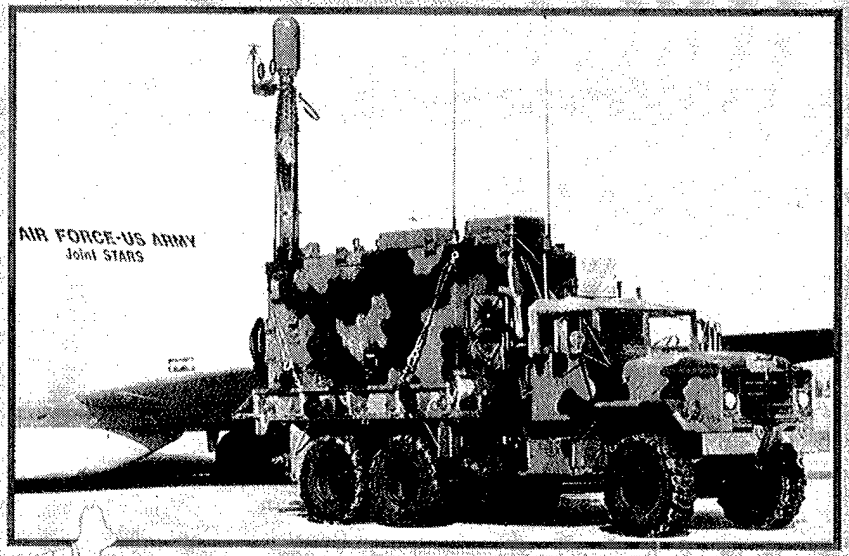
* See appendix for list of subcontractors.



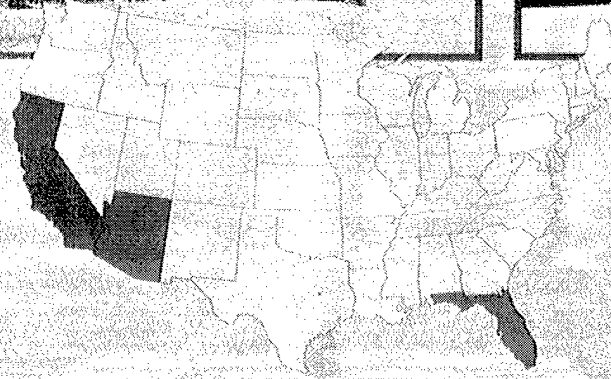
Joint STARS GSM, Light



Joint STARS GSM, Heavy



Joint STARS GSM, Medium



Joint Surveillance Target Attack Radar System Ground Station Module

MISSION: The Joint Surveillance Target Attack Radar System (Joint STARS) Ground Station Module (GSM) provides long-range radar surveillance and targeting data to tactical headquarters.

CHARACTERISTICS: The Joint STARS is a joint Air Force/Army program. The airborne platform is a USAF E-8 (a militarized Boeing 707) with Joint STARS radar (capable of wide area surveillance and synthetic aperture modes), 18 operation and control consoles, a surveillance and control data link, and secure communications. Orbiting a safe distance from the Forward Line of Own Troops (FLOT), Joint STARS radar scans a wide area of the battlefield at long ranges. The radar data are received by Air Force and Army operators aboard the aircraft and then downlinked to multiple GSMs. The information provides tactical air and ground commanders with near-real-time wide area surveillance and deep targeting data. The Joint STARS system can detect, locate, track, classify, and assist in attacking both fixed and moving targets during daylight and darkness in nearly all weather conditions beyond the FLOT. In addition to Joint STARS radar data, the GSM is now capable of receiving and displaying Unmanned Aerial Vehicle (UAV) imagery as well as signals intelligence data via an integrated Commanders Tactical Terminal.

The GSM is a mobile, tactical, multisensor ground station that receives, displays, processes, and disseminates targeting information. The GSM is being developed using a block approach. The Block I GSM will be produced in two variants: a medium version mounted on a 5-ton truck and a light version mounted on a HMMWV. The Block II GSM will be the Common Ground Station (CGS), which also will be produced in two versions: a light version on a HMMWV and a heavy version mounted on the Command and Control Vehicle (C2V), a Bradley variant. The CGS will be a key node on the digitized battlefield, receiving multiple national, theater, and tactical sensor inputs.

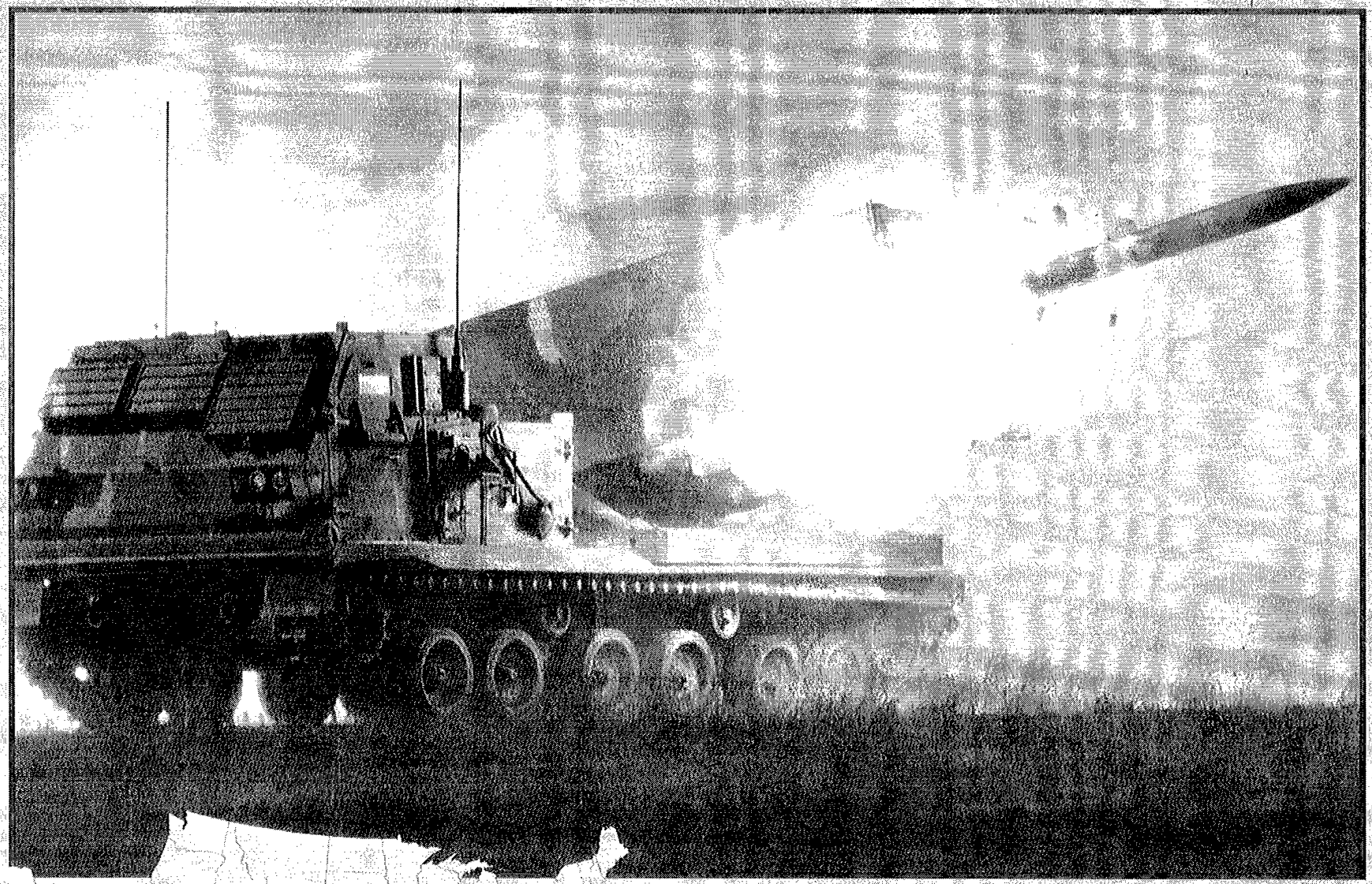
FOREIGN COUNTERPART: Britain: Astor France: Horizon Italy: Creso

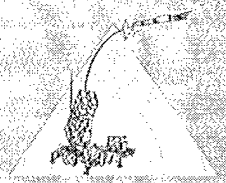
PROGRAM STATUS: The Joint STARS GSM is in the Engineering and Manufacturing Development phase. Five Interim GSMs (IGSM) have been fielded to contingency forces. A successful Defense Acquisition Board was held on 23 July 1993 that resulted in the approval of a Low-Rate Initial Production of 12 medium GSMs and also accelerated the CGS program by four years. The Light GSM successfully completed preliminary operational testing in 4QFY94.

PROJECTED ACTIVITIES: An Army decision to enter Low Rate Initial Production (LRIP) for the Light GSM is scheduled for March 1995. A Multiservice Operational Test for the Air Force and the Army is scheduled for June 1995.

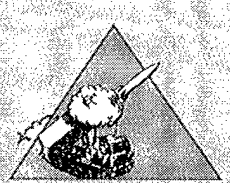
PRIME CONTRACTOR: Motorola (Scottsdale, AZ)—GSM
Northrop-Grumman (Melbourne, FL)—Aircraft
CUBIC Defense Systems (San Diego, CA)—Datalink

* See appendix for list of subcontractors.

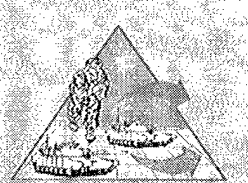




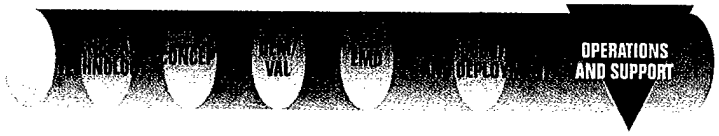
Protect The Force



Conduct Precision Strikes



Dominate The Maneuver Battle



MISSION: The MLRS provides counterbattery fire and suppression of enemy air defenses, light materiel, and personnel targets.

CHARACTERISTICS: The MLRS is a free-flight, area-fire, artillery rocket 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. A growth program is under way to add the extended range rocket (ER-MLRS) to improve counterbattery fires at greater distances. The MLRS M270 launcher has been updated to accommodate launching the MLRS Family of Munitions (MFOM), including the Army Tactical Missile System (Army TACMS).

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: Similar multiple launch rocket systems exist that have a broad range of capabilities, some of which are similar to MLRS.

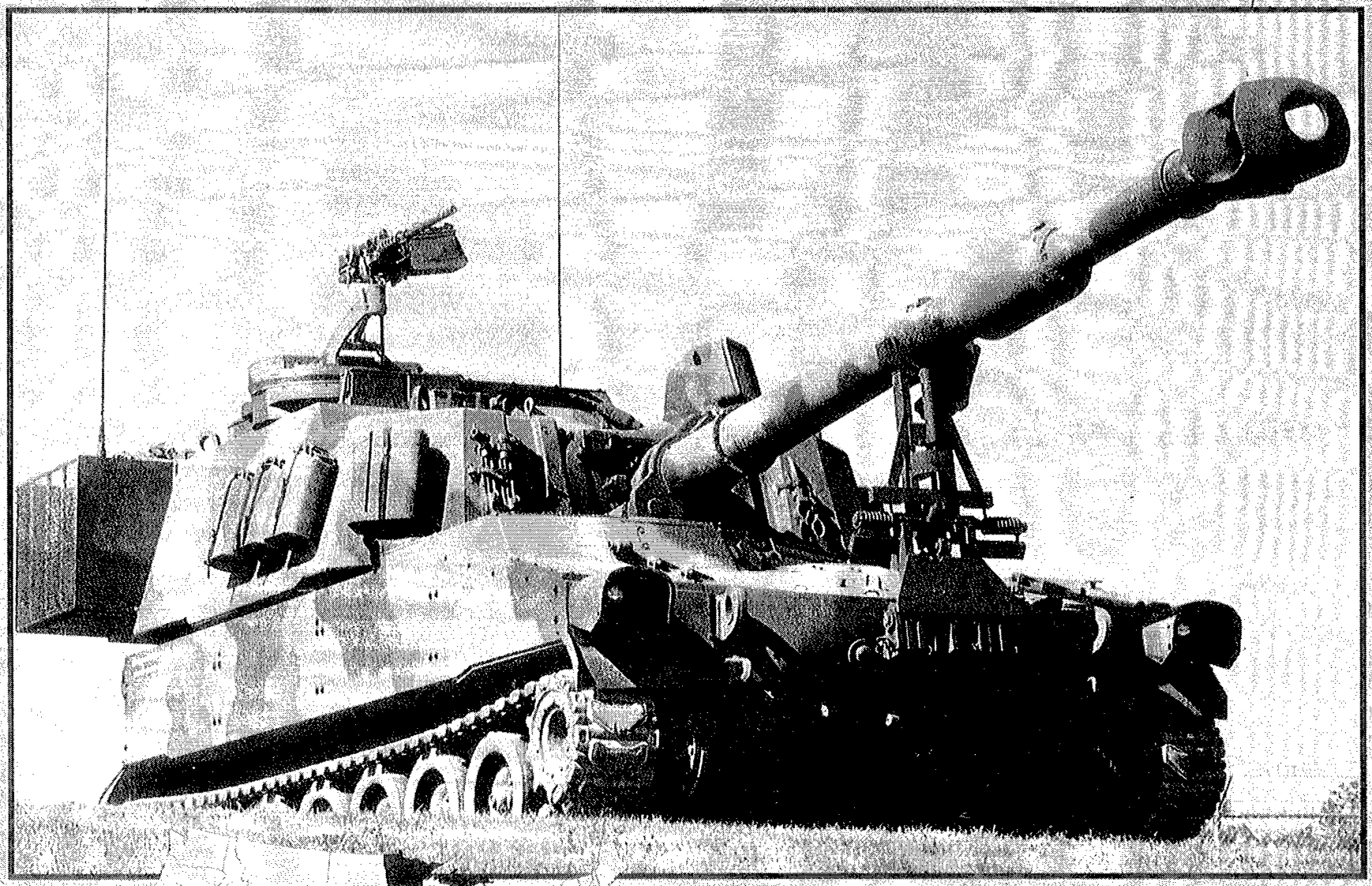
PROGRAM STATUS: The second multiyear procurement contract for FY89 – 93 was awarded in July 1989 for MLRS. In 1994 an annual procurement contract for 34 launchers was awarded. The U.S. initial operational capability for MLRS was achieved in 1983. Starting in FY89, MLRS has been co-produced by the United States, United Kingdom, Germany, France, and Italy. As of September 1994, a total of 744 launchers have been delivered, 656 to the active Army and 88 to the National Guard, foreign military sales, and other. Current plans for improvement to the system include the Improved Fire Control System (IFCS), the Improved Mechanical Launch System (IMLS), and the extended range rocket (ER-MLRS). The IFCS will mitigate electronic obsolescence currently existing in the fire control system and will accommodate the needs of the MFOM weapon systems under development and provide growth for future weapon systems. The IMLS will provide rapid responses to time critical targets by reducing time to aim by 70% and by reducing reload times by 50%. The ER-MLRS will extend the current range of the basic rocket from 31.8 km to a new range of approximately 50 km. The IFCS, the IMLS, and the ER-MLRS are in the Engineering and Manufacturing Development Phase.

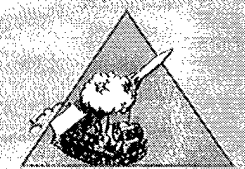
PROJECTED ACTIVITIES: Acquisition of launchers and rockets will continue in FY95.
Two Research & Development (R&D) contracts will continue and one R&D contract will begin in FY95.

PRIME CONTRACTOR: Loral (Dallas, TX; Camden, AR)

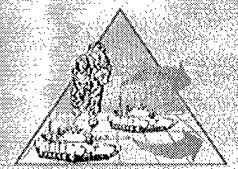
* See appendix for list of subcontractors.

MISSION: The Paladin provides the primary indirect fire support to heavy divisions and armored cavalry regiments.





Conduct Precision Strikes



Dominate The Maneuver Battle

CHARACTERISTICS: Like the earlier M109 models, the Paladin (M109A6) is a fully tracked, armored vehicle with a 155 mm howitzer. The Paladin includes an on-board ballistic computer and navigation system, secure radio communications, an improved cannon and gun mount, automatic gun positioning, automotive improvements, improved ballistic and nuclear-biological-chemical protection, driver's night vision capability, and built-in test equipment. The Paladin has improved responsiveness, survivability, lethality, and reliability compared to the earlier M109s.

Range:	30 km (with rocket-assisted projectile) 24 km (with unassisted projectile)
Rate of fire	
Maximum:	4 rd/min for 3 min
Sustained:	1 rd/min
Main armament:	M284 155 mm cannon
Secondary armament:	.50 caliber machine gun
Weight:	32 ton (combat loaded)

FOREIGN COUNTERPART:

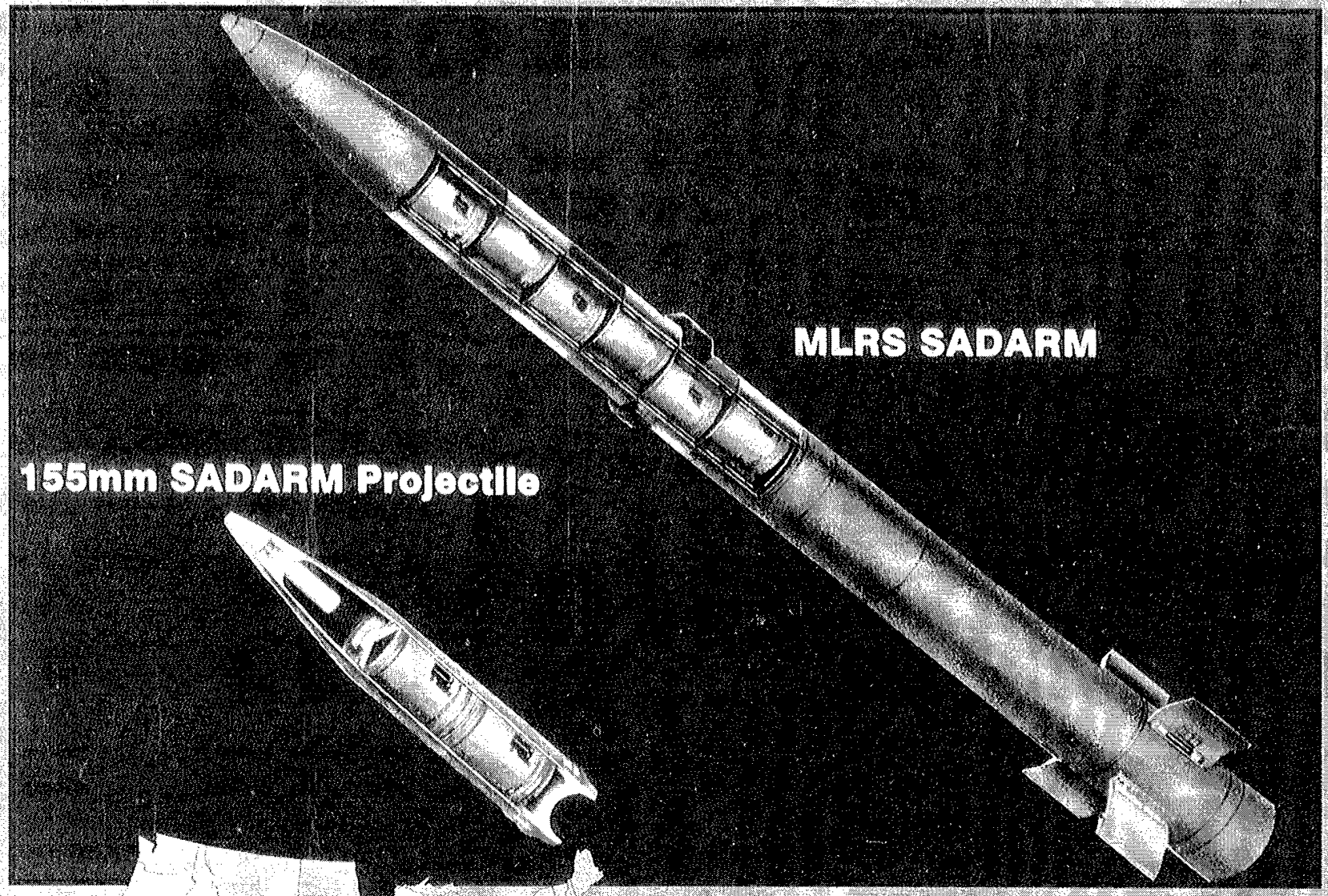
United Kingdom:	AS90
France:	155 GCT
Germany:	PzH 2000
Israel:	Slammer

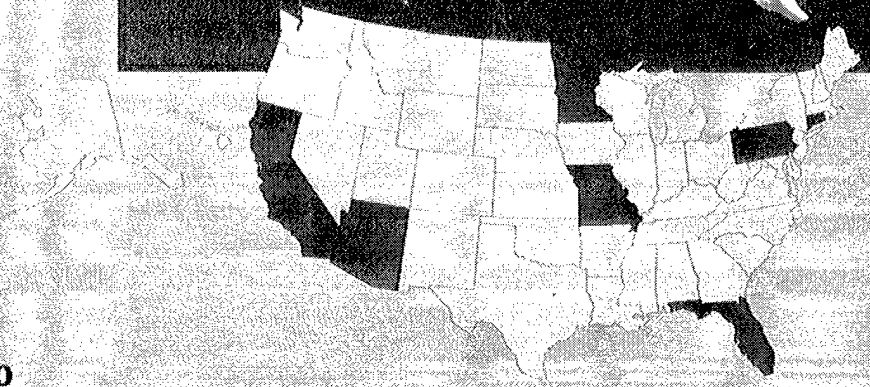
PROGRAM STATUS: Low-rate production began in September 1991 and achieved a First Unit Equipped in June 1993. A full-rate production contract was awarded in April 1993. The Army will acquire 824 Paladins as a product improvement of the current M109A2/A3 howitzer. The balance of the M109 howitzer fleet will receive the M109A5 upgrade, which includes some automotive and crew nuclear-biological-chemical protection improvements and Paladin's M284 cannon.

PROJECTED ACTIVITIES: Production will continue during 1995.

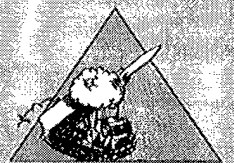
PRIME CONTRACTOR: United Defense (Chambersburg, PA; York, PA)

* See appendix for list of subcontractors.

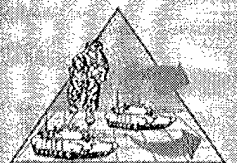




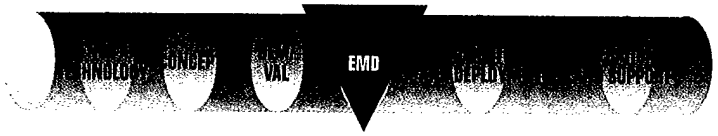
Protect The Force



Conduct Precision Strikes



Dominate The Maneuver Battle



MISSION: SADARM will provide an autonomous, counterbattery capability to indirect fire units.

CHARACTERISTICS: SADARM is a comparatively low-cost, fire-and-forget, sensor-fuzed submunition designed to detect and destroy lightly armored vehicles, primarily self-propelled artillery. SADARM is delivered to the target area by 155 mm artillery projectiles or by the Multiple Launch Rocket System (MLRS). Once dispensed from its carrier, the submunition detects targets using dual-mode millimeter wave and infrared sensors and fires an explosively formed penetrator through the top of the target.

	155 mm	*MLRS*
Caliber:	5.8 in	6.9 in
Weight:	25.8 lb	28.3 lb
Range:	22.5 km*	30 km**
Number of submunitions:	2/rd	6/rocket

* From M109A6 howitzer
** From M270 MLRS launcher

FOREIGN COUNTERPART: No known foreign counterpart.

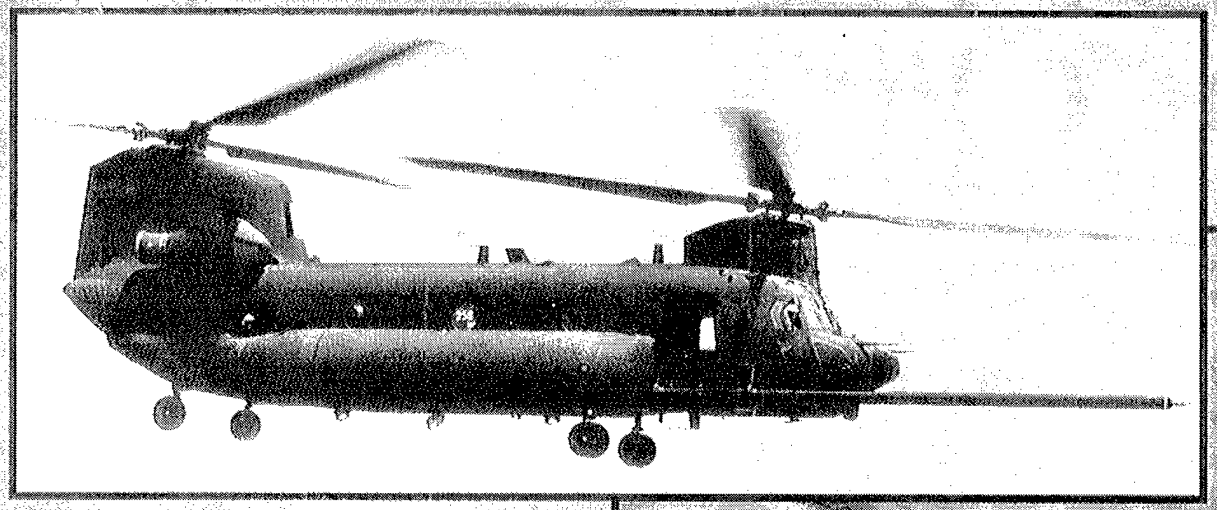
PROGRAM STATUS: SADARM entered the Engineering and Manufacturing Development phase in March 1988 and is scheduled for a low-rate production decision in January 1995. SADARM is scheduled to be fielded in FY99.

PROJECTED ACTIVITIES: LRIP will begin in 1995.

PRIME CONTRACTOR: Aerojet (Azusa,CA)

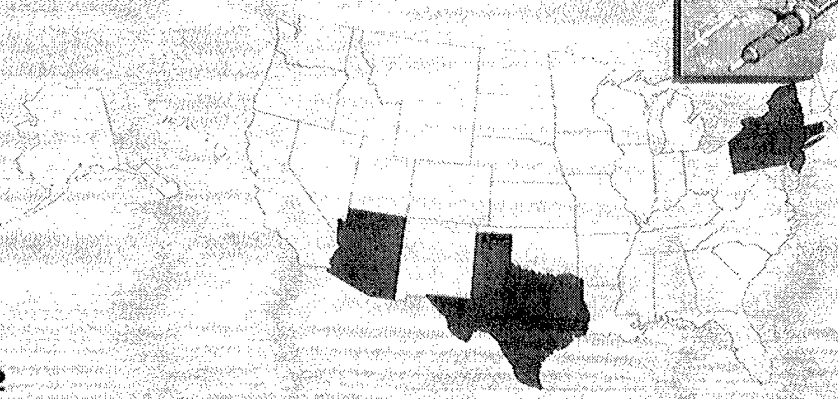
* See appendix for list of subcontractors.

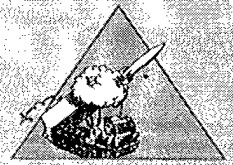
MISSION: The SOA provide a means for the rapid movement of special operations forces and equipment for a multitude of Special Operations Forces (SOF) missions.



MH-47E

MH-60K





Conduct Precision Strikes

CHARACTERISTICS: The SOA are modified Black Hawk (UH-60L) and medium-lift Chinook (CH-47D) helicopters that will provide the U.S. Special Operations Command with the capability for low-level, night, adverse weather, extended range, and precision navigation through unfamiliar mountainous terrain. Both the utility and medium-lift version (designated MH-60K and MH-47E, respectively) will be provisioned with extended range fuel systems, including an aerial refueling capability, upgraded engines, and worldwide communications equipment. Additional improvements include a totally integrated cockpit, improved terrain following/terrain avoidance radar, and forward-looking infrared imaging capability. SOA missions cover rapid deployment, strategic intelligence strikes, and other operational missions supported by the SOF.

	MH-60K	*MH-47E*
Mission weight:	24,500 lb	54,000 lb
Cruise speed:	145 kt	147 kt
Endurance*:	7.6 hr	9.8 hr
Max self-deployment range*:	755 nm	1,260 nm
Crew:	4	5
Payload:	12 troops	44 troops
Armament:	2 – 7.62 mm (M134) machine guns	2 – 7.62 mm (M134) machine guns

* Unrefueled with 30-minute reserve; however, also has air-to-air refuel capability

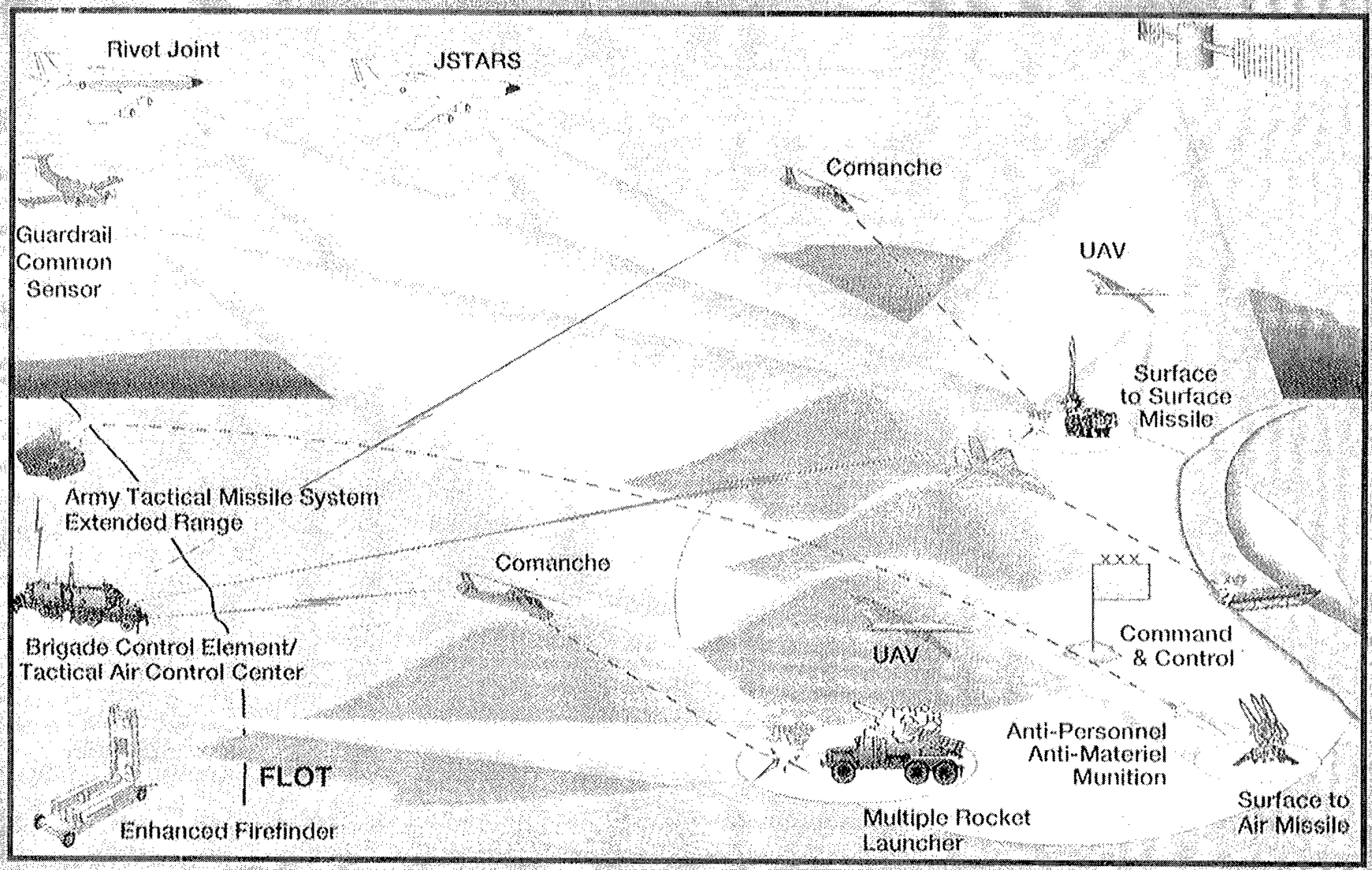
FOREIGN COUNTERPART: At this time, there are no foreign helicopters equivalent to the MH-60K or MH-47E or performing similar missions. A number of foreign helicopters could be modified for SOA-type missions.

PROGRAM STATUS: The MH-60K and MH-47E have entered initial production, verification testing, and training. The SOA program will provide 23 MH-60K and 26 MH-47E aircraft.

PROJECTED ACTIVITIES: Conditional Material Release is scheduled for 2QFY95.
Full Materiel Release of these aircraft is scheduled during 2QFY96.

PRIME CONTRACTOR: Boeing (Philadelphia, PA)—MH-47E
Sikorsky Aircraft (Stratford, CT)—MH-60K

* See appendix for list of subcontractors.



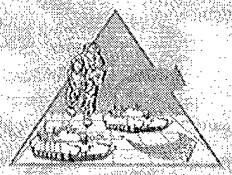
Joint Precision Strike Demonstration

OVERVIEW: The goal of the Army Science and Technology program in Conduct Precision Strikes focuses on producing advanced technologies to improve accuracy, range, mobility, targeting, radar deception, survivability, and lethality while decreasing training and logistics burdens. The Army, both independently and in a joint warfighting environment, must be able to conduct integrated, adverse weather, day/night, end-to-end, sensor-to-shooter precision fires against highly agile enemy forces in minutes. Integrated surveillance, target acquisition, and processing with precision weapons are essential for rapid response execution against high-value, short-dwell targets over extended ranges.

JOINT PRECISION STRIKE DEMONSTRATION (JPSD): The objective of the Army's Joint Precision Strike Demonstration (JPSD) is to develop and demonstrate an adverse weather, day/night, end-to-end, sensor-to-shooter precision strike capability against high-value, short-dwell targets at extended range within tactically meaningful time lines (minutes, not hours or days). An evolutionary approach is being used to achieve this advanced capability through a series of demonstrations that started in 1992 and will continue through the year 2000. These demonstrations build on the Army's current precision strike capabilities, such as the Army Tactical Missile System (Army TACMS). The JPSD demonstrations address deficiencies in wide-area surveillance, target acquisition, strike planning, weapon systems delivery, and battle damage assessment through a combination of advanced technologies and improved tactics, techniques and procedures. In FY95 and FY96 a Precision/Rapid Counter-MRL Advanced Concept Technology Demonstration (ACTD) will provide the CINC U.S. Forces Korea a capability to defeat the North Korean 240 mm MRL threat. In the 1997-2000 timeframe joint and combined demonstrations are planned, as well as a low intensity conflict demonstration.

Precision/Rapid Counter—Multiple Rocket Launcher (MRL) ACTD: A key element of the JPSD program is the FY95 and FY96 Precision/Rapid Counter Multiple Rocket Launcher (MRL) ACTD. The growing 240 mm MRL threat in North Korea, combined with the urging by the CINC, served as a catalyst for the Army to formulate plans jointly with the CINC, U.S. Forces Korea (USFK) and the Commanding General, 2nd Infantry Division (2ID), for this demonstration to be initiated in FY95. This effort will demonstrate a capability to neutralize the 240 mm MRLs that pose political and strategic threats to the theater. The ACTD will analyze promising new concepts and technologies through simulation and live demonstration that could provide significant enhancements to the USFK precision strike capability. Fire support and intelligence operations will be horizontally integrated and automated to speed the sensor-to-shooter information flow and the Decide, Detect, Deliver process. A number of new capabilities will be left behind: an integrated and automated tactical operations center; enhanced communications connectivity between the theater KCOIC and the 2ID; 2nd Generation FLIR payloads for the Hunter UAV platoon; a delay and disrupt munition deliverable by MLRS rockets. In addition to these materiel improvements, improved tactics, techniques and procedures will be developed to better utilize existing and new capabilities. The JPSD Integration and Evaluation Center is a key element of this ACTD in that it will integrate the live and simulated elements of the demonstration, and will be able to record data and do "what-if" analyses and support USFK exercises.

MultipLe-Platform Launcher/Low Cost Guidance for Artillery Rockets ATD: The Multiple-Platform Launcher (MPL)/Low Cost Guidance for Artillery Rockets ATD will provide the early entry commander the capability for protection from a threat of superior numbers. The MPL program will investigate the integration of a lightweight launcher system, capable of firing the full family of MLRS munitions into the Rapid Force Projection Initiative. To support these activities, two approaches have been chosen: improving the accuracy of the MLRS free-flight rocket, identification and mitigation of risks associated with a lightweight launcher. The development of a low-cost guidance package will provide the MLRS rocket this critical enhancement.



Advanced weapon systems and technology will continue to proliferate around the world. To ensure swift, decisive victory, with minimal casualties, the Army combined arms force must be able to outmaneuver and outshoot potential adversaries, consistently engaging them with coordinated fires from unexpected directions and unmatched ranges, day and night. This requires such capabilities as "owning the night," superior situational awareness, and compatible digital data exchange.

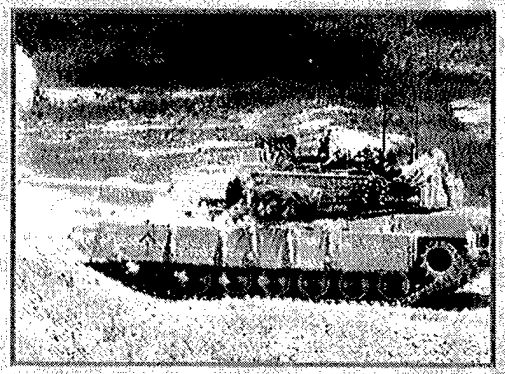
SCIENCE AND TECHNOLOGY	CONCEPT	DEM/ VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
Advanced Vehicle Technologies	Breacher	CCTT	HETS	Abrams
Integrated High Performance Turbine Engine Technology		HAB	HELLFIRE II	AGMS
Line-of-Sight Antitank		Longbow Apache	HYDRA 70 Rocket System	Apache
National Automotive Center		Longbow HELLFIRE Missile	IRV	Bradley FVS
Rapid Force Projection Initiative ACTD		WAM	NV/RSTR	M119A1 Howitzer
Rotocraft Pilot's Associate ATD			Small Arms	M113 FOV
			Tank Main Gun Ammunition	Mortar (120 mm)
			Volcano	TOW Weapon System

YESTERDAY: The U.S. Army was the most mobile, best equipped, and best supplied of any of the combatants in World War II. Due to its wealth of vehicles, the Army was able to use its mobility throughout the force, not just in armored units. Then, just like today, the Army relied on superior firepower to guarantee victory. *Best rate of advance (4th Armored Division—WWII): 250 km in 7 days*

Italy, 1944

Texas, 1939

TODAY: Today's Army also relies on firepower and mobility. The Army's ability to outmaneuver and engage the enemy at greater distances becomes more important as we reduce the number of our forces. Digitization of the force and the capability to "own the night" will dramatically increase the effectiveness of U.S. forces, causing a shock effect and minimizing friendly casualties. *Best rate of advance (24th Infantry Division (Mechanized) in Desert Storm): 400 km in less than 4 days*



TOMORROW: The mobility of Army heavy forces will be enhanced as new vehicles like the C2V, AFAS and FARV, and BFVS will allow all elements to keep pace with the Abrams. New systems, such as EFOG-M, Longbow Hellfire, and LOSAT, will mark a revolutionary improvement in the lethality and survivability of the Army. Digitization will allow the commander to exploit the mobility and firepower of a unit more effectively, while reducing the chance for fratricide. *Best rate of advance (Force XXI): Limited only by opposition and fuel*

Dominate The Maneuver Battle

MISSION: The Abrams tank provides heavy armor superiority on the battlefield.

CHARACTERISTICS: 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 Improved M1 (IPM1) and the 120 mm main gun on the M1A1, 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 on a highly lethal battlefield. Additional features of the M1A1 are increased armor protection, suspension improvements, and an NBC protection system that provides additional survivability in a contaminated environment. The M1A2 program builds on the M1A1 to provide an 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 Independent Commander's Weapon Station, position navigation equipment, a distributed data and power architecture, and a radio interface unit that allows, through the SINCGARS radio, rapid transfer of situational data and overlays to compatible systems on the digital battlefield.

	M1/IPM1	*M1A1*	*M1A2*
Length:	32.04 ft	32.25 ft	32.25 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 mph	41.5 mph	41.5 mph
Weight:	60 ton	67 ton	68.9 ton
Armament:	105 mm	120 mm	120 mm
Crew:	4	4	4

FOREIGN COUNTERPART:

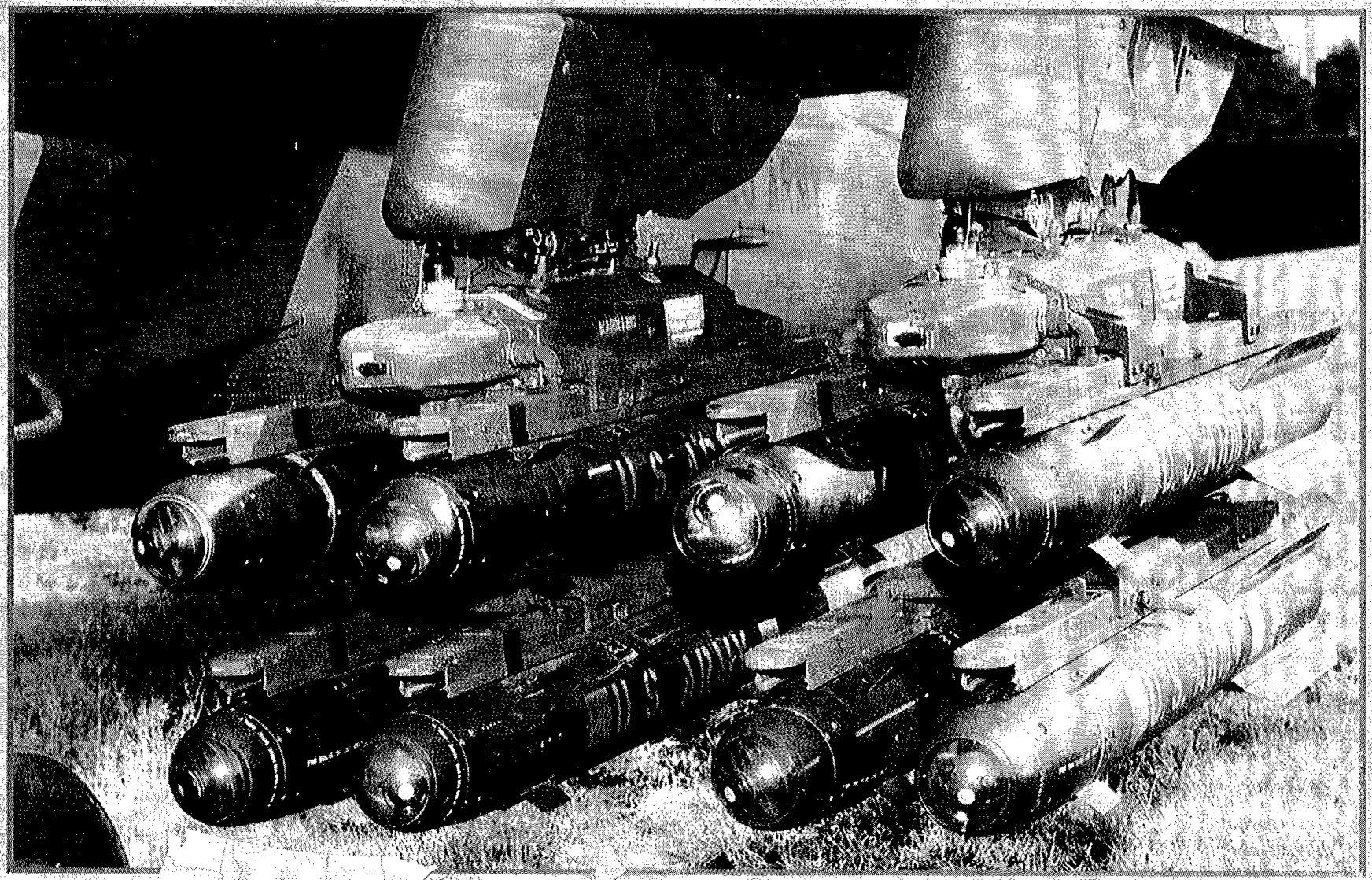
United Kingdom:	Challenger 2	Germany:	Leopard 2	France:	Leclerc
Russia:	T-64, T-72, and T-80	Israel:	Merkava Mk. 3	Italy:	C1 Ariete

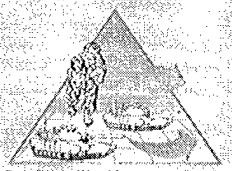
PROGRAM STATUS: Production of M1A1 tanks for the U.S. Army is complete. Low-rate production of the M1A2 tank is complete with 62 new M1A2 tanks accepted by the Army. "New" Abrams tanks will continue to be produced for Foreign Military Sales. In lieu of new production, the Army has initiated an Abrams upgrade program to convert approximately 1,000 older M1 tanks to the M1A2 configuration. This program received approval from the Office of the Secretary of Defense on 18 December 1992. A Milestone III decision review conducted in April 1994 approved the M1A2 configuration for the upgrade program. The upgrade contract was awarded on 30 September 1994.

PROJECTED ACTIVITIES: The initial M1A2 upgrade fieldings are scheduled for 1995.

PRIME CONTRACTOR: General Dynamics (Sterling Heights, MI; Warren, MI; Scranton, PA; Lima, OH)

* See appendix for list of subcontractors.





Dominate The Maneuver Battle

MISSION: The AGMS provides a heavy anti-armor capability to helicopters.

CHARACTERISTICS: The AGMS is a family of four generations of HELLFIRE airborne anti-armor weapons. The missile configuration has the capability for modular seeker replacements. The first three generations of HELLFIRE missiles use a laser seeker. The fourth generation, Longbow HELLFIRE, uses a radar frequency seeker. The first generation of Laser HELLFIRE presently is used as the main armament of the U.S. Army's AH-64 Apache and U.S. Marine Corps' AH-1W Super Cobra helicopters. The second generation currently is available for deployment. Laser HELLFIRE homes on a laser spot that can be projected from ground observers, other aircraft, or the launching aircraft itself. This enables the system to be employed in a variety of modes: autonomous, air or ground, direct or indirect, single shot, rapid, or ripple fire. Due to significant system improvements, HELLFIRE II and Longbow HELLFIRE are discussed separately on pages 175 and 187 respectively

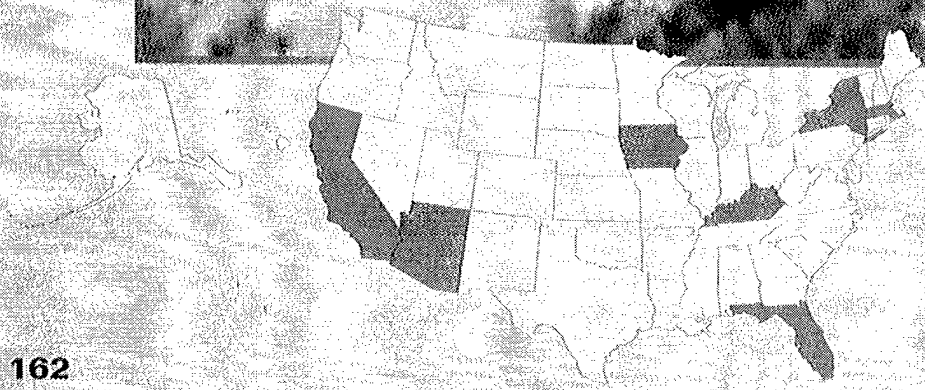
	Basic	*Interim*	*HF II*	*Longbow*
Diameter:	7 in	7 in	7 in	7 in
Weight:	100 lb	107 lb	100 lb	108 lb
Length:	64 in	71 in	64 in	69.2 in

FOREIGN COUNTERPART: Numerous countries have one or more wire, radio, or laser homing anti-armor missiles of varying accuracy and lethality. There are presently no known capable heliborne millimeter wave missile systems.

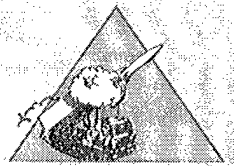
PROGRAM STATUS: There are four versions of the AGMS missile in various stages of the life cycle:
Basic HELLFIRE: Semi-active laser seeker, 31,616 produced by both Martin Marietta and Rockwell International since 1982. All deliveries have been completed.
Interim HELLFIRE: (Adds precursor warhead for reactive armor) Final delivery of the Interim HELLFIRE missiles produced by Rockwell was completed in January 1994. Production for foreign military sales will continue.
HELLFIRE II: See HELLFIRE II, page 175.
Longbow HELLFIRE: See Longbow HELLFIRE, page 187.

PROJECTED ACTIVITIES: See Longbow HELLFIRE and HELLFIRE II.

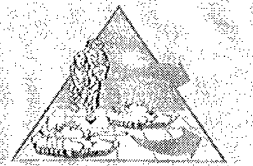
PRIME CONTRACTOR: Rockwell (Duluth, GA)—Interim HELLFIRE
Martin Marietta (Orlando, FL)—HELLFIRE II
Martin Marietta (Orlando, FL) and Westinghouse (Baltimore, MD)—Longbow HELLFIRE



Protect The Force



Conduct Precision Strikes



Dominate The Maneuver Battle

MISSION: The Apache provides day, night, and adverse weather attack helicopter capability.

CHARACTERISTICS: The Apache (AH-64) is the Army's primary attack helicopter. It is a quick-reacting, airborne weapon system that can fight close and deep to destroy, disrupt, or delay enemy forces. The Apache is designed to fight and survive during the day, night, and in adverse weather throughout the world. It is equipped with a Target Acquisition Designation Sight and a Pilot Night Vision Sensor that permit its two-man crew to navigate and attack in darkness and in adverse weather conditions. The principal mission of the Apache is the destruction of high-value targets with the HELLFIRE missile. It also is capable of employing a 30 mm M230 chain gun and HYDRA 70 (2.75 in) rockets that are lethal against a wide variety of targets. The Apache has a full range of aircraft survivability equipment and has the ability to withstand hits from rounds up to 23 mm in critical areas.

Mission gross weight:	14,790 lb
Cruise speed:	147 kt
Crew:	2
Armament:	HELLFIRE missiles, HYDRA 70 rockets, and 30 mm M230 chain gun

FOREIGN COUNTERPART:

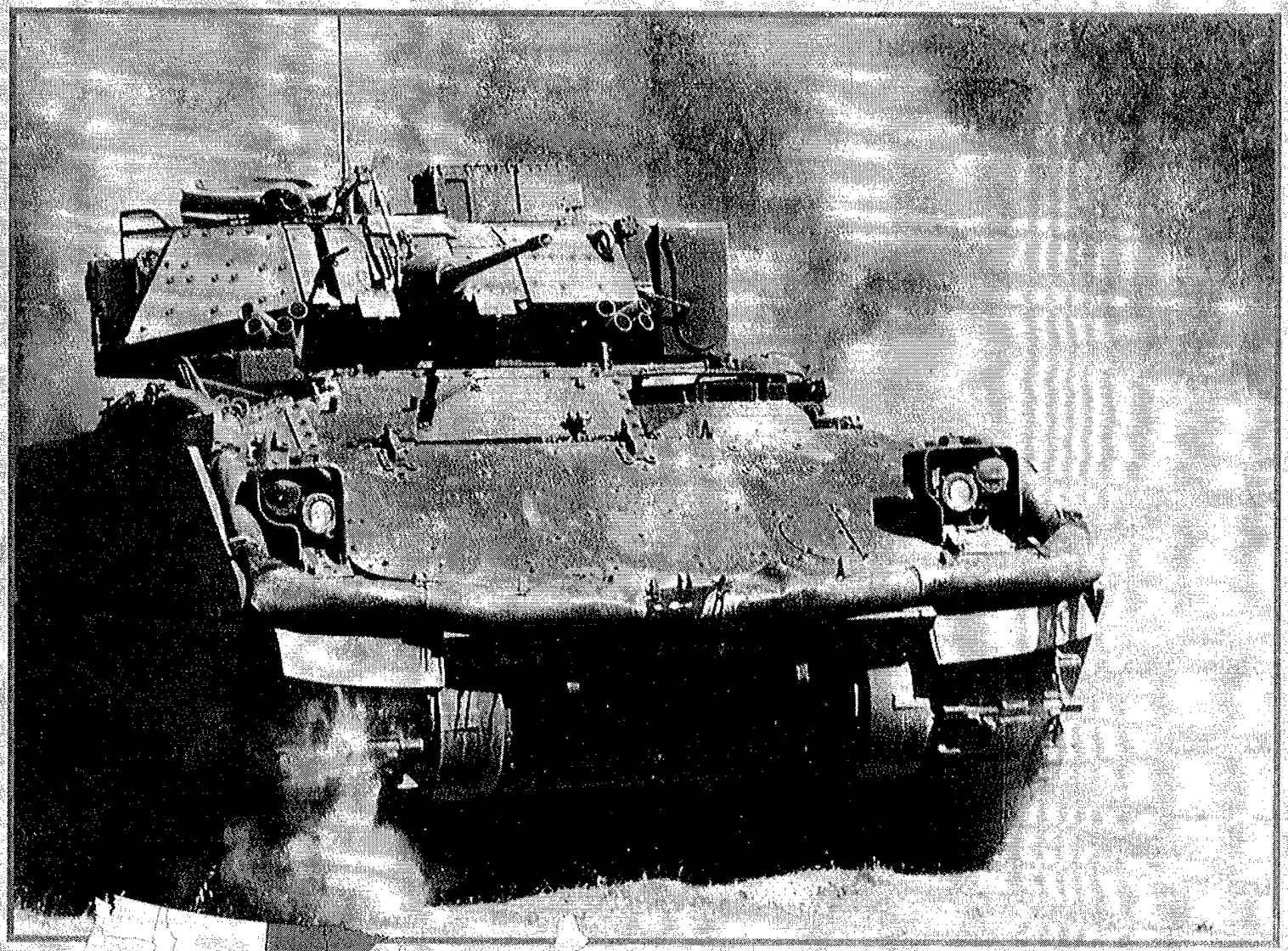
Russia: Mi-24 HIND;	KA-50 Hokum
Germany/France:	PAH-2 Tiger
Italy:	A-129 Mangusta
South Africa:	CSH-2 Rooivalk

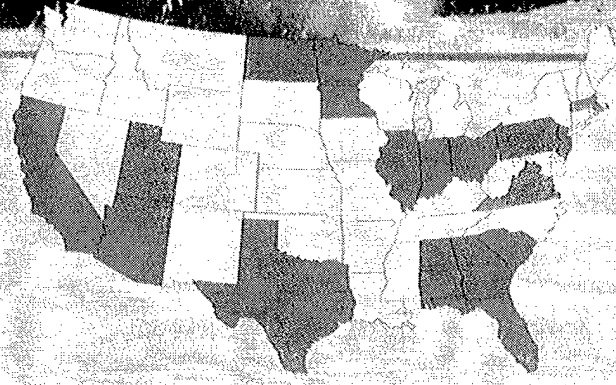
PROGRAM STATUS: Apache production began in FY82 and the first unit was deployed in FY86. As of July 1994, 807 Apaches were delivered to the Army. The last Army Apache delivery is scheduled for April 1996. Thirty-five attack battalions are deployed and ready for combat. The Army is procuring a total of 821 Apaches to support a new force structure of 25 battalions with 24 Apaches for each unit (16 Active; 2 Reserve; 7 National Guard) under the Aviation Restructure Initiative. The Apache has been sold to Israel, Egypt, Saudi Arabia, the UAE, and Greece.

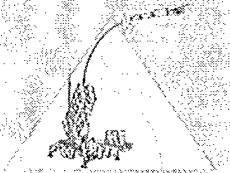
PROJECTED ACTIVITIES: Desert Storm and RAM enhancements throughout FY95.

PRIME CONTRACTOR: McDonnell Douglas (Mesa, AZ)

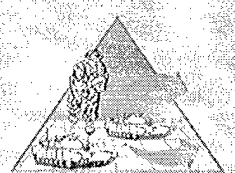
* See appendix for list of subcontractors.







Protect The Force



Dominate The Maneuver Battle

Bradley Fighting Vehicle System (BFVS)

MISSION: The BFVS is a lightly armored, full-track fighting vehicle that provides cross-country mobility; mounted firepower; protection from artillery and small-arms fire to mounted infantry and cavalry combat operations; and support to dismounted combat operations.

CHARACTERISTICS:

Weight:	67,000 lb (combat loaded)
Crew:	3
Length:	21.5 ft
Power train:	600 hp
Height:	9.92 ft
Range:	260 mi
Width:	10.5 ft
Road speed:	38 mph
Main armament:	25 mm cannon
Swim speed:	4 mph
Secondary armament:	TOW, 7.62 mm coaxial machine gun

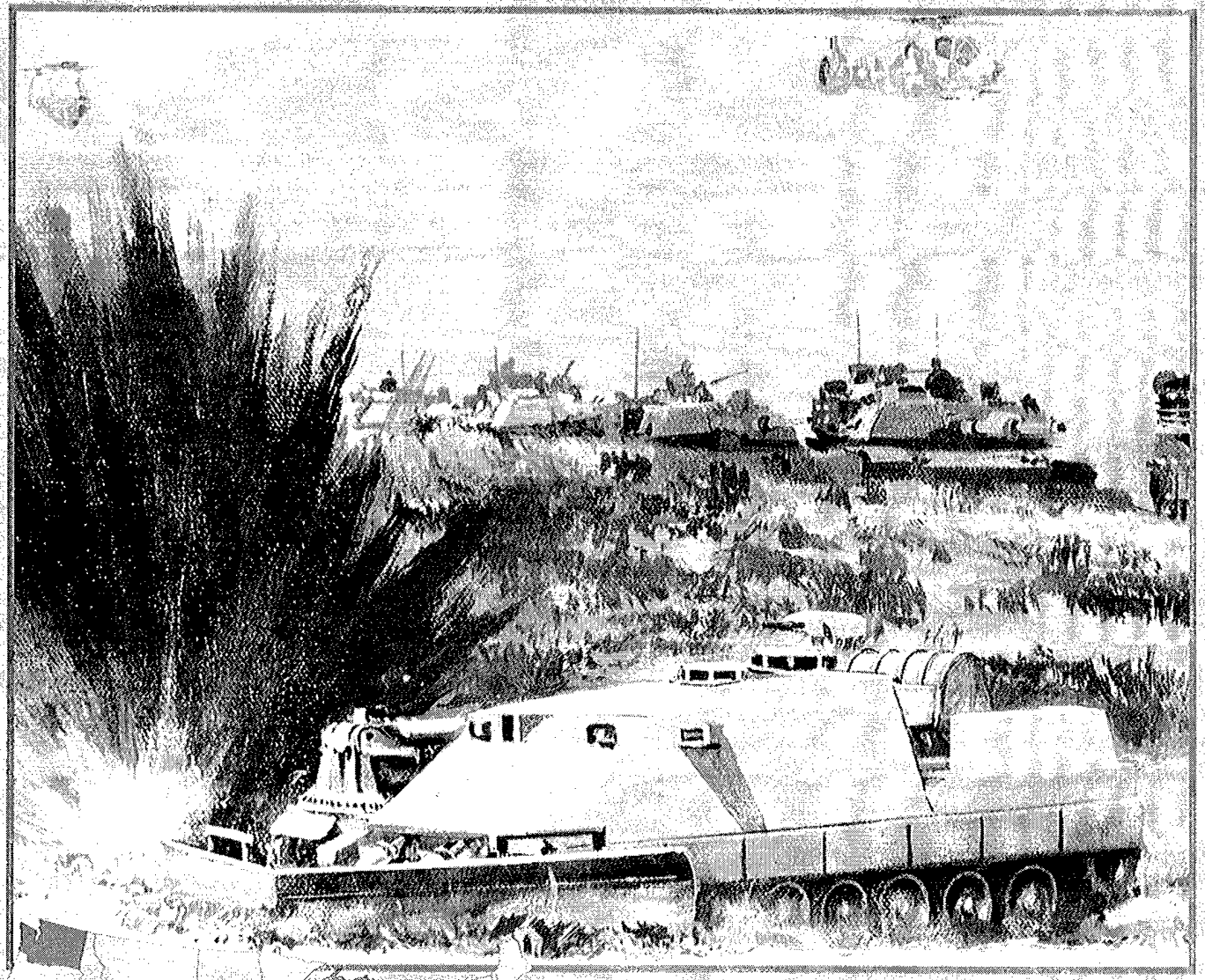
FOREIGN COUNTERPART: Russia: BMP-1,2,3 United Kingdom: MCV-80 Warrior France: AMX-10P

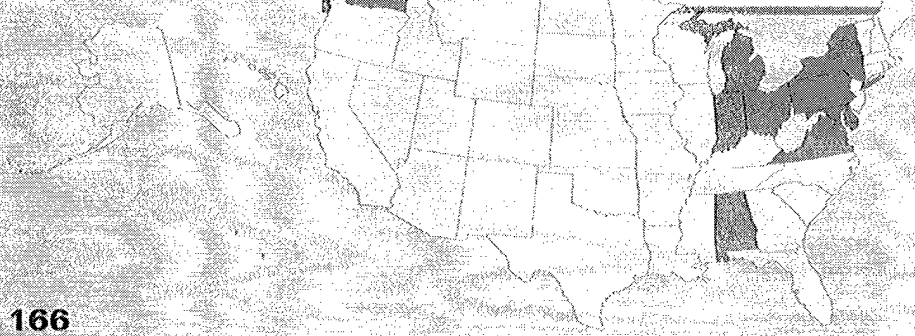
PROGRAM STATUS: At the end of the latest contract with United Defense, LP in FY94, the Army will have produced a total of 6,724 Bradleys, 4,641 of the M2 or Infantry configuration and 2,083 of the M3 or Cavalry configuration. Both the M2 and M3 were produced in three versions: the Army initially purchased 2,300 basic, or A0 Bradleys; then 1,371 vehicles of the A1 configuration, which incorporates the TOW 2 subsystem; and currently 3,053 vehicles of the A2 High Survivability configuration. The Army is also in the process of converting all A1s to the A2 configuration at Red River Army Depot while investigating advanced capabilities to increase compatibility with the upgraded M1A2 tank on the digital battlefield.

PROJECTED ACTIVITIES: M2/3A0s and A1s will continue to be upgraded to the A2 configuration in 1995.
The M2/3A3 configuration is in EMD.

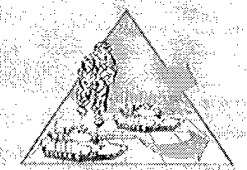
PRIME CONTRACTOR: United Defense (San Jose, CA; Aiken, SC)

* See appendix for list of subcontractors.





Protect The Force



Dominate The Maneuver Battle

MISSION: The Breacher provides an in-stride capability to overcome simple and complex obstacles.

CHARACTERISTICS: The system will breach 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 Breacher is an M1 Abrams chassis-based system. It will be equipped with a full-width mine clearing blade and a power-driven excavating arm. While buttoned up, the crew of two will be able to operate all systems and drive the vehicle from either crew station.

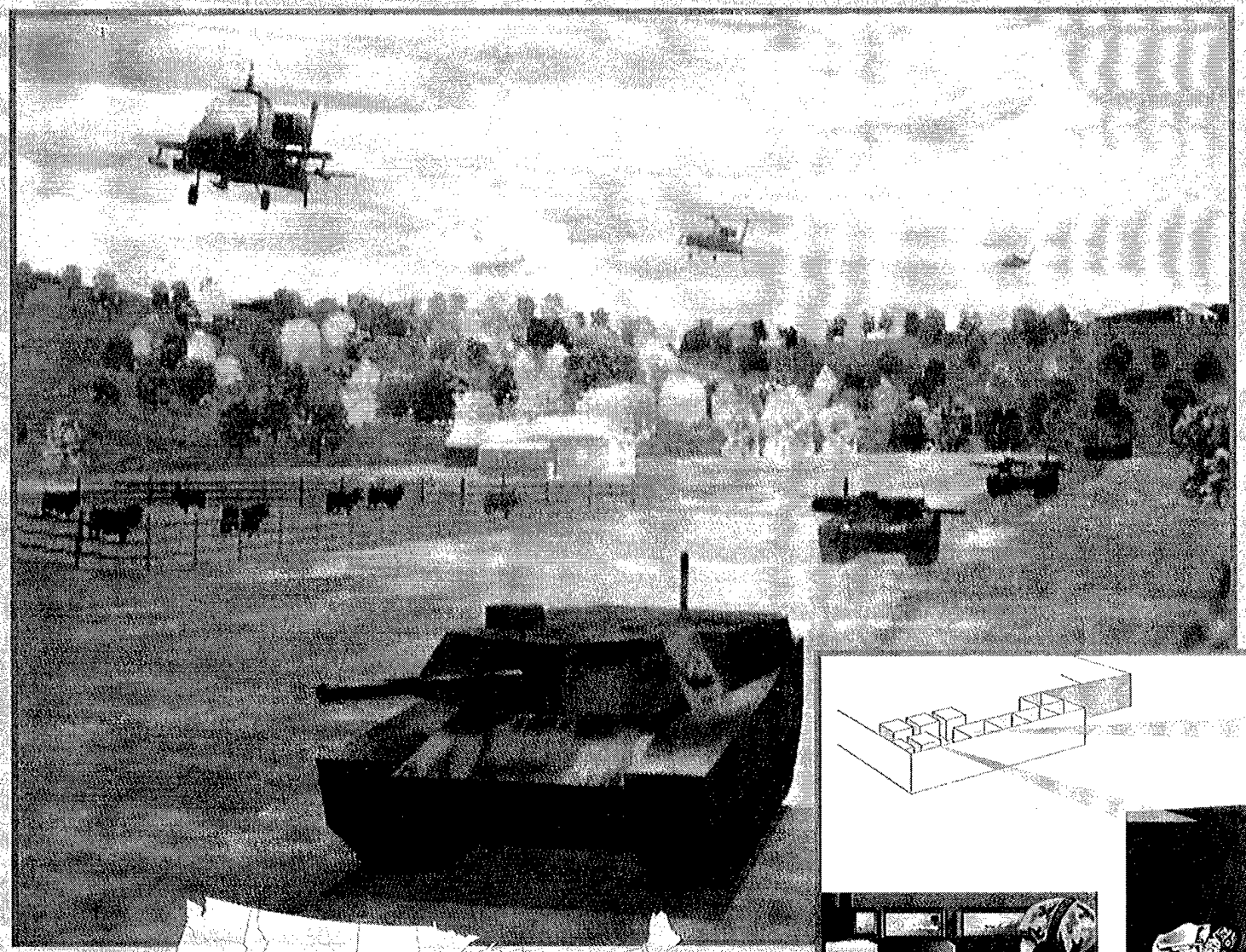
FOREIGN COUNTERPART: Russia: IMR-2 Germany: Pionierpanzer 2

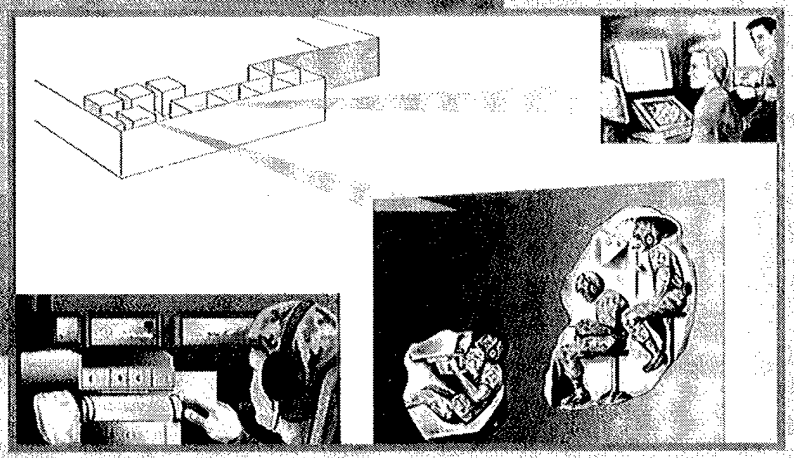
PROGRAM STATUS: The Breacher program was initiated in FY92 as a result of lessons reinforced during Operation Desert Storm and as a consequence of the deferral of the Combat Mobility Vehicle (CMV) during the Armored Systems Modernization (ASM) restructure. The Army has leveraged the work conducted under the ASM-CMV Advanced Technology Transition Demonstrator (ATTD) program to accelerate the development cycle. A sole-source contract was awarded to United Defense, (formerly BMY) in September 1992 for Demonstration and Validation. Prototypes will be delivered in 4QFY95.

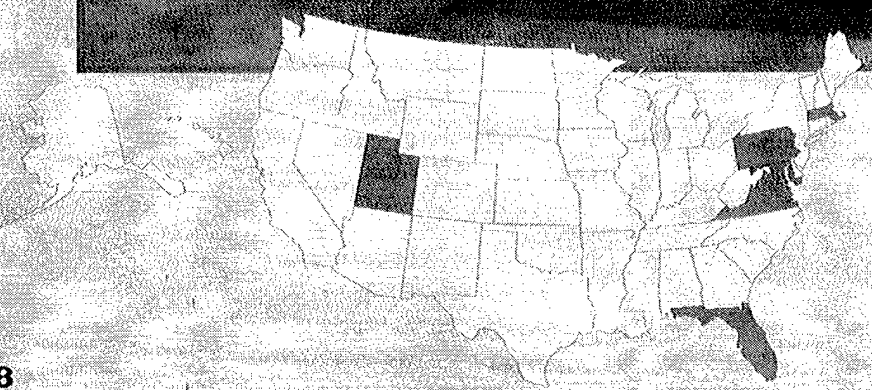
PROJECTED ACTIVITIES: Complete prototypes in July 1995.
Initiate government testing in August 1995.

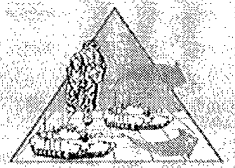
PRIME CONTRACTOR: United Defense (York, PA)

* See appendix for list of subcontractors.

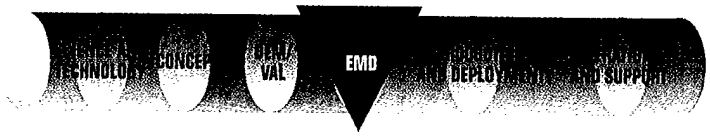








Dominate The Maneuver Battle



MISSION: The CCTT provides realistic individual and collective training for vehicle crews on a simulated battlefield.

CHARACTERISTICS: The CCTT's function is to train active and reserve component M1 Tank and M2/3 Bradley crews on individual and collective (crew through battalion task force) tasks and skills in command, control, communications, and maneuver on a simulated, fully interactive, real-time battlefield. The CCTT will simulate, in real time, the conduct of combat operations in a realistic environment with an appropriate and challenging opposing force that will require realistic individual, crew, and staff actions, placing the stresses of combat on all participants. The CCTT conducts joint operations involving other U.S. services and members of the allied forces with whom we routinely operate outside CONUS. The system will allow individuals, crews, and units to operate in a simulated combat environment, reducing the impact of restrictions of weapon effects, safety, terrain limitations, and time, and will assist in overcoming the effects of crew turbulence and scarce resources.

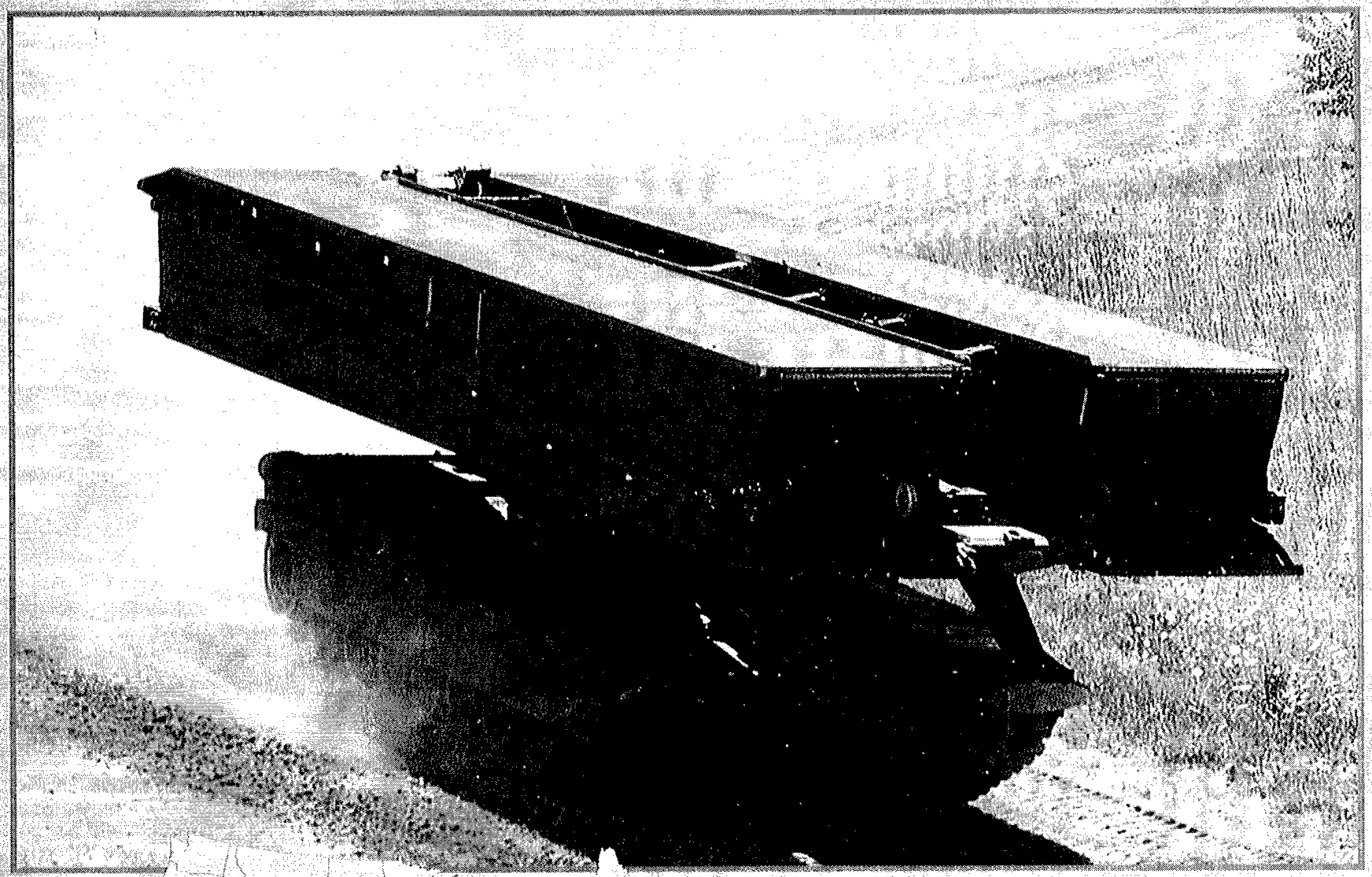
The CCTT program comprises a group of fully interactive networked simulators and command, control, and communications workstations, replicating the M1 and M2/3 vehicles and weapon systems of a company/team operating on a simulated real-time battlefield. The system will exist in both fixed-site and mobile versions. The fixed-site version will be static at all times during operation. The mobile version will be static during operation but will move over primary and secondary roads during transport from site to site.

PROGRAM STATUS: The CCTT program successfully completed Milestone I/II ASARC. The contract was awarded in November 1992.

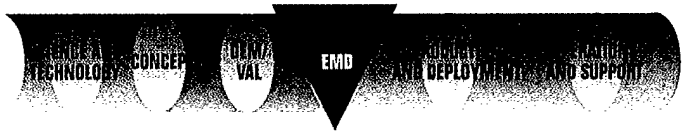
PROJECTED ACTIVITIES: Continue spiral development of software and initiate procurement of Quickstart hardware.

PRIME CONTRACTOR: Loral (Manassas, VA)

* See appendix for list of subcontractors.



Dominate The Maneuver Battle



Heavy Assault Bridge (HAB)

MISSION: The HAB provides assault bridging support for forward, heavy-maneuver forces.

CHARACTERISTICS: The HAB launcher is mounted on an M1 Abrams chassis and is operated by a two-man crew. The bridge is 26 m long and can span gaps up to 24 m. It will support an MLC 70 loading crossing at 16 kph. The bridge is launched from under armor in 5 minutes and retrieved in 10 minutes.

The HAB will increase maneuver force mobility by allowing units to transit such gaps as tank ditches, road craters, and partially damaged bridge sections. The current Armored Vehicle Launched Bridge (AVLB) cannot support Abrams tank units.

FOREIGN COUNTERPART:

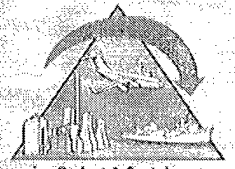
Russia:	MTU-20; MTU-72
China:	Type 84
Slovakia:	MT-55
France:	AMX (AVLB)
Germany:	BLG-60; Biber
United Kingdom:	Chieftain
South Korea:	K-1

PROGRAM STATUS: The program was restarted in FY92 as a result of lessons reinforced during Operation Desert Storm. It is currently in Engineering and Manufacturing Development (EMD). The contract for Phase II of EMD was awarded in January 1994. Phase II includes the design, fabrication, and integration of the HAB system onto the M1 Abrams chassis. Full-up system testing will begin 3QFY96. A contract for Low-Rate Initial Production is planned for 3QFY97.

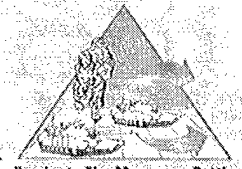
PROJECTED ACTIVITIES:
CDR planned for February 1995.
Begin contractor testing in August 1995.
Prototype delivery is planned for April 1996 for government testing.

PRIME CONTRACTOR: General Dynamics (Sterling Heights, MI)

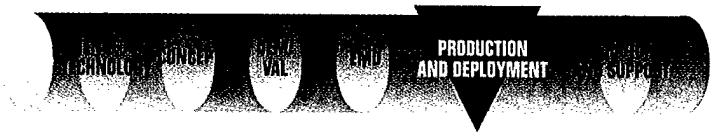
* See appendix for list of subcontractors.



Project & Sustain



Dominate The Maneuver Battle



Heavy Equipment Transporter System (HETS)

MISSION: The HETS will transport, deploy, and evacuate a combat-loaded M1 series tank or other vehicles of similar weight.

CHARACTERISTICS: The HETS consists of the M1070 truck tractor and M1000 semitrailer (70 ton). They are being procured under separate acquisition programs. The new HETS will transport 70-ton payloads, primarily M1 series tanks. It operates on OCONUS highways, on CONUS highways 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.

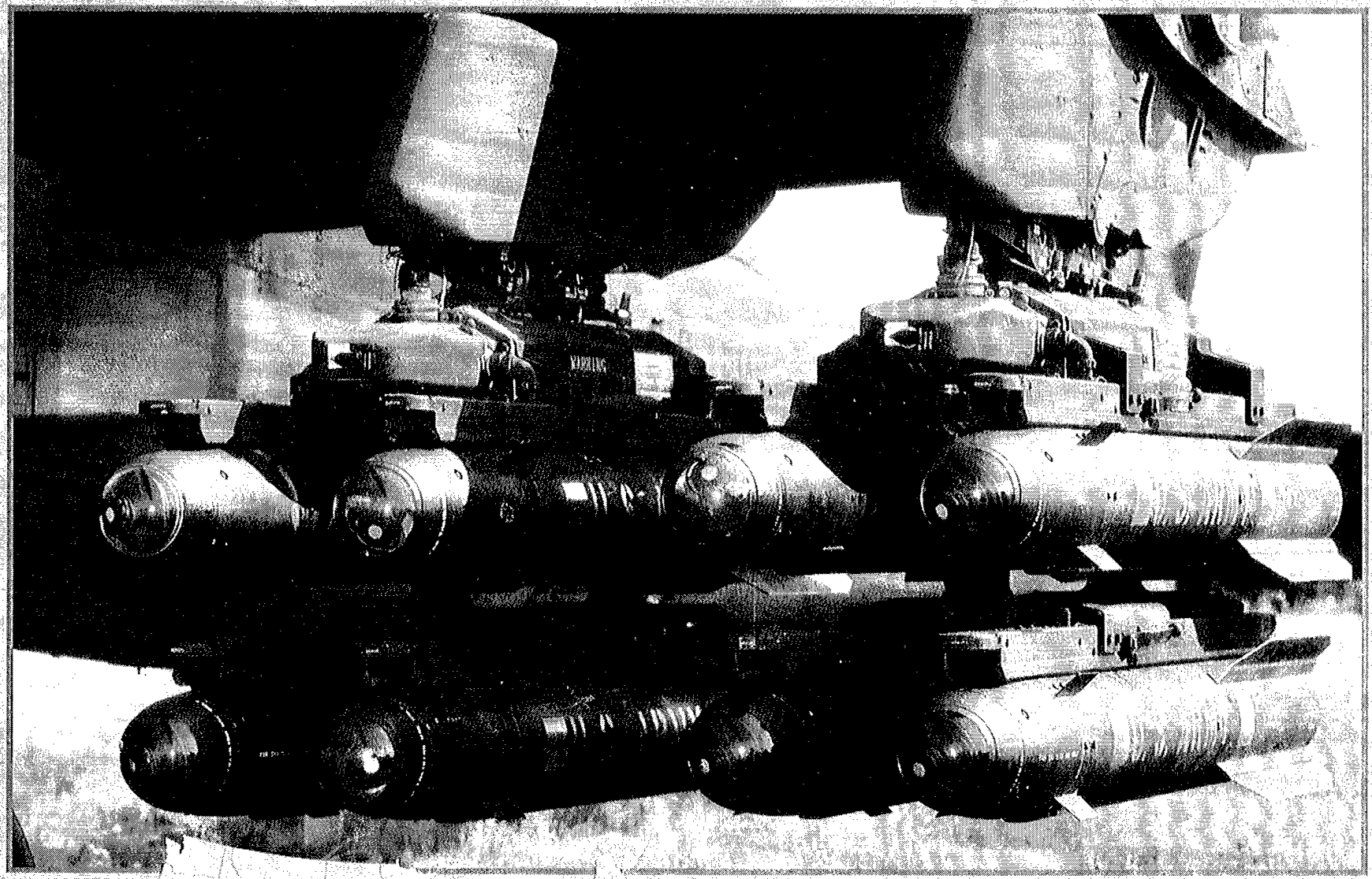
Speed: 40 – 45 mph (with 70-ton payload, 25 – 30 mph)
Range: 300 mi
Transport: C-5 aircraft
Mobility: 95 % on road; 5 % off road
RAM: 3,000 mean miles between hardware mission failure for both tractor and trailer

FOREIGN COUNTERPART: Russia: TATRA-813 (tractor)/ChMZAP-5212 (trailer) France: TRH 350

PROGRAM STATUS: The HETS is being procured as a Non-Developmental Item (NDI) and was recently approved for full production and type classification-standard. Oshkosh Truck Corporation is producing the tractor. The trailer is being produced by Southwest Mobile Systems. First Unit Equipped (FUE) occurred on 3 June 1994 with the 27th MSB at Ft. Hood. HETS fielding will continue through FY96.

PROJECTED ACTIVITIES: Fielding through FY96.
Procurement of an additional 200 systems in FY97.

PRIME CONTRACTOR: Oshkosh Truck (Oshkosh, WI)—Tractor
Southwest Mobile Systems (St. Louis, MO)—Trailer



MISSION: The HELLFIRE II provides heavy anti-armor capability for attack helicopters.

CHARACTERISTICS: HELLFIRE II is the latest production version of the Laser HELLFIRE missile. Laser HELLFIRE presently is used as the main armament of the U.S. Army's AH-64 Apache and U.S. Marine Corps's AH-1W Super Cobra helicopters. The laser missile homes on a laser spot that can be projected from ground observers, other aircraft, or the launching aircraft itself. This enables the system to be employed in a variety of modes: autonomous, air or ground, direct or indirect, single shot, rapid, or ripple fire. HELLFIRE II and Longbow HELLFIRE missiles are complementary. The combination of HELLFIRE II's precision guidance and Longbow HELLFIRE's fire-and-forget capability will provide the battlefield commander flexibility across a wide range of mission scenarios, permitting fast battlefield response and high mobility not afforded by other anti-armor weapons.

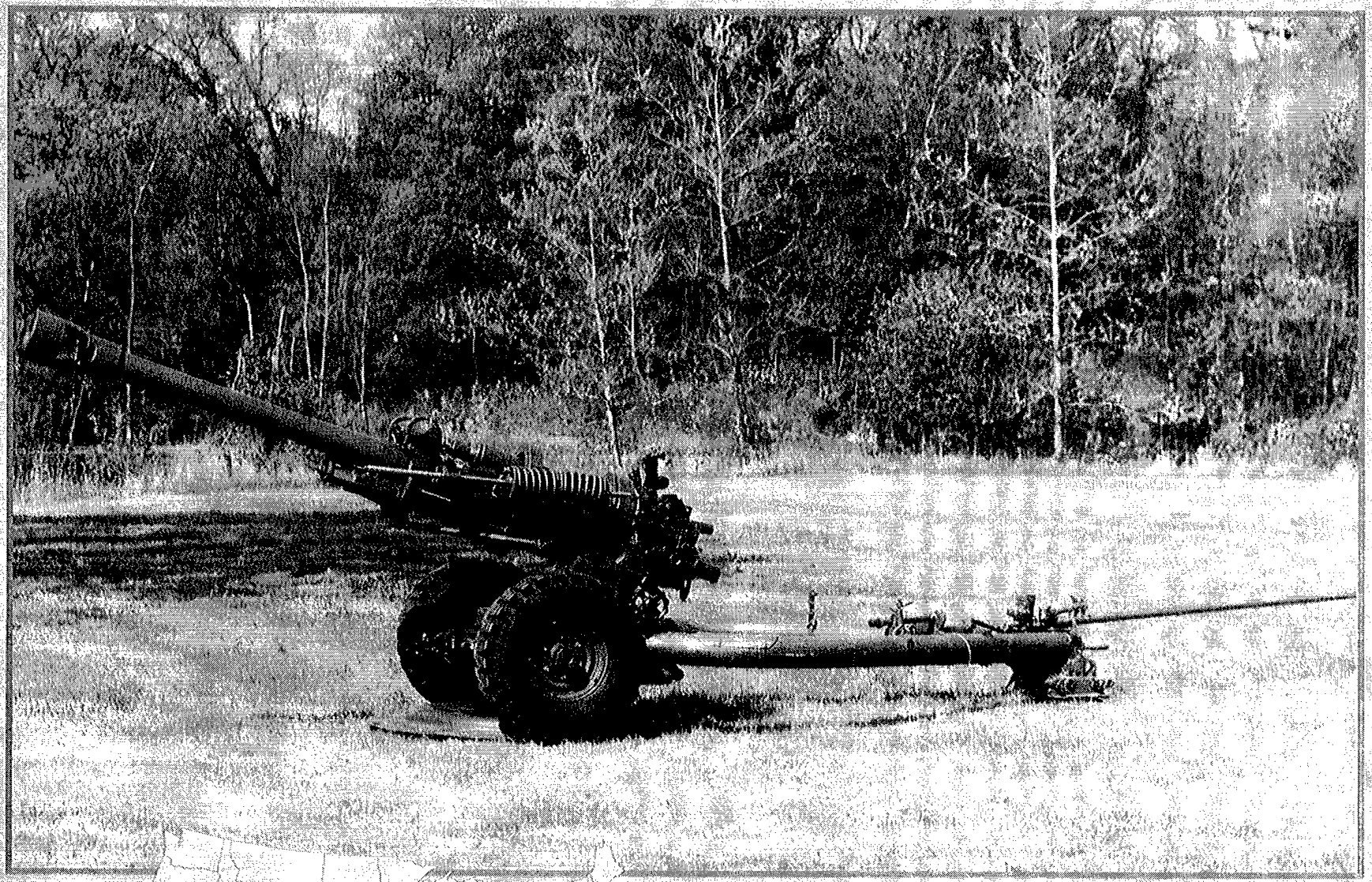
HELLFIRE II incorporates many improvements over the Interim HELLFIRE missile, including solving the laser obscurant/backscatter problem, the only shortcoming identified during Operation Desert Storm. Other improvements include electro-optical countermeasure hardening, improved target reacquisition capability, an advanced technology warhead system capable of defeating reactive armor configurations projected into the 21st century, reprogrammability to adapt to changing threats and mission requirements, shipboard compatibility, and regaining the original HELLFIRE missile weight and length (100 lb, 64 in).

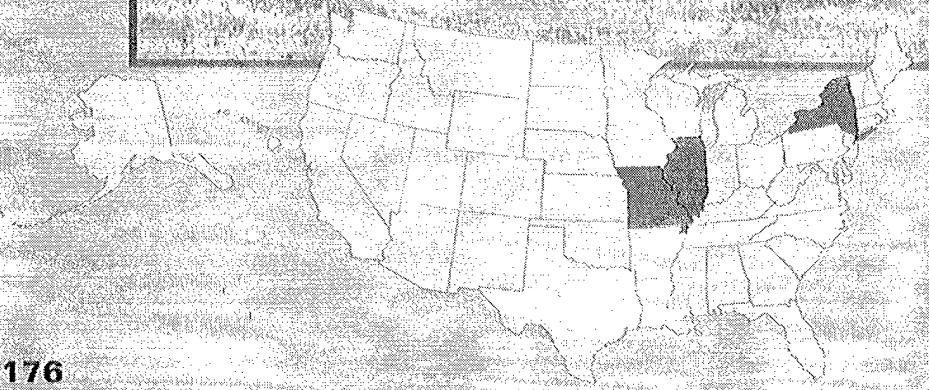
FOREIGN COUNTERPART: Numerous countries possess one or more wire, radio, or laser homing anti-armor missiles of varying accuracy and lethality.

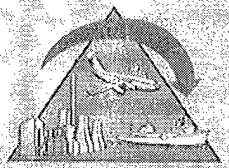
PROGRAM STATUS: The Initial Production Facilitation and Production Qualification Test contract was awarded to Martin Marietta in November 1992. The initial production contract was awarded in May 1993, and the second production contract was awarded in February 1994.

PROJECTED ACTIVITIES: A third production contract award is planned in February 1995.

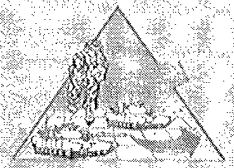
PRIME CONTRACTOR: Martin Marietta (Orlando, FL)



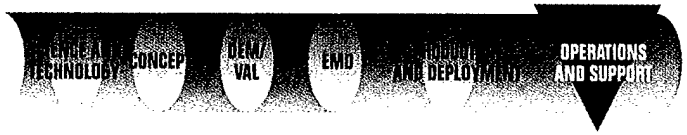




Project & Sustain



Dominate The Maneuver Battle



MISSION: The M119A1 howitzer provides improved field artillery fire support for the Army's airborne, air assault, and light infantry divisions.

CHARACTERISTICS: The M119A1 howitzer is a lightweight, 105 mm, towed howitzer that fires all conventional 105 mm ammunition in the inventory. Its prime mover is the High Mobility Multipurpose Wheeled Vehicle (HMMWV). It is airmobile with the UH-60 Black Hawk helicopter.

Range:	14.3 km (high explosive); 19.5 km (rocket assisted)
Weight:	4,000 lb
Width:	70 in
Length:	241.5 in
Height:	54 in (traveling configuration)
Crew:	7
Ammunition:	High-explosive, smoke, illumination, high-explosive rocket-assisted, and improved conventional munitions

FOREIGN COUNTERPART: The nearest counterpart is the L119 British Light Gun and the Russian-developed D-30 122mm howitzer.

PROGRAM STATUS: The M119 was first fielded to the 7th Infantry Division, Ft Ord, CA, in December 1989. Since the initial fielding, it has been reclassified the M119A1 and fielded to the 82nd Airborne Division in July 1991 and to the 101st Airborne (Air Assault) Division in August 1992.

PROJECTED ACTIVITIES: Fielding of the M119A1 will be completed in 1995.

PRIME CONTRACTORS: Watervliet Arsenal (Watervliet, NY)
Rock Island Arsenal (Rock Island, IL)

* See appendix for list of subcontractors.

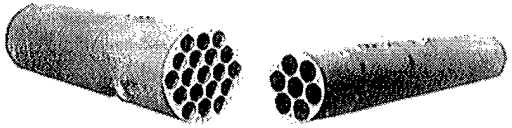
M267 PRACTICE MPSM

M261 MPSM

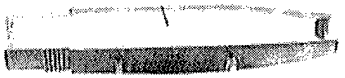
M274 SIGNATURE PRACTICE

M151 HE/PD

ATAF, FLECHETTE

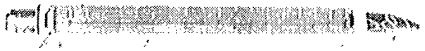


LWL

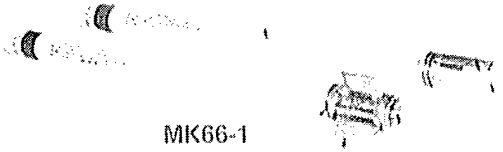


M151, WITHOUT FUZE

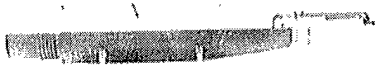
M257 ILLUMINATION



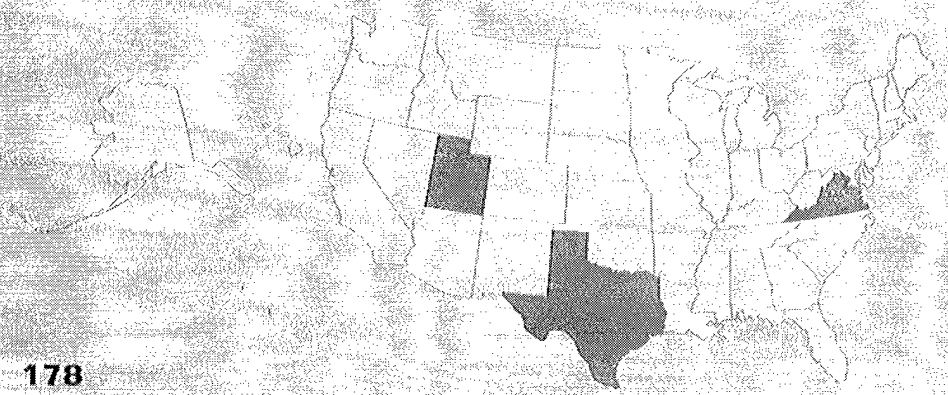
M264 SMOKE

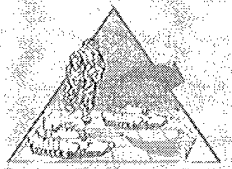


MK66-1



M151 HE/RS





HYDRA 70 Rocket System

MISSION: The family of HYDRA 70 rockets performs 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. HYDRA rockets are 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.

CHARACTERISTICS: The warheads fall into three categories:
1 Unitary warheads with impact-detonating fuzes or remote-set multi-option fuzes.
2 Cargo warheads with airburst-range, setable fuzes using the "wall-in-space" concept or fixed standoff fuzes.
3 Training rounds.

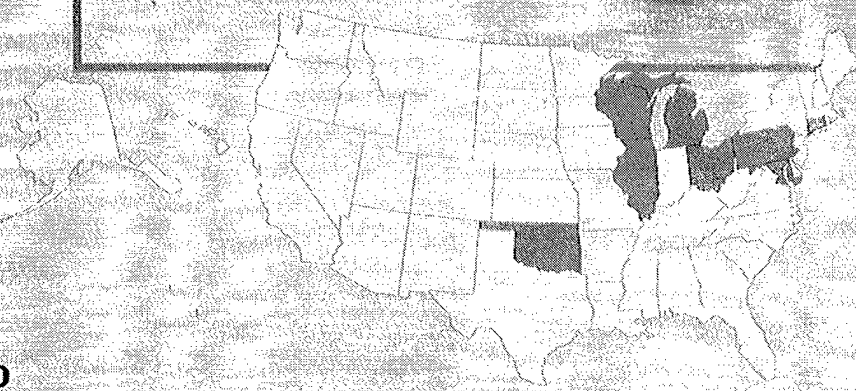
FOREIGN COUNTERPARTS: Although there is no known foreign counterpart, many countries have expressed an interest in co-production of this system.

PROGRAM STATUS: Training and combat rockets are presently in production for U.S. Army and other customers.

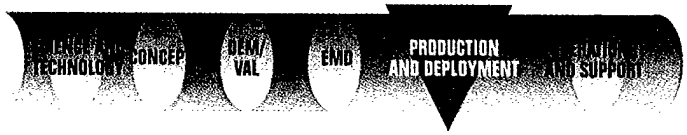
PROJECTED ACTIVITIES: A new system contract covering four fiscal years is scheduled for award in January 1995.

PRIME CONTRACTOR: BEI Defense Systems (Euless, TX)

* See appendix for list of subcontractors.



Dominate The Maneuver Battle



MISSION: The IRV is a full-tracked, armored vehicle developed for towing, winching, and hoisting operations supporting battlefield recovery operations and evacuation of heavy tanks and other tracked combat vehicles.

CHARACTERISTICS: The IRV (M88A1E1) will be type classified as the M88A2. The M88A1E1 uses the existing M88A1 chassis but significantly improves towing, winching, lifting, and braking characteristics. The M88A1E1 IRV is the primary recovery support to the Abrams tank fleet, and future heavy systems such as the Breacher, Heavy Assault Bridge, and heavy self-propelled artillery.

Length:	339 in	Power train:	12 cylinder, 1,050 hp air-cooled diesel engine with 3-speed automatic transmission
Width:	144 in		
Height:	123 in		
Weight:	70 ton	Cruising range:	200 mi
Speed		Draw bar pull:	70 ton
(w/o load):	29 mph	Boom capacity:	35 ton
(w/load):	20 mph	Winch Capacipty:	70 ton / 300 ft
Armament:	One .50 caliber machine gun	Aux. Winch Capacity:	3 ton/670 ft

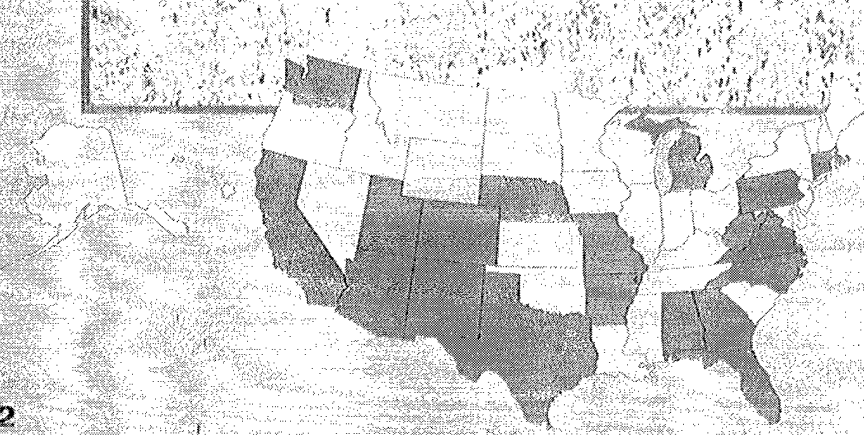
FOREIGN COUNTERPART: There is no foreign counterpart that provides the combined weight, towing, winch, and hoist capacities developed in the M88A1E1 IRV. However, many foreign nations do incorporate recovery systems on existing recovery chassis' or main battle tank chassis'.

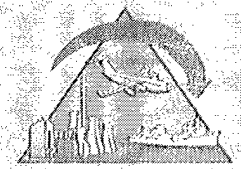
PROGRAM STATUS: The M88A1E1 IRV went into low rate initial production on 9 September 1994 after successfully demonstrating performance characteristics over 12,000 miles of RAM, performance, and user evaluation.

PROJECTED ACTIVITIES: PQT/IOTE is scheduled for 2—4QFY96.
Milestone III is scheduled for 4QFY96.
First Unit Equipped is scheduled for 1QFY97.

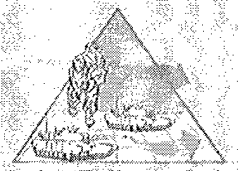
PRIME CONTRACTOR: United Defense (York, PA)

* See appendix for list of subcontractors.





Project & Sustain



Dominate The Maneuver Battle

MISSION: The LOSAT will provide a high volume of extremely lethal, accurate missile fire, effective against heavy armor systems at ranges exceeding tank main gun ranges.

CHARACTERISTICS: The LOSAT weapon system consists of a Kinetic Energy Missile (KEM) turret mounted on an air mobile armored combat vehicle chassis. The key attractions of the LOSAT are the tremendous overmatch lethality of the KEM (defeats all predicted future armored combat vehicles) and its deployability, which is compatible with the early entry forces. The LOSAT also will provide increased survivability and countermeasure effectiveness. The LOSAT will operate out to the maximum range of direct fire combat engagements and will provide dramatically increased rates of fire and enhanced performance under day and night, adverse weather, and obscured battlefield conditions. The LOSAT will satisfy critical anti-armor needs of the early entry forces and, in dedicated anti-tank companies of the mechanized infantry battalions, will provide anti-tank fire to fix and destroy enemy-armored formations. This fixing fire will provide tanks and infantry with the capability to dominate the maneuver battle, thus allowing rapid maneuver into the enemy's vulnerable flanks and rear. The LOSAT will replace selected mounted TOW systems.

	KEM
Weight:	177 lb
Length:	112 in
Diameter:	6.4 in
Range:	Greater than TOW
Crew:	3

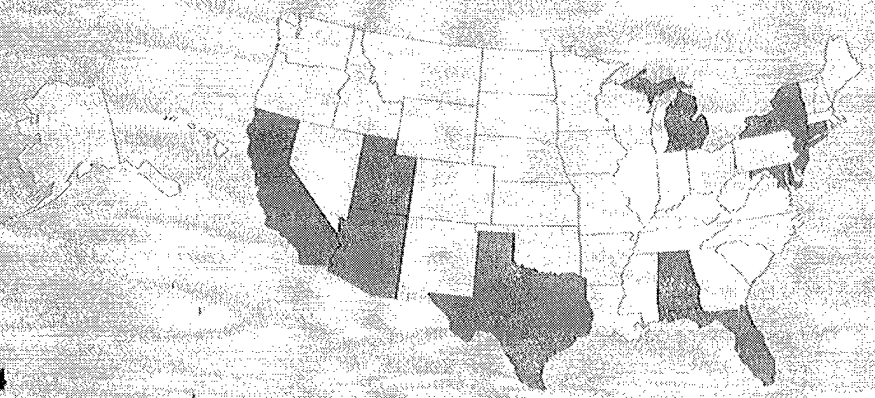
FOREIGN COUNTERPART: No known foreign counterparts.

PROGRAM STATUS: The LOSAT program began a Technology Demonstration phase of development in 4QFY92. The demonstration provides for the completion of priority risk reduction tasks to the Fire Control System (FCS), the demonstration of the FCS upgrades in dirty battlefield and flight tests, and the conduct of an Early Entry Force (EEF) demonstration program. The EEF demonstration includes the design, fabrication, and integration of a LOSAT system turret into an Armored Gun System (AGS) chassis, a missile flight test program from the AGS-based LOSAT fire unit, and Advanced Warfighting Experiments (AWE) user testing.

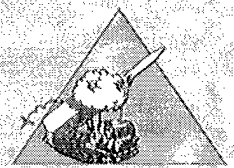
PROJECTED ACTIVITIES:
Start fabrication of the AGS chassis.
Conduct 6 missile flight test program from the LOSAT/Bradley Fighting Vehicle prototype.
Start design and fabrication of the Weapon System Turret Assembly for the AGS-based system.
Support Distributive Interactive Sumulation Crew Station Simulator activities for the AGS-based system.
Rapid Force Projection Initiative analysis simulation effort and Anti-Armor advanced technology demonstration exercises.

PRIME CONTRACTOR: Loral (Dallas, TX)

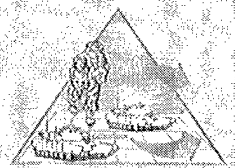
* See appendix for list of subcontractors.



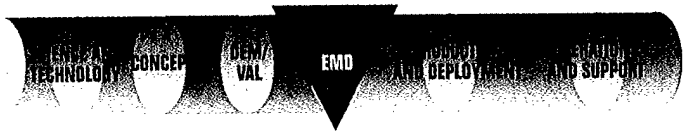
Protect The Force



Conduct Precision Strikes



Dominate The Maneuver Battle



MISSION: The Longbow Apache will provide Longbow HELLFIRE (fire-and-forget) capability and improve the target acquisition in adverse conditions while modernizing the AH-64 fleet.

CHARACTERISTICS: 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 (RFI), and a radar frequency fire-and-forget HELLFIRE missile onto the Apache. The modernized Apache now will be able to provide a truly "coordinated" rapid-fire (16 separate targets within 1 minute) capability to the maneuver force commander on a 24-hour basis in day, night, and adverse weather conditions. The AH-64D heavy attack team will enhance the domination of the maneuver battle by giving the ground commander a versatile, rapidly employable, long-range aerial weapon system capable of massed, rapid, precision engagements against a wide range of fixed and moving targets. Longbow's digitized target acquisition system provides automated detection, location, classification, prioritization, and target handover. Longbow will significantly enhance situational awareness of both friendly and enemy air and ground dispositions through secure voice and digital data burst information exchanges to both air (for example, other AH-64Ds, RAH-66 Comanche, F-15/16s, Joint-STARS) and ground assets by using the jointly developed Improved Data Modem (IDM) and the communication suite. This allows the Apache to provide accurate battlefield information for intelligence, targeting, and decision support. Commanders and their staffs now will have a shared picture of the battlefield for real-time command, control, and situational awareness, speeding the tempo of the battle with efficient battle management and minimized fratricide. The AH-64D cockpit is redesigned to digitize and multiplex all systems. The MANPRINT crew stations have multifunction displays to reduce pilot work load and increase effectiveness. The Longbow FCR and RFI are housed in a mast-mounted assembly above the helicopter's main rotor system. The processors for the radar are located in the aircraft's avionics bays. The Longbow Apache consists of the AH-64 aircraft, modified with changes necessary to effectively and efficiently integrate the Longbow radar and missile. Changes include additional power, expanded avionics bays, additional cooling, upgraded processors, integrated avionics, MANPRINT crewstations, and data modems that allow situation and target data transfer to compatible systems on the digital battlefield.

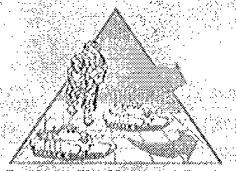
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The Longbow Apache System entered Full Scale Development in December 1990, following an extremely successful Proof of Principle (POP) phase. Technical success during POP culminated with the live firing of missiles against a wide variety of targets, moving and stationary, through smoke and obscurants. The current program objective calls for 227 Longbow fire control radar mission kits capable of being installed on the Apache's modernized fleet (758 minus attrition) being upgraded to the new AH-64D baseline configuration. The Longbow Apache will add significant warfighting capability to the combined arms team through increased survivability, lethality, and versatility, as well as through long-term reliability improvements.

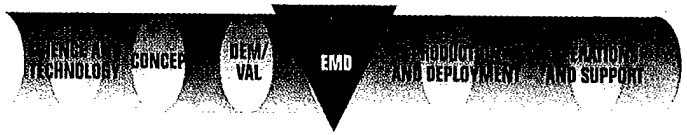
PROJECTED ACTIVITIES: IOTE complete March 1995.
Lot I Production November 1995.

PRIME CONTRACTOR: Joint Venture: Martin Marietta (Orlando, FL) and Westinghouse (Baltimore, MD)—Fire control radar
McDonnell Douglas (Mesa, AZ)—Airframe

* See appendix for list of subcontractors.



Dominate The Maneuver Battle



MISSION: The Longbow HELLFIRE missile will provide an adverse weather, fire-and-forget, heavy anti-armor capability for attack helicopters.

CHARACTERISTICS: The Longbow HELLFIRE missile is a millimeter wave radar fire-and-forget version of the HELLFIRE missile. The Longbow development program also includes development of a Fire Control Radar (FCR) system and numerous modifications to the helicopter. The Longbow FCR will locate, classify, and prioritize targets for the Longbow HELLFIRE missile. The Longbow system is being developed for integration into the Apache attack helicopter and the Comanche armed reconnaissance helicopter. Longbow is planned for integration into the entire fleet of Apache aircraft and into one-third of the Comanche fleet. Longbow HELLFIRE and HELLFIRE II missiles are complementary. 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, permitting fast battlefield response and high mobility not afforded by other anti-armor weapons.

Longbow HELLFIRE incorporates a millimeter wave radar seeker on a HELLFIRE II aft section bus. The primary advantages of the Longbow missile include 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 remask, thus minimizing exposure to enemy fire; an advanced warhead capable of defeating reactive armor configurations projected into the 21st century; and reprogrammability to adapt to changing threats and mission requirements.

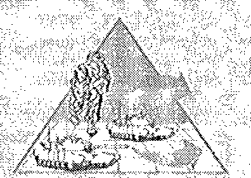
FOREIGN COUNTERPART: No known foreign counterpart.

PROGRAM STATUS: The Engineering and Manufacturing Development contract is scheduled to be completed in May 1995 by a joint venture between Martin Marietta and Westinghouse. The Initial Production Facilitization and Long-Lead Time Item contract was awarded in December 1994.

PROJECTED ACTIVITIES: Award of the first Low-Rate Initial Production contract is planned in November 1995.

PRIME CONTRACTOR: Joint Venture: Martin Marietta (Orlando, FL) and Westinghouse (Baltimore, MD)

Protect The Force



Dominate The Maneuver Battle

MISSION: The M113 FOV provides transport of infantry and engineer units, medical evacuation, fire support, and command and control functions on the battlefield.

CHARACTERISTICS: The M113 FOV was in continuous production from 1960 through November 1992. There are more than 85,000 vehicles, consisting of 35 different variants, in use by more than 40 countries. The Army's fleet of 25,000 vehicles is used for a variety of missions.

	M113A3
Weight:	27,180 lb
Height:	8.2 ft
Width:	8.8 ft
Length:	17.4 ft
Range:	300 mi
Power train:	275 hp
Crew:	2
Road speed:	42 mph
Main armament:	.50 caliber machine gun

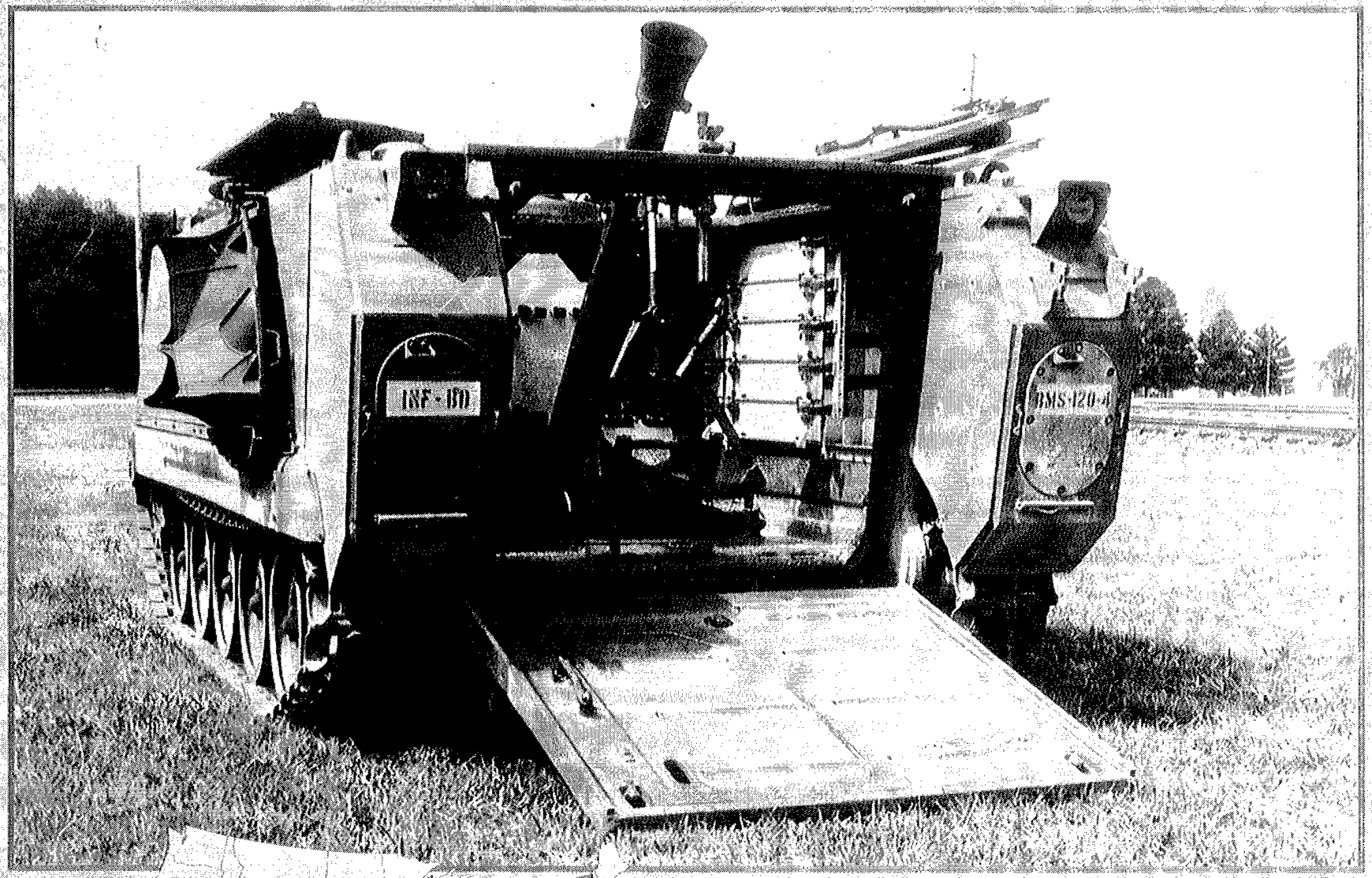
FOREIGN COUNTERPART: Russia: BTR-60, 70, 80 and MTLB series South Africa: Ratel China: YW531

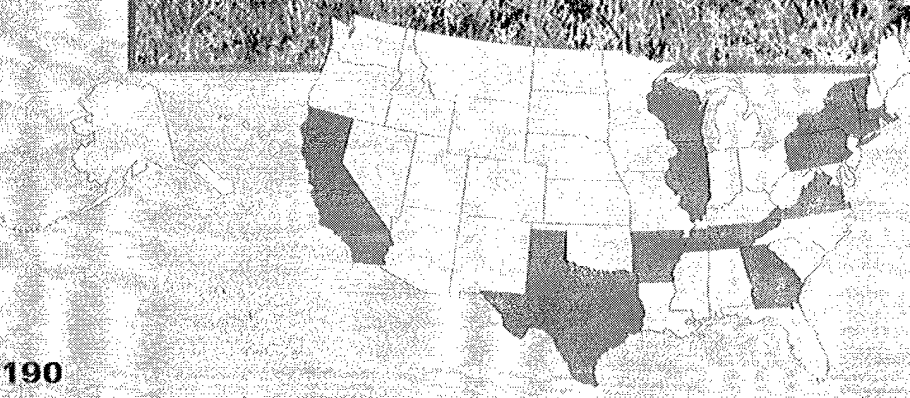
PROGRAM STATUS: Deliveries of new production M113A3s began in FY86 and were completed in FY92. The A3 configuration adds spall suppression liners, optional bolt-on armor, armored external fuel tanks, and upgraded engine and transmission to provide speed and mobility commensurate with the M1 series tank and the M2/M3 Bradley Fighting Vehicles. Depot conversion programs are ongoing in CONUS and OCONUS to modify fielded M113A2s to the M113A3 configuration. Future conversion programs (FY94-99) will create A3 configurations for seven additional M113 variants: M1068A3, M1064A3, M548A3, M577A3, M981A3, M1059A3, and M901A3.

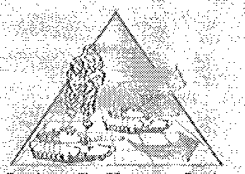
PROJECTED ACTIVITIES: Upgrades of older M113 variants to the A3 configuration will continue in 1995.

PRIME CONTRACTOR: United Defense (San Jose, CA)

* See appendix for list of subcontractors.







Dominate The Maneuver Battle

MISSION: The 120 mm mortar system will provide improved organic indirect fire support capability to the maneuver unit commander.

CHARACTERISTICS: The 120 mm mortar system is a conventional smoothbore, muzzle-loaded mortar system that provides increased range and lethality over the 4.2-in heavy mortar system. It is employed in both towed and carrier-mounted versions. The 120 mm mortar fires a family of enhanced ammunition being produced in the United States. It replaces the WWII-vintage, 4.2-inch heavy mortars in mechanized infantry, armored, and armored cavalry units.

Range: 7,240 m
Weight: 319 lb
Rate of fire: 4 rd/min, sustained
Crew: 5 (ground-mounted)
Ammunition: High-explosive, smoke, illumination

FOREIGN COUNTERPART: The 120 mm smoothbore mortar is used by France, Germany, Denmark, and other allied armies. The Russian-developed counterpart is the M43 120 mm mortar, which has a range of 5,700 meters, weighs 602 pounds, and has a six-man crew.

PROGRAM STATUS: The 120 mm mortar is being produced at Watervliet Arsenal, NY. The 120 mm mortar towed system, M120, was fielded in September 1991 to the 199th Infantry Brigade, Fort Lewis, WA. The M121 carrier-mounted version will eventually be fielded to all remaining armor and mechanized units. The Army plans to field a total of 1,725 systems to replace all 4.2-inch mortars currently in the inventory. The 120 mm mortar-enhanced ammunition is currently being produced by Martin Marietta Ordnance Systems. The Army type classified the M933/934 HE and M930 illumination rounds for production in 1991.

PROJECTED ACTIVITIES: Procurement continues.

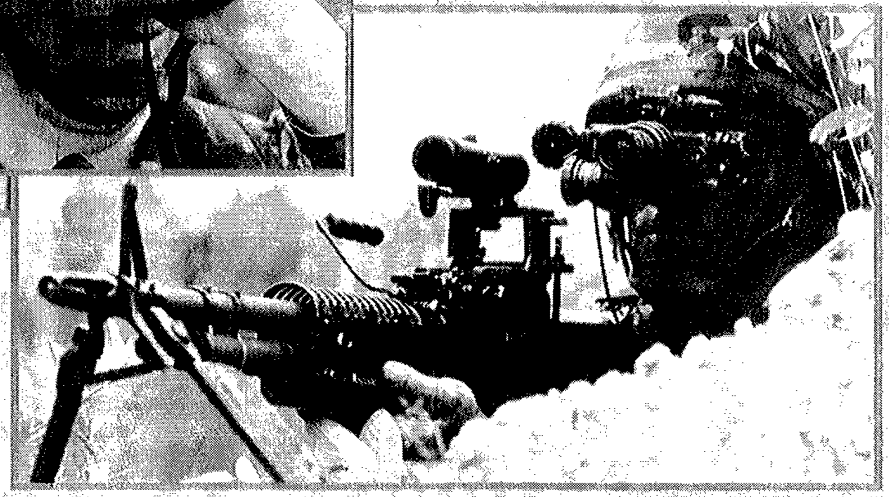
PRIME CONTRACTORS: Watervliet Arsenal, (Watervliet, NY)
Red River Army Depot (Texarkana, TX)

* See appendix for list of subcontractors.

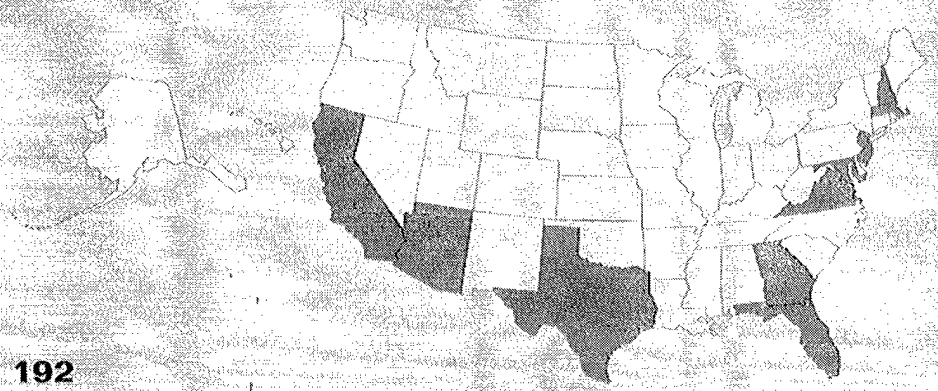
Aviator's Night Imaging System

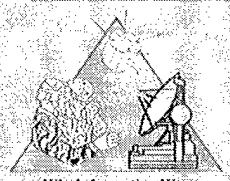
Thermal Weapon Sight

Mini Eyesafe Laser Infrared Observation Set

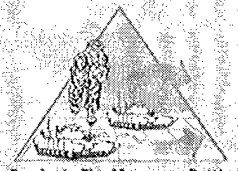


Night Vision Goggle and Infra Red Aiming Light





Win Information War



Dominate The Maneuver Battle

MISSION: Night vision (NV) image intensification (I2), laser, and thermal technologies provide today's soldier with the capability to operate more effectively and safely by day or night and under degraded battlefield conditions.

CHARACTERISTICS: **Horizontal Technology Integration of Second Generation Forward Looking Infrared (2nd Gen. FLIR):** 2nd Gen. FLIR will allow combined arms forces to see the same battlespace while achieving cost reductions through commonality and potential economies of scale. Initial platforms for integration include the Bradley, Abrams, Armored Gun System, and Long-Range Advanced Scout Surveillance System (LRAS3). **Multi Sensor Devices:** The AN/AVS-6 Aviator's Night Vision Imaging System (ANVIS) is a lightweight, high-performance, binocular NV goggle for helicopter crews to aid in low-level, Nap-Of-the-Earth (NOE) flight. AN/AVS-7 ANVIS heads-up display (HUD) attaches to ANVIS and displays critical flight data to the helicopter pilot, eliminating the need to look inward. The AN/PVS-7 NV goggle is a lightweight, head-mounted, monocular unit used for walking, operating ground vehicles, navigation, map reading, first aid, and so forth. The Sniper Night Sight is a Third Generation Night Vision image intensification device, with a day scope, being procured in limited quantities solely for sniper missions. The AN/PAS-13 family of Thermal Weapon Sights (TWS) is used for surveillance and fire control of individual, crew-served, and heavy weapons during day/night, under "dirty" battlefield conditions. The AN/VAS-5, driver's vision enhancers (DVE), is a thermal viewer for tracked combat and tactical wheeled vehicles in combat and combat support units. It significantly improves the driver's capability by allowing maneuver and mobility operations during day or night under "dirty" battlefield conditions. **SAR/ATR:** Synthetic Aperture Radar Target Recognition and Location System (STARLOS) is an advanced technology demonstration of the feasibility of locating and identifying high value targets from an aerial platform such as an unmanned aerial vehicle. **Laser Devices:** The AN/PVS-6 Mini Eyesafe Laser Infrared Observation Set (MELIOS) is an eyesafe rangefinder that measures and displays range data. The AN/PLQ-4 Laser Countermeasure System (LCMS) is an adjunct to the M16 rifle. It is designed to detect and counter Optical and Electro-Optical (OEO) systems. The AN/VLQ-7 Combat Protection System, Stingray, is an electro-optical countermeasure system mounted on a Bradley FVS for testing and evaluation.

FOREIGN COUNTERPART: I2 and thermal devices are produced in many countries.

PROGRAM STATUS: Two multiyear contracts are in place (FY93-97) to procure final quantities of ANVIS, AN/PVS-7, and associated spare parts. Production qualification of ANVIS/HUD was completed in FY94. TWS and LCMS prototypes and training devices were tested and delivered in FY94. An Engineering and Manufacturing Development contract for the HTI SGF will be awarded. Two DVE NDI Integration contracts will each result in delivery of 25 "B" kits and 30 "A" kits (15 each for the PLS/HEMTT and HMMWV) in 2QFY95. Two STINGRAY systems were delivered and are in testing.

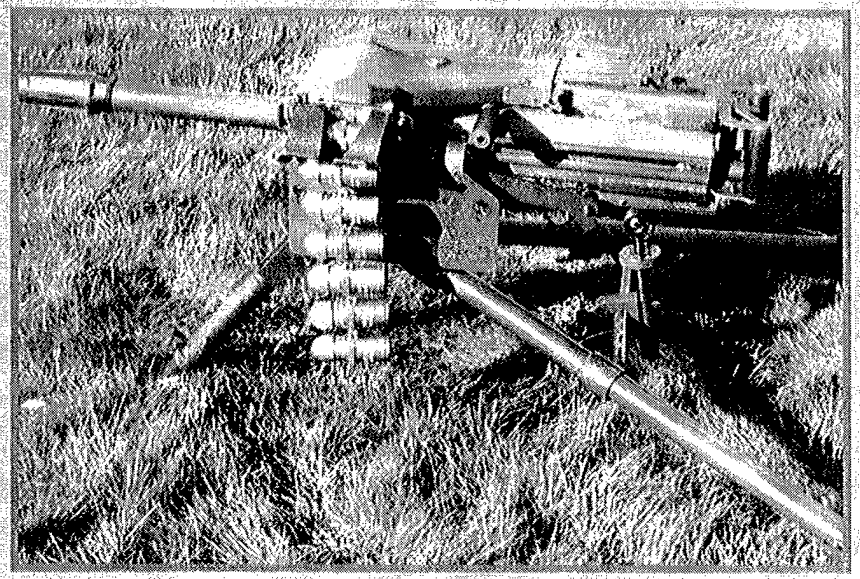
PROJECTED ACTIVITIES:

FY95 production award of TWS and AN/PLQ-4.
Continue SAR algorithm development and implementation.
STINGRAY OTI simulation Phase III and ATD exit decision.
AN/PLQ-4 LCMS MS II.
2nd Gen. FLIR PDR and producibility contract awards.
DVE DT/LUT and final deliverables.

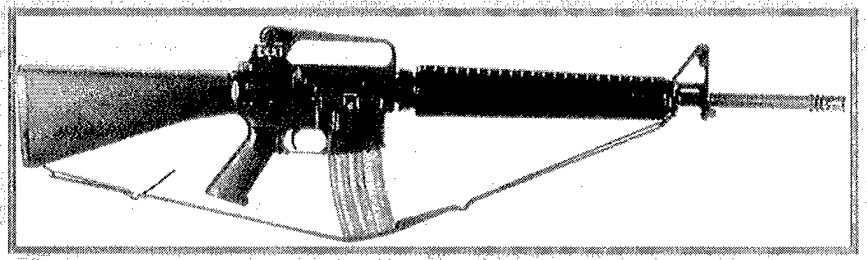
PRIME CONTRACTOR:

ITT (Roanoke, VA)
IMO/Optic-Electronic (Dallas, TX)
Lockheed-Sanders (Nashua, NH)
Magnavox (Mahwah, NJ)
Hughes (El Segundo, CA)
Electro-Optical Sensors (Palo Alto, CA)
AEL Defense (Alpharetta, GA)
Insight Technology (Manchester, NH)
Brunswick (Bedford, MA)
Texas Instruments (Dallas, TX)
Litton Industries (Tempe, AZ)

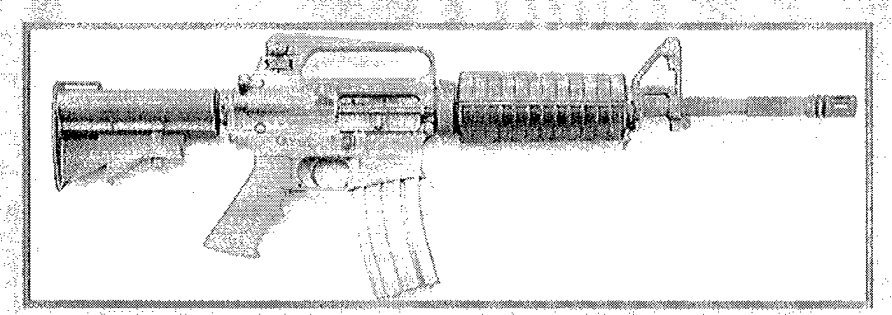
* See appendix for list of subcontractors.



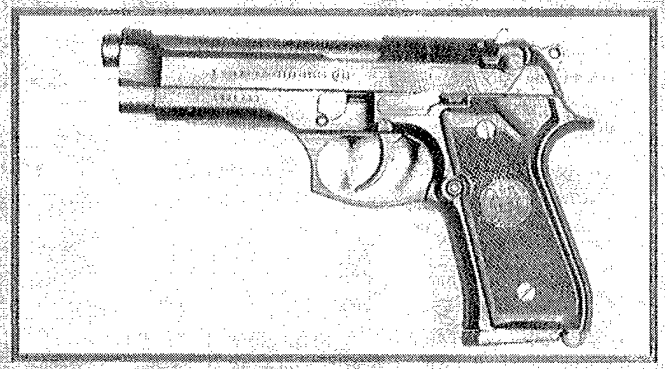
MK 19-3 40mm Automatic Grenade Launcher



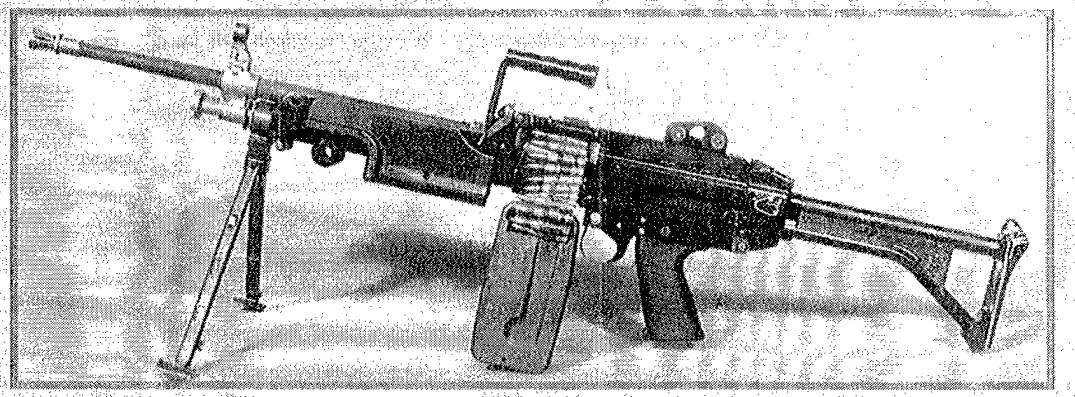
M16A2 Rifle



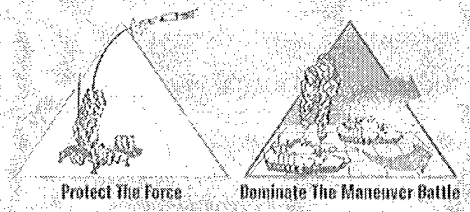
M4 Carbine

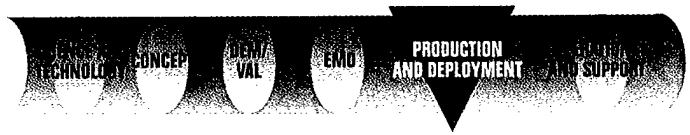


M9 Personal Defense Weapon



M249 Squad Automatic Weapon (SAW)





MISSION: Small Arms provide direct fire for individuals and small units.

CHARACTERISTICS:

M9 Personal Defense Weapon: A semiautomatic, double-action pistol, the M9 is more lethal, lighter, and safer than its predecessors. The M9 is carried by crew-served weapon crewmen and by others who have a personal defense requirement, such as law enforcement personnel and aviators. It replaces the M1911A1 .45 caliber pistol and the .38 caliber revolver.

M4 Carbine: The M4 is a lightweight, gas operated, air cooled, magazine fed, selective rate, shoulder fired weapon with a collapsible stock. A more compact version of the M16A2 rifle, the M4 provides the individual soldier operating in close quarters the capability to engage targets at extended range with accurate, lethal fire. It achieves over 80% commonality with the M16A2 Rifle and will replace all .45 caliber M3 submachine guns and selected M9 pistols and M16 series rifles.

M16A2 Rifle: The M16A2 is a lightweight, air-cooled, gas-operated, low-impulse rifle. An improved version of the M16A1 it is replacing, the M16A2 incorporates improvements in 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 NATO standard ammunition, which is also fired by the Squad Automatic Weapon.

M249 Squad Automatic Weapon (SAW): The M249 is a lightweight, gas-operated, one-man-portable machine gun capable of delivering a large volume of effective fire to support infantry squad operations. The M249 replaces the two automatic M16A1 rifles in the rifle squad on a one-for-one basis in all infantry type units and in other units requiring high firepower.

MK19-3 40mm Automatic Grenade Launcher: 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 used in offensive and defensive operations 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, 5-ton trucks, and selected M88A1 recovery vehicles.

	M9	*M4*	*M16A2*	*M249*	*MK19-3*
Caliber:	9mm	5.56mm	5.56mm	5.56mm	40 mm
Weight:	2.6 lb	5.65 lb	8.9 lb	16.3 lb	72.5 lbs
Max effective range:	50m	500m	550m	800m	2,200 m (area target)

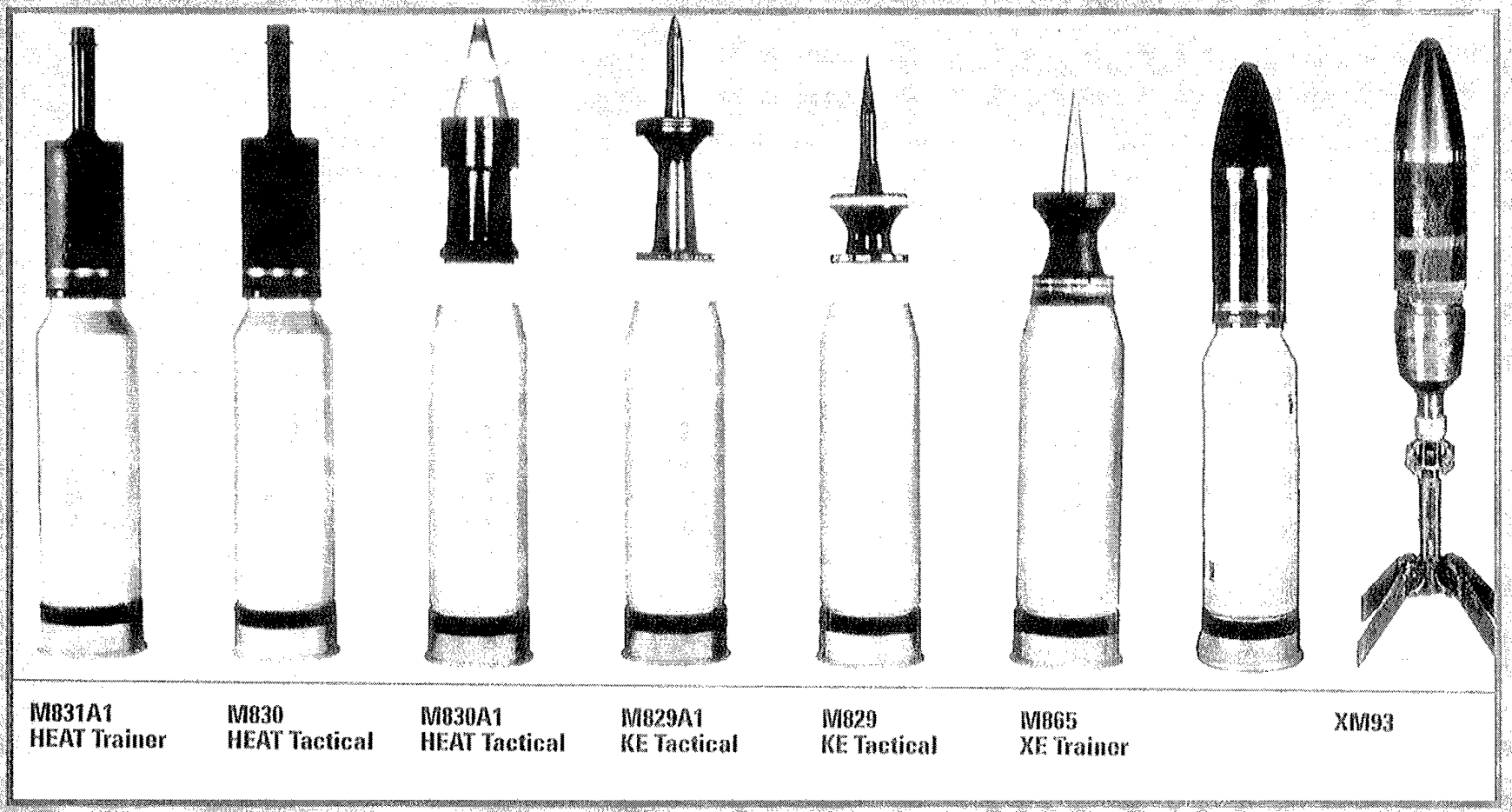
PROGRAM STATUS: All are currently in series production and fielding.

PRME CONTRACTORS:

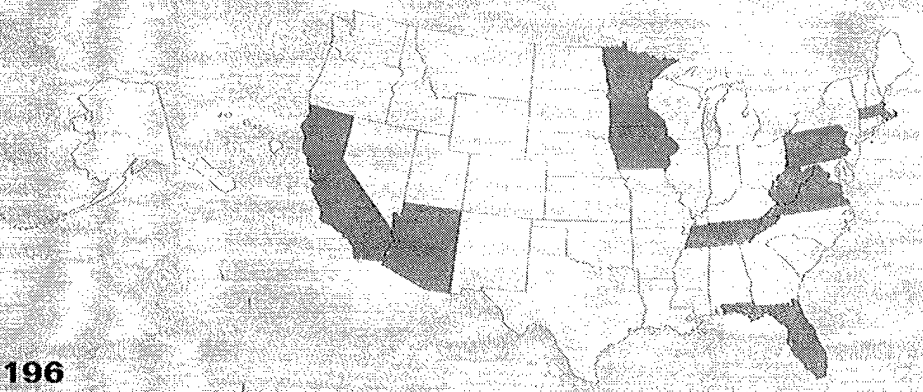
Beretta (Accokeek, MD)—M9 Personal Defense Weapon
Colt's Manufacturing (Hartford, CT)—M4 Carbine, M16A2 Rifle
FN Manufacturing (Columbia, SC)—M16A2 Rifle, M249 Squad Automatic Weapon
Saco Defense (Saco, ME)—MK19-3 Automatic Grenade Launcher

* See appendix for list of subcontractors.

Rounds Type Classified for U.S. Army



M831A1	M830	M830A1	M829A1	M829	M865	XM93
HEAT Trainer	HEAT Tactical	HEAT Tactical	KE Tactical	KE Tactical	XE Trainer	



Dominate The Maneuver Battle

MISSION: The 120 mm family of tank ammunition is fired from the M256 cannon on the M1A1/M1A2 tank. There are four basic cartridge types: Kinetic Energy (KE), Armor Piercing, Fin Stabilized, Discarding Sabot—Tracer (APFSDS-T); High-Explosive, Multipurpose—Tracer (HE-MP-T); an APFSDS-T Training Cartridge (M865); and an HE-MP-T Training Cartridge (M831).

CHARACTERISTICS: **APFSDS-T:** One-piece depleted uranium penetrator, combustible cartridge case, discarding sabot—JA2 propellant—M829, M829A1, M829A2.

HE-MP-T: Shaped charge warhead, combustible cartridge case—JA2 propellant—M830. Saboted projectile with manually selectable air/ground switch for anti-helicopter—M830A1.

STAFF: Smart Target Activated Fire-and-Forget (XM93) munition with Explosively Formed Penetrator (EFP) for defeat of armor targets in defilade.

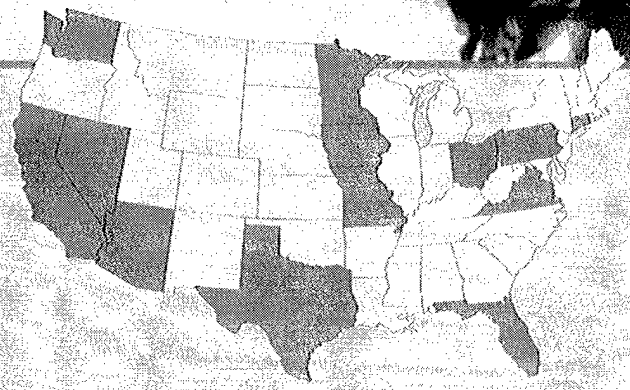
FOREIGN COUNTERPART: NATO tanks employ similar types of KE and HE-MP ammunition. Russian-designed tanks fire KE, high explosive fragmentation ammunition, and anti-tank guided missiles.

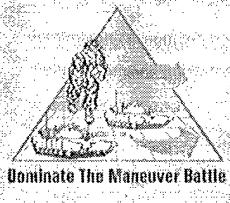
PROGRAM STATUS: The basic 120-mm ammunition was fielded with the M1A1 Tank. The Armament Enhancement Initiative (AEI) program provides ammunition required to defeat future threat targets. The M829A2, APFSDS-T and M830A1, HE-MP-T are in low-rate production. The STAFF cartridge is in the Engineering and Manufacturing Development phase.

PROJECTED ACTIVITIES: A four-year production contract for the M865 APFSDS-T Training Cartridge will be awarded in FY95.
Also production of the M831A1 HE-MP-T Training Cartridge and the M829A2 APFSDS-T will continue during FY95.

PRIME CONTRACTOR: Alliant (Brooklyn Park, MN)—M830A1, M831A1, M865
Olin (St. Petersburg, FL)—M829A2, M831A1, M865

* See appendix for list of subcontractors.





Dominate The Maneuver Battle

MISSION: The TOW (Tube-Launched, Optically Tracked, Wire Command-Link Guided) missile is a long-range, heavy anti-tank system designed to attack and defeat armored vehicles and other targets, such as field fortifications.

CHARACTERISTICS: The TOW is found at battalion level and is mounted on the Bradley Fighting Vehicle System (BFVS), the Improved TOW Vehicle (ITV), the High Mobility Multipurpose Wheeled Vehicle (HMMWV), and the AH-1S Cobra Helicopter. The system consists of a tripod, traversing unit, missile guidance set, launch tube, optical sight, battery assembly, and any of the five missile variations. The system also includes a thermal sight that provides a capability for operations at night, in reduced visibility, and in a countermeasure environment. The missiles are all-up rounds encased in a disposable container.

	TOW 2A	*TOW 2B*
	Missile	Missile
Crew size:	3	3
System weight:	277.7 lb	280.1 lb
Reliability:	96 %	98 %
Min range:	65 m	200 m
Max range:	3,750 m	3,750 m

	TOW 2	*ITAS*
	System	System
Target acquisition:	2 sights	1 integrated sight
	1st Gen FLIR	2d Gen FLIR
		increased range
Range determination:	No	Yes
Training:	Peripheral	Embedded
Fire control:	Gunner	Auto target/
	Guidance only	Multi target track

FOREIGN COUNTERPART:

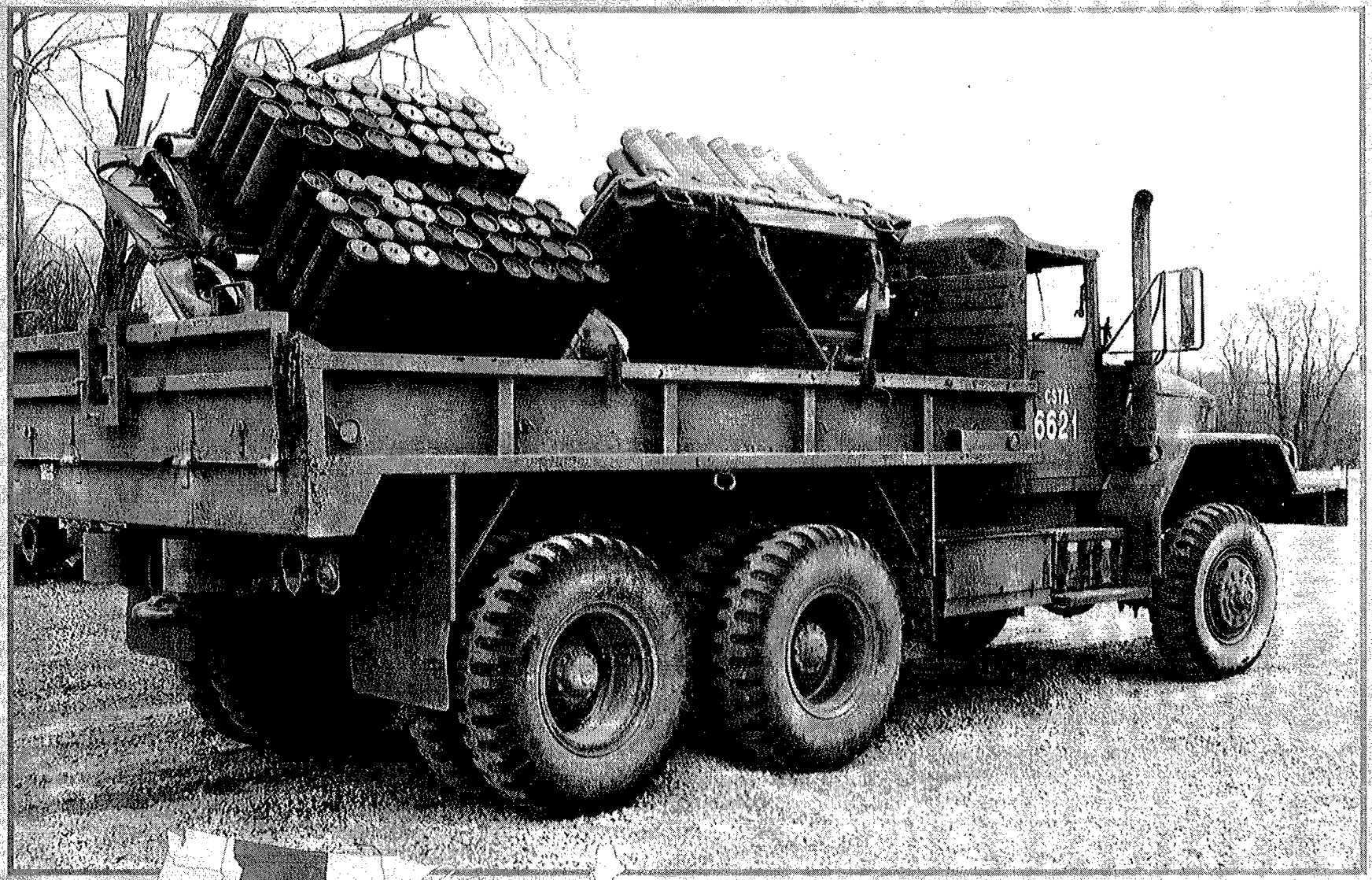
Sweden:	Bofors BILL
Russia:	AT-4/5/6
France/Germany:	HOT 2
United Kingdom:	TRIGAT-Heavy; MILAN 2

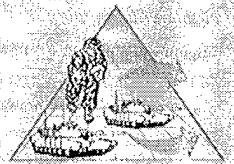
PROGRAM STATUS: The TOW Weapon System entered its Production and Deployment phase with the Basic TOW in 1970. Since that time, there have been five variations of the missile and two variations of the TOW subsystem. The TOW 2B replaced the TOW 2A as the standard production missile in 2QFY92, and will join the more than 100,000 missiles and 14,000 platforms already in the field. The TOW is currently in use by more than 40 other nations as their primary heavy anti-armor weapon system. The TOW Improved Target Acquisition System (ITAS) entered into the Engineering and Manufacturing Development phase in April 1993. ITAS will improve the target detection, recognition and engagement capability of the TOW through the incorporation of a second generation FLIR, a laser range finder, and automatic tracking features.

PROJECTED ACTIVITIES: Continue TOW 2B missile production.
ITAS Limited User Test (June 1995).

PRIME CONTRACTOR: Hughes (Tucson, AZ; Goleta, GA)—TOW missile
Texas Instruments (Dallas, TX)—ITAS

* See appendix for list of subcontractors.





Dominate The Maneuver Battle

MISSION: The Volcano system is a rapidly deployed mine system that can be delivered from a UH-60 helicopter and a host of ground vehicles. The system can be employed offensively and defensively to delay enemy movement, isolate the battlefield and reinforce friendly fires.

CHARACTERISTICS: The delivery system consists of a dispenser control unit, one to four launcher racks and unique mounting hardware. Each launcher rack is capable of holding 40 mine canisters with a 5:1 mix of anti-tank and anti-personnel mines. The air system is capable of deploying 960 mines in less than 20 seconds.

FOREIGN COUNTERPARTS:

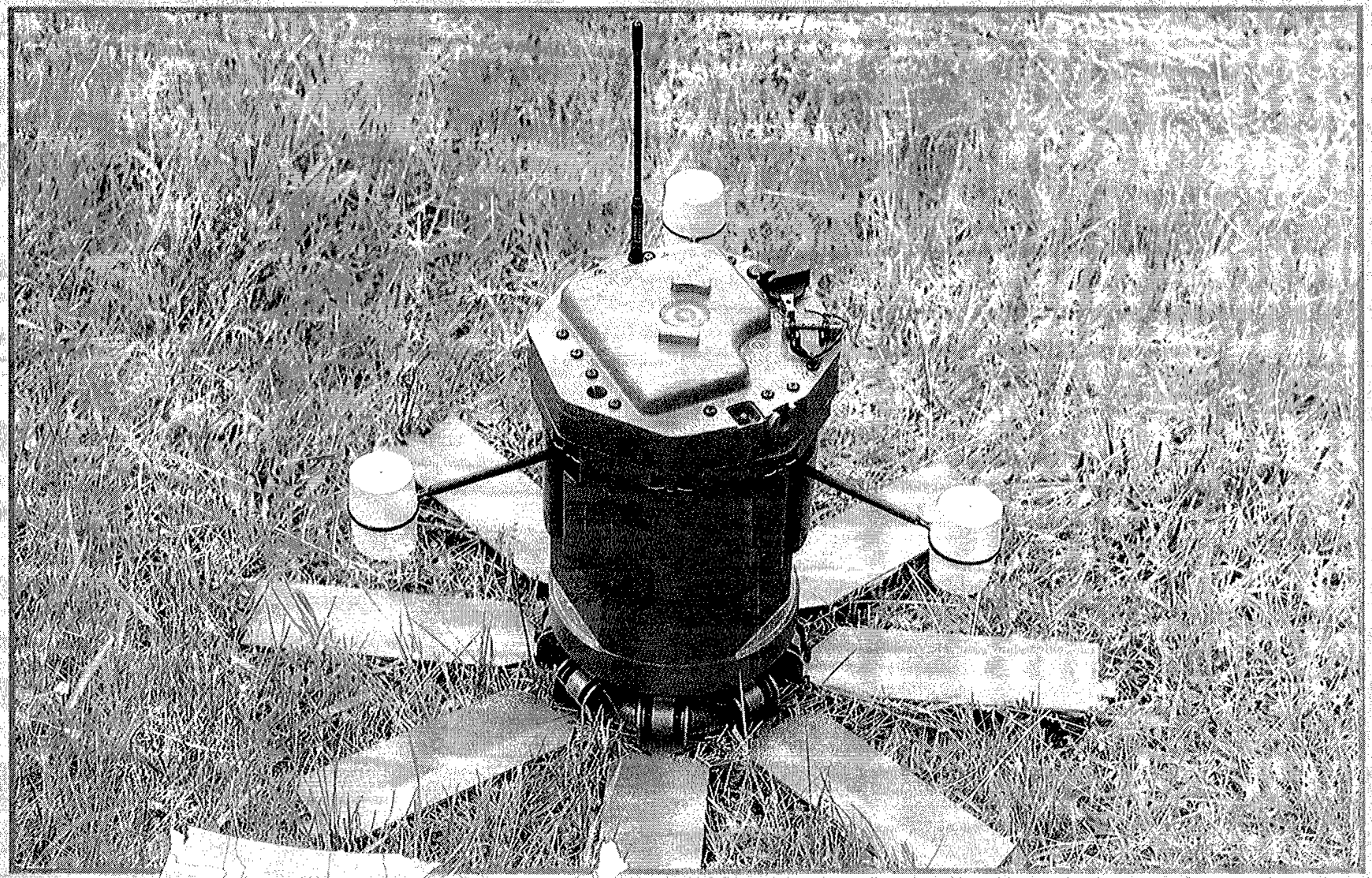
Germany:	Skorpion
France:	Minotaur
Italy:	Istrice
U.K.:	VLSMS

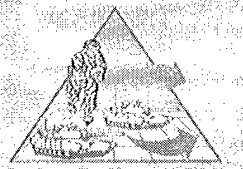
PROGRAM STATUS: The 5-ton truck delivery system was type classified in January 1989, the M548A1 version of type classified in October 1991 and the air version was type classified in June 1991. Troop New Equipment Training Team (Troop NETT) of the 5-ton and the M548A1 are ongoing and Troop NETT of the air system will start 4QFY95. A new improved anti-tank mine (MSEP) was included in the FY94 mine buy. FY95 will be the last Volcano production buy.

PROJECTED ACTIVITIES: Deliveries of the Air-mounted Dispensers will be completed in April 1995.
Deliveries of the M548 mounted Dispensers will occur between August 1996 and July 1997.
Deliveries of the improved M89A1 canisters will begin October 1996 and continue through June 1997.
Deliveries of the 5-ton Truck Dispensers will be completed by July 1997.

PRIME CONTRACTOR: Nomura Enterprise (Rock Island, IL)

* See appendix for list of subcontractors.





Dominate The Maneuver Battle

Wide Area Munition (WAM)

MISSION: WAM counters the enemy's mobility by delaying, disrupting and canalizing enemy vehicle movement in the close battle. Future variants will perform these functions in deep battle.

CHARACTERISTICS: The WAM 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 within the 100 meter lethal radius, the munition determines the optimum firing point and launches a submunition over the target. The sublet acquires the target by infrared sensor and fires a tantalum Explosively Formed Penetrator (EFP) at the top of the target vehicle.

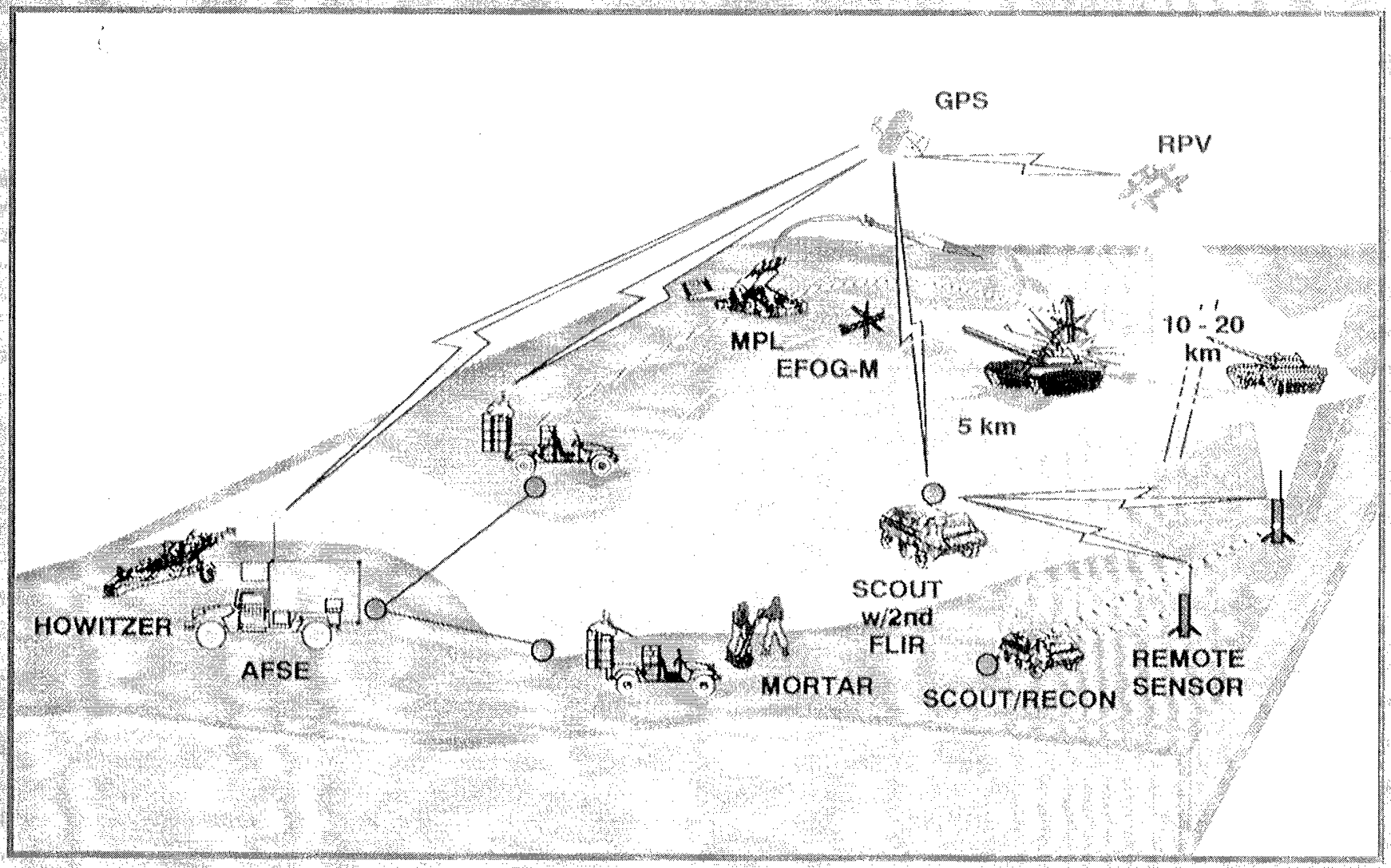
FOREIGN COUNTERPARTS: None known foreign counterpart.

PROGRAM STATUS: The WAM is currently in EMD. Milestone IIIa is scheduled for 4QFY95, Milestone III is scheduled for 4QFY96.

PROJECTED ACTIVITIES: Critical Design Review is scheduled for March 1995.
LRIP contract is planned for a 2QFY96 award.
TT/UT will be completed by 4QFY96.

PRIME CONTRACTOR: Textron Defense Systems (Wilmington, MA)

* See appendix for list of subcontractors.



Rapid Force Projection Initiative

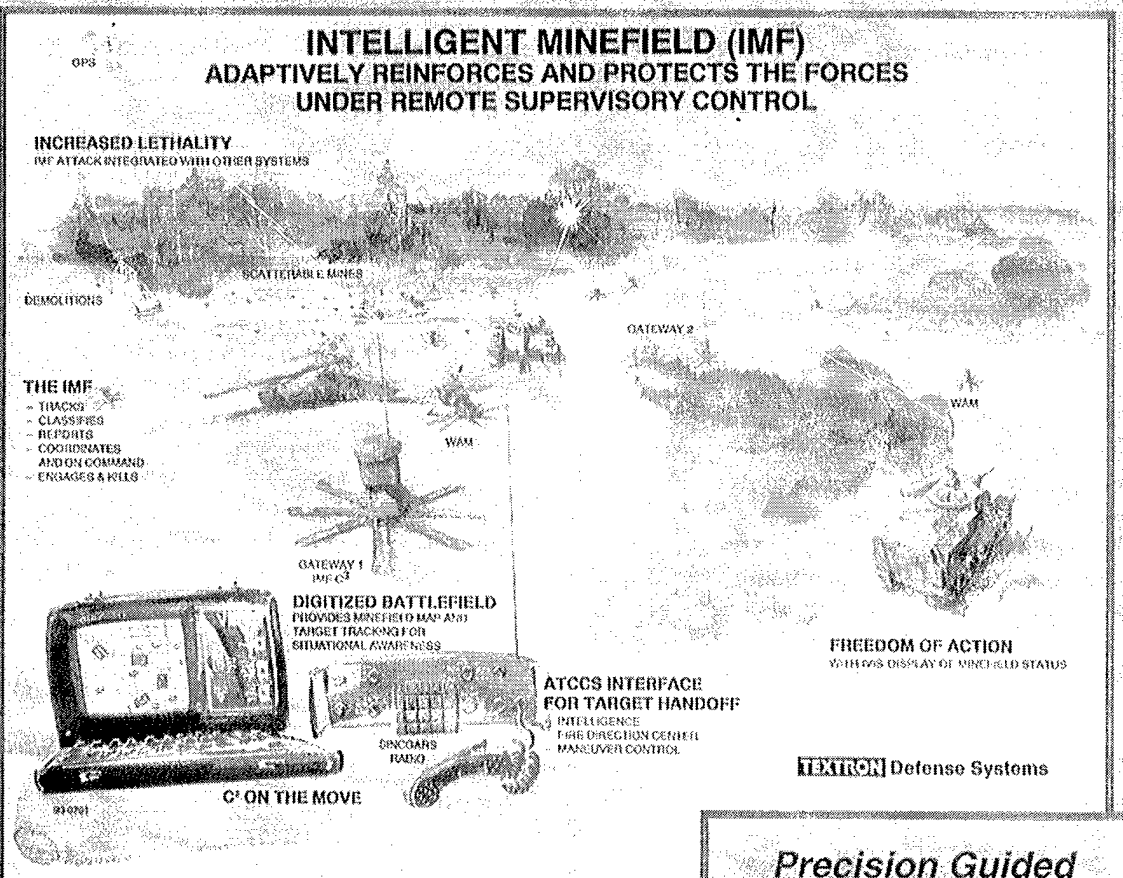
OVERVIEW: The goal of the Army Science and Technology program in Dominate the Maneuver Battle is to provide technology for overmatching enemy air and land systems to give our soldiers the decisive edge on the battlefield. The future battlefield will contain advanced air and land forces because of the rapid proliferation of progressive weapon systems and technologies around the world. To ensure a swift, decisive, low-casualty victory, the Army combined arms force must be able to outmaneuver and quickly destroy these mobile adversaries at long ranges. This requires horizontal technology integration into the combined arms force of such critical capabilities as owning the night, superior situational awareness, digitizing the battlefield, and increased lethality and survivability of first-to-fight forces.

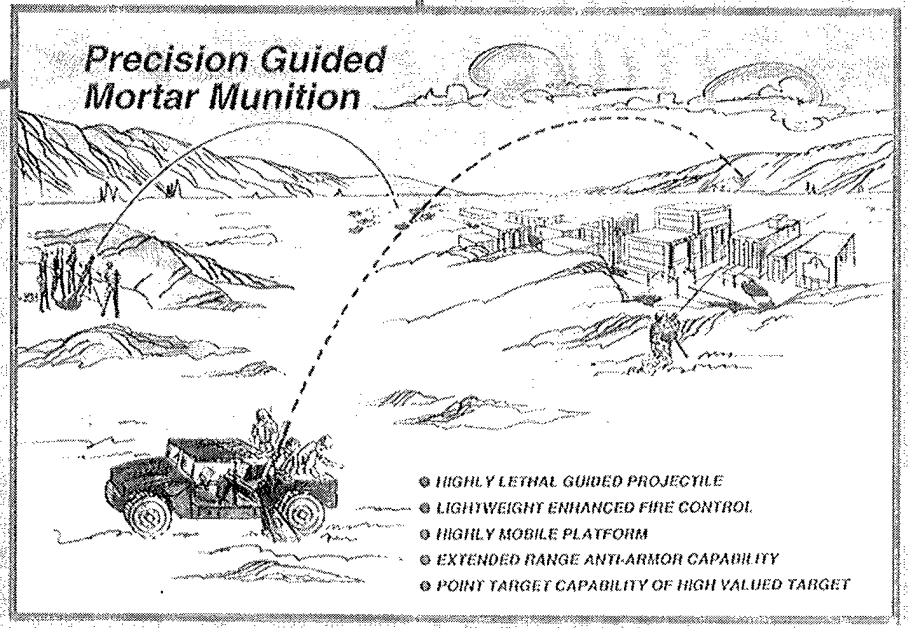
RAPID FORCE PROJECTION INITIATIVE (RFPI) ACTD: The Rapid Force Projection Initiative (RFPI) Advanced Concept Technology Demonstration (ACTD) will provide early entry forces with advanced technologies and systems. RFPI addresses the operational capability requirements for lethality and survivability of airlift constrained early entry forces. These requirements developed by the U.S. Army Training and Doctrine Command (TRADOC), investigate the value added of advanced technologies while maintaining the inherent strategic deployability of these forces. RFPI is a "system of systems" concept of Hunters and Standoff Killers which will demonstrate technology solutions which greatly expand the battlespace of light forces. Near-real time target information is relayed from the Hunters through a battlefield computer network to the Standoff Killers, systems designed to engage and kill enemy armor forces with long-range precision munitions. The enhancements to the operational capability requirements of light forces provided by RFPI technologies will significantly reduce threat combat power prior to the occurrence of the direct fire battle. The capability to overmatch any threat force with highly deployable forces is essential for the success of a force projection Army. RFPI consists of three components: Simulation (SIM), Integrated Demonstration (ID), and eleven individual Advanced Technology Demonstrations (ATD) and Technology Demonstrations (TD). The ACTD provides a large-scale field demonstration in 3QFY97, and a substantial, residual, warfighting capability for an operational unit selected by the Office of the Deputy Chief of Staff for Operations and Plans. The ACTD builds on the ongoing activities of the RFPI TLD. Office of the Secretary of Defense funds augment the RFPI program by providing resources for the field exercise and the leave behind systems. It provides the user an opportunity to not only examine new technologies, but new tactics, techniques and procedures as well. The participating unit will retain a mix of sensors, stand-off weapons, and command and control assets to continue assessments and for use in contingencies as needed.

The Hunter Sensor Suite ATD will demonstrate an advanced long-range sensor suite on a hunter/scout vehicle, which provides multiple target acquisition capabilities with enhanced target hand-off time lines to standoff killers. This will provide the mounted scout with long-range target acquisition and detection using second generation FLIR and acoustic sensors. Pacing technologies include second generation focal plane arrays, advanced signal processing hardware, image compression/transfer techniques, ground-based aided target recognition algorithms, and reduced signature optics. The Hunter Sensor Suite will be integrated with a surrogate hunter vehicle for use in the RFPI Integrated Demonstration. Additionally, the ATD will provide a sensor for the Dismounted Scout, which couples into the Hunter network, and a Drivers Thermal Viewer (DTV) for enhanced (day/night) vehicle mobility.

The Remote Sentry ATD provides low-cost, lightweight, autonomous, remote, wide-area, ground-based surveillance and target acquisition technology for day, night, and limited visibility conditions for early entry forces. This will be accomplished through both imaging (FLIR and day TV) sensors and non-imaging (acoustic, magnetic, and seismic) sensors. These sensors will provide compressed target image hand-off to the scout vehicle over the Single Channel Ground and Airborne Radio System (SINCGARS) secure link. Pacing technologies include uncooled FLIR, data compression/transfer techniques, low-level processing, and power sources.

INTELLIGENT MINEFIELD (IMF)
ADAPTIVELY REINFORCES AND PROTECTS THE FORCES UNDER REMOTE SUPERVISORY CONTROL





The Intelligent Minefield (IMF) ATD demonstrates effective command and control of interactive minefields containing sensor arrays and smart anti-tank mines. The IMF ATD is tasked to enhance and support standoff warfighting by providing a capability for mines to maintain a command and control link to standoff forces. The ATD focus is on optimized use of smart, wide area anti-tank mines with the ability to coordinate the action of individual mines, resulting in selective engagements (avoid multiple attacks on single targets) and advanced coordinated tactics (ambush, entrapment, filtration). The ATD will demonstrate a variety of minefield enhancements obtained through advanced sensors and digital communications to help the user determine which alternatives are cost effective for future systems. Critical technologies include sensors, communications, signal processing, and data fusion.

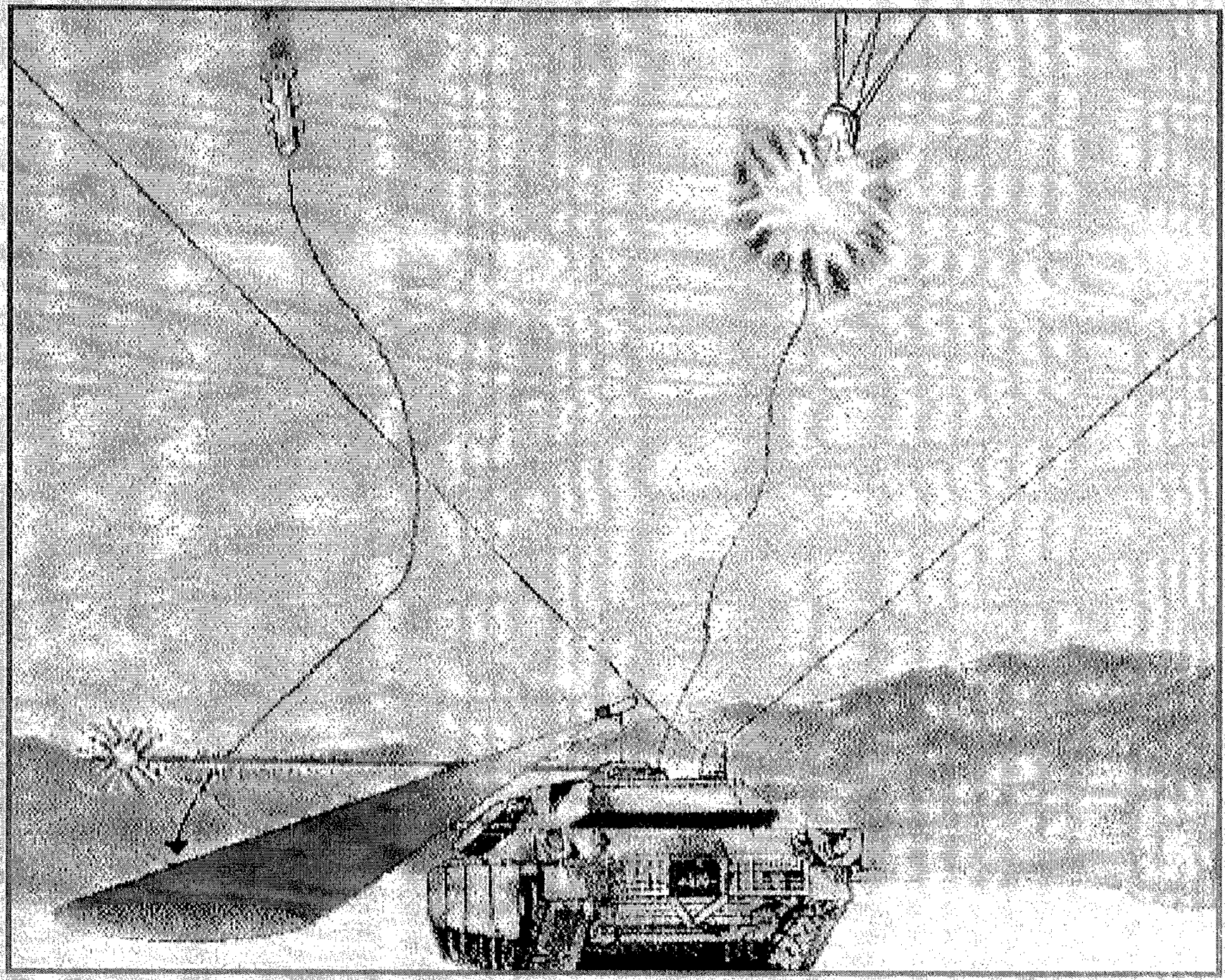
The Precision Guided Mortar Munition (PGMM) ATD will investigate the technologies of infrared and millimeter wave sensors, laser designators, and fiber optics guidance systems into a mortar munition to increase the survivability and lethality of the light forces on the battlefield. An improved man-portable fire control system will be developed, which can be used to upgrade the fire control of other mortar and artillery systems for improved effectiveness. Near-term emphasis will be on the evaluation of existing foreign and domestic systems to use or modify NDI technology. The PGMM ATD goal is to rapidly engage specific targets identified by the forward sensors (Hunters), and to provide rapid response to calls for fire through use of a compact, man-portable fire control system. Integration of PGMMs in the Hunter/Standoff Killer first-to-fight forces will provide increased flexibility as compared to current force structures, and reduction in logistics requirements by reduction in numbers of rounds per kill (increased accuracy and lethality).

ADVANCED VEHICLE TECHNOLOGIES:

The Advanced Vehicle Technologies (AVT) includes several demonstrations applicable to all ground vehicles, but emphasize improvements in medium and heavy systems. The primary goals of AVT are to provide superior combat capabilities at weights and sizes that enhance deployability, and to provide opportunities for system upgrades. AVT will examine ways to lighten combat vehicles through such means as composite structures and protection of ground vehicles with innovative means other than heavy armor. It will also explore techniques to reduce the number of crewmen required to operate these systems.

The Composite Armored Vehicle (CAV) ATD is an AVT program with a four-year ATD contract awarded to United Defense, LP in FY94. Future prospects of a smaller Army with fewer forces deployed overseas, combined with growing regional instability, make power projection of survivable forces with decisive advantages an imperative. Technologies must be developed that lead to future lightweight, versatile, survivable, and deployable combat vehicles. The CAV ATD will demonstrate a lighter-weight, ground combat vehicle using advanced composites with integrated signature management. It will consist of a demonstration of advanced composites, signature management technology, and advanced lightweight armors on a 17—to 22-ton platform, emphasizing manufacturability, repairability, non-destructive testing, and structural integrity. The CAV's operational advantages will improve survivability by reducing detectability, improving agility, and improving deployability by reducing structure weight.

The Hit Avoidance ATD is also an AVT program. The premises behind an integrated approach in this ATD are that smart weapons are very effective and are expected to become more prevalent, and that vehicle systems cannot be protected totally by ballistic armor without paying an unacceptable price in system weight. The Hit Avoidance ATD will demonstrate integration of sensors, countermeasures, and active defenses against both top attack and horizontal threats. The types of sensors that could be integrated include laser warning, radar warning, and passive missile warning receivers. Countermeasures might include jammers, obscurants, and counterfire.



The Crewman's Associate ATD will demonstrate crew station performance enhancements through the application of advanced technologies with potential Abrams and Bradley upgrades as well as future ground combat vehicle applications. The focus of the Crewman's Associate ATD is on the application and evaluation of advanced human interface technologies (i.e. helmet mounted displays, panoramic displays, voice interfaces, etc.), that will enable the design of a revolutionary Soldier Machine Interface (SMI). If implemented, this SMI will permit the soldier to take advantage of the increased amount of data available from the digitized battlefield and from advanced sensors, and the improved capabilities being developed under the Hit Avoidance, Target Acquisition, and Combined Arms and Control ATD's as well as other emerging crew task aids. These advanced displays, controls, and crew task aids will be integrated into crew stations which maximize the crewman's efficiency and effectiveness on the battlefield. Soldier-in-the-loop simulators will be built in FY95.

The Target Acquisition ATD will demonstrate aided target acquisition and prioritization at extended ranges to allow reduced crew work loads and targeting time lines. The program will combine a "Comanche-type" second generation thermal sight, aided target recognition processor, global positioning system, cooperative target identification, and other emerging technologies to reduce crew requirements and increase lethality and survivability. In addition, thermal driving technologies will provide increased on- and off-road mobility.

ROTORCRAFT PILOT'S ASSOCIATE ATD:

The Rotorcraft Pilot's Associate (RPA) ATD will enhance rotorcraft fightability and revolutionize combat helicopter mission effectiveness. It focuses on critical pilotage and mission management technologies, including the use of artificial intelligence/expert systems to optimize crew workload; advanced command and control techniques necessary to meet new mission requirements and situational awareness needs; advanced pilotage sensors, displays, and controls; and advanced weapon systems to support both air-to-air and air-to-ground engagements. The ATD technology deliverables, as applied to the development of DoD/Army rotorcraft, will contribute greatly to the pilot's ability to "see and comprehend the battlefield" in all conditions; rapidly collect, synthesize, and disseminate battlefield information; and take immediate and effective actions. Measures of performance beyond a "Comanche-like" baseline during day/night, clear and adverse weather include the following: reduction in mission losses by 30 to 60 percent, increased targets destroyed by 50 to 150 percent, and reduction in mission time lines by 20 to 30 percent. Projected plans for transition include support of the RAH-66 Comanche, AH-64 Apache Improved, Special Operations Aircraft (SOA), DoD/Army System Upgrades, and potential future systems beyond 2000.

INTEGRATED HIGH PERFORMANCE TURBINE ENGINE TECHNOLOGY (IHPTET):

The Integrated High Performance Turbine Engine Technology (IHPTET), Joint Turbine Advanced Gas Generator (JTAGG) initiative is a joint DoD/NASA/industry effort to provide revolutionary advancement in aircraft propulsion performance and operational capability. The goals of JTAGG are fully aligned with the three phases of IHPTET and will focus on improvements in Turboshaft/Turboprop (TS/TP) core engine technology with a long-range goal of achieving a 40% decrease in specific fuel consumption (SFC) and a 120% increase in power-to-weight for a given size engine. The JTAGG program is currently demonstrating TS/TP core engines with advanced aerodynamics and materials technology which will allow the IHPTET Phase I goals to be achieved. Demonstrator engines that can greatly exceed the Phase I goals and meet the IHPTET Phase II goals are currently being designed and fabricated with component testing to begin shortly. JTAGG is jointly sponsored by the Army, Navy, and Air Force. Two contractors, Textron Lycoming of Stratford, Connecticut, and General Electric of Lynn, Massachusetts are under contract to conduct JTAGG programs. General Electric is teamed 50/50 with Allied Signal Engines of Phoenix, Arizona.

NATIONAL AUTOMOTIVE CENTER:

The National Automotive Center (NAC), located at the U.S. Army Tank-Automotive Research, Development and Engineering Center, serves to accelerate the development and integration of dual use automotive technologies, and to encourage collaborative research and development among the government, industry and academia. Its strategic thrusts are to identify and pursue high payoff dual use technologies and processes that offer significant performance and cost payoffs. Efforts are focused on advanced propulsion systems; adaptive controls; light weight materials; polymeric composite structures; silicon carbide power electronics; onboard sensors, displays and other automated vehicle systems; virtual prototyping tools; energy storage devices; rapid, flexible manufacturing; and flexible assembly systems. Currently, the NAC is supporting 35 contracts with industry and academia.

ABRAMS TANK:

Anniston Army Depot; Anniston, AL
Hughes; Los Angeles, CA
Textron Lycoming; Stratford, CT
DOE; Idaho Falls, ID
Rock Island Arsenal; Rock Island, IL
GMC-Allison; Indianapolis, IN
Cadillac Gage; Warren, MI
General Dynamics; Sterling Heights, MI; Warren, MI
Smith Industries; Grand Rapids, MI
Watervliet Arsenal; Watervliet, NY
General Dynamics; Lima, OH
General Dynamics; Scranton, PA
Texas Instruments; Dallas, TX

ADVANCED AIRDROP FOR LAND COMBAT (AALC) ATD:

Pioneer Aerospace; Melbourne, FL
SSE; Pennsauken, NJ

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS):

MILTOPE; Montgomery, AL;
SAIC; San Diego, CA
Magnavox; Fort Wayne, IN
MILTOPE; Eatontown, NJ

ADVANCED INTEGRATED COLLECTIVE PROTECTION SYSTEM (AICPS):

Loral; Glendale, CA

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

United Defense; San Jose, CA
Martin Marietta; Orlando, FL
Thiokol; Elkton, MD
Martin Marietta; Pittsfield, MA
Teledyne; Muskegon, MI
Alliant Tech Systems; Edina, MN
United Defense; Minneapolis, MN
Olin; Charleston, TN
Martin Marietta; Burlington, VT

AIR-TO-GROUND MISSILE SYSTEM (AGMS):

Martin Marietta; Orlando, FL
Rockwell International; Duluth, GA
Westinghouse (Joint Venture); Baltimore, MD

ALL SOURCE ANALYSIS SYSTEM (ASAS):

Jet Propulsion Laboratory; Pasadena, CA
Loral; San Jose, CA
Martin Marietta; Denver, CO
CODAR; Boulder, CO
Magnavox; Fort Wayne, IN
Martin Marietta; Pittsfield, MA
BDM; McLean, VA

APACHE:

McDonnell Douglas; Mesa, AZ
Teledyne; San Diego, CA
Honeywell; St. Petersburg, FL
Martin Marietta; Orlando, FL
Rockwell International; Cedar Rapids, IA
Serv-Air; Lexington, KY
General Electric; Lynn, MA
Photronics; Hauppauge, NY

ARMORED GUN SYSTEM (AGS):

Pentastar; Huntsville, AL
United Defense; Anniston, AL
Hughes; El Segundo, CA
United Defense; San Jose, CA
General Electric; Pittsfield, MA
Detroit Diesel; Detroit, MI
Cadillac Gage; Warren, MI
United Defense; Minneapolis, MN
Watervliet Arsenal; Watervliet, NY
United Defense; Aiken, SC
Computing Devices; Ottawa, Ontario, Canada

ARMY DATA DISTRIBUTION SYSTEM (ADDS):

White Technology; Phoenix, AZ
GEC-Marconi; San Marcos, CA
Hughes; Fullerton, CA
Rockwell International; Newbury Park, CA
Bowmar Instrument; Fort Wayne, IN
Hughes; Forrest, MS
GEC-Marconi; Totowa, NJ

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Atlantic Research; Camden, AR
Loral; Camden, AR
Taber Metals; Russelville, AR
Teledyne; Los Angeles, CA; Hollister, CA
Wyman-Gordon; San Leondro, CA
Wyman-Gordon; Groton, CT
Honeywell; Clearwater, FL
Honeywell; Minneapolis, MN
Eagle Picher; Joplin, MO
Hitchner; OiFallon, MO
Simmonds Precision; Cedar Knolls, NJ
Grey Syracuse; Syracuse, NY
KDI; Cincinnati, OH
Piqua; Piqua, OH
Martin Marietta; Milan, TN
Chemical Dynamics; Weatherford, TX
Hercules; McGregor, TX
Loral; Dallas, TX, Horizon City, TX
Texas Metal Spinning; Fort Worth, TX
Atlantic Research; Gainesville, VA
Spincraft; New Berlin, WI
Wisconsin Invest Cast; Watertown, WI

AVENGER:

AC; Huntsville, AL
Boeing; Huntsville, AL
Colsa; Huntsville, AL
Nichols Research; Huntsville, AL
Phoenix Industries; Huntsville, AL
United International Engineering; Huntsville, AL
Wildwood Electronics; Huntsville, AL
Hughes; Tucson, AZ
Arral Industries; Ontario, CA
FMS; Los Angeles, CA
Hughes; Pomona, CA
DBA; Melbourne, FL
CAI; Barrington, IL
Plastic Fabricating; Wichita, KS
KECO Industries; Florence, KY
Adams Russell; Amesbury, MA
General Electric; Pittsfield, MA
Magnavox; Mahwah, NJ
United Telecontrol Electronics; Asbury Park, NJ
Hughes; Farmington, NM
Cherokee Nation; Stillwell, OK
Letterkenny Army Depot; Letterkenny, PA
Kaydon; Sumter, SC
Boeing; Oakridge, TN
ATI; Fort Worth, TX
Texas Instruments; Dallas, TX
Texstar; Grand Prairie, TX
General Electric; Burlington, VT
Electro-Tech; Blacksburg, VA
Renton Coil; Renton, WA
Milwaukee Gear; Milwaukee, WI

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Speed Ring; Cullman, AL
Motorola; Phoenix, AZ
EG&G; Covina, CA
ENDEVCO; San Juan Capistrano, CA
Northrop-Grumman; Hawthorne, CA
Physics International; San Leondro, CA
SYNDEX; Torrance; CA
Systron Donner; Concord, CA
Versatron; Healdsberg, CA
Pioneer Aerospace; Windsor Locks, CT
ILC Dover; Fredrich, DE
Group Technology; Tampa, FL
Northrop-Grumman; Perry, GA
Analog Devices; Wilmington, MA
Eagle Picher; Joplin, MO
Raytheon; Manchester, NH
Brentronics; Comack, NY
Texas Instruments; Midland, TX
Interpoint; Redmond, WA
Rocket Research; Redmond, WA

BATTLEFIELD COMBAT IDENTIFICATION:

TRW; Redondo Beach, CA
University of Southern California; Los Angeles, CA
GTRI; Atlanta, GA
Magnavox; Fort Wayne, IN
MIT; Cambridge, MA
Booz-Allen Hamilton; Eatontown, NJ
QUESTECH; Eatontown, NJ
IITRI; Eatontown, NJ
Mitre; Eatontown, NJ
Colsa; Falls Church, VA
AMELEX; Falls Church, VA
QUESTECH; Falls Church, VA
E-OIR Measurements; Fort Belvoir, VA

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM (BCIS) – NEAR TERM:

TRW; Redondo Beach, CA
United Defense; San Jose, CA
Magnavox; Fort Wayne, IN
General Dynamics; Sterling Heights, MI

BATTLEFIELD DISTRIBUTED SIMULATION – DEVELOPMENTAL:

Loral; Akron, OH

BISTATIC RADAR FOR WEAPONS LOCATION ATD:

Syracuse Research; Syracuse, NY

BLACK HAWK:

Allied Signal; Tempe, AZ
ANF Ducommon; Gardena, CA
Parker Hannifin; Irvine, CA
Sikorsky Aircraft; Stratford, CT
Dayton-Granger; Fort Lauderdale, FL
Engineered Fabric; Rockmart, GA
CR Industries; Elgin, IL
Howmet; LaPorte, IN
Fansteel/Wellman Dynamics; Creston, IA
Plastic Fabricating; Wichita, KS
C.R. Daniels; Ellicott City, MD
General Electric; Lynn, MA
Aeroquip; Jackson, MI
Howmet; Muskegon, MI
Rosemount; Burnsville, MN
Vickers; Jackson, MS
New Hampshire Ball Bearing; Laconia, NH
Allied Signal; Teterboro, NJ
Precision Gear; Corona, NY
Walter Kidde Aerospace; Wilson, NC
FL Aerospace; Columbus, OH
PCC; Portland, OR
Northrop-Grumman; Fleetville, PA
Sentel; Providence, RI
Cameron Forge; Houston, TX
Simmonds Precision Products; Vergennes, VT
ELDEC; Bothell, WA
Astronautics of America; Milwaukee, WI

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Pentastar; Huntsville, AL
McDonnell Douglas; Mesa, AZ
United Defense; San Jose, CA
Booz-Allen Hamilton; San Fransisco, CA
ALCOA Forge; Vernon, CA
Hughes; Manhattan Beach, CA
Optical Coating Lab; Santa Rosa, CA
Metric Systems; Fort Walton Beach, FL
Hughes; La Grange, GA
Reynolds Metals; McCook, IL
Cummins; Columbus, IN
Martin Marietta; Pittsfield, MA
LAU Technologies; Acton, MA
Alliant Tech Systems; Minneapolis, MN
CHT Steel; Ventor, NJ
Sioux MFG; Fort Totten, ND
ALCOA Forge; Cleveland, OH
United Defense; York, PA
United Defense; Aiken, SC
Texas Instruments; Dallas, TX
Teleflex Defense Systems; Spanish Fort, UT
United Defense; Arlington, VA

BREACHER:

Pentastar; Huntsville, AL
E.I. Dupont Denemours; Wilmington, DE
GMC-Allison; Indianapolis, IN
AAI; Hunt Valley, MD
Cadillac Gage; Warren, MI
General Dynamics; Sterling Heights, MI
Deanco; Ithaca, NY
General Microwave; Amityville, NY
Gradall; New Philadelphia, OH
ITS; Philadelphia, PA
United Defense; York, PA
Jorge Scientific; Arlington, VA
Korry Electronics; Seattle, WA

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Pulau Electronics; Orlando, FL
SAIC; Orlando, FL
Loral; Bethesda, MD
Dynamics Research; Wilmington, MA
ECC International; Wayne, PA
Evans & Sutherland; Salt Lake City, UT
Loral; Manasass, VA

CIRCUIT SWITCH/MESSAGE SWITCH:

GTE; Taunton, MA
Laguna Industries; Albuquerque, NM

COMANCHE:

Allied Signal; Tempe, AZ; Glendale, AZ, Phoenix, AZ
ATD; Tucson, AZ
VLSI; Tempe, AZ
Kaiser Electronics; San Jose, CA; Carlsbad, CA
Litton Industries; Los Angeles, CA
TRW; San Diego, CA
AMCC; San Diego, CA
Applied Microcircuits; San Diego, CA
Command Systems Group; Torrance, CA
Lear Astronics; Santa Monica, CA
Micro Craft; Ontario, CA
Teledyne; Los Angeles, CA
TLD Systems; Torrance, CA
Vitesse; Camarillo, CA
Allied Signal; Torrance, CA
Ball Aerospace; Broomfield, CO
ATMEL; Colorado Springs, CO
Hamilton Standard; Windsor Locks, CT
Sikorsky Aircraft; Stratford, CT
CECO; West Hartford, CT
Fenn Manufacturing; Newington, CT
Kaman Aerospace; Bloomfield, CT
Harris; Melbourne, FL
Martin Marietta; Orlando, FL
Aircraft Porous Media; Pinellas Park, FL
Schwartz Electro-Optics; Orlando, FL
VLSI; Clearwater, FL
Micron Tech.; Boise, ID
Cinch Connector; Elk Grove, IL
MPC Products; Skokie, IL
Allied Signal; South Bend, IN
GMC-Allison; Indianapolis, IN
CTS; West Lafayette, IN
Westinghouse; Baltimore, MD
Fairchild Space & Defense; Germantown, MD
Loral; Lexington, MA
Wyman-Gordon; North Grafton, MA
Parker Hannifin; Woburn, MA
Williams International; Walled Lake, MI
Rosemount; Burnsville, MN
Vickers; Jackson, MS
McDonnell Douglas; St. Louis, MO
Teledyne; Hudson, NH
Teradyne; Nashua, NH
Smith Industries; Florham Park, NJ
Calculex; Las Cruces, NM
CAE-Link; Binghamton, NY
Applied Amphenol; Sidney, NY
Automation Software; Stony Brook, NY
Northrop-Grumman; Bethpage, NY
MILTOPE; Melville, NY
Moog; East Aurora, NY
Sunstrand; Lima, OH
Boeing; Philadelphia, PA
Advance Intercon; Mill Hall, PA
Timken; Fort Washington, PA
Boeing; Midlothian, TX
Hexcell; Arlington, TX
Hercules; Ogden, UT
Martin Marietta; Burlington, VT
General Electric; Burlington, VT
Polhemus; Colchester, VT
Liege; Arlington, VA
Boeing; Seattle, WA
ELDEC; Seattle, WA
Korry Electronic; Seattle, WA

COMBAT SERVICE SUPPORT CONTROL SYSTEM (CSSCS):

TRW; Carson, CA
LB&M Associates; Lawton, OK

COMMAND AND CONTROL VEHICLE (C2V):

United Defense; San Jose, CA
ALCOA Forge; Vernon, CA
Triax; Visalia, CA
SCFM; Los Angeles, CA
Loral; San Jose, CA
AMI Industries; Colorado Springs, CO
Brunswick; Deland, FL
Cummings; Columbus, IN
Airflow; Frederick, MD
Martin Marietta; Pittsfield, MA
GTE; Taunton, MA
Gichner Systems Group; Dallastown, PA
Antenna Products; Mineral Wells, TX
RDA; Tacoma, WA

COMMON HARDWARE/ SOFTWARE (CHS):

SAIC; San Diego, CA
Hewlett Packard; Palo Alto, CA
Sun Microsystems; Mountain View, CA
Magnavox; Fort Wayne, IN
GTE; Taunton, MA
MILTOPE; Melville, NY

CORPS SAM (Concept Study Contractors):

BDM; Huntsville, AL
CAS; Huntsville, AL
Nichols Research; Huntsville, AL
GEC-Marconi; Wayne, NJ
BDM; McLean, VA

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Ohmeda Medical; Pleasanton, CA
Outdoor Venture; Stearns, KY
Eastman Kodak; Rochester, NY
Picker; Cleveland, OH
Airtacs; Red Lion, PA
Engineered Systems; Trappe, PA
Brunswick; Marion, VA
BIOCHEM International; Waukesha, WI

DIGITAL TRANSMISSION ASSEMBLAGES:

Centrair; Birmingham, AL
Aydin; San Jose, CA
Group Technologies; Tampa, FL
Harris; Melbourne, FL
Raytheon; Marlboro, MA
Transistor Devices; Cedar Knolls, NJ
Laguna Industries; Laguna Pueblo, NM
Tobyhanna Army Depot; Tobyhanna, PA
Gichner Systems Group; Dallastown, PA

EXTENDED RANGE MULTIPLE LAUNCH ROCKET SYSTEM (ER-MLRS):

Loral; Camden, AR
Raytheon; Tewksbury, MA
KDI; Cincinnati, OH
Loral; Dallas, TX

FAMILY OF MEDIUM TACTICAL VEHICLES (FMTV):

Caterpillar; Peoria, IL
Stewart & Stevenson Services; Houston, TX
Rockwell International; Oshkosh, WI

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

MILTOPE; Birmingham, AL
TRW; Redondo Beach, CA
Hughes; Fullerton, CA
Rockwell International; Cedar Rapids, IA
Hughes; Forrest, MS
Lockheed-Sanders; Nashua, NH
GEC-Marconi; Wayne, NJ
R&D Associates; Seattle, WA

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Hughes; Fullerton, CA, Torrance, CA
DAICO Industrial; Rancho Dominguez, CA
AXEL Electronics; Rancho Dominguez, CA
Watkins Johnson; Palo Alto, CA
NC Systems; Signal Hill, CA
SAIC; San Diego, CA
Pacific Scientific; Santa Barbara, CA
Motion Systems; Carlsbad, CA
Raymond Engineering; Middletown, CT
TDI; Fort Walton Beach, FL
Diamond Antenna; Winchester, MA
ENON; Pittsfield, MA
MA/COM; Burlington, MA
Herly Industries; Woburn, MA
Hughes; Forrest, MS
Midcon Cable; Joplin, MO
Waveline; West Caldwell, NJ
Hazeltine; Greenlawn, NY
Rotron; Woodstock, NY
Gichner Systems Group; Dallastown, PA
UNISYS; King of Prussia, PA
KINTEC; Dallas, TX
Electro-Tech; Blacksburg, VA
Brunswick; Marion, VA
TAMAM; Yeoud, Israel

GEN II SOLDIER SYSTEM ATD:

Motorola; Scottsdale, AZ
Hughes; Fullerton, CA
Arthur D. Little; Cambridge, MA
Honeywell; Minneapolis, MN
Battelle; Columbus, OH
GENTEX; Carbondale, PA

GROUND-BASED COMMON SENSOR (GBCS):

Motorola; Scottsdale, AZ
United Defense; Santa Clara, CA
Magnavox; Fort Wayne, IN
Sanders/AEL (Joint Venture); Hudson, NH
IBM; Owego, NY
ELECTROSPACE Systems; Richardson, TX

GUARDRAIL COMMON SENSOR (GRCS):

ESL; Sunnyvale, CA
Beech Aircraft; Wichita, KS
ESCO; St. Louis, MO
IBM; Owego, NY
UNISYS; Salt Lake City, UT

HEAVY ASSAULT BRIDGE (HAB):

Caterpillar; Peoria, IL
General Dynamics; Sterling Heights, MI
Stewart and Stevenson Services; Houston, TX
MAN GHH; Dusseldorf, Germany

HEAVY EQUIPMENT TRANSPORTER SYSTEM (HETS):

Southwest Mobile Systems; St. Louis, MO
Oshkosh Truck; Oshkosh, WI

HELLFIRE II MISSILE:

Martin Marietta; Orlando, FL

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

AM General; South Bend, IN
ITT; Fort Wayne, IN
Rockwell International; Cedar Rapids, IA
AM General; Livonia, MI
General Motors Hydromatic; Ypsilanti, MI
Motor Wheel; Lansing, MI
American Transcoil; Richmond Hill, NY
New Venture Gear; Schenectady, NY
Gleason Gear; Rochester, NY
General Motors Diesel; Moraine,OH
Goodyear; Akron, OH
OiGara, Hess and Eisenhardt; Fairfield, OH
Texas Instruments; Dallas, TX

HOWITZER (M119A1):

Rock Island Arsenal; Rock Island, IL
Seiler Instrument; St. Louis, MO
Watervliet Arsenal; Watervliet, NY

HUNTER SENSOR SUITE ATD:

Texas Instruments; Dallas, TX

HUNTER SHORT RANGE UAV:

TRW; San Diego, CA
IAI; Tel Aviv, Israel

HYDRA 70 ROCKET SYSTEM:

BEI Defense Systems; Euless, TX
Thiokol; Brigham City, UT
Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA

INTEGRATED FAMILY OF TEST EQUIPMENT (IFTE):

SAIC; San Diego, CA
Northrop-Grumman; Great River, NY

IMPROVED FIRE CONTROL SYSTEM (IFCS):

Harris; Melbourne, FL
Raytheon; Tewksbury, MA
Allied Signal; Teterboro, NJ
Loral; Dallas, TX

IMPROVED RECOVERY VEHICLE (IRV):

Carlyle Johnson Machine; Manchester, CT
Miner Elastomer Products; Geneva, IL
DCA Foods; Jessup, MD
Teledyne; Muskegon, MI
LOC Performance Products; Plymouth, MI
Goodyear; St. Mary's, OH
Barden Carco Gearmatic; Broken Arrow, OK
United Defense; York, PA
Harnischfeger P&H; Oak Creek, WI
Maynard Steel Casing; Milwaukee, WI
Twin Disc; Racine, WI

INDIVIDUAL BALLISTIC PROTECTION:

Allied Signal; Hartford, CT
E.I. Dupont Denemours; Wilmington, DE

INTEGRATED HIGH PRESSURE TURBINE ENGINE TECHNOLOGY, JOINT TURBINE ADVANCED GAS GENERATOR:

Allied Signal; Phoenix, AZ
Textron Lycoming; Stratford, CT
General Electric; Lynn, MA

INTEGRATED SYSTEM CONTROL (ISYSCON):

BBN Systems and Technologies; Carson, CA
GTE; Taunton, MA
TRW; Cambridge, MA
ACSI; Burlington, MA
SofTech; Waltham, MA

JAVELIN:

AC; Huntsville, AL
Martin Marietta; Troy, AL
Atlantic Research; Camden, AR
High Tech; Camden, AR

Classic Composites Design; Irvin, CA
Santa Barbara Research Center; Goleta, CA
Sparta; San Diego, CA
Viking Electronics; Chatsworth, CA
Condor Pacific Industries; Westlake Village, CA
Conax Florida; Tampa, FL
ECC International; Orlando, FL
Martin Marietta; Orlando, FL; Ocala, FL
Orlando Technologies; Shalimar, FL
Abex/NWL Aerospace; Dublin, GA
Magnavox; Fort Wayne, IN
Mason and Hanger; Middletown, IA
Loral; Lexington, MA
Eagle Picher; Joplin, MO
GEC-Marconi; Wayne, NJ
Carleton Technologies; Orchard Park, NY
Texas Instruments/Martin Marietta Joint Venture; Lewisville, TX .
Hercules; Rocket City, WV

JOINT SURVEILLANCE TARGET ATTACK RADAR (JOINT STARS) GROUND STATION MODULE (GSM):

Motorola; Scottsdale, AZ
CUBIC Defense Systems; San Diego, CA
Northrop-Grumman; Melbourne, FL

JOINT TACTICAL GROUND STATION (JTAGS):

Aerojet; Azusa, CA
Berg Systems; Carlsbad, CA
Datron; Simi Valley, CA
Silicon Graphics; Mountain View, CA
Aerojet; Colorado Springs, CO
Loral; Boulder, CO
Gichner Systems Group; Hunt Valley, MD
Advanced Programming Concepts; Pfluegerville, TX
Response Service and Innovation; Austin, TX

KIOWA WARRIOR:

Allied Signal; Tucson, AZ
General Dynamics; Pomona, CA
Litton Industries; Woodland Hills; CA
McDonnell Douglas; Montovia, CA
Northrop-Grumman; Hawthorne, CA
Ball Aerospace; Boulder, CO
Litton Industries; Orlando, FL
GMC-Allison; Indianapolis, IN
Magnavox; Fort Wayne, IN
Rockwell International; Cedar Rapids, IA
Allied Signal; Baltimore, MD
Honeywell; Minneapolis, MN
GEC-Marconi; Little Falls, NJ
Honeywell; Albuquerque, NM
Teleponics; Huntington, NY
BEI Defense Systems; Fort Worth, TX
Bell Helicopter; Fort Worth TX

LIGHT AND SPECIAL DIVISION INTERIM SENSOR (LSDIS):

Lockheed-Sanders (Joint Venture); Nashua, NH

LINE-OF-SIGHT ANTITANK (LOSAT):

Nichols Research; Huntsville, AL
Coleman Research; Huntsville, AL
Colsa; Huntsville, AL
SESI; Huntsville, AL
Booz-Allen Hamilton; Huntsville, AL
R.E. Darling; Tucson, AZ
Atlantic Research; Camden, AR
United Defense; San Jose, CA
LSI Logic Systems; Milpitas, CA
Quantic Industries; Salinas, CA
Cypress; San Jose, CA
Dense-Pac; Garden Grove, CA
Kaman Sciences; Colorado Springs, CO
Allied Signal; Cheshire, CT
DRI; Vero Beach, FL
Graseby Infrared; Orlando, FL
Loral; Orlando, FL
GEC-Marconi; Atlanta, GA
Loral; Cambridge, MA
Haigh-Farr; Woburn, MA
TRW; Troy, MI
Eagle Picher; Joplin, MO
Brunswick; Lincoln, NE
Cortez III; Alamagordo, NM
General Research; Research Park, NC
APD Cryogenics; Allentown, PA
Microcom; Warminster, PA
Aydin; Newton, PA
Loral; Dallas, TX
Texas Instruments; Dallas, TX
EDO; Salt Lake City, UT
Atlantic Research; Gainesville, VA
Booz-Allen Hamilton; McLean, VA
Loral; Bellevue, WA
Hercules; Rocket City, WV

LONGBOW APACHE:

SCI Technology, Huntsville, AL
Allied Signal; Phoenix, AZ
McDonnell Douglas; Mesa, AZ
Fluid Components; San Marcos, CA
Litton Industries; Woodland Hills, CA
Parker Hannifin; Irvine, CA
Hamilton Standard; Windsor Locks, CT
Martin Marietta (Joint Venture); Orlando, FL
Smiths Industries; Clearwater, FL
Transistor Devices; Fort Walton Beach, FL
Westinghouse (Joint Venture); Baltimore, MD
Smiths Industries; Grand Rapids, MI
Allied Signal; Eatontown, NJ; Teterboro, NJ
ITT; Nutley, NJ
General Electric; Binghamton, NY
Westinghouse; Dallas, TX
ACME; West Jordan, UT

LONGBOW HELLFIRE MISSILE:

Martin Marietta (Joint Venture); Orlando, FL
Westinghouse (Joint Venture); Baltimore, MD

LOGISTICS OVER THE SHORE (LOTS)-CAUSEWAY FERRY:

Ameron Paint; Brea, CA
Giannoti Marine Services; Ventura, CA
Omni Thruster; Santa Fe, CA
Lake Shore; Iron Mountain, MI
Sewall Gear; St. Paul, MN
Missouri Steel Castings; Joplin, MO
Inland Diesel; Butler, WI

M4 CARBINE:

Colt's Manufacturing Company; Hartford, CT

M9 9 mm PERSONAL DEFENSE WEAPON:

Beretta USA; Accokeek, MD

M16A2 RIFLE:

Colt's Manufacturing Company; Hartford, CT
FN Manufacturing; Columbia, SC

M113 FAMILY OF VEHICLES (FOV):

United Defense; San Jose, CA
GMC-Allison; Indianapolis, IN
Detroit Diesel; Detroit, MI

M249 SQUAD AUTOMATIC WEAPON (SAW):

FN Manufacturing; Columbia, SC

MK-19-3 40 mm AUTOMATIC GRENADE LAUNCHER:

Saco Defense; Saco, ME

MANEUVER CONTROL SYSTEM (MCS):

GTE; Taunton, MA
Mitre; Eatontown, NJ
Telos; Shrewsbury, NJ
ESC; Eatontown, NJ

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

CommQuest; Enchinitas, CA
TRW; Redondo Beach, CA
Rantee Microwave & Electronics; Calabasas, CA
Titan Linkabit; San Diego, CA
Harris; Melbourne, FL
Raytheon; Marlboro, MA
Martin Marietta; Camden, NJ
Rockwell International; Richardson, TX

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):

Atlantic Research; Camden, AR
Brunswick; Camden, AR
Loral; Camden, AR
Norris Industries; Los Angeles, CA
United Technologies; Norwalk, CT
Allied Signal; Teterboro, NJ
Loral; Dallas TX

MOBILE SUBSCRIBER EQUIPMENT (MSE):

Gould; El Monte, CA
KECO Industries; Florence, KY
GTE; Taunton, MA
Raytheon; Marlboro, MA
AM General; Livonia, MI
Telex Communications; Lincoln, NE
Magnavox; Philadelphia, PA
FN Manufacturing; Columbia, SC
Ericsson Radio Systems AB; Molndal, Sweden
Thomson CSF; Laval, Cholet & Toulouse, France

MORTAR (120 mm):

Pine Bluff Arsenal; Pine Bluff, AR
ARMTEC; Coachella, CA

FMS; Los Angeles, CA
Fermont; Bridgeport, CT
Brockway Standard; Homerville, GA
Olin; East Alton, IL
Stocker & Yale; Beverly, MA
Watervliet Arsenal; Watervliet, NY
Chamberlain Manufacturing; Scranton, PA
Loral; Archibald, PA
Scranton Army Ammunition Plant; Scranton, PA
MMOS Milan Army Ammunition Plant; Milan, TN
United Ammunition Container; Milan, TN
Red River Army Depot; Texarkana, TX
Martin Marietta; Burlington, VT
Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA
Accudyne; Janesville, WI
Hughes-Leitz; Canada

NATIONAL MISSILE DEFENSE (NMD):

Teledyne; Huntsville, AL
Nichols Research; Huntsville, AL
Sparta; Huntsville, AL
Colsa; Huntsville, AL
General Research; Huntsville, AL
BDM; Huntsville, AL
Stone Engineering; Huntsville, AL
Mevatec; Huntsville, AL
ASG; Huntsville, AL
APT Research; Huntsville, AL
Booz-Allen Hamilton; Huntsville, AL
Mitre; Huntsville, AL
Hughes; Tucson, AZ
Rockwell International; Downey, CA
Lockheed; Sunnyvale, CA
Litton Industries; Woodland Hills, CA
TRW; Redondo Beach, CA
McDonnell Douglas; Huntington Beach, CA
Hughes; El Segundo, CA
Xontech; Huntington Beach, CA
Photon Research Association; La Jolla, CA
Santa Barbara Research; Santa Barbara, CA
Mission Research; San Diego, CA
Honeywell; Clearwater, FL
Raytheon; Wayland, MA
Lincoln National Laboratory; Lexington, MA
Kearfott; Wayne, NJ
Sandia National Laboratory; Albequerque, NM
Arnold Engineering Development Ctr.; Tullahoma, TN
Loral; Dallas, TX
Boeing; Seattle, WA

NAVSTAR GLOBAL POSITIONING SYSTEM (GPS):

Rockwell International; Cedar Rapids, IA

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Litton Industries; Tempe, AZ
Electro-Optical Sensors; Palo Alto, CA
Hughes; El Segundo, CA
Martin Marietta; Orlando, FL
AEL Defense; Alpharetta, GA
Westinghouse; Baltimore, MD
Brunswick; Bedford, MA
Lockheed-Sanders; Nashua, NH
Insight Technology; Manchester, NH
Magnavox; Mahwah, NJ
IMO/Optic-Electronic; Dallas, TX
Texas Instruments; Dallas, TX
ITT; Roanoke, VA

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DETECTION:

Brunswick; Deland, FL
Battelle; Edgewood, MD
Environment Technologies Group; Baltimore, MD
Nuclear Research; Dover, NJ
Graseby Ionics; Watford, Herts, United Kingdom

NUCLEAR, BIOLOGICAL, AND CHEMICAL RECONNAISSANCE SYSTEM (NBCRS) – FOX:

General Dynamics; Detroit, MI
Thyssen Henschel; Germany

PALADIN:

Honeywell; St. Petersburg, FL
Detroit Diesel; Detroit, MI
Alliant Tech Systems; Edina, MN
United Defense; Letterkenny, PA; York, PA
Sechan Electronics; Littiz, PA

PALLETIZED LOAD SYSTEM (PLS):

OTC Trailer; Bradenton, FL
GMC-Allison; Indianapolis, IN
Detroit Diesel; Detroit, MI
Grove Crane; Shady Grove, PA
CM Automotive; Oshkosh, WI
Oshkosh Truck; Oshkosh, WI
Rockwell International; Oshkosh, WI
Steeltech; Milwaukee, WI
Michelin; Nova Scotia, Canada

PATRIOT:

Thiokol; Huntsville, AL
Motorola; Phoenix, AZ
Prescott Foundry; Prescott, AZ
Pacific Scientific; Prescott, AZ
ARC & LV; Camden, AR
Taber Metals; Russelville, AR
Litton Industries; Woodland Hills, CA
Varian; Palo Alto, CA
Hughes; Newport Beach, CA
AMPEX; Sunnyvale, CA
Rantec; Calabasas, CA
Rockwell International; Anaheim, CA
Kaiser Electroprecision; Irvine, CA
Zeta Laboratories; San Jose, CA
Teledyne; Mountain View, CA
TRW; Campbell, CA
Signetics; Sunnyvale, CA
Loral; San Diego, CA
Explosive Technologies; Fairfield, CA
Hi-Shear Technologies; Torrance, CA
Systron Donner; Sylmar, CA
Coors Porcelain; Golden, CO
Tecnetics; Boulder, CO
Anderson Labs; Bloomfield, CT
Raymond Engineering; Middleton, CT
W.L. Gore Associates; Newark, DE
Martin Marietta; Orlando, FL
Aerospace Interconnect Systems; Titusville, FL
Honeywell; Clearwater, FL
Piezo Tech.; Orlando, FL
Murata Erie; Smyrna, GA
Hartman Elec.; Atlanta, GA
RI Tac System Division; Atlanta, GA; Duluth, GA
Quality Thermistor; Boise, ID
Amco Engineering; Schiller Park, IL
Aluminum Forge; Indianapolis, IN
B.E. Controls; Davenport, IA
Networks International; Lenexa, KS
Irving B. Moore; Lexington, KY
C.P.I.; Broussard, LA
Microwave Tech.; Raymond, ME
Martin Marietta; Baltimore, MD
Allied Signal; Baltimore, MD
Hercules; Cumberland, MD
Raytheon; Bedford, MA
Varian Associates; Beverly, MA
Haigh-Farr; Woburn, MA
Lucas Epsco; Hopkinton, MA
Micro Networks; Worcester, MA
Kaydon; Muskegon, MI
Honeywell; Minneapolis, MN
Minco Products; Minneapolis, MN
Metal Masters; Guntown, MS
Eagle Picher; Joplin, MO
Torotel; St. Louis, MO
Brunswick; Lincoln, NE
Dale Electronics; Columbus, NE
TRON-TECH; Eatontown, NJ
GEC-Marconi; Frenchtown, NJ
Alliance Electronics; Scotsdale, NM
RHG Electronics Lab; Deer Park, NY
Sensitron; Deer Park, NY
Arrow Electronics; Winston-Salem, NC
Analog Devices; Greensboro, NC
Lucas Aerospace; Aurora, OH
KDI; Cincinnati, OH
West Milton Precision; Vandalia, OH
Deleval; Cleveland, OH
Cherokee Nation; Stillwell, OK
Oeco; Milwaukee, OR
Gichner Systems Group; Dallastown, PA
Litton Industries; Clifton Heights, PA
GTE; Towanda, PA
Jade Manufacturing; Warwick, RI
Kemet; Greenville, SC
Woven Electronics; Simpsonville, SC
Precision Cable of Tennessee; Gallatin, TN
Loral; Dallas, TX
Rockwell International; Dallas, TX
Valley Enterprises; Sandy, UT
Fibertek; Springville, UT
EDO; Salt Lake City, UT
G.S. Precision; Brattleboro, VT
Brunswick; Marion, VA
Atlantic Research; Gainesville, VA
Audio; Fairfax, VA
Ovenair; Marion, VA
Sunstrand; Redmond, WA
Adel; Newell, WV
Airsan; Milwuakee, WI

PROTECTIVE MASKS (M40 SERIES):

ILC Dover; Dover, DE
Mine Safety Appliance; Pittsburgh, PA

RADAR DECEPTION AND JAMMING (RD&J) ATD:

ITT; Clifton, NJ
Allied Signal; Teterboro, NJ

RAIL CARS:

Canadian National Railway, AMF Division; Montreal, Canada

SATELLITE COMMUNICATIONS (SATCOM):

Motorola; Scottsdale, AZ
Magnavox; Torrance, CA
Titan; San Diego, CA
Trivec Avant; Huntington Beach, CA
Loral; Colorado Springs, CO
Harris; Melbourne, FL
Magnavox; Fort Wayne, IN
GTE; Taunton, MA
Cincinnati Electronics; Cincinnati, OH
General Electric; Valley Forge, PA

SENSE AND DESTROY ARMOR (SADARM):

Dynaco; Tempe, AZ
Aerojet; Azusa, CA
LSI Logic; Fremont, CA
Teledyne; Los Angeles, CA
Soladyne Division; San Diego, CA
Pioneer Aerospace; South Windsor, CT
Ensign Bickford Aerospace; Simsbury, CT
Harris; Melbourne, FL
Alliant Tech Systems; Edina, MN
Eagle Picher; Joplin, MO
Phoenix Microwave; Telford, PA

SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS):

General Dynamics; Tallahassee, FL
Talla-Comm; Tallahassee, FL
ITT; Fort Wayne, IN

SMOKE GENERATOR (XM56):

Chamberlain Manufacturing; Hunt Valley, MD

SOLDIER SYSTEM:

Allied Signal; Hartford, CT
E.I. Dupont Denemours; Wilmington, DE
Simulation Technologies; Columbus, GA
Foam Design; Lexington, KY
The Grandoe Corporation; Gloversville, NY
Progressive Technologies; Fairfax, VA

SPECIAL OPERATIONS AIRCRAFT (SOA):

Hughes; Mesa, AZ
Robertson Aviation; Tempe, AZ
Sikorsky Aircraft; Stratford, CT
Textron Lycoming; Stratford, CT
Allied Signal; Teterboro, NJ
CAE Link; Binghamton, NY
Loral; Owego, NY
Boeing; Philadelphia, PA
Texas Instruments; McKinney, TX

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

United Defense; San Jose, CA
Gichner Systems Group; Hunt Valley, MD
Letterkenny Army Depot; Letterkenny, PA
Tobyhanna Army Depot; Tobyhanna, PA
Camel; Knoxville, TN
Brunswick; Marion, VA

STINGER:

AC; Huntsville, AL
Electro Design; Decatur, AL
Nichols Research; Huntsville, AL
SCI Systems; Huntsville, AL
United International Engineering; Huntsville, AL
Hughes; Tucson, AZ,
Hughes; Pomona, CA
Arral Industries; Ontario, CA
Magnavox; Fort Wayne, IN
Honeywell; Minneapolis, MN
Eagle Picher; Joplin, MO
United Telecontrol Electronics; Asbury Park, NJ
Hughes; Farmington, NM
Bausch & Lomb; Rochester, NY
Lourdes; Hauppauge, NY
Phototronics; Rome, NY
Cincinnati Electronics; Cincinnati, OH
Atlantic Research; Gainesville, VA

TACTICAL QUIET GENERATORS (TQG):

Dynamics; Bridgeport, CT
Libby; Kansas City, MO

TANK MAIN GUN AMMUNITION:

Motorola; Scottsdale, AZ
ARMTEC; Coachella, CA
Olin; St. Petersburg, FL
Hercules; Clearwater, FL
Mason and Hangar; Middletown, IA
Nuclear Metals; Concord, MA
Alliant Tech Systems; Brooklyn Park, MN
Microcom; Philadelphia, PA
MVI; Pittsburgh, PA
Bulova; Lancaster, PA
Aerojet; Jonesboro, TN
Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA
Hercules; Rocket City, WV

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Phase IV Systems; Huntsville, AL
Lockheed; Huntsville, AL
Pacific Scientific; Chandler, AZ
Lockheed; Sunnyvale, CA
Rocketdyne; Canoga Park, CA
United Technologies; San Jose, CA
Westinghouse; Sunnyvale, CA
Litton Industries; Agoura Hills, CA
Decom Systems; Carlsbad, CA
OCLI; Santa Rosa, CA
Hewlett Packard; Palo Alto, CA
Silicon Graphics; Mountain View, CA
TRW; Redondo Beach, CA
Engine & Equipment Company; Rancho Domingez, CA
Honeywell; Orlando, FL
Gichner Systems Group; Hunt Valley, MD
Thiokol; Elkton, MD
Westinghouse; Baltimore, MD
Raytheon; Wayland, MA
Loral; Lexington, MA
CPI; Boston, MA
Eagle Picher; Joplin, MO
Lockheed-Sanders; Nashua, NH
DEC; Salem, NH
Anaren; Syracuse, NY

Gichner Systems Group; Dallastown, PA
Aydin Vector; Newton, PA
Loral; Dallas, TX
Texas Instruments; Dallas, TX
EDAC; Fredericksburg, VA
Rocket Research; Redmond, WA
Oshkosh Truck; Oshkosh, WI
EBCO; Vancouver, BC, Canada

TOTAL DISTRIBUTION PROGRAM (TDP):

SAVI Technology; Mountain View, CA
Battelle, Pacific Northwest Laboratories; Washington, DC
GTE; Taunton, MA
UNISYS; Reston, VA
Innovative Logistics Techniques; McLean, VA
CACI, International; Arlington, VA

TOW WEAPON SYSTEM:

Hughes; Tucson, AZ
Aerojet; Azusa, CA
BW/IP; Van Nuys, CA
Hughes; Goleta, CA
Allied Signal; Cheshire, CT
OMI; Melbourne, FL
Mason and Hanger; Middletown, IA
Quadion; Minneapolis, MN
Eagle Picher; Joplin, MO
Smart Telecommunication; Verdi, NV
American Steel & Wire; Cleveland, OH
Loral; Archibald, PA
Kaiser Aluminum; Erie, PA
Texas Instruments; Dallas, TX
Varo Industries; Garland, TX
Hercules; Radford, VA
BP Chemical; Auburn, WA
Thorn EMI; Middlesex, England
DY-4; Ontario, Canada

TRACKWOLF:

Technology for Communications International; Fremont, CA

VOLCANO:

Brunswick; Deland, FL
Nomura Enterprise; Rock Island, IL
S & K Electronics; Roman, MT

WIDE AREA MUNITION (WAM):

Hughes; Fullerton, CA
Opto-Electronics; Petaluma, CA
Mason and Hanger; Burlington, IA
Textron Defense System; Wilmington, MA
Eagle Picher; Joplin, MO
Texas Instruments; Dallas, TX
Hercules; Rocket City, WV

ALABAMA

ABRAMS TANK:
Anniston Army Depot; Anniston, AL

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS):
MILTOPE; Montgomery, AL;

ARMORED GUN SYSTEM (AGS):
Pentastar; Huntsville, AL
United Defense; Anniston, AL

AVENGER:
AC; Huntsville, AL
Boeing; Huntsville, AL
Colsa; Huntsville, AL
Nichols Research; Huntsville, AL
Phoenix Industries; Huntsville, AL
United International Engineering; Huntsville, AL
Wildwood Electronics; Huntsville, AL

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):
Speed Ring; Cullman, AL

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):
Pentastar; Huntsville, AL

BREACHER:
Pentastar; Huntsville, AL

CORPS SAM (Concept Study Contractors):
BDM; Huntsville, AL
CAS; Huntsville, AL
Nichols Research; Huntsville, AL

DIGITAL TRANSMISSION ASSEMBLAGES:
Centrair; Birmingham, AL

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):
MILTOPE; Birmingham, AL

JAVELIN:
AC; Huntsville, AL
Martin Marietta; Troy, AL

LONGBOW APACHE:
SCI Technology, Huntsville, AL

LINE-OF-SIGHT ANTITANK (LOSAT):
Nichols Research; Huntsville, AL
Coleman Research; Huntsville, AL
Colsa; Huntsville, AL
SESI; Huntsville, AL
Booz-Allen Hamilton; Huntsville, AL

NATIONAL MISSILE DEFENSE (NMD):
Teledyne; Huntsville, AL
Nichols Research; Huntsville, AL
Sparta; Huntsville, AL
Colsa; Huntsville, AL
General Research; Huntsville, AL
BDM; Huntsville, AL
Stone Engineering; Huntsville, AL
Mevatec; Huntsville, AL
ASG; Huntsville, AL
APT Research; Huntsville, AL
Booz-Allen Hamilton; Huntsville, AL
Mitre; Huntsville, AL

PATRIOT:
Thiokol; Huntsville, AL

STINGER:
AC; Huntsville, AL
Electro Design; Decatur, AL
Nichols Research; Huntsville, AL
SCI Systems; Huntsville, AL
United International Engineering; Huntsville, AL

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:
Phase IV Systems; Huntsville, AL
Lockheed; Huntsville, AL

ALASKA

ARIZONA

APACHE:
McDonnell Douglas; Mesa, AZ

ARMY DATA DISTRIBUTION SYSTEM (ADDS):
White Technology; Phoenix, AZ

AVENGER:
Hughes; Tucson, AZ

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):
Motorola; Phoenix, AZ

BLACK HAWK:
Allied Signal; Tempe, AZ

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):
McDonnell Douglas; Mesa, AZ

COMANCHE:
Allied Signal; Tempe, AZ; Glendale, AZ; Phoenix, AZ
ATD; Tucson, AZ
VLSI; Tempe, AZ

GEN II SOLDIER SYSTEM ATD:
Motorola; Scottsdale, AZ

GROUND-BASED COMMON SENSOR (GBCS):
Motorola; Scottsdale, AZ

INTEGRATED HIGH PRESSURE TURBINE ENGINE TECHNOLOGY, JOINT TURBINE ADVANCED GAS GENERATOR:
Allied Signal; Phoenix, AZ

JOINT SURVEILLANCE TARGET ATTACK RADAR (JOINT STARS) GROUND STATION MODULE (GSM):
Motorola; Scottsdale, AZ

KIOWA WARRIOR:
Allied Signal; Tucson, AZ

LONGBOW APACHE:
Allied Signal; Phoenix, AZ
McDonnell Douglas; Mesa, AZ

LINE-OF-SIGHT ANTITANK (LOSAT):
R.E. Darling; Tucson, AZ

NATIONAL MISSILE DEFENSE (NMD):
Hughes; Tucson, AZ

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):
Litton Industries; Tempe, AZ

PATRIOT:
Alliance Electronics; Scottsdale, AZ
Motorola; Phoenix, AZ
Prescott Foundry; Prescott, AZ
Pacific Scientific; Prescott, AZ

SATELLITE COMMUNICATIONS (SATCOM):
Motorola; Scottsdale, AZ

SENSE AND DESTROY ARMOR (SADARM):
Dynaco; Tempe, AZ

SPECIAL OPERATIONS AIRCRAFT (SOA):
Hughes; Mesa, AZ
Robertson Aviation; Tempe, AZ

STINGER:
Hughes; Tucson, AZ

TANK MAIN GUN AMMUNITION:
Motorola; Scottsdale, AZ

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:
Pacific Scientific; Chandler, AZ

TOW WEAPON SYSTEM:
Hughes; Tucson, AZ

ARKANSAS

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):
Atlantic Research; Camden, AR
Loral; Camden, AR
Taber Metals; Russelville, AR

EXTENDED RANGE-MULTIPLE LAUNCH ROCKET SYSTEM (ER-MLRS):
Loral; Camden, AR

JAVELIN:
Atlantic Research; Camden, AR
High Tech.; Camden, AR

LINE-OF-SIGHT ANTITANK (LOSAT):
Atlantic Research; Camden, AR

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):
Atlantic Research; Camden, AR
Brunswick; Camden, AR
Loral; Camden, AR

MORTAR (120 mm):
Pine Bluff Arsenal; Pine Bluff, AR

PATRIOT:
ARC & LV; Camden, AR
Taber Metals; Russelville, AR

CALIFORNIA

ABRAMS TANK:
Hughes; Los Angeles, CA

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS):
SAIC; San Diego, CA;

ADVANCED INTEGRATED COLLECTIVE PROTECTION SYSTEM (AICPS):
Loral; Glendale, CA

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):
United Defense; San Jose, CA

ALL SOURCE ANALYSIS SYSTEM (ASAS):
Jet Propulsion Laboratory; Pasadena, CA
Loral; San Jose, CA

APACHE:
Teledyne; San Diego, CA

ARMORED GUN SYSTEM (AGS):
Hughes; El Segundo, CA
United Defense; San Jose, CA

ARMY DATA DISTRIBUTION SYSTEM (ADDS):
GEC-Marconi; San Marcos, CA
Hughes; Fullerton, CA
Rockwell International; Newbury Park, CA

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):
Teledyne; Los Angeles, CA; Hollister, CA
Wyman-Gordon; San Leondro, CA

AVENGER:
Arral Industries; Ontario, CA
FMS; Los Angeles, CA
Hughes; Pomona, CA

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):
EG&G; Covina, CA
ENDEVCO; San Juan Capistrano, CA
Northrop-Grumman; Hawthorne, CA
Physics International; San Leondro, CA
SYNDEX; Torrance, CA
Systron Donner; Concord, CA
Versatron; Healdsberg, CA

BATTLEFIELD COMBAT IDENTIFICATION:
TRW; Redondo Beach, CA
University of Southern California; Los Angeles, CA

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM (BCIS) – NEAR TERM:
TRW; Redondo Beach, CA
United Defense; San Jose, CA

BLACK HAWK:
ANF Ducommon; Gardena, CA
Parker Hannifin; Irvine, CA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):
United Defense; San Jose, CA
Booz-Allen Hamilton; San Francisco, CA
ALCOA Forge; Vernon, CA
Hughes; Manhattan Beach, CA
Optical Coating Lab; Santa Rosa, CA

COMANCHE:
Kaiser Electronics; San Jose, CA; Carlsbad, CA
Litton Industries; Los Angeles, CA
TRW; San Diego, CA
AMCC; San Diego, CA
Applied Microcircuits; San Diego, CA
Command Systems Group; Torrance, CA
Lear Astronics; Santa Monica, CA
Micro Craft; Ontario, CA
Teledyne; Los Angeles, CA
TLD Systems Ltd.; Torrance, CA
Vitesse; Camarillo, CA
Allied Signal; Torrance, CA

COMBAT SERVICE SUPPORT CONTROL SYSTEM (CSSCS):
TRW; Carson, CA

COMMAND AND CONTROL VEHICLE (C2V):
United Defense; San Jose, CA
ALCOA Forge; Vernon, CA
Triax; Visalia, CA
SCFM; Los Angeles, CA
Loral; San Jose, CA

COMMON HARDWARE/ SOFTWARE (CHS):
SAIC; San Diego, CA
Hewlett Packard; Palo Alto, CA
Sun Microsystems; Mountain View, CA

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):
Ohmeda Medical; Pleasanton, CA

DIGITAL TRANSMISSION ASSEMBLAGES:
Aydin; San Jose, CA

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):
TRW; Redondo Beach, CA
Hughes; Fullerton, CA

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):
Hughes; Fullerton, CA, Torrance, CA
DAICO Industrial; Rancho Dominguez, CA
AXEL Electronics; Rancho Dominguez, CA
Watkins Johnson; Palo Alto, CA
NC Systems; Signal Hill, CA
SAIC; San Diego, CA
Pacific Scientific; Santa Barbara, CA
Motion Systems; Carlsbad, CA

GEN II SOLDIER SYSTEM ATD:
Hughes; Fullerton, CA

GROUND-BASED COMMON SENSOR (GBCS):
United Defense; Santa Clara, CA

GUARDRAIL COMMON SENSOR (GRCS):
ESL; Sunnyvale, CA

HUNTER SHORT RANGE UAV:
TRW; San Diego, CA

INTEGRATED FAMILY OF TEST EQUIPMENT (IFTE):
SAIC; San Diego, CA

INTEGRATED SYSTEM CONTROL (ISYSCON):
BBN Systems and Technologies; Carson, CA

JAVELIN:
Classic Composites Design; IrvinE, CA
Santa Barbara Research Center; Goleta, CA
Sparta; San Diego, CA
Viking Electronics; Chatsworth, CA
Condor Pacific Industries; Westlake Village, CA

JOINT TACTICAL GROUND STATION (JTAGS):
Aerojet; Azusa, CA
Berg Systems; Carlsbad, CA
Datron; Simi Valley, CA
Silicon Graphics; Mountain View, CA

JOINT SURVEILLANCE TARGET ATTACK RADAR (JOINT STARS) GROUND STATION MODULE (GSM):
CUBIC Defense Systems; San Diego, CA

KIOWA WARRIOR:
General Dynamics; Pomona, CA
Litton Industries; Woodland Hills, CA
McDonnell Douglas; Montovia, CA
Northrop-Grumman; Hawthorne, CA

LONGBOW APACHE:

Fluid Components; San Marcos, CA
Litton Industries; Woodland Hills, CA
Parker Hannifin; Irvine, CA

LINE-OF-SIGHT ANTITANK (LOSAT):

United Defense; San Jose,CA
LSI Logic Systems; Milpitas, CA
Quantic Industries; Salinas, CA
Cypress; San Jose, CA
Dense-Pac; Garden Grove, CA

LOGISTICS OVER THE SHORE (LOTS) CAUSEWAY FERRY:

Ameron Paint; Brea, CA
Giannoti Marine Services; Ventura, CA
Omni Thruster; Santa Fe, CA

M113 FAMILY OF VEHICLES (FOV):

United Defense; San Jose, CA

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

CommQuest; Enchinitas, CA
TRW; Redondo Beach, CA
Rantee Microwave & Electronics; Calabasas, CA
Titan Linkabit; San Diego, CA

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):

Norris Industries; Los Angeles, CA

MOBILE SUBSCRIBER EQUIPMENT (MSE):

Gould; El Monte, CA

MORTAR (120 mm):

ARMTEC; Coachella, CA
FMS; Los Angeles, CA

NATIONAL MISSILE DEFENSE (NMD):

Rockwell International; Downey, CA
Lockheed; Sunnyvale, CA
Litton Industries; Woodland Hills, CA
TRW; Redondo Beach, CA
McDonnell Douglas; Huntington Beach, CA
Hughes; El Segundo, CA
Xontech; Huntington Beach, CA
Photon Research Association; La Jolla, CA
Santa Barbara Research; Santa Barbara, CA
Mission Research; San Diego, CA

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Electro-Optical Sensors; Palo Alto, CA
Hughes; El Segundo, CA

SATELLITE COMMUNICATIONS (SATCOM):

Magnavox; Torrance, CA
Titan; San Diego, CA
Trivec Avant; Huntington Beach, CA

PATRIOT:

Litton Industries; Woodland Hills, CA
Varian; Palo Alto, CA
Hughes; Newport Beach, CA
AMPEX; Sunnyvale, CA
Rantec; Calabasas, CA
Rockwell International; Anaheim, CA
Kaiser Electroprecision; Irvine, CA
Zeta Laboratories; San Jose, CA
Teledyne; Mountain View, CA
TRW; Campbell, CA
Signetics; Sunnyvale, CA
Loral; San Diego, CA
Explosive Technologies; Fairfield, CA
Hi-Shear Technologies; Torrance, CA
Systron Donner; Sylmar, CA

SENSE AND DESTROY ARMOR (SADARM):

Aerojet; Azusa, CA
LSI Logic; Fremont, CA
Teledyne; Los Angeles, CA
Soladyne Division; San Diego, CA

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

United Defense; San Jose, CA

STINGER:

Hughes; Pomona, CA
Arral Industries; Ontario, CA

TANK MAIN GUN AMMUNITION:

ARMTEC; Coachella, CA

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Lockheed; Sunnyvale, CA
Rocketdyne; Canoga Park, CA
United Technologies; San Jose, CA
Westinghouse; Sunnyvale, CA
Litton Industries; Agoura Hills, CA
Decom Systems; Carlsbad, CA
OCLI; Santa Rosa, CA
Hewlett Packard; Palo Alto, CA
Silicon Graphics; Mountain View, CA
TRW; Redondo Beach, CA
Engine & Equipment Company; Rancho DomingUez, CA

TOTAL DISTRIBUTION PROGRAM (TDP):

SAVI Technology; Mountain View, CA

TOW WEAPON SYSTEM:

Aerojet; Azusa, CA
BW/IP; Van Nuys, CA
Hughes; Goleta, CA

TRACKWOLF:

Technology for Communications International; Fremont, CA

WIDE AREA MUNITION (WAM):

Hughes; Fullerton, CA
Opto-Electronics; Petaluma, CA

COLORADO

ALL SOURCE ANALYSIS SYSTEM (ASAS):

Martin Marietta; Denver, CO
CODAR; Boulder, CO

COMANCHE:

Ball Aerospace; Broomfield, CO
ATMEL; Colorado Springs, CO

COMMAND AND CONTROL VEHICLE (C2V):

AMI Industries; Colorado Springs, CO

JOINT TACTICAL GROUND STATION (JTAGS):

Aerojet; Colorado Springs, CO
Loral; Boulder, CO

KIOWA WARRIOR:

Ball Aerospace; Boulder, CO

LINE-OF-SIGHT ANTITANK (LOSAT):

Kaman Sciences; Colorado Springs, CO

PATRIOT:

Coors Porcelain; Golden, CO
Tecnetics; Boulder, CO

SATELLITE COMMUNICATIONS (SATCOM):

Loral; Colorado Springs, CO

CONNECTICUT

ABRAMS TANK:

Textron Lycoming; Stratford, CT

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Wyman-Gordon; Groton, CT

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Pioneer Aerospace; Windsor Locks, CT

BLACK HAWK:

Sikorsky Aircraft; Stratford, CT

COMANCHE:

Hamilton Standard; Windsor Locks, CT
Sikorsky Aircraft; Stratford, CT
CECO; West Hartford, CT
Fenn Manufacturing; Newington, CT
Kaman Aerospace; Bloomfield, CT

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Raymond Engineering; Middletown, CT

IMPROVED RECOVERY VEHICLE (IRV):

Carlyle Johnson Machine; Manchester, CT

INDIVIDUAL BALLISTIC PROTECTION:

Allied Signal; Hartford, CT

INTEGRATED HIGH PRESSURE TURBINE ENGINE TECHNOLOGY, JOINT TURBINE ADVANCED GAS GENERATOR:

Textron Lycoming; Stratford, CT

LONGBOW APACHE:

Hamilton Standard; Windsor Locks, CT

LINE-OF-SIGHT ANTITANK (LOSAT):

Allied Signal; Cheshire, CT

M4 CARBINE:

Colt's Manufacturing Company; Hartford, CT

M16A2 RIFLE:

Colt's Manufacturing Company; Hartford, CT

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):

United Technologies; Norwalk, CT

MORTAR (120 mm):

Fermont; Bridgeport, CT

PATRIOT:

Anderson Labs; Bloomfield, CT
Raymond Engineering; Middleton, CT

SENSE AND DESTROY ARMOR (SADARM):

Pioneer Aerospace; South Windsor, CT
Ensign Bickford Aerospace; Simsbury, CT

SOLDIER SYSTEM:

Allied Signal; Hartford, CT
Connecticut (cont.)

SPECIAL OPERATIONS AIRCRAFT (SOA):

Sikorsky Aircraft; Stratford, CT
Textron Lycoming; Stratford, CT

TACTICAL QUIET GENERATORS (TQG):

Dynamics; Bridgeport, CT

TOW WEAPON SYSTEM:

Allied Signal; Cheshire, CT

DELAWARE

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

ILC Dover; Fredrich, DE

BREACHER:

E.I. Dupont Denemours; Wilmington, DE

INDIVIDUAL BALLISTIC PROTECTION:

E.I. Dupont Denemours; Wilmington, DE

PATRIOT:

W.L. Gore Associates; Newark, DE

PROTECTIVE MASKS (M40 SERIES):

ILC Dover; Dover, DE

SOLDIER SYSTEM:

E.I. Dupont Denemours; Wilmington, DE

DISTRICT OF COLUMBIA

TOTAL DISTRIBUTION PROGRAM (TDP):

Battelle, Pacific Northwest Laboratories; Washington, DC

FLORIDA

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Martin Marietta; Orlando, FL

ADVANCED AIRDROP FOR LAND COMBAT (AALC) ATD:

Pioneer Aerospace; Melbourne, FL

AIR-TO-GROUND MISSILE SYSTEM (AGMS):

Martin Marietta; Orlando, FL

APACHE:

Honeywell; St. Petersburg, FL
Martin Marietta; Orlando, FL

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Honeywell; Clearwater, FL

AVENGER:

DBA; Melbourne, FL

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Group Technology; Tampa, FL

BLACK HAWK:

Dayton-Granger; Fort Lauderdale, FL

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Metric Systems; Fort Walton Beach, FL

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Pulau Electronics; Orlando, FL
SAIC; Orlando, FL

COMANCHE:

Harris; Melbourne, FL
Martin Marietta; Orlando, FL
Aircraft Porous Media; Pinellas Park, FL
Schwartz Electro-Optics; Orlando, FL
VLSI; Clearwater, FL

COMMAND AND CONTROL VEHICLE (C2V):

Brunswick; Deland, FL

DIGITAL TRANSMISSION ASSEMBLAGES:

Group Technologies; Tampa, FL
Harris; Melbourne, FL

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

TDI; Fort Walton Beach, FL

HELLFIRE II MISSILE:

Martin Marietta; Orlando, FL

IMPROVED FIRE CONTROL SYSTEM (IFCS):

Harris; Melbourne, FL

JAVELIN:

Conax Florida; Tampa, FL
ECC International; Orlando, FL
Martin Marietta; Orlando, FL; Ocala, FL
Orlando Technologies; Shalimar, FL

JOINT SURVEILLANCE TARGET ATTACK RADAR (JOINT STARS) GROUND STATION MODULE (GSM):

Northrop-Grumman; Melbourne, FL

KIOWA WARRIOR:

Litton Industries; Orlando, FL

LONGBOW APACHE:

Martin Marietta (Joint Venture); Orlando, FL
Smiths Industries; Clearwater, FL
Transistor Devices; Fort Walton Beach, FL

LONGBOW HELLFIRE MISSILE:

Martin Marietta (Joint Venture); Orlando, FL

LINE-OF-SIGHT ANTITANK (LOSAT):

DRI; Vero Beach, FL
Graseby Infrared; Orlando, FL
Loral; Orlando, FL

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

Harris; Melbourne, FL

NATIONAL MISSILE DEFENSE (NMD):

Honeywell; Clearwater, FL

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Martin Marietta; Orlando, FL

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DETECTION:

Brunswick; Deland, FL

PALADIN:

Honeywell; St. Petersburg, FL

PALLETIZED LOAD SYSTEM (PLS):

OTC Trailer, Bradenton, FL

PATRIOT:

Martin Marietta; Orlando, FL
Aerospace Interconnect Systems; Titusville, FL
Honeywell; Clearwater, FL
Piezo Tech.; Orlando, FL

SATELLITE COMMUNICATIONS (SATCOM):

Harris; Melbourne, FL

SENSE AND DESTROY ARMOR (SADARM):

Harris; Melbourne, FL

SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS):

General Dynamics; Tallahassee, FL
Talla-Comm; Tallahassee, FL

TANK MAIN GUN AMMUNITION:

Olin; St. Petersburg, FL
Hercules; Clearwater, FL

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Honeywell; Orlando, FL

TOW WEAPON SYSTEM:

OMI; Melbourne, FL

VOLCANO:

Brunswick; Deland, FL

GEORGIA

AIR-TO-GROUND MISSILE SYSTEM (AGMS):

Rockwell International; Duluth, GA

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Northrop-Grumman; Perry, GA

BATTLEFIELD COMBAT IDENTIFICATION:

GTRI; Atlanta, GA

BLACK HAWK:

Engineered Fabric; Rockmart, GA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Hughes; La Grange, GA

JAVELIN:

Abex/NWL Aerospace; Dublin, GA

LINE-OF-SIGHT ANTITANK (LOSAT):

GEC-Marconi; Atlanta, GA

MORTAR (120 mm):

Brockway Standard; Homerville, GA

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

AEL Defense; Alpharetta, GA

PATRIOT:

Murata Erie; Smyrna, GA
Hartman Elec.; Atlanta, GA
RI Tac System Division; Atlanta, GA; Duluth, GA

SOLDIER SYSTEM:

Simulation Technologies; Columbus, GA

HAWAII

IDAHO

ABRAMS TANK:

DOE; Idaho Falls, ID

COMANCHE:

Micron Tech.; Boise, ID

PATRIOT:

Quality Thermistor; Boise, ID

ILLINOIS

ABRAMS TANK:

Rock Island Arsenal; Rock Island, IL

AVENGER:

CAI; Barrington, IL

BLACK HAWK:

CR Industries; Elgin, IL

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Reynolds Metals; McCook, IL

COMANCHE:

Cinch Connector; Elk Grove, IL
MPC Products; Skokie, IL

FAMILY OF MEDIUM TACTICAL VEHICLES (FMTV):

Caterpillar; Peoria, IL

HEAVY ASSAULT BRIDGE (HAB):

Caterpillar; Peoria, IL

HOWITZER (M119A1):

Rock Island Arsenal; Rock Island, IL

IMPROVED RECOVERY VEHICLE (IRV):

Miner Elastomer Products; Geneva, IL

MORTAR (120 mm):

Olin; East Alton, IL

PATRIOT:

Amco Engineering; Schiller Park, IL

VOLCANO:

Nomura Enterprise; Rock Island, IL

INDIANA

ABRAMS TANK:

GMC-Allison; Indianapolis, IN

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS):

Magnavox; Fort Wayne, IN

ALL SOURCE ANALYSIS SYSTEM (ASAS):

Magnavox; Fort Wayne, IN

ARMY DATA DISTRIBUTION SYSTEM (ADDS):

Bowmar Instrument; Fort Wayne, IN

BATTLEFIELD COMBAT IDENTIFICATION:

Magnavox; Fort Wayne, IN

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM (BCIS) – NEAR TERM:

Magnavox; Fort Wayne, IN

BLACK HAWK:

Howmet; LaPorte, IN

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Cummins; Columbus,IN

BREACHER:

GMC-Allison; Indianapolis, IN

COMANCHE:

Allied Signal; South Bend, IN
GMC-Allison; Indianapolis, IN
CTS; West Lafayette, IN

COMMAND AND CONTROL VEHICLE (C2V):

Cummings; Columbus, IN

COMMON HARDWARE/ SOFTWARE (CHS):

Magnavox; Fort Wayne, IN

GROUND-BASED COMMON SENSOR (GBCS):

Magnavox; Fort Wayne, IN

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

AM General; South Bend, IN
ITT; Fort Wayne, IN

JAVELIN:

Magnavox; Fort Wayne, IN

KIOWA WARRIOR:

GMC-Allison; Indianapolis, IN
Magnavox; Fort Wayne, IN
M113 FAMILY OF VEHICLES (FOV):
GMC-Allison; Indianapolis, IN

PALLETIZED LOAD SYSTEM (PLS):

GMC-Allison; Indianapolis, IN

PATRIOT:

Aluminum Forge; Indianapolis, IN

SATELLITE COMMUNICATIONS (SATCOM):

Magnavox; Fort Wayne, IN

SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS):

ITT; Fort Wayne, IN

STINGER:

Magnavox; Fort Wayne, IN

IOWA

APACHE:

Rockwell International; Cedar Rapids, IA

BACK HAWK:

Fansteel/Wellman Dynamics; Creston, IA

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

Rockwell International; Cedar Rapids, IA

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

Rockwell International; Cedar Rapids, IA

JAVELIN:

Mason and Hanger; Middletown, IA

KIOWA WARRIOR:

Rockwell International; Cedar Rapids, IA

NAVSTAR GLOBAL POSITIONING SYSTEM (GPS):

Rockwell International; Cedar Rapids, IA

PATRIOT:

B.E. Controls; Davenport, IA

TANK MAIN GUN AMMUNITION:

Mason and Hangar; Middletown, IA

TOW WEAPON SYSTEM:

Mason and Hanger; Middletown, IA

WIDE AREA MUNITION (WAM):

Mason and Hanger; Burlington, IA

KANSAS

AVENGER:

Plastic Fabricating; Wichita, KS

BLACK HAWK:

Plastic Fabricating; Wichita, KS

GUARDRAIL COMMON SENSOR (GRCS):

Beech Aircraft; Wichita, KS

PATRIOT:

Networks International; Lenexa, KS

KENTUCKY

APACHE:

Serv-Air; Lexington, KY

AVENGER:

KECO Industries; Florence, KY

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Outdoor Venture; Stearns, KY

MOBILE SUBSCRIBER EQUIPMENT (MSE):

KECO Industries; Florence, KY

PATRIOT:

Irving B. Moore; Lexington, KY

SOLDIER SYSTEM:

Foam Design; Lexington, KY

LOUISIANA

PATRIOT:

C.P.I.; Broussard, LA

MAINE

MK-19-3 40 mm AUTOMATIC GRENADE LAUNCHER:

Saco Defense; Saco, ME

PATRIOT:

Microwave Tech.; Raymond, ME

MARYLAND

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Thiokol; Elkton, MD

AIR-TO-GROUND MISSILE SYSTEM (AGMS):

Westinghouse (Joint Venture); Baltimore MD

BLACK HAWK:

C.R. Daniels; Ellicott City, MD

BREACHER:

AAI; Hunt Valley, MD

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Loral; Bethesda, MD

COMANCHE:

Westinghouse; Baltimore, MD
Fairchild Space & Defense; Germantown, MD

COMMAND AND CONTROL VEHICLE (C2V):

Airflow; Frederick, MD

IMPROVED RECOVERY VEHICLE (IRV):

DCA Foods; Jessup, MD

JOINT TACTICAL GROUND STATION (JTAGS):

Gichner Systems Group; Hunt Valley, MD

KIOWA WARRIOR:

Allied Signal; Baltimore, MD

LONGBOW APACHE:

Westinghouse (Joint Venture); Baltimore, MD

LONGBOW HELLFIRE MISSILE:

Westinghouse (Joint Venture); Baltimore, MD

M9 9 mm PERSONAL DEFENSE WEAPON:

Beretta USA; Accokeek, MD

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Westinghouse; Baltimore, MD

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DETECTION:

Battelle; Edgewood, MD
Environment Technologies Group; Baltimore, MD

PATRIOT:

Martin Marietta; Baltimore, MD
Allied Signal; Baltimore, MD
Hercules; Cumberland, MD

SMOKE GENERATOR (XM56):

MRC Division of Chamberlain Manufacturing; Hunt Valley, MD

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

Gichner Systems Group; Hunt Valley, MD

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Gichner Systems Group; Hunt Valley, MD
Thiokol; Elkton, MD
Westinghouse; Baltimore, MD

MASSACHUSETTS

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Martin Marietta; Pittsfield, MA

ALL SOURCE ANALYSIS SYSTEM (ASAS):

Martin Marietta; Pittsfield, MA

APACHE:

General Electric; Lynn, MA

ARMORED GUN SYSTEM (AGS):

General Electric; Pittsfield, MA

AVENGER:

Adams Russell; Amesbury, MA
General Electric; Pittsfield, MA

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Analog Devices; Wilmington, MA

BATTLEFIELD COMBAT IDENTIFICATION:

MIT; Cambridge, MA

BLACK HAWK:

General Electric; Lynn, MA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Martin Marietta; Pittsfield, MA
LAU Technologies; Acton, MA

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Dynamics Research; Wilmington, MA

CIRCUIT SWITCH/MESSAGE SWITCH:

GTE: Taunton, MA

COMANCHE:

Loral; Lexington, MA
Wyman-Gordon; North Grafton, MA
Parker Hannifin; Woburn, MA

COMMAND AND CONTROL VEHICLE (C2V):

Martin Marietta; Pittsfield, MA
GTE; Taunton, MA

COMMON HARDWARE/ SOFTWARE (CHS):

GTE; Taunton, MA

DIGITAL TRANSMISSION ASSEMBLAGES:

Raytheon; Marlboro, MA

EXTENDED RANGE-MULTIPLE LAUNCH ROCKET SYSTEM (ER-MLRS):

Raytheon; Tewksbury, MA

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Diamond Antenna; Winchester, MA
ENON; Pittsfield, MA
MA/COM; Burlington, MA
Herly Industries; Woburn, MA

GEN II SOLDIER SYSTEM ATD:

Arthur D. Little; Cambridge, MA

IMPROVED FIRE CONTROL SYSTEM (IFCS):

Raytheon; Tewksbury, MA

INTEGRATED HIGH PRESSURE TURBINE ENGINE TECHNOLOGY, JOINT TURBINE ADVANCED GAS GENERATOR:

General Electric; Lynn, MA

INTEGRATED SYSTEM CONTROL (ISYSCON):

GTE; Taunton, MA
TRW; Cambridge, MA
ACSI; Burlington, MA
SofTech; Waltham, MA

JAVELIN:

Loral; Lexington, MA

LINE-OF-SIGHT ANTITANK (LOSAT):

Loral; Cambridge, MA
Haigh-Farr; Woburn, MA

MANEUVER CONTROL SYSTEM (MCS):

GTE; Taunton, MA

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

Raytheon; Marlboro, MA

MOBILE SUBSCRIBER EQUIPMENT (MSE):

GTE; Taunton, MA
Raytheon; Marlboro, MA

MORTAR (120 mm):

Stocker & Yale; Beverly, MA

NATIONAL MISSILE DEFENSE (NMD):

Raytheon; Wayland, MA
Lincoln National Laboratory; Lexington, MA

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Brunswick; Bedford, MA

PATRIOT:

Raytheon; Bedford, MA
Varian Associates; Beverly, MA
Haigh-Farr; Woburn, MA
Lucas Epsco; Hopkinton, MA
Micro Networks; Worcester, MA

SATELLITE COMMUNICATIONS (SATCOM):

GTE; Taunton, MA

TANK MAIN GUN AMMUNITION:

Nuclear Metals; Concord, MA

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Raytheon; Wayland, MA
Loral; Lexington, MA
CPI; Boston, MA

TOTAL DISTRIBUTION PROGRAM:

GTE; Taunton, MA

WIDE AREA MUNITION (WAM):

Textron Defense System; Wilmington, MA

MICHIGAN

ABRAMS TANK:

Cadillac Gage; Warren, MI
General Dynamics; Sterling Heights, MI; Warren, MI
Smith Industries; Grand Rapids, MI

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Teledyne; Muskegon, MI

ARMORED GUN SYSTEM (AGS):

Detroit Diesel; Detroit, MI
Cadillac Gage; Warren, MI

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM (BCIS) – NEAR TERM:

General Dynamics; Sterling Heights, MI

BLACK HAWK:

Aeroquip; Jackson, MI
Howmet; Muskegon, MI

BREACHER:

Cadillac Gage; Warren, MI
General Dynamics; Sterling Heights, MI

COMANCHE:

Williams International; Walled Lake, MI

HEAVY ASSAULT BRIDGE (HAB):

General Dynamics; Sterling Heights, MI

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

AM General; Livonia, MI
General Motors Hydromatic; Ypsilanti, MI
Motor Wheel; Lansing, MI

IMPROVED RECOVERY VEHICLE (IRV):

Teledyne Vehicle Systems; Muskegon, MI
LOC Performance Products; Plymouth, MI

LONGBOW APACHE:

Smiths Industries; Grand Rapids, MI

LINE-OF-SIGHT ANTITANK (LOSAT):

TRW; Troy, MI

LOGISTICS OVER THE SHORE (LOTS)-CAUSEWAY FERRY:

Lake Shore; Iron Mountain, MI

M113 FAMILY OF VEHICLES (FOV):

Detroit Diesel; Detroit, MI

MOBILE SUBSCRIBER EQUIPMENT (MSE):

AM General; Livonia, MI

NUCLEAR, BIOLOGICAL, AND CHEMICAL RECONNAISSANCE SYSTEM (NBCRS) – FOX:

General Dynamics; Detroit, MI

PALADIN:

Detroit Diesel; Detroit, MI

PALLETIZED LOAD SYSTEM (PLS):

Detroit Diesel; Detroit, MI

PATRIOT:

Kaydon; Muskegon, MI

MINNESOTA

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Alliant Tech Systems; Edina, MN
United Defense; Minneapolis, MN

ARMORED GUN SYSTEM (AGS):

United Defense; Minneapolis, MN

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Honeywell; Minneapolis, MN

BLACK HAWK:

Rosemount; Burnsville, MN

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Alliant Tech Systems; Minneapolis, MN

COMANCHE:

Rosemount; Burnsville, MN

GEN II SOLDIER SYSTEM ATD:

Honeywell; Minneapolis, MN

KIOWA WARRIOR:

Honeywell; Minneapolis, MN

LOGISTICS OVER THE SHORE (LOTS)-CAUSEWAY FERRY:

Sewall Gear; St. Paul, MN

PALADIN:

Alliant Tech Systems; Edina, MN

PATRIOT:

Honeywell; Minneapolis, MN
Minco Products; Minneapolis, MN

SENSE AND DESTROY ARMOR (SADARM):

Alliant Tech Systems; Edina, MN

STINGER:

Honeywell; Minneapolis, MN

TANK MAIN GUN AMMUNITION:

Alliant Tech Systems; Brooklyn Park, MN

TOW WEAPON SYSTEM:

Quadion; Minneapolis, MN

MISSISSIPPI

ARMY DATA DISTRIBUTION SYSTEM (ADDS):

Hughes; Forrest, MS

BLACK HAWK:

Vickers; Jackson, MS

COMANCHE:

Vickers; Jackson, MS

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

Hughes; Forrest, MS

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Hughes; Forrest, MS

PATRIOT:

Metal Masters; Guntown, MS

MISSOURI

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Eagle Picher; Joplin, MO
Hitchner; OíFallon, MO

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Eagle Picher; Joplin, MO

COMANCHE:

McDonnell Douglas; St. Louis, MO

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Midcon Cable; Joplin, MO

GUARDRAIL COMMON SENSOR (GRCS):

ESCO; St. Louis, MO

HEAVY EQUIPMENT TRANSPORTER SYSTEM (HETS):

Southwest Mobile Systems; St. Louis, MO

HOWITZER (M119A1):

Seiler Instrument; St. Louis, MO

JAVELIN:

Eagle Picher; Joplin, MO

LINE-OF-SIGHT ANTITANK (LOSAT):

Eagle Picher; Joplin, MO

LOGISTICS OVER THE SHORE (LOTS)-CAUSEWAY FERRY:

Missouri Steel Castings; Joplin, MO

PATRIOT:

Eagle Picher; Joplin, MO
Torotel; St. Louis, MO

SENSE AND DESTROY ARMOR (SADARM):

Eagle Picher; Joplin, MO

STINGER:

Eagle Picher; Joplin, MO

TACTICAL QUIET GENERATORS (TQG):

Libby; Kansas City, MO

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Eagle Picher; Joplin, MO

TOW WEAPON SYSTEM:

Eagle Picher; Joplin, MO

WIDE AREA MUNITION (WAM):

Eagle Picher; Joplin, MO

MONTANA

VOLCANO:

S & K Electronics; Roman, MT

NEBRASKA

LINE-OF-SIGHT ANTITANK (LOSAT):

Brunswick; Lincoln, NE

MOBILE SUBSCRIBER EQUIPMENT (MSE):

Telex Communications; Lincoln, NE

PATRIOT:

Brunswick; Lincoln, NE
Dale Electronics; Columbus, NE

NEVADA

TOW WEAPON SYSTEM:

Smart Telecommunication; Verdi, NV

NEW HAMPSHIRE

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Raytheon; Manchester, NH

BLACK HAWK:

New Hampshire Ball Bearing; Laconia, NH

COMANCHE:

Teledyne; Hudson, NH
Teradyne; Nashua, NH

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

Lockheed-Sanders; Nashua, NH

GROUND-BASED COMMON SENSOR (GBCS):

Sanders/AEL (Joint Venture); Hudson, NH

LIGHT AND SPECIAL DIVISION INTERIM SENSOR (LSDIS):

Lockheed-Sanders (Joint Venture); Nashua, NH

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Lockheed-Sanders; Nashua, NH
Insight Technology; Manchester, NH

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Lockheed-Sanders; Nashua, NH
DEC; Salem, NH

NEW JERSEY

ADVANCED AIRDROP FOR LAND COMBAT (AALC) ATD:

SSE; Pennsauken, NJ

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS):

MILTOPE; Eatontown, NJ

ARMY DATA DISTRIBUTION SYSTEM (ADDS):

GEC-Marconi; Totowa, NJ

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Simmonds Precision; Cedar Knolls, NJ

AVENGER:

Magnavox; Mahwah, NJ
United Telecontrol Electronics; Asbury Park, NJ

BATTLEFIELD COMBAT IDENTIFICATION:

Booz-Allen Hamilton; Eatontown, NJ
QUESTECH; Eatontown, NJ
IITRI; Eatontown, NJ
Mitre; Eatontown, NJ

BLACK HAWK:

Allied Signal; Teterboro, NJ

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

CHT Steel; Ventor, NJ

COMANCHE:

Smith Industries; Florham Park, NJ

CORPS SAM (Concept Study Contractor):

GEC-Marconi; Wayne, NJ

DIGITAL TRANSMISSION ASSEMBLAGES:

Transistor Devices; Cedar Knolls, NJ

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

GEC-Marconi; Wayne, NJ

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Waveline; West Caldwell, NJ

IMPROVED FIRE CONTROL SYSTEM (IFCS):

Allied Signal; Teterboro, NJ

JAVELIN:

GEC-Marconi; Wayne, NJ

KIOWA WARRIOR:

GEC-Marconi; Little Falls, NJ

LONGBOW APACHE:

Allied Signal; Eatontown, NJ; Teterboro, NJ
ITT; Nutley, NJ

MANEUVER CONTROL SYSTEM (MCS):

Mitre; Eatontown, NJ
Telos; Shrewsbury, NJ
ESC; Eatontown, NJ

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

Martin Marietta; Camden, NJ

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):

Allied Signal; Teterboro, NJ

NATIONAL MISSILE DEFENSE (NMD):

Kearfott; Wayne, NJ

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

Magnavox; Mahwah, NJ

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DETECTION:

Nuclear Research; Dover, NJ

PATRIOT:

TRON-TECH; Eatontown, NJ
GEC-Marconi; Frenchtown, NJ

RADAR DECEPTION AND JAMMING (RD&J) ATD:

ITT; Clifton, NJ
Allied Signal; Teterboro, NJ

SPECIAL OPERATIONS AIRCRAFT (SOA):

Allied Signal; Teterboro, NJ

STINGER:

United Telecontrol Electronics; Asbury Park, NJ

NEW MEXICO

AVENGER:

Hughes; Farmington, NM

CIRCUIT SWITCH/MESSAGE SWITCH:

Laguna Industries; Albuquerque, NM

COMANCHE:

Calculex; Las Cruces, NM

DIGITAL TRANSMISSION ASSEMBLAGES:

Laguna Industries; Laguna Pueblo, NM

KIOWA WARRIOR:

Honeywell; Albuquerque, NM

LINE-OF-SIGHT ANTITANK (LOSAT):

Cortez III; Alamogordo, NM

NATIONAL MISSILE DEFENSE (NMD):

Sandia National Laboratory; Albuquerque, NM

STINGER:

Hughes; Farmington, NM

NEW YORK

ABRAMS TANK:

Watervliet Arsenal; Watervliet, NY

ARMORED GUN SYSTEM (AGS):

Watervliet Arsenal; Watervliet, NY

APACHE:

Photronics; Hauppauge, NY

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Grey Syracuse; Syracuse, NY

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Brentronics; Commack, NY

BISTATIC RADAR FOR WEAPONS LOCATION ATD:

Syracuse Research; Syracuse, NY

BLACK HAWK:

Precision Gear; Corona, NY

BREACHER:

Deanco; Ithaca, NY
General Microwave; Amityville, NY

COMANCHE:

CAE Link; Binghamton, NY
Applied Amphenol; Sidney, NY
Automation Software; Stony Brook, NY
Northrop-Grumman; Bethpage, NY
MILTOPE; Melville, NY
Moog; East Aurora, NY

COMMON HARDWARE/ SOFTWARE (CHS):

MILTOPE; Melville, NY

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Eastman Kodak; Rochester, NY

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Hazeltine; Greenlawn, NY
Rotron; Woodstock, NY

GROUND-BASED COMMON SENSOR (GBCS):

IBM; Owego, NY

GUARDRAIL COMMON SENSOR (GRCS):

IBM; Owego, NY

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

American Transcoil; Richmond Hill, NY
New Venture Gear; Schenectady, NY
Gleason Gear; Rochester, NY

HOWITZER (M119A1):

Watervliet Arsenal; Watervliet, NY

INTEGRATED FAMILY OF TEST EQUIPMENT (IFTE):

Northrop-Grumman; Great River, NY

JAVELIN:

Carleton Technologies; Orchard Park, NY

KIOWA WARRIOR:

Teleponics; Huntington, NY

LONGBOW APACHE:

General Electric; Binghamton, NY

MORTAR (120 mm):

Watervliet Arsenal; Watervliet, NY

PATRIOT:

RHG Electronics Lab; Deer Park, NY
Sensitron; Deer Park, NY

SOLDIER SYSTEM:

The Grandoe; Gloversville, NY

SPECIAL OPERATIONS AIRCRAFT (SOA):

CAE Link; Binghamton, NY
Loral; Owego, NY

STINGER:

Bausch & Lomb; Rochester, NY
Lourdes; Hauppauge, NY
Phototronics; Rome, NY

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Anaren; Syracuse, NY

NORTH CAROLINA

BLACK HAWK:

Walter Kidde Aerospace; Wilson, NC

LINE-OF-SIGHT ANTITANK (LOSAT):

General Research; Research Park, NC

PATRIOT:

Arrow Electronics; Winston-Salem, NC
Analog Devices; Greensboro, NC

NORTH DAKOTA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Sioux MFG; Fort Totten, ND

OHIO

ABRAMS TANK:

General Dynamics; Lima, OH

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

KDI; Cincinnati, OH
Piqua; Piqua, OH

BATTLEFIELD DISTRIBUTED SIMULATION – DEVELOPMENTAL:

Loral; Akron, OH

BLACK HAWK:

FL Aerospace; Columbus, OH

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

ALCOA Forge; Cleveland, OH

BREACHER:

Gradall; New Philadelphia, OH

COMANCHE:

Sunstrand; Lima, OH

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Picker; Cleveland, OH

EXTENDED RANGE-MULTIPLE LAUNCH ROCKET SYSTEM (ER-MLRS):

KDI; Cincinnati, OH

GEN II SOLDIER SYSTEM ATD:

Battelle; Columbus, OH

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

General Motors Diesel; Moraine,OH
Goodyear; Akron, OH
OiGara, Hess and Eisenhardt; Fairfield, OH

IMPROVED RECOVERY VEHICLE (IRV):

Goodyear Tire; St. Mary's, OH

PATRIOT:

Lucas Aerospace; Aurora, OH
KDI; Cincinnati, OH
West Milton Precision; Vandalia, OH
Deleval; Cleveland, OH

SATELLITE COMMUNICATIONS (SATCOM):

Cincinnati Electronics; Cincinnati, OH

STINGER:

Cincinnati Electronics; Cincinnati, OH

TOW WEAPON SYSTEM:

American Steel & Wire; Cleveland, OH

OKLAHOMA

AVENGER:

Cherokee Nation; Stillwell, OK

COMBAT SERVICE SUPPORT CONTROL SYSTEM (CSSCS):

LB&M Associates; Lawton, OK

IMPROVED RECOVERY VEHICLE (IRV):

Barden Carco Gearmatic; Broken Arrow, OK

PATRIOT:

Cherokee Nation; Stillwell, OK

OREGON

BLACK HAWK:

PCC; Portland, OR

PATRIOT:

Oeco; Milwaukee, OR

PENNSYLVANIA

ABRAMS TANK:

General Dynamics; Scranton, PA

AVENGER:

Letterkenny Army Depot; Letterkenny, PA

BLACK HAWK:

Northrop-Grumman; Fleetville, PA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

United Defense; York, PA

BREACHER:

ITS; Philadelphia, PA
United Defense; York, PA

CLOSE COMBAT TACTICAL TRAINER (CCTT):

ECC International; Wayne, PA

COMANCHE:

Boeing; Philadelphia, PA
Advance Intercon; Mill Hall, PA
Timken; Fort Washington, PA

COMMAND AND CONTROL VEHICLE (C2V):

Gichenr Systems Group; Dallastown, PA

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Airtacs; Red Lion, PA
Engineered Systems; Trappe, PA

DIGITAL TRANSMISSION ASSEMBLAGES:

Tobyhanna Army Depot; Tobyhanna, PA
Gichner Systems Group; Dallastown, PA

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Gichner Systems Group; Dallastown, PA
UNISYS; King of Prussia, PA

GEN II SOLDIER SYSTEM ATD:

GENTEX; Carbondale, PA

IMPROVED RECOVERY VEHICLE (IRV):

United Defense; York, PA

LINE-OF-SIGHT ANTITANK (LOSAT):

APD Cryogenics; Allentown, PA
Microcom; Warminster, PA
Aydin; Newton, PA

MOBILE SUBSCRIBER EQUIPMENT (MSE):

Magnavox; Philadelphia, PA

MORTAR (120 mm):

Chamberlain Manufacturing; Scranton, PA
Loral; Archibald, PA
Scranton Army Ammunition Plant; Scranton, PA

PALADIN:

United Defense; Letterkenny, PA; York, PA
Sechan Electronics; Littiz, PA

PALLETIZED LOAD SYSTEM (PLS):

Grove Crane; Shady Grove, PA

PATRIOT:

Gichner Systems Group; Dallastowne, PA
Litton Industries; Clifton Heights, PA
GTE; Towanda, PA

PROTECTIVE MASKS (M40 SERIES):

Mine Safety Appliance; Pittsburgh, PA

SATELLITE COMMUNICATIONS (SATCOM):

General Electronic; Valley Forge, PA

SENSE AND DESTROY ARMOR (SADARM):

Phoenix Microwave; Telford, PA

SPECIAL OPERATIONS AIRCRAFT (SOA):

Boeing; Philadelphia, PA

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

Letterkenny Army Depot; Letterkenny, PA
Tobyhanna Army Depot; Tobyhanna, PA

TANK MAIN GUN AMMUNITION:

Microcom; Philadelphia, PA
MVI; Pittsburgh, PA
Bulova; Lancaster, PA

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Gichner Systems Group; Dallastown, PA
Aydin Vector; Newton, PA

TOW WEAPON SYSTEM:

Loral, Archibald, PA
Kaiser Aluminum, Erie, PA

RHODE ISLAND

BLACK HAWK:

Sentol; Providence, RI

PATRIOT:

Jade Manufacturing; Warwick, RI

SOUTH CAROLINA

ARMORED GUN SYSTEM (AGS):

United Defense; Aiken, SC

AVENGER:

Kaydon; Sumter, SC

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

United Defense; Aiken, SC

M16A2 RIFLE:

FN Manufacturing; Columbia, SC

M249 SQUAD AUTOMATIC WEAPON (SAW):

FN Manufacturing; Columbia, SC

MOBILE SUBSCRIBER EQUIPMENT (MSE):

FN Manufacturing; Columbia, SC

PATRIOT:

Kemet; Greenville, SC
Woven Electronics; Simpsonville, SC

SOUTH DAKOTA

TENNESSEE

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Olin; Charleston, TN

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Martin Marietta; Milan, TN

AVENGER:

Boeing; Oakridge, TN

MORTAR (120 mm):

MMOS Milan Army Ammunition Plant; Milan, TN
United Ammunition Container; Milan, TN

NATIONAL MISSILE DEFENSE (NMD):

Arnold Engineering Development Ctr.; Tullahoma, TN

PATRIOT:

Precision Cable of Tennessee; Gallatin, TN

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

Camel; Knoxville, TN

TANK MAIN GUN AMMUNITION:

Aerojet; Jonesboro, TN

TEXAS

ABRAMS TANK:

Texas Instruments; Dallas, TX

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Chemical Dynamics; Weatherford, TX
Hercules; McGregor, TX
Loral; Dallas, TX, Horizon City, TX
Texas Metal Spinning; Fort Worth, TX

AVENGER:

ATI; Fort Worth, TX
Texas Instruments; Dallas, TX
Texstar; Grand Prairie, TX

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Texas Instruments; Midland, TX

BLACK HAWK:

Cameron Forge; Houston, TX

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Texas Instruments; Dallas, TX

COMANCHE:

Boeing; Midlothian, TX
Hexcell; Arlington, TX

COMMAND AND CONTROL VEHICLE (C2V):

Antenna Products; Mineral Wells, TX

EXTENDED RANGE-MULTIPLE LAUNCH ROCKET SYSTEM (ER-MLRS):

Loral; Dallas, TX

FAMILY OF MEDIUM TACTICAL VEHICLES (FMTV):

Stewart & Stevenson Services; Houston, TX

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

KINTEC; Dallas, TX

GROUND-BASED COMMON SENSOR (GBCS):

ELECTROSPACE Systems; Richardson, TX

HEAVY ASSAULT BRIDGE (HAB):

Stewart and Stevenson Services; Houston, TX

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV):

Texas Instruments; Dallas, TX

HUNTER SENSOR SUITE ATD:

Texas Instruments; Dallas, TX

HYDRA 70 ROCKET SYSTEM:

BEI Defense Systems; Euless, TX

IMPROVED FIRE CONTROL SYSTEM (IFCS):

Loral; Dallas, TX

JAVELIN:

Texas Instruments/Martin Marietta Joint Venture; Lewisville, TX

JOINT TACTICAL GROUND STATION (JTAGS):

Advanced Programming Concepts; Pfluegerville, TX
Response Service and Innovation; Austin, TX

KIOWA WARRIOR:

BEI Defense Systems; Fort Worth, TX
Bell Helicopter; Fort Worth TX

LONGBOW APACHE:

Westinghouse; Dallas, TX

LINE-OF-SIGHT ANTITANK (LOSAT):

Loral; Dallas, TX
Texas Instruments; Dallas, TX

MILITARY-STRATEGIC/TACTICAL RELAY (MILSTAR) SYSTEM:

Rockwell International; Richardson, TX

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS):

Loral; Dallas, TX

MORTAR (120 mm):

Red River Army Depot; Texarkana, TX

NATIONAL MISSILE DEFENSE (NMD):

Loral; Dallas, TX

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

IMO/Optic-Electronic; Dallas, TX
Texas Instruments; Dallas, TX

PATRIOT:

Loral; Dallas, TX
Rockwell International; Dallas, TX

SPECIAL OPERATIONS AIRCRAFT (SOA):

Texas Instruments; McKinney, TX

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Loral; Dallas, TX
Texas Instruments; Dallas, TX

TOW WEAPON SYSTEM:

Texas Instruments; Dallas, TX
Varo Industries; Garland, TX

WIDE AREA MUNITION (WAM):

Texas Instruments; Dallas, TX

UTAH

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

Teleflex Defense Systems; Spanish Fort, UT

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Evans & Sutherland; Salt Lake City, UT

COMANCHE:

Hercules; Ogden, UT

GUARDRAIL COMMON SENSOR (GRCS):

UNISYS; Salt Lake City, UT

HYDRA 70 ROCKET SYSTEM:

Thiokol; Brigham City, UT

LONGBOW APACHE:

ACME; West Jordan, UT

LINE-OF-SIGHT ANTITANK (LOSAT):

EDO; Salt Lake City, UT

PATRIOT:

Valley Enterprises; Sandy, UT
Fibertek; Springville, UT
EDO; Salt Lake City, UT

VERMONT

ADVANCED FIELD ARTILLERY SYSTEM (AFAS) & FUTURE ARMORED RESUPPLY VEHICLE (FARV):

Martin Marietta; Burlington, VT

AVENGER:

General Electric; Burlington, VT

BLACK HAWK:

Simmonds Precision Products; Vergennes, VT

COMANCHE:

Martin Marietta; Burlington, VT
General Electric; Burlington, VT
Polhemus; Colchester, VT

MORTAR (120 mm):

Martin Marietta; Burlington, VT

PATRIOT:

G.S. Precision; Brattleboro, VT

VIRGINIA

ALL SOURCE ANALYSIS SYSTEM (ASAS):

BDM; McLean, VA

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Atlantic Research; Gainesville, VA

AVENGER:

Electro-Tech; Blacksburg, VA

BATTLEFIELD COMBAT IDENTIFICATION:

Colsa; Falls Church, VA
AMELEX; Falls Church, VA
QUESTECH; Falls Church, VA
E-OIR Measurements; Fort Belvoir, VA

BRADLEY FIGHTING VEHICLE SYSTEM (BFVS):

United Defense; Arlington, VA

BREACHER:

Jorge Scientific; Arlington, VA

CLOSE COMBAT TACTICAL TRAINER (CCTT):

Loral; Manasass, VA

COMANCHE:

Liege; Arlington, VA

CORPS SAM (Concept Study Contractor):

BDM; McLean, VA

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

Brunswick; Marion, VA

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

Electro-Tech; Blacksburg, VA
Brunswick; Marion, VA

HYDRA 70 ROCKET SYSTEM:

Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA

LINE-OF-SIGHT ANTITANK (LOSAT):

Atlantic Research; Gainesville, VA
Booz-Allen Hamilton; McLean, VA

MORTAR (120 mm):

Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA

NIGHT VISION/RECONNAISSANCE, SURVEILLANCE & TARGET RECOGNITION (NV/RSTR):

ITT; Roanoke, VA

PATRIOT:

Brunswick; Marion, VA
Atlantic Research; Gainesville, VA
Audio; Fairfax, VA
Ovenair; Marion, VA

SOLDIER SYSTEM:

Progressive Technologies; Fairfax, VA

STINGER:

Atlantic Research; Gainesville, VA

STANDARDIZED INTEGRATED COMMAND POST SYSTEM (SICPS):

Brunswick; Marion, VA

TANK MAIN GUN AMMUNITION:

Hercules; Radford, VA
Radford Army Ammunition Plant; Radford, VA

TOTAL DISTRIBUTION PROGRAM (TDP):

UNISYS; Reston, VA
Innovative Logistics Techniques; McLean, VA
CACI, International; Arlington, VA

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

EDAC; Fredericksburg, VA

TOW WEAPON SYSTEM:

Hercules; Radford, VA

WASHINGTON

AVENGER:

Renton Coil; Renton, WA

BRILLIANT ANTI-ARMOR SUBMUNITION (BAT):

Interpoint; Redmond, WA
Rocket Research; Redmond, WA

BLACK HAWK:

ELDEC; Bothell, WA

BREACHER:

Korry Electronics; Seattle, WA

COMANCHE:

Boeing; Seattle, WA
ELDEC; Seattle, WA
Korry Electronic; Seattle, WA

COMMAND AND CONTROL VEHICLE (C2V):

RDA; Tacoma, WA

FORWARD AREA AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE (FAAD C^2I):

R&D Associates; Seattle, WA

LINE-OF-SIGHT ANTITANK (LOSAT):

Loral; Bellevue, WA

NATIONAL MISSILE DEFENSE (NMD):

Boeing; Seattle, WA

PATRIOT:

Sunstrand; Redmond, WA

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Rocket Research; Redmond, WA

TOW WEAPON SYSTEM:

BP Chemical; Auburn; WA

WEST VIRGINIA

JAVELIN:

Hercules; Rocket City, WV

LINE-OF-SIGHT ANTITANK (LOSAT):

Hercules; Rocket City, WV

PATRIOT:

Adel; Newell, WV

TANK MAIN GUN AMMUNITION:

Hercules; Rocket City, WV

WIDE AREA MUNITION (WAM):

Hercules; Rocket City, WV

WISCONSIN

ARMY TACTICAL MISSILE SYSTEM (ARMY TACMS):

Spincraft; New Berlin, WI
Wisconsin Invest Cast; Watertown, WI

AVENGER:

Milwaukee Gear; Milwaukee, WI

BLACK HAWK:

Astronautics of America; Milwaukee, WI

DEPLOYABLE MEDICAL SYSTEMS (DEPMEDS):

BIOCHEM International; Waukesha, WI

FAMILY OF MEDIUM TACTICAL VEHICLES (FMTV):

Rockwell International; Oshkosh, WI

HEAVY EQUIPMENT TRANSPORTER SYSTEM (HETS):

Oshkosh Truck; Oshkosh, WI

IMPROVED RECOVERY VEHICLE (IRV):

Harnischfeger P&H; Oak Creek, WI
Maynard Steel Casing; Milwaukee, WI
Twin Disc; Racine, WI

LOGISTICS OVER THE SHORE (LOTS)-CAUSEWAY FERRY:

Inland Diesel; Butler, WI

MORTAR (120 mm):

Accudyne; Janesville, WI

PALLETIZED LOAD SYSTEM (PLS):

CM Automotive; Oshkosh, WI
Oshkosh Truck; Oshkosh, WI
Rockwell International; Oshkosh, WI
Steeltech; Milwaukee, WI

PATRIOT:

Airsan; Milwuakee, WI

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

Oshkosh Truck; Oshkosh, WI

WYOMING

OTHER COUNTRIES

ARMORED GUN SYSTEM (AGS):

Computing Devices; Ottawa, Ontario, Canada

FORWARD AREA AIR DEFENSE (FAAD) GROUND-BASED SENSOR (GBS):

TAMAM; Yeoud, Israel

HEAVY ASSAULT BRIDGE (HAB):

MAN GHH; Dusseldorf, Germany

HUNTER SHORT RANGE UAV:

IAI; Tel Aviv, Israel

MORTAR (120 mm):

Hughes-Leitz of Canada

MOBILE SUBSCRIBER EQUIPMENT (MSE):

Ericsson Radio Systems AB; Molndal, Sweden
Thomson CSF; Laval, Cholet & Toulouse, France

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DETECTION:

Graseby Ionics; Watford, Herts, United Kingdom

NUCLEAR, BIOLOGICAL, AND CHEMICAL RECONNAISSANCE SYSTEM (NBCRS) – FOX:

Thyssen Henschel; Germany

PALLETIZED LOAD SYSTEM (PLS):

Michelin; Nova Scotia, Canada

RAIL CARS:

Canadian National Railway, AMF Division; Montreal, Canada

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD) SYSTEM:

EBCO; Vancouver, BC, Canada

TOW WEAPON SYSTEM:

Thorn EMI, Middlesex, England
DY-4; Ontario, Canada

Abrams Tank

Project Manager
Abrams Tank System
ATTN: SFAE-ASM-AB
Warren, MI 48397-5000

AFAS/FARV

Project Manager
AFAS/FARV
ATTN: SFAE-FAS-AF
Picatinny Arsenal, NJ 07806

Advanced Field Artillery

Tactical Data System
(AFATDS)
Project Manager
AFATDS
ATTN: SFAE-CC-FS
Ft. Monmouth, NJ 07703

Advanced Integrated Collective

Protection System:
U.S. Army Edgewood Research
Development and Engineering Center
ATTN: SCBRD-CE/AICPS
Bldg. E3549
Aberdeen Proving Ground, MD
21010-5423

Air-to-Ground Missile System (AGMS):

Project Manager
Air-to-Ground Missile System
ATTN: SFAE-MSL-HD
Redstone Arsenal, AL 35898-5610

All Source Analysis System (ASAS):

Project Manager
All Source Analysis System
1616 Anderson Rd
McLean, VA 22102-1616

Apache:

Program Manager
Advanced Attack Helicopter
4300 Goodfellow Blvd.
St. Louis, MO 63120
Armored Gun System (AGS):
Project Manager

Armored Gun System

ATTN: SFAE-ASM-AG
Warren, MI 48397-5000

Army Data Distribution System (ADDS):

Project Manager
ADDS
ATTN: SFAE-CM-ADD
Ft. Monmouth, NJ 07703

Army Tactical Missile System (Army TACMS):

Project Manager
Army TACMS-BAT
ATTN: SFAE-MSL-AB
Redstone Arsenal, AL 35898-5650

Avenger:

Project Manager
FAAD
ATTN: SFAE-MSL-FAD
Redstone Arsenal, AL 35898-5630

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM

(BCIS) Near Term:

Project Manager
Combat Identification
ATTN: SFAE-IEW-CI-BCIS
Ft. Monmouth, NJ 07703

Project Manager
Combat Identification
Skyline 6, Suite 309
Falls Church, VA 22041

Black Hawk:

Project Manager
Utility Helicopters
ATTN: SFAE-AV-BH
St. Louis, MO 63120-1798

Bradley Fighting Vehicle System (BFVS):

Program Manager
Bradley Fighting Vehicle System
ATTN: SFAE-ASM-BV
Warren, MI 48397-5000

Breacher:

Project Manager
Combat Mobility Systems
ATTN: SFAE-ASM-CV-B
Warren, MI 48397-5000

Brilliant Anti-Armor Submunition (BAT):

Project Manager
Army TACMS-BAT
ATTN: SFAE-MSL-AB
Redstone Arsenal, AL 35898-5650

Circuit Switch And Message Switch:

Project Manager
JTACS
ATTN: SFAE-CM-MSC-CSW
Ft. Monmouth, NJ 07703

CECOM Commodity Command

ATTN: AMSEL-LC-MMR-T
Ft. Monmouth, NJ 07703

Close Combat Tactical Trainer (CCTT):

Project Manager
Combined Arms Tactical Trainer
Headquarters, STRICOM
12350 Research Parkway
Orlando, FL 32826-3276

Army Materiel Command (AMC)

5001 Eisenhower Avenue
ATTN: AMCRD-S
Alexandria, VA 22333-0001

Comanche:

Project Manager
Comanche
ATTN: SFAE-AV-RAH (Bldg. 105)
St. Louis, MO 63120-1795

Combat Service Support Control System

(CSSCS):
Project Manager
CSSCS
6020 Meade Rd., Suite 103
Ft. Belvoir, VA 22060-5259

Command and Control Vehicle (C^2V):

Product Manager
Command and Control Vehicle
ATTN: SFAE-ASM-BV
Warren, MI 48397-5000

Common Hardware/ Software (CHS):

Project Manager
Common Hardware/ Software
ATTN: SFAE-CC-CHS
Ft. Monmouth, NJ 07703-5402

Corps Surface-to-Air Missile (Corps SAM):

Program Executive Office
Missile Defense
ATTN: SFAE-MD-SM
P.O.Box 1500
Huntsville, AL 35807-3801

Project Manager
Corps SAM
ATTN: SFAE-MD-SM
Redstone Arsenal, AL 35898-5797

Deployable Medical Systems

(DEPMEDS):
Commander
U.S. Army Medical Material Agency
ATTN: MCMR-MM-R
Frederick, MD 21702-5001

HQ, U.S. Army Aviation and Troop

Command
4300 Goodfellow Blvd.
ATTN: AMSAT-W-TV
St. Louis, MO 63120-1798

Digital Transmission Assemblages:

Project Manager
JTACS (P)
ATTN: SFAE-CM-MSC-CTS
Ft. Monmouth, NJ 07703

Commodity Command

CECOM-DMM
ATTN: AMSEL-LC-MMR-T
Ft. Monmouth, NJ 07703

Extended Range Multiple Launch Rocket

System (ER—MLRS):
Project Manager
ATTN: SFAE-MSL-ML-PGM
Multiple Launch Rocket System
Redstone Arsenal, AL 35898-5700

Family of Medium(FMTV):

Program Manager
Medium Tactical Vehicles
ATTN: SFAE-CS-TVM
Warren, MI 48397

Program Executive Officer

Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397

Force Provider:

HQ, U.S. Army Aviation and
Troop Command
St. Louis, MO 63120-1798

Forward Area Air Defense Command and Control (FAADC2):

U.S. Army Missile Command
ATTN: SFAE-FAAD
Redstone Arsenal, AL 35898

Forward Area Air Defense (FAAD)

Ground Based Sensor (GBS):
Product Manager
FAAD Sensor
ATTN: SFAE-IEW-GSI
Redstone Arsenal, AL 35898-5796

Generator, Smoke, Mechanical:

Motorized for Dual Purpose
Units(XM56):
Product Manager
Smoke/Obscurants
ATTN: AMCPM-SM
Aberdeen Proving Ground, MD
21010-5423

Generator, Smoke, Mechanical:

Mechanized Smoke Obscurant
System (XM58):
Product Manager
Smoke/Obscurants
ATTN: AMCPM-SM
Aberdeen Proving Ground, MD
21010-5423

Ground-Based Common Sensor (GBCS):

Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Guardrail:

Program Manager
Signals Warfare
ATTN: SFAE-IEW-SW
Ft. Monmouth, NJ 07703-5303

Heavy Assault Bridge (HAB):

Project Manager
Combat Mobility Systems
ATTN: SFAE-ASM-CV-H
Warren, MI 48397-5000

Heavy Equipment Transporter System (HETS):

Program Manager
Palletized Load System
ATTN: SFAE-CS-PLS
Warren, MI 48397-5000

Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397-5000

HELLFIRE II Missile:

Product Manager
Air-to-Ground Missile System
ATTN: SFAE-MSL-HD-O
Redstone Arsenal, AL 35898-5610

High Mobility Multipurpose Wheeled

Vehicle (HMMWV):
Project Manager
Tactical Vehicle Special Programs
ATTN: SFAE-CS-TVSP
Warren, MI 48397-5000

Program Executive Officer

Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397-5000

Howitzer (M119A1):

U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSH
Rock Island Arsenal, IL 61299-6000

Hunter Short-range UAV:

Program Manager
UAV-SR Project Office
ATTN: SFAE-UAV-SR
Redstone Arsenal, AL 35898-5791

Hydra 70 Rocket System:

Chief, Hydra-70/2.75 Inch Rocket
Management Office
ATTN: AMSMC-ASH
Rock Island, IL 61299-6000

Improved Fire Control

System (IFCS):
Project Manager
ATTN: SFAE-MSL-ML-FC
Multiple Launch Rocket System
Redstone Arsenal, AL 35898-5700

Integrated Family of Test Equipment (IFTE):

Product Manager
Automatic Test Support Systems
ATTN: PM-ATSS
Redstone Arsenal, AL 35898-5400

Improved Recovery Vehicle:

Product Manager
Combat Mobility Systems
ATTN: SFAE-ASM-CV-R
Warren, MI 48397-5000

Integrated System Control (ISYSCON):

Project Manager
JTACS
ATTN: SFAE-CM-MSC-CMS
(Product Manager, CMS)
Ft. Monmouth, NJ 07703

Javelin:

Project Manager
Javelin
ATTN: SFAE-MSL-AM
Redstone Arsenal, AL 35898-5720

Joint Surveillance Army Target Attack Radar

System (JSTARS) Ground Station
Module(GSM)
Project Manager
Joint STARS
ATTN: SFAE-IEW-JS
Ft. Monmouth, NJ 07703-5304

Joint Tactical Ground Station(JTAGS):

Program Executive Office
Missile Defense
ATTN: SFAE-GPL-TMD-SS-P
P.O. Box 1500
Huntsville, AL 35807-3801

Kiowa Warrior:

Project Manager
Kiowa Warrior
ATTN: SFAE-AV-ASH-T
St. Louis, MO 63120-1798

Light and Special Division Interim

Sensor(LSDIS):
Product Manager
FAAD Sensor
ATTN: SFAE-IEW-GSI
Redstone Arsenal, AL 35898-8052

Line-of-Sight Antitank (LOSAT):

Project Manager
LOSAT
ATTN: SFAE-MSL-LS
Redstone Arsenal, AL 35898-8051

Logistics Over the Shore (LOTS):

HQ, U.S. Army Aviation and
Troop Command
ATTN: AMSAT-I-WTA
St. Louis, MO 63120-1798

Longbow:

Project Manager
Longbow
ATTN: SFAE-AV-LB
St. Louis, MO 63120-1795

Longbow HELLFIRE Missile:

Project Manager
Air-to-Ground Missile System
ATTN: SFAE-MSL-HD-G
Redstone Arsenal, AL 35898-5610

M113 Family of Vehicles (FOV):

Program Manager
AMCPM-M113/M60 FOV
U.S. Army Tank and Automotive
Command
Warren, MI 48397-5000

Maneuver Control System (MCS):

Project Manager
Operations Tactical Data Systems
ATTN: SFAE-CC-MVR
Ft. Monmouth, NJ 07703-5405

Military Strategic/ Tactical Relay (MILSTAR):

Project Manager

MILSTAR (Army)

ATTN: SFAE-CM-MSA
Ft. Monmouth, NJ 07703

Mobile Subscriber Equipment (MSE):

Project Manager
JTACS
ATTN: SFAE-JTC
Ft. Monmouth, NJ 07703

Mortar (120mm):

Project Manager
U.S. Army Mortar Systems
ATTN: AMCPM-MO
Picatinny Arsenal, NJ 07806-5000

Multiple Launch Rocket System (MLRS):

Project Manager
MLRS
ATTN: SFAE-MSL-ML
Redstone Arsenal, AL 35896-570

National Missile Defense:

Program Executive Office
ATTN: SFAE-MD-SM
P.O. Box 1500
Huntsville, AL 35807-5801

NAVSTAR Global Positioning

System(GPS):
Project Manager
GPS
ATTN: SFAE-CM-GPS
Ft. Monmouth, NJ 07703

Night Vision/Reconnaissance, Surveillance,

and Target Recognition (NV/RSTR):
Project Manager
Night Vision and Electro-Optics
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

NBC Detection:

Project Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground,
MD 21010-5423

Office of Program Director

NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground,
MD 21010-5423

Joint Program Office for

Biological Defense Systems
ATTN: SFAE-BD/Skyline#5
5111 Leesburg Pike
Falls Church, VA 22041

NBC Reconnaissance System (NBCRS) Fox:

Project Manager
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010

Paladin:

Product Manager
Paladin/FAASV
ATTN: SFAE-FAS-PAL
Picatinny Arsenal, NJ 07806-5000

Palletized Load System (PLS):

Program Manager
Palletized Load System
ATTN: SFAE-CS-PLS
Warren, MI 48397-5000

Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397-5000

Patriot:

Project Manager
Patriot
ATTN: SFAE-MD-PA
Redstone Arsenal, AL 35898-5620

Project Manager
ERINT
ATTN: SFAE-MD-ERT
P.O. Box 1500
Huntsville, AL 35807-3801

Protective Mask (M40 Series):

Project Manager
NBC Defense
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010

Rail Cars:

Department of the Army
HQ, US Army Troop Support Command
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

Satellite Communications (SATCOM):

Project Manager
SATCOM
ATTN: SFAE-CM-SC
Ft. Monmouth, NJ 07703

Project Manager
MILSTAR (Army)
ATTN: SFAE-CM-MS
Ft. Monmouth, NJ 07703

Program Executive Office

Communications Systems
ATTN: SFAE-CM
Ft. Monmouth, NJ 07703

Sense and Destroy Armor (SADARM):

Project Manager
Sense and Destroy Armor
ATTN: SFAE-FAS-SD
Picatinny Arsenal, NJ 07806-5000

SINCGARS:

Project Manager
SINCGARS
ATTN: SFAE-CM-GAR
Ft. Monmouth, NJ 07703

SMALL ARMS:

M4 Carbine:
U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSS
Rock Island, IL 61299- 7630

Product Manager, Small Arms
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

M9 9mm Personal Defense Weapon:

U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSS
Rock Island, IL 61299- 7630
Product Manager, Small Arms
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

M16A2 Rifle:

U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSS
Rock Island, IL 61299- 7630

Product Manager, Small Arms
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

MK19-3 40MM Automatic Grenade Launcher:

U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSS
Rock Island, IL 61299- 7630

Product Manager, Small Arms
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

M249 Squad Automatic Weapon (SAW):

U.S. Army Armament Chemical
Acquisition & Logistics Activity
ATTN: AMSTA-AC-WSS
Rock Island, IL 61299- 7630

Product Manager, Small Arms
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

Soldier System:

Program Manager Soldier
14050 Dawson Beach Rd.
Woodbridge, VA 22919

AMCCOM

ATTN: AMSMC-RT
Rock Island, IL 61299

ATCOM

4300 Goodfellow Blvd.
St. Louis, MO 63120

CECOM

ATTN: AMSEL-RD
Ft. Monmouth, NJ 07703

Special Operations Aircraft (SOA):

Project Manager
Special Operations Aircraft (SOA)
ATTN: SFAE-AV-SOA
St. Louis, MO 63120-1798

Standardized Integrated Command Post System (SICPS):

Project Manager, Common Hardware/Software
Product Manager, SICPS
Ft. Monmouth, NJ 07703

Stinger:

FAAD Project Office
ATTN: SFAE-MSL-FAD
Redstone Arsenal, AL 35898-5630

Tactical Quiet Generators (TQG):

DoD Project Manager-Mobile Power
Mobile Electric Power
7500 Backlick Road
Springfield, VA 22150-3107

Department of the Army

HQ, U.S. Army Aviation and Troop Command
St. Louis, MO 63120-1798

Tank Main Gun Ammunition:

Project Manager
Tank Main Armament Systems (PM-TMAS)
ATTN: SFAE-AR-TMA
Picatinny Arsenal, NJ 07806-5000

Theater High Altitude Area Defense (THAAD) System:

THAAD
Project Manager
THAAD
ATTN: SFAE-MD-THA
P.O. Box 1500
Huntsville, AL 35807-3801

Program Executive Officer
Missile Defense
ATTN: SFAE-MD-GBR
P.O. Box 1500
Huntsville, AL 35807-3801

Total Distribution Program (TDP):

Strategic Logistics Agency
Strategic Planning Division
Alexandria, VA 22333

TOW Weapon System:

Project Manager
CCAWS
ATTN: SFAE-MSL-CC
Redstone Arsenal, AL 35898-5710

Trackwolf:

Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Volcano:

Project Manager
Mines, Countermine, and Demolitions
ATTN: SFAE-ASM-MCD
Picatinny Arsenal, NJ 07806-5000

Wide Area Munition (WAM):

Project Manager
Mines, Countermine, and Demolitions
ATTN: SFAE-ASM-MCD
Picatinny Arsenal, NJ 07806-5000

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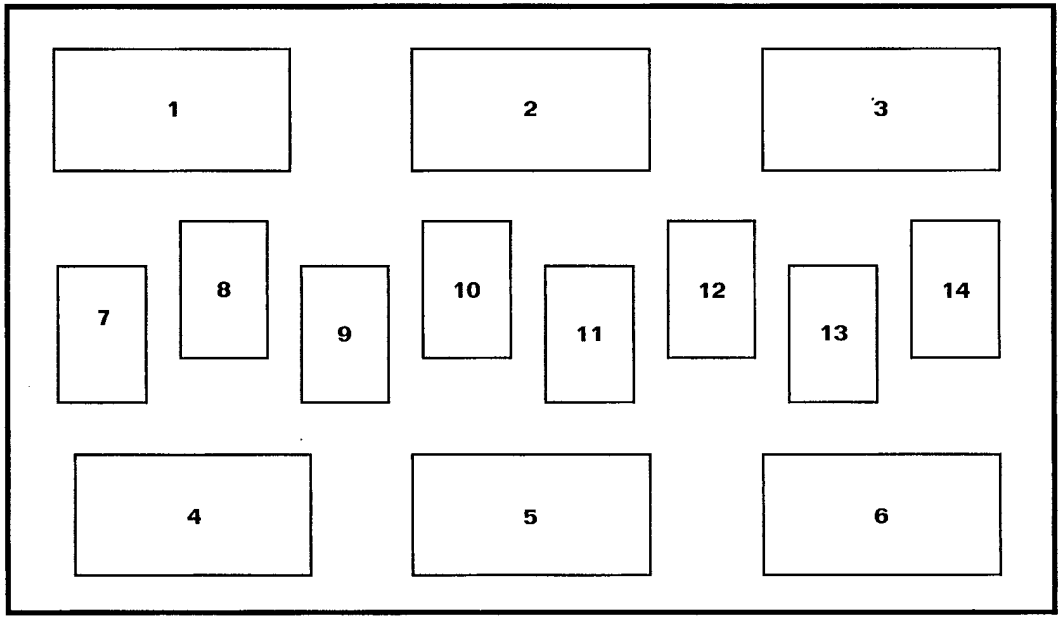
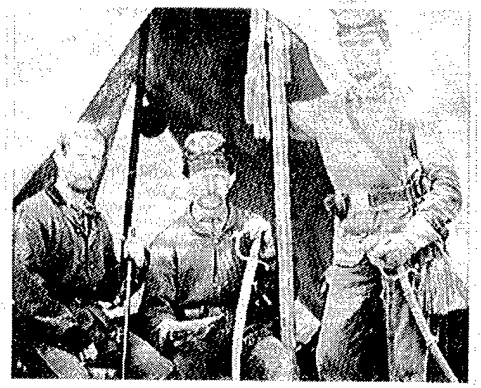
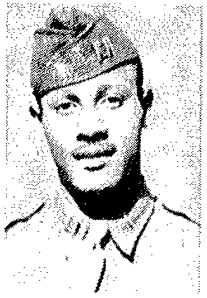


1. **PFC Joe S. Vega** of the 27th Infantry Division on Saipan (August 1944).
2. Unknown Union Civil War soldiers (1861 – 1864).
3. Unknown 1st Cavalry Division soldier in Vietnam (January 1966).
4. Unknown 29th Infantry Division (Light) soldier in Arizona (April 1988).
5. Unknown 5th Regimental combat Team soldiers during the Korean War (1951 – 1953).
6. Unknown 82nd Airborne division soldier in North Carolina (September 1994).
7. **COL Joshua Chamberlain,** Commander of the 20th Maine at Gettysburg, for which he won the Congressional Medal of Honor (July 1863).
8. **CPT Charles B. Hall,** of the 99th Fighter Squadron, first Tuskegee Airman to shoot down a German aircraft (November 12, 1944).
9. **PVT Jose Lopez,** 2nd Infantry Division Congressional Medal of Honor winner (Belgium 1944).
10. **SFC Randall Shughart,** Special Operations Command sniper, awarded the Congressional Medal of Honor for volunteering to protect helicopter-crash survivors against great odds (posthumous—Somalia 1993).
11. **SGT Truman Olson,** 3rd Infantry Division Congressional Medal of Honor winner (posthumous—Italy 1944).
12. **MSG Gary Gordon,** Special Operations Command Sniper, awarded the Congressional Medal of Honor for volunteering to protect helicopter-crash survivors against great odds (posthumous—Somalia 1993).
13. **GEN George S. Patton, Jr.,** Commander of the 3rd Army in Northern Europe (1944 – 1945).
14. **GEN Thomas J. "Stonewall" Jackson,** Confederate brigade commander at First Bull Run (July 1861).





38th
PARALLEL
COURTESY OF
5TH RCT