



*THAAD demonstrates that
near-leakproof defense is
achievable*



**1999
ADA
YEARBOOK**

LEADING EDGE EXPERIENCE FROM ONE OF EL PASO'S OWN ENGINEERING AND ANALYSIS COMPANIES



Research Analysis and Maintenance, Inc. (RAM) provides Air Defense Artillery (ADA) specific and other related systems and software engineering, test and evaluation (T&E), intelligence and research, logistics, training, and operations and maintenance (O&M) services on crucial systems. RAM provides engineering, T&E, and training services for the Tactical High Energy Laser (THEL), a joint Israeli/US Army developmental effort being conducted at both White Sands and in Israel. RAM is also providing lead software engineering support for the Theater High Altitude Air Defense (THAAD) Battlefield Management/C⁴I Segment, developing THAAD NDR architecture in conformance with the Joint and Army Technical Architectures. RAM also provides engineering and analysis (E&A) services to the National Range Office's Materiel Test Directorate and is currently focused on the PAC-3 upgrade to Patriot and THAAD developmental efforts. Many of RAM's contracts are available to the ADA community in its quest to field the best for the *FIRST TO FIRE*.

RAM also provides responsive threat systems support services for the OPTEC Threat Support Activity (OTSA), in government owned/contractor operated (GOCO) facilities at the JRTC in Fort Polk, Louisiana, and at Site Monitor and Biggs Army Airfield in Fort Bliss, Texas.

RAM, a woman-owned small business incorporated and headquartered in El Paso, TX, has provided professional and technical services to Federal agencies and industrial contractors in the Fort Bliss and Air Defense communities since 1982. If you believe you have the skills and talents that will help RAM grow in the defense community, forward your resume to:

Research Analysis and Maintenance, Inc.

ATTN: Human Resources
1790 Lee Trevino, Suite 600
El Paso, TX 79936

www.ramincorp.com/careers.htm

RAM is an Equal Opportunity Employer.

1999 ADA YEARBOOK



THAAD demonstrates that near-leakproof defense is achievable

The Lockheed Martin Missiles & Space Theater High-Altitude Area Defense (THAAD) system achieves its first successful intercept, setting the stage to join Patriot in a two-tier, near-leakproof defense. (Cover photos courtesy of White Sands Missile Range.)

**SOLDIERS:
The Future of ADA**
Chief of Air Defense Artillery Major General Dennis D. Cavin reflects on the roles and missions of ADA soldiers in the 21st century.

Page 5

**ADA FORCE XXI:
Crossing the Line of Departure**
Soldiers of the "First to Fire" branch prepare to take their place in the ranks of the "Army After Next."

Page 8

**FORT BLISS:
The Air and Missile Defense Power-Projection Platform**
Fort Bliss' importance increases as ballistic and cruise missile technologies proliferate.

Page 17

**ADA TRAINING XXI:
Producing Warriors Attuned to the Digitized Battlefield**
The Force XXI process transforms how ADA soldiers and units train for future battlefields.

Page 23

The Laven Group
Publisher

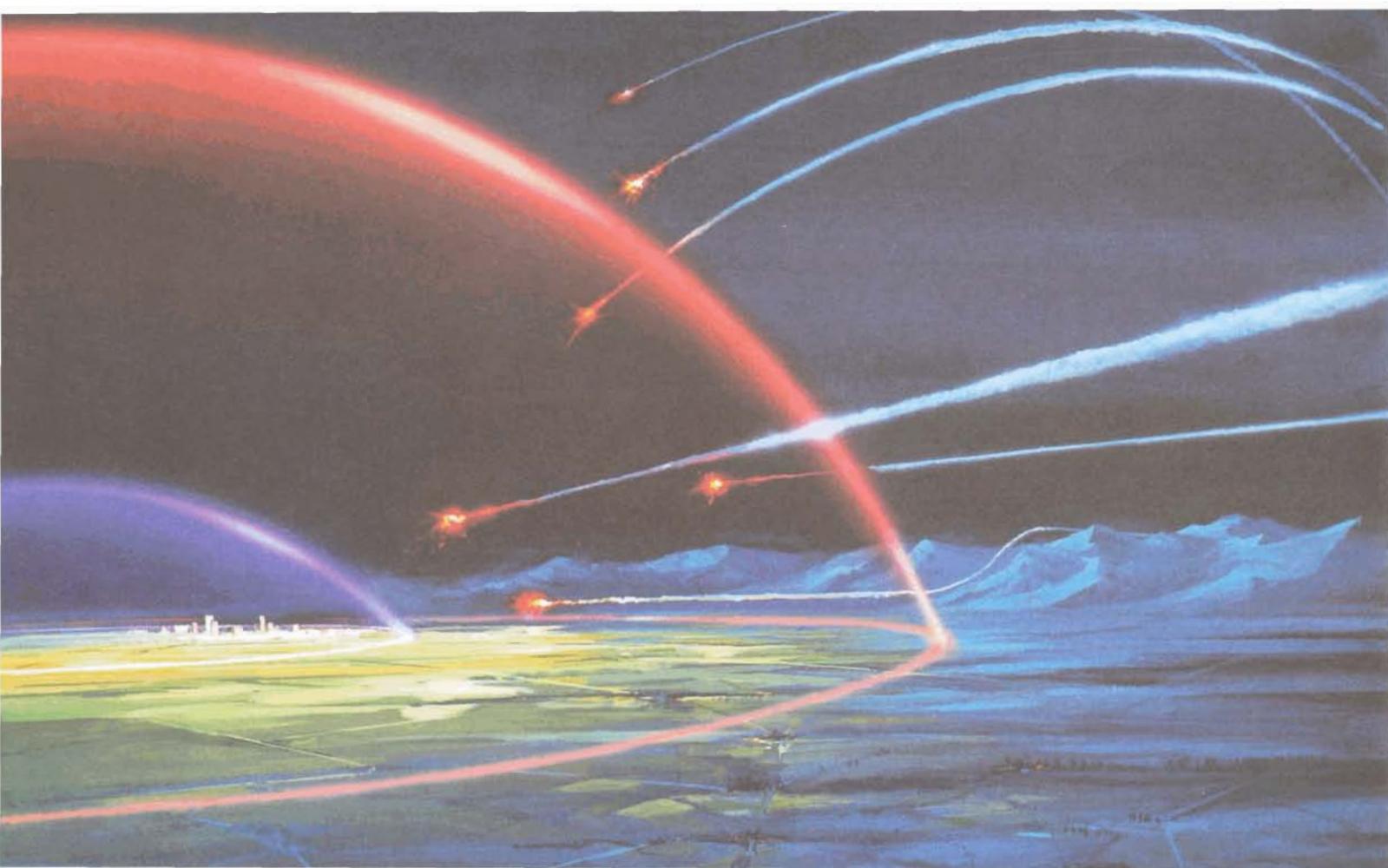
Skip Laven
President

Lisa B. Henry
Editor-in-Chief

Mike and Susan Laven
Production

Advertising Sales
915-772-0934

The 1999 ADA Yearbook is published by The Laven Group, 1420 Geronimo, El Paso, Texas, 79925, on behalf of the U.S. Army Air Defense Artillery Association. Articles appearing in this publication do not necessarily reflect the opinions of the officers or members of The Laven Group, the U.S. Army ADA Association, the U.S. Army or the Department of Defense.



ADVANCED BMC3 SOFTWARE FOR AIR AND MISSILE DEFENSE

According to scientific planners from our armed forces, the future military-based security of the United States will depend importantly on two interrelated achievements. One is to field combat systems having the ability to substantially multiply the present tempo of fighting a war. The other is to at least double the speed with which new versions of such systems are fielded.

At Litton Data Systems, that's what we do. As a key member of the Lockheed Martin THAAD team, we provide advanced BMC3I software for the THAAD weapon system. Our fielded USAF and USMC MCE/TAOM systems are providing mobile, responsive theater air defense BMC3 for today's forces. And our innovative work for the joint US-Canadian R/SAOC program is bringing both air and missile defense technology into the 21st century. From theater missile defense to theater air defense, Litton Data Systems is a leader in BMC3 software.

L I T T O N D A T A S Y S T E M S

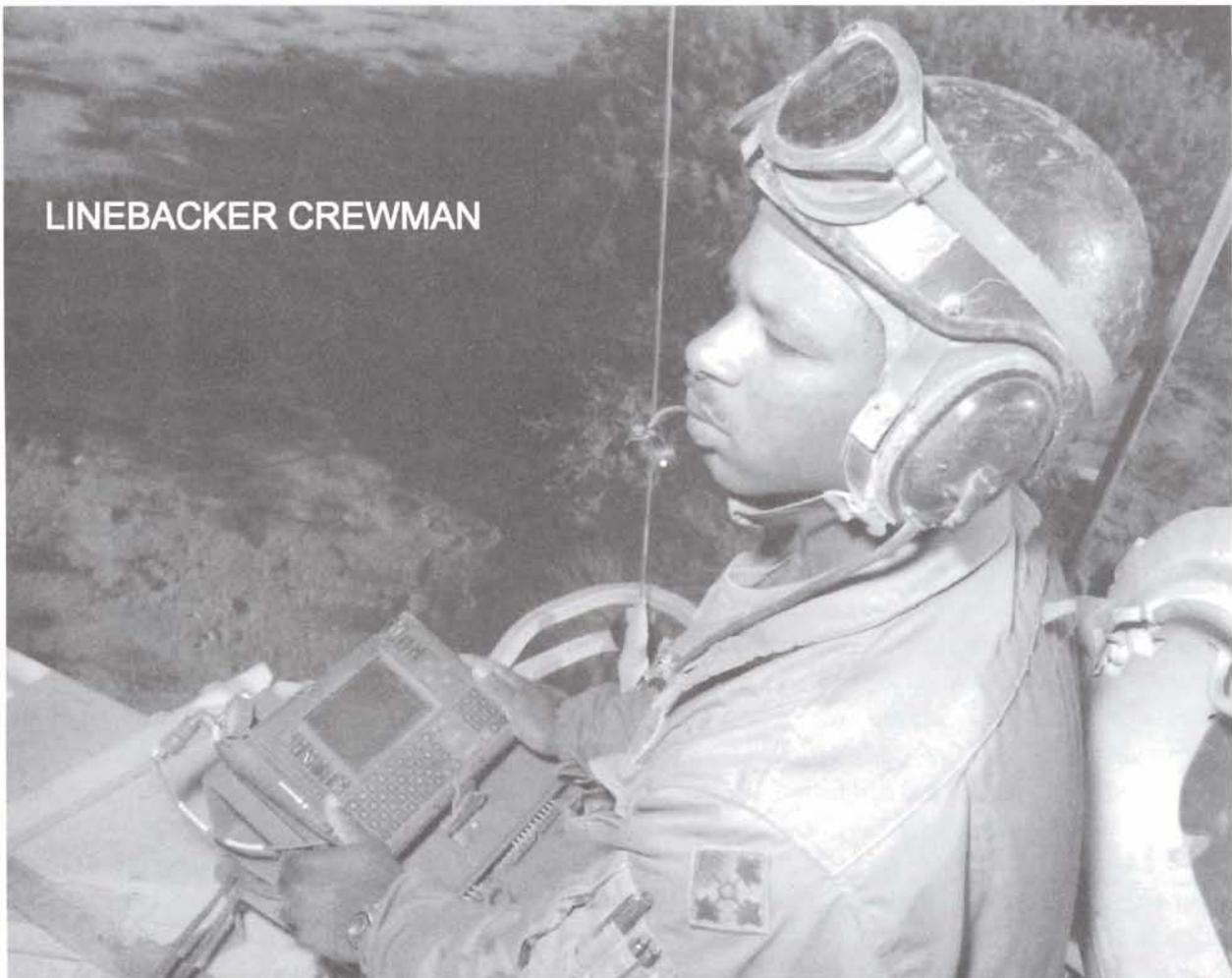
Litton
Technology. Solutions. Results.

Visit us at www.littondsd.com

SOLDIERS: THE FUTURE OF ADA

by Major General Dennis D. Cavin

Soldiers and readiness are the reason Fort Bliss and the U.S. Army Air Defense Artillery School exist. If not for soldiers, our wondrous weapon systems, our information-age training technologies, our restructured combat organizations and our concepts of future operations would all be worthless.





“The Army is like a funnel,” said General Harold K. Johnson, a former Army chief of staff. “At the top you pour in doctrine, resources, concepts, equipment and facilities. And out the bottom comes one lone soldier walking point.”

The Army’s “funnel” has worked well for generations, pouring out soldiers who helped make the 20th century the “American Century,” but at present the Army’s funnel is under-producing. We are running short of soldiers who will complete their tours of duty and make a contribution to the nation’s defense.

Current recruiting projections indicate the U.S. Army will not make end strength in fiscal year 1999, and fiscal year 2000 is also at risk. According to recruiters, negative publicity about reducing recruit “quality” has not helped recruiters meet accession goals in an already difficult recruiting environment.

Even major corporations that pass out stock options instead of MREs are having trouble meeting their recruiting goals in today’s booming job market, but Army recruiters say the Army’s recruiting problem goes beyond career perks and pay comparability. “Too many American youths,” they say, “feel that national defense isn’t their responsibility, but a job they can pay someone else to do.”

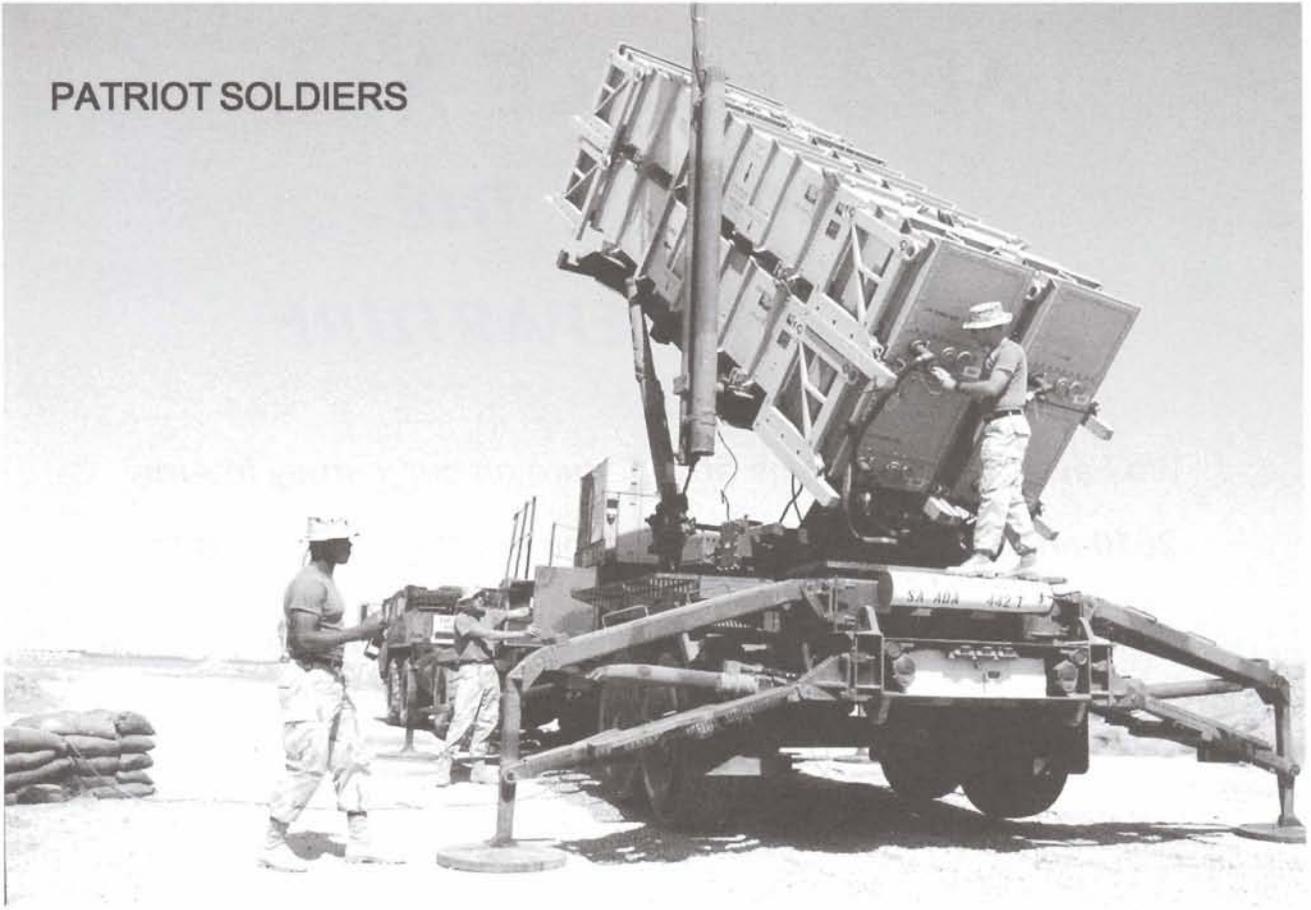
Fortunately, the United States is a participatory democracy whose citizens share common dreams and aspirations. American soldiers are professionals, but they

are also volunteers whose primary motivation is patriotism and faith in American ideals and values. The Army has reacted proactively to the recruiting and retention shortfall. For example, we’ll soon have the initial results of the Assessment of Individual Motivation (AIM), a test that measures a recruit’s motivation and the likelihood that the recruit will successfully complete his or her training. Recruits started taking the AIM at Army basic training centers last September. The test consists of a battery of questions that asks recruits about their past behavior and preferences in an attempt to measure dependability, adjustment, athletic interests and achievement orientation.

More than 20,000 recruits have taken the AIM. The basic training center portion of the pilot program ended in March, and the study tracked recruits through June to see how many completed training and stayed in the Army. The AIM measures “will do,” as opposed to the Armed Services Vocational Aptitude Battery, which measures “can do.” The Army will use both tests to screen applicants who want to enlist (especially those without high school diplomas) to determine which potential recruits are most likely to complete their terms of service.

I am confident that we will overcome our recruiting and retention problems just as we have overcome the technological challenges that once made hit-to-kill intercepts seem an impossible dream. Better pay and the

PATRIOT SOLDIERS



restoration of retirement and health benefits will help us recruit and retain soldiers, but in the end, it will be up to us to make the Army of the 21st century an Army in which soldiers will be proud to serve.

We *must* train confident, competent soldiers and leaders who are mentally and physically prepared for the rigors of war by developing a “We Fight Tonight” ethic.

We *must* revitalize the role of the noncommissioned officer as the foundation of, and a key member of, all leadership teams.

We *must* enforce training management programs to ensure that predictability becomes part of everyday life for soldiers, civilians and family members.

We *must* produce leaders who recognize that chevrons and rank insignia are not symbols of privilege but badges of servitude to the soldiers they lead.

“American power continues to grow,” writes David Fromkin in *The Way of the World*. “American ideas continue to spread. Major reversals in direction tend to take time; so neither movement seems likely to come to a stop at midnight on Dec. 31, 2000. For the first part of the century, at least, and perhaps for all of it, it is a reasonably safe bet that we will have more of the same,

that the 21st century will be not a Japanese or Chinese or European, but another American century.”

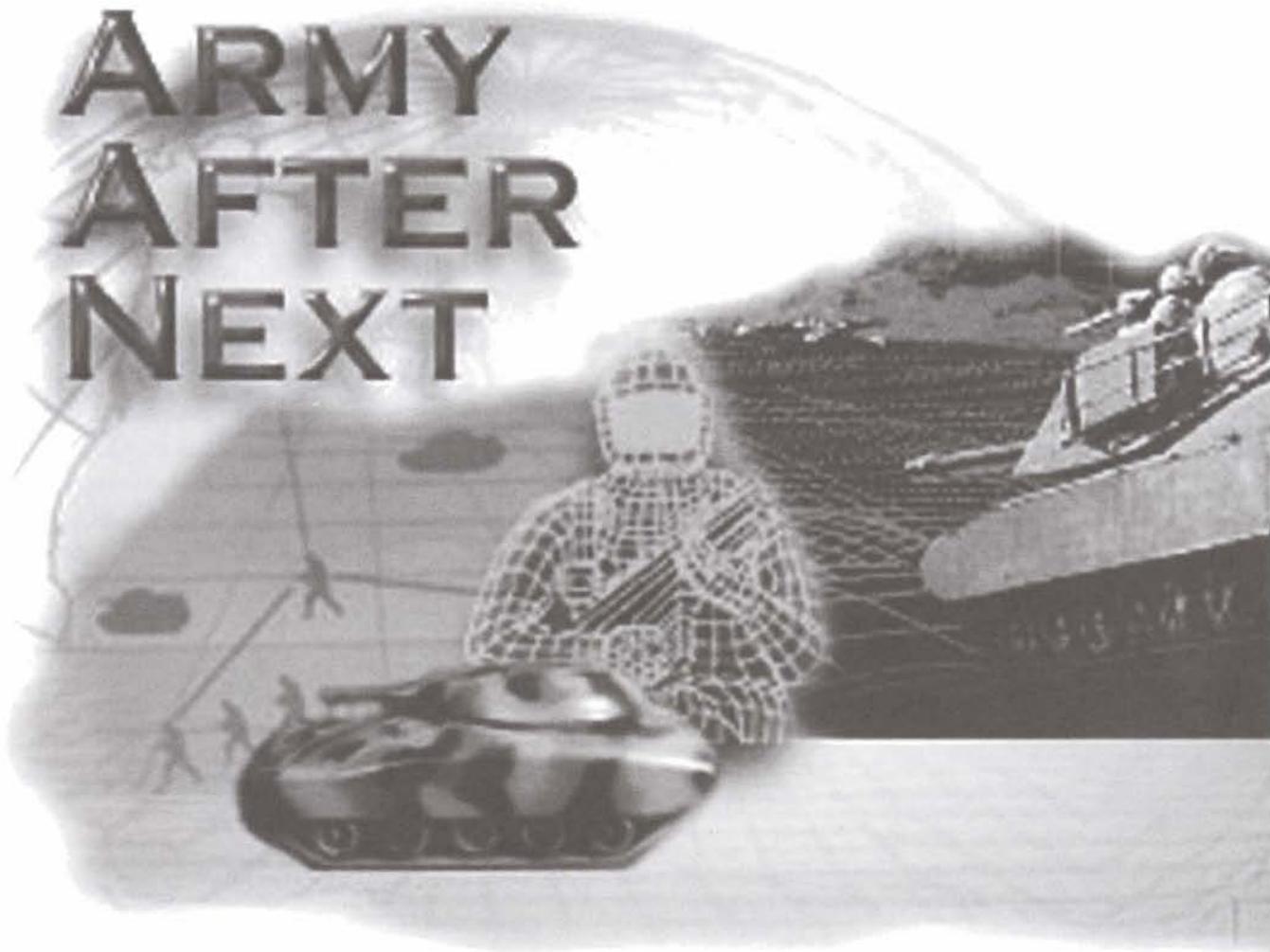
In the first part of the new millennium, ADA soldiers will deploy a joint, multitier, multiplatform, near-leakproof theater air and missile defense system of systems. Divisional ADA soldiers fully attuned to the digitized battlefield will provide our maneuver forces immunity from air and missile attack. ADA soldiers will once again take up the mission of defending the nation against long-range ballistic missile attacks.

Fort Bliss will serve as the Army’s power-projection platform for air and missile defenses, and the Air Defense Artillery School will emerge as the Army’s training innovator. The Air Defense Artillery Center will send forth “First to Fire” soldiers prepared to star in the role that history has assigned them — the shaping of the “next” American century.

Major General Dennis D. Cavin is the chief of Air Defense Artillery.

ADA FORCE XXI: CROSSING THE LINE OF DEPARTURE

*We have crossed the line of departure on our journey to Army
2010 and have begun to look beyond the "high beams" to the
Army After Next*



The U.S. Naval Observatory determines the positions and motions of celestial objects and maintains the "Master Clock" for the United States. According to America's official timekeepers, the end of the second millennium and the beginning of the third will be reached on Jan. 1, 2001, not Jan. 1, 2000. Since the calendar has no year zero, the year 2000 is the 100th, or last, year of the 20th century, not the first year of the 21st century.

Nevertheless, air defenders have justification for prematurely celebrating the turn of the century — along with the rest of the world — on Jan. 1, 2000.

"Air Defense Artillery's 'Master Clock' is ahead of the rest of the world," explains Major General

Dennis D. Cavin, chief of Air Defense Artillery. "Our soldiers are accomplishing the type of missions envisioned for them in the first part of the 21st century today. We have crossed the line of departure on our journey to Army 2010 and have begun to look beyond the 'high beams' to the 'Army After Next.'

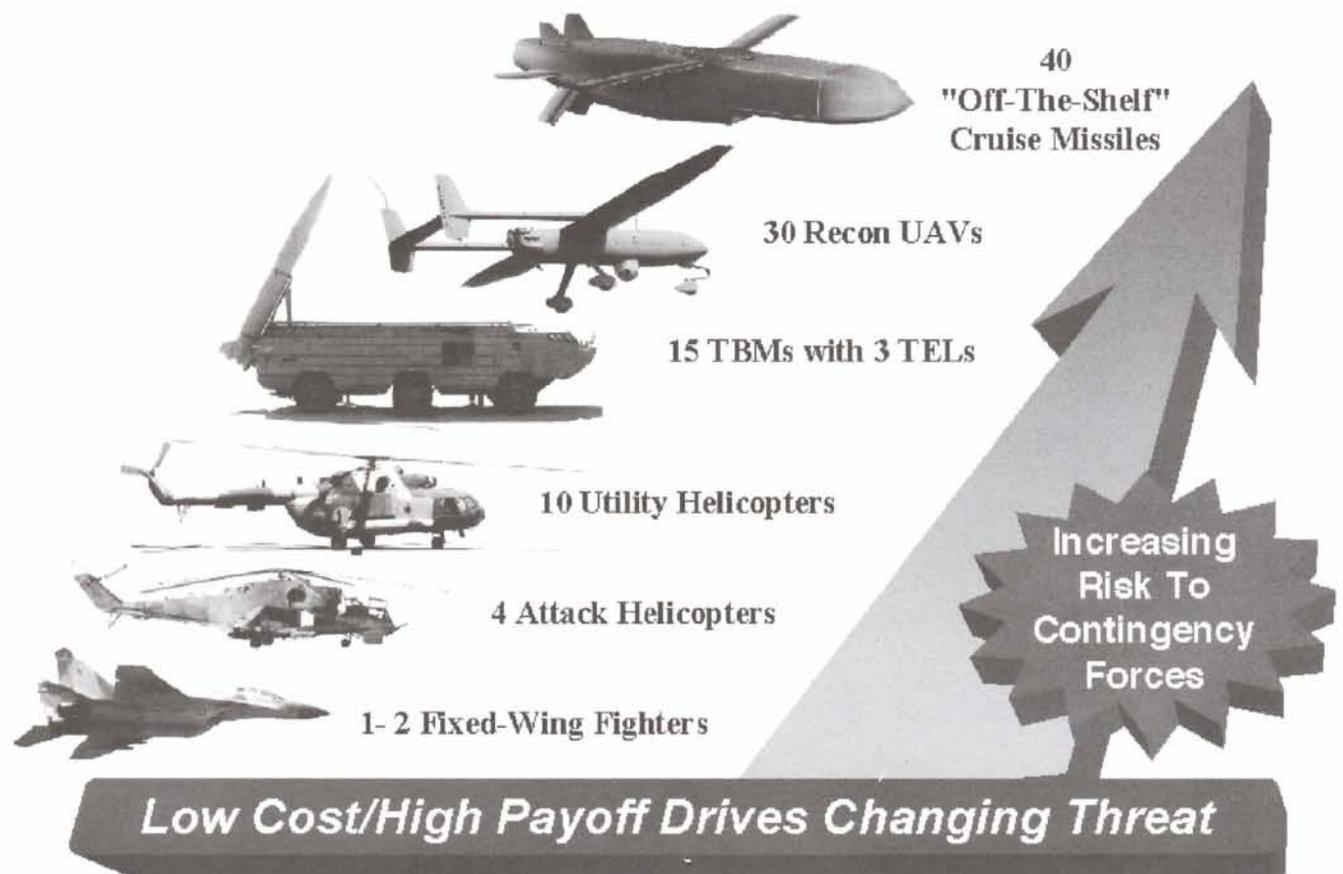
"Our 21st-century ADA missions are well defined, and we enjoy robust and widespread support for our theater missile defense and short-range air defense weapons programs," says Cavin. "We have an important role to play in the deployment of a national missile defense (NMD) system to defend the continental United States, Alaska and Hawaii from long-range ballistic missile attack. Now

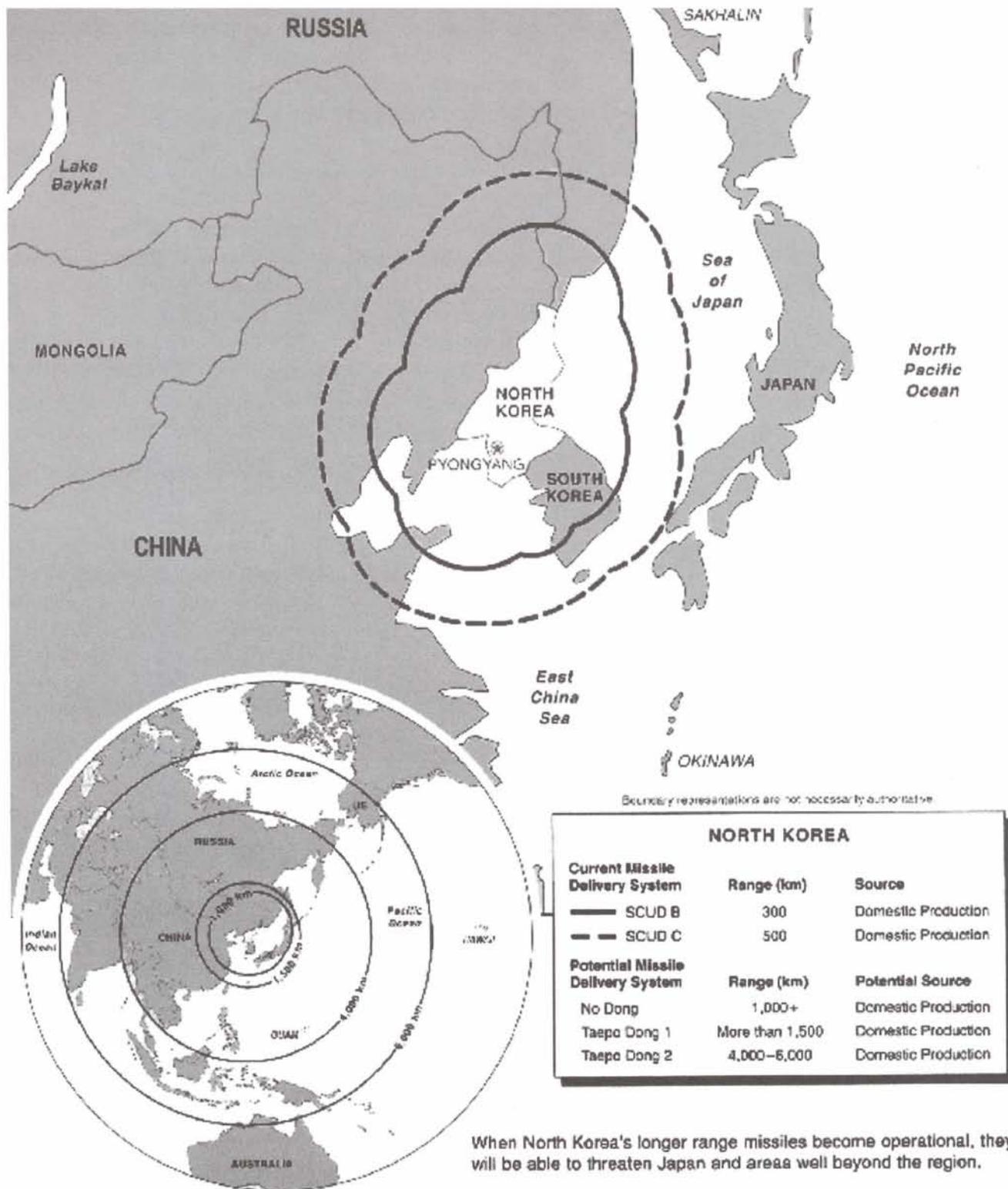
we must maintain the momentum that propels us toward our objective — the creation of ADA 2010 and preparing the 'First to Fire' branch to take its place in the ranks of the Army After Next."

The Emerging Threat

Sometime in the next millennium new Alexanders or Caesars may appear to unite nations and create hostile superpowers, but the current trend is toward diffusion, rather than integration, of power. Rogue states and terrorist organizations have no hope of building conventional land, naval or air forces that can challenge the United States and its allies on conventional battlefields. However, they can — and are — developing

GIVEN \$50 BILLION, THE ADVERSARY'S INVESTMENT OPTIONS





or purchasing arsenals of ballistic and cruise missiles and weapons of mass destruction.

At present, the theater ballistic and cruise missile threat is maturing faster than even our experts

anticipated. Our nonproliferation efforts have failed. Precision-guided ballistic and cruise missiles will hold our soldiers at risk in most, if not all, projected future theaters of operations.

North Korea quieted opposition to NMD deployment by launching a three-stage ballistic missile on a trajectory that took it over Japan to a splashdown in the Pacific, a thousand miles from its launch

In 1984, the U.S. Army Space and Strategic Defense Command's Homing Overlay Experiment projectile achieved the first non-nuclear intercept of an intercontinental ballistic missile



site. The true range of North Korea's Taepo-Dong 1 is thought to be much greater, and experts say an even more powerful missile, the Taepo-Dong 2, will be able to strike not only all of Alaska and Hawaii, but also parts of the western continental United States.

The realization that the dawn of the "Age of Weapons of Mass Destruction" will soon be breaking has lent a new urgency to our Theater Air and Missile Defense (TAMD) and NMD programs.

National Missile Defense

In January, Secretary of Defense William S. Cohen announced that the Department of Defense (DoD) plans to allocate additional funds to NMD programs to meet the growing ballistic missile threat from rogue states to U.S. territories. Submitted in February, the fiscal year 2000 budget requested additions of \$6.6 billion to current NMD funding levels for a total of \$10.5 billion for NMD through fiscal year 2005.

"We are affirming that there is a growing threat and that it will pose a danger not only to our troops overseas, but also to Americans here at home," said Secretary Cohen. But he added that no decision to deploy an NMD system will be made before 2000, when a Deployment Readiness Review will assess the NMD program's progress and provide information for a deployment decision.

In March, Congress voted overwhelmingly to make it U.S.

policy to deploy an NMD system to protect the continental United States, Alaska and Hawaii against long-range ballistic missile attacks "as soon as technologically feasible." Many analysts interpret the legislation to mean that the question is no longer "whether" we'll deploy an NMD system, but "when" we'll deploy an NMD system.

DoD projects an NMD deployment date of 2005, perhaps sooner if the testing goes flawlessly. The U.S. Army Space and Missile Defense Command (SMDC), presently commanded

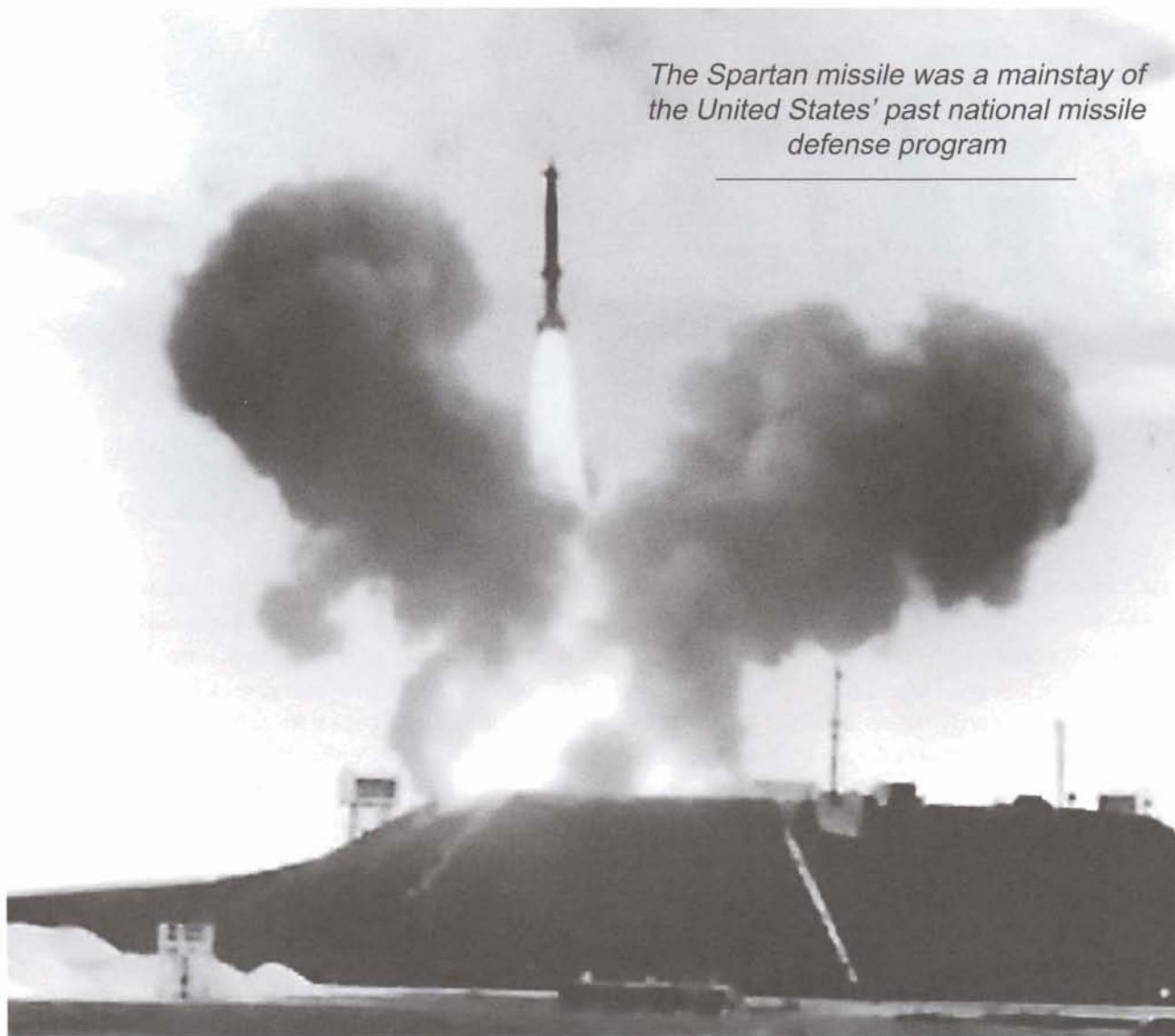
by Lieutenant General John Costello, a former chief of Air Defense Artillery, will exercise proponent responsibility for NMD, but Air Defense Artillery will play an important role in doctrine, leader development, training and organizational development. SMDC has submitted a proposal, called a force design update, for deploying and manning a future ground-based NMD system to the U.S. Army Training and Doctrine Command. The NMD force design structure, based on a one-site deployment, would (at least ini-

tially) consist of about 265 Army National Guard ADA soldiers, a cadre of active component ADA soldiers and 190 contractor personnel. The number of personnel will increase if NMD systems deploy at more than one site.

Theater Air and Missile Defense

Joint Vision 2010 states that power projection will remain the fundamental strategic concept of our future force, but a "witch's brew" of theater ballistic and cruise missiles threatens to invalidate our most fundamental

The Spartan missile was a mainstay of the United States' past national missile defense program



strategic concept. Undeterred, simply the threat of saturation attacks might deter U.S. and coalition partners from responding to aggression. Therefore, Air Defense Artillery's importance to the national military strategy will grow as we enter the new century.

At a Jan. 20 press conference, Secretary Cohen announced a basic restructuring of missile defense programs to enable us to deploy a capable TAMD as quickly as possible. The restructuring will produce a joint, multitier, multiplatform, land- and sea-based "system of systems." The systems that currently comprise the TAMD family of systems are –

- ADA's Patriot Advanced Capabilities-3 (PAC-3),

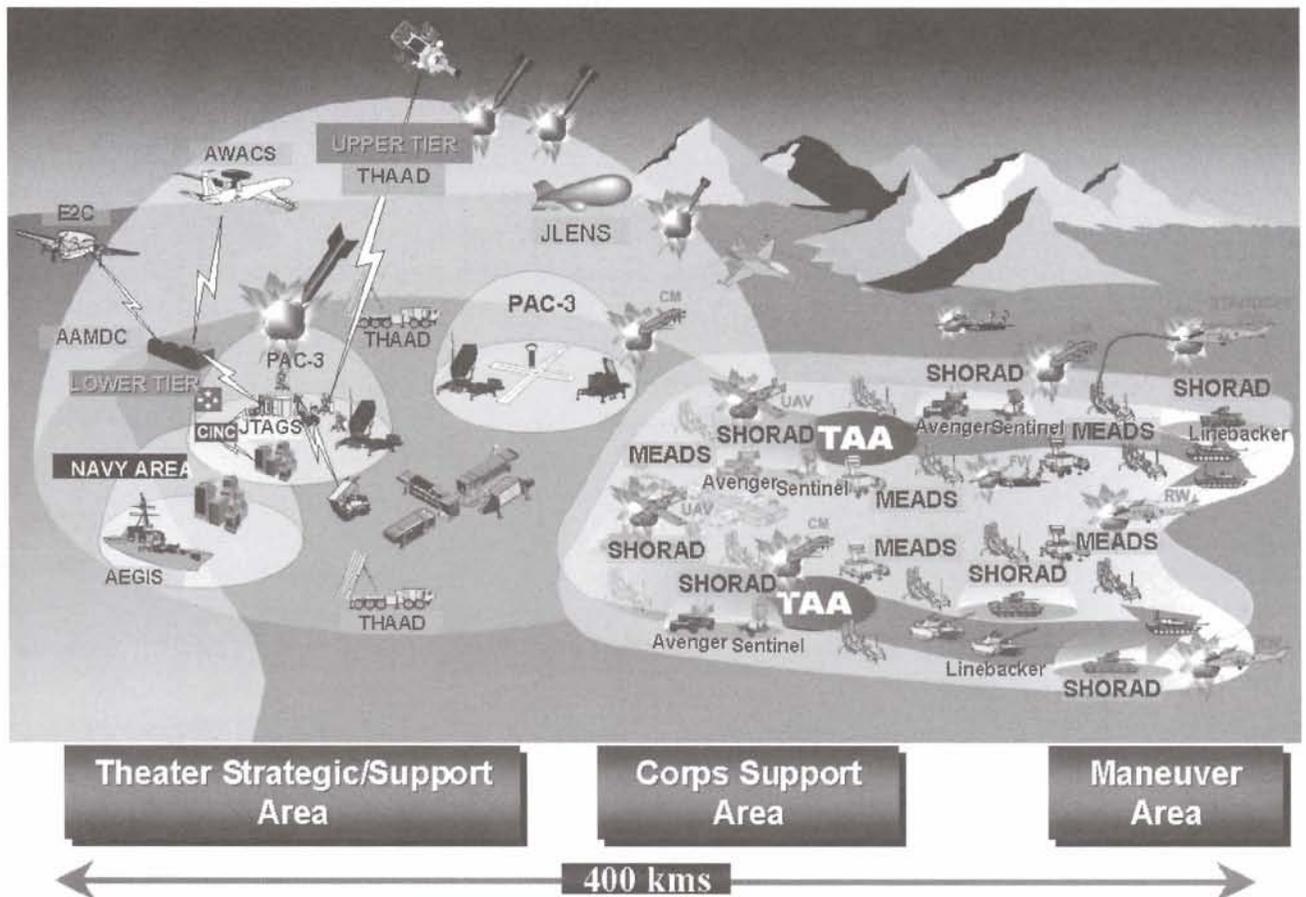
- ADA's Theater High-Altitude Area Defense (THAAD) system,
- the Navy Area Defense System and
- the Navy Theater-Wide Missile.

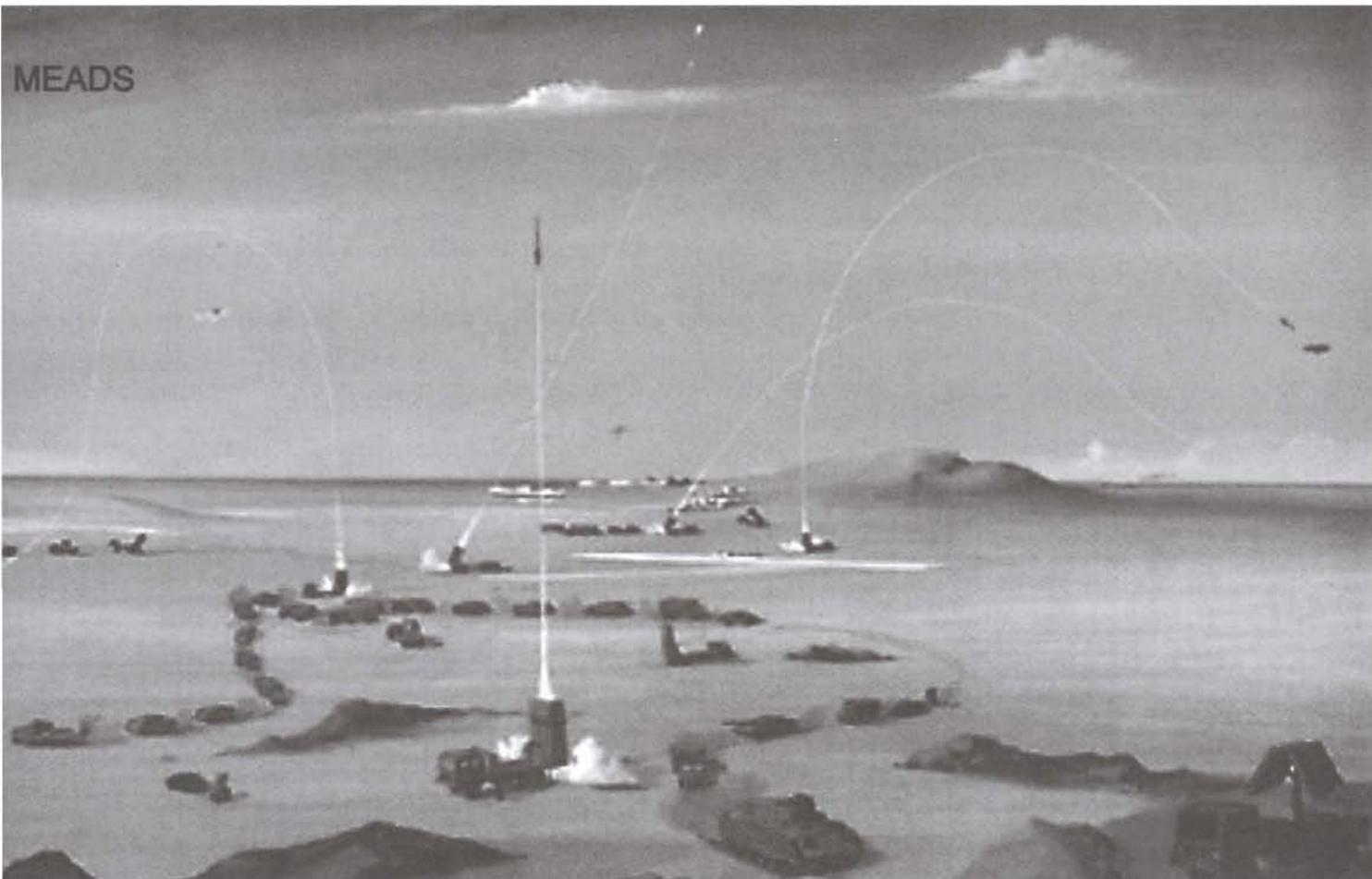
The restructuring allots funds to continue flight testing the THAAD interceptor missile, which scored its first successful intercept last June, and other elements of the system such as the radar, which have performed exceedingly well. The restructuring initiative also provides acquisition funding for the Navy Theater-Wide program (which until now has been a technological development program) so it can deploy around 2007 — roughly the same time as THAAD.

A review of the THAAD and Navy Theater-Wide programs late next year will assess costs, sched-

ules, technical performance and program risks. The review will lead quickly to a determination about which program will be the lead upper-tier system. We will then focus our resources on the system that will best provide an effective, affordable defense as quickly as possible.

Although slightly behind schedule, the PAC-3 missile recently scored a dramatic "hit-to-kill" intercept of an incoming tactical ballistic missile. The March flight test built confidence not only in PAC-3, but also in the "hit-to-kill" technology that is the core of the NMD and TAMD programs. Air Defense Artillery is fielding other PAC-3 system enhancements in increments to ADA units. The branch has also standardized nine of its 10 Patriot bat-





talions at five firing batteries per battalion, and will standardize the tenth Patriot battalion this year.

Secretary Cohen also announced plans to restructure Air Defense Artillery's Medium Extended Air Defense System (MEADS) program to focus on the technology development needed for a ground-based theater missile defense system to protect maneuver forces. The highly mobile MEADS moves with maneuver forces, providing continuous protection against very short-range tactical ballistic missiles and large-caliber rockets, as well as low-observable and aerial platforms. DoD will fund the MEADS program at \$150 million over three years. Germany and Italy will continue their participation in the MEADS program.

Air Defense Artillery's short-range air defense (SHORAD) systems (Bradley Linebackers, Avengers, Sentinel radars and forward area air defense command, control, communications and intelligence [C³I] subsystems) emerged as "clear winners" during the Task Force XXI and Division XXI Advanced Warfighting Experiments. As a result, the Force XXI Conservative Heavy Division Redesign includes an ADA SHORAD battalion capable of protecting the maneuver force in every phase of operations.

Our Avenger Slew-to-Cue and Bradley Linebacker fielding programs are on schedule. Our Air and Missile Defense Planning and Control System — a combat mul-

tiplier — is a worthy contender for future funding.

Our ADA brigades and 32nd Army Air and Missile Defense Command (AAMDC) already deploy prototype Air and Missile Defense Planning and Control Systems. The Army National Guard will standardize a second AAMDC next year.

By 2010, our SHORAD battalions will be fully digitized and equipped to protect the maneuver forces at every stage of operations, from seaports and airports of debarkation to decisive engagement. By 2010, our TAMD architecture (AAMDCs, THAAD, PAC-3 and Navy Theater-Wide Defense System) will be in place to defend our deployed forces, logistical centers and host population centers from ballistic and cruise missile attacks.

Evolving to Meet Future Challenges

There is no truce or cease fire in the technological war and no "end-state" when it comes to developing and fielding new weaponry. Air Defense Artillery continues to anticipate and seek out solutions to emerging threats and discover better ways to exploit technological developments. Our combat developers have already identified, and begun working on, solutions to the threat that lies beyond the 2010 milestone.

HUMRAAM. Funded as an experimental system, this proto-

type mounts five off-the-shelf advanced medium-range air-to-air missiles (AMRAAMs) onto a high mobility, multipurpose wheeled vehicle (HMMWV). It also integrates into the FAAD C³I network. The system provides a complementary capability to SHORAD, and offers a significantly extended range and non-line-of-sight advantage over the Stinger-based SHORAD systems. It has also demonstrated its effectiveness against cruise missile surrogate targets flying at low altitudes and

masked from the launcher by terrain features.

JLENS. The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) provides an elevated sensor system that will enhance the ability of friendly air defense and counterair forces to counter and defeat the land attack cruise missile threat. JLENS provides the capability to expand the battlespace. The system performs or supports detection, acquisition, track, categorization, identification, engagement, inter-

THE STINGER-BASED SHORAD FAMILY OF SYSTEMS



Air Defense Artillery continues to seek solutions to emerging threats and better ways to exploit technological developments

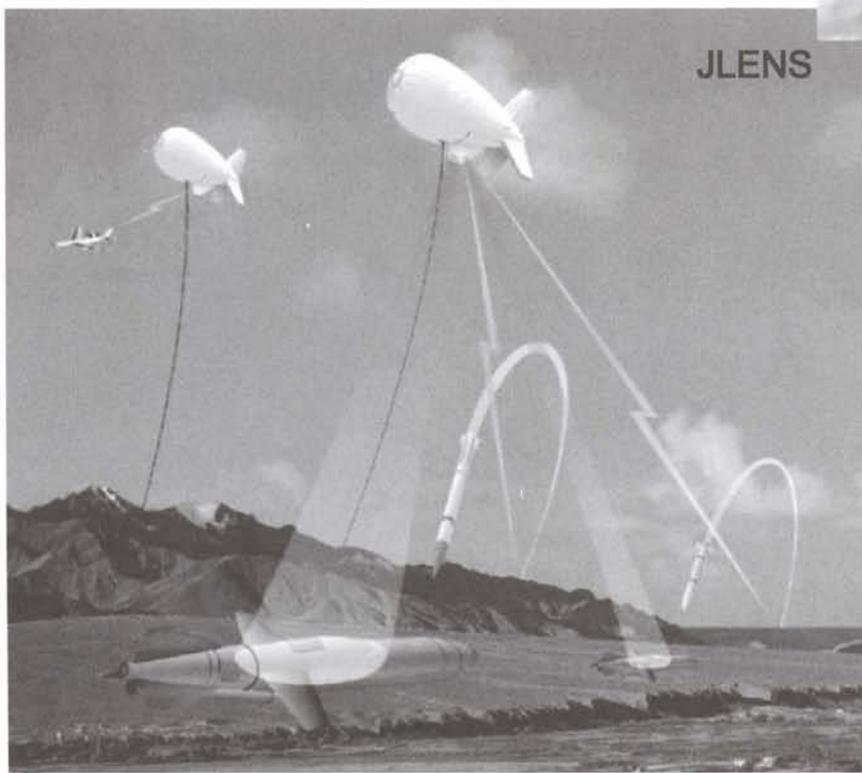
THEL



HUMRAAM



JLENS



cept and kill assessment of the specified threat set.

THEL. During Operation Roving Sands 98, our Tactical High-Energy Laser (THEL), an advanced concept technology demonstration program, exhibited a directed-energy capability against rockets, artillery, mortars and cruise missiles. The THEL promises to provide us

insight into a cost-effective method of engaging the lower spectrum of the air and missile threat.

Roadmap to the Future

We have followed ADA Vision 2010 a long way down the road to Army Vision 2010 and Joint Vision 2010. We have cleared many roadblocks from

our paths, and only a few obstacles remain.

ADA Force 2010 is taking shape before our eyes. We are rapidly restructuring ADA organizations for 21st-century missions and equipping them with the soldiers, training, weapon systems and information-age technologies they need to counter the emerging theater air and missile threat.

The branch stands prepared, when tasked, to rapidly develop and deploy NMD systems and organizations to protect America against limited, long-range ballistic missile attacks.

We are winning the race to field an effective TAMD before our projected foes can perfect and deploy precision-guided, longer range ballistic and cruise missile systems capable of delivering weapons of mass destruction. But the race is a close one and the pace is accelerating. We will need a strong finishing kick.

The cliché that failure is not an option applies.



FORT BLISS: THE AIR AND MISSILE DEFENSE POWER-PROJECTION PLATFORM

*Now that our continental ADA brigades have been withdrawn
from the corners of the nation and reassembled at Fort
Bliss, we have become the Army's power-projection
platform for air and missile defense*

LINEBACKER — ROVING SANDS



Spanish conquistadors, the first Europeans to venture into the Desert Southwest, called the region surrounding Fort Bliss *El Despoblado*, the empty place. But the vastness and emptiness that daunted early explorers are the keys to our future growth. There has always been plenty of room to grow and diversify.

For much of its early history, the small adobe on the Rio Grande was out of sight and largely out of mind. But during World War II, the Army rapidly expanded the installation by buying up surrounding rangeland. What was once the domain of wild horses, scraggly cattle, coyotes and mountain lions became bombing ranges, training areas and test sites. The aggregate area, which today extends deep into New Mexico and includes White Sands Missile Range,

grew so large that in 1945, when the Army detonated the first atomic bomb at Trinity Site, no one called up the post to complain.

Fort Bliss Today

Fort Bliss is headquartered in El Paso, a city of more than 600,000 located on the north bank of the Rio Grande on the United States-Mexico border. The warm, dry southwestern climate and mild winters make Fort Bliss an excellent facility for year-round training. Sited midway between the California coast and the Gulf of Mexico, we are ideally situated for deployments both east and west. Just five minutes from the El Paso International Airport, our headquarters building sits near the junction of two interstate highways.

Fort Bliss is a giant among military installations. All other U.S. Army Training and Doctrine Command (TRADOC) installations would fit comfortably inside. Big, of course, is not necessarily better, but sheer size alone makes Fort Bliss a jewel in the Army's crown. Other installations are crowded by urban sprawl, but Fort Bliss has plenty of room to expand its operations. At Fort Bliss, the future is still unfenced and the borders of possibility still lie over distant horizons.

Economy. Today, Fort Bliss serves a population of more than 12 thousand soldiers, more than 16 thousand military dependents, and nearly 50 thousand military retirees. We have slightly more than 6,500 federal civilian employees. The employee base reflects our diversity: 49

percent are minorities and 25 percent are women.

Today, Fort Bliss is the largest employer west of the Pecos. We play a major role in the regional economy, injecting more than \$1 billion annually through contracts, jobs and services.

Resources. Fort Bliss, McGregor Range, White Sands Missile Range and Holloman Air Force Base sprawl across sagebrush and cactus, sparkling white sand dunes of the purest gypsum, deep canyons and dry arroyos to the feet of snow-capped mountains. Combined they comprise the largest block of Department of Defense (DoD) controlled airspace in the world — with the notable but temporary exception of the No-Fly Zone in Southern Iraq.

Fort Bliss' Biggs Army Airfield, adjacent to the El Paso International Airport, has more miles of runway than any other Army airfield in the world. It also ranks as the nation's

third largest runway, including commercial airports. It can handle any aircraft that flies.

Sheer size, the synergistic blending of training and testing facilities, adequate rail systems and miles and miles of runway combine to make Fort Bliss a superb power-projection platform and the perfect host for multiservice and multinational exercises.

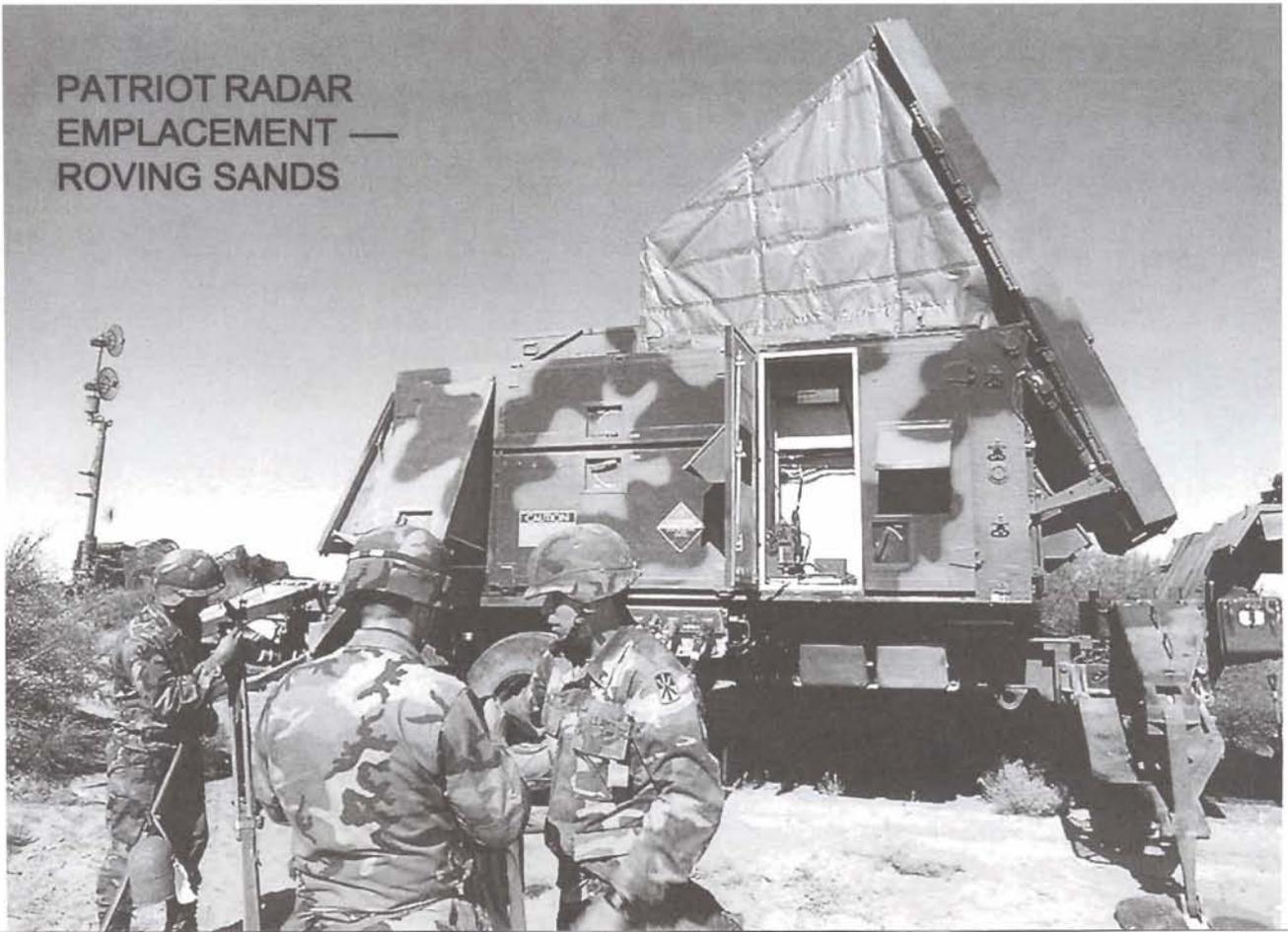
Range Capabilities. Fort Bliss' training ranges have remained one of the Army's best-kept secrets for decades. They will not be secret much longer. Today, we are developing new strategies to aggressively market our top-quality training ranges to the Total Army (U.S. Army National Guard and Reserve, joint services, allied and friendly nations and the law enforcement community).

Fort Bliss' training ranges are so large and diverse that everyone comes for their live fires. Field Ar-

tillery sends its Army tactical missile systems. Norway brings its Hawk missile firing batteries. Thousands of Japanese Patriot soldiers arrive for annual service practice. Army active and reserve forces, joint services and multinational forces assemble for Exercise Roving Sands. There's plenty of room for more. When the Third Cavalry moved to Fort Carson, Colo., in 1995, it left behind a \$20-million tank range — the Multipurpose Range Complex (Heavy) — which is still open for business.

Fort Bliss has more than 700,000 acres of training ranges that can support any weapon in the Army inventory. Its more than 900,000 acres of maneuver area can support training exercises up to, and including, division level. Simply put, Fort Bliss training ranges are one of the Army's most precious but most underdeveloped and underused assets.

PATRIOT RADAR EMPLACEMENT — ROVING SANDS



Facilities. When General Phil Sheridan visited Fort Bliss at the end of the Civil War, he brushed the Texas dust from his cavalry boots and declared, "If I owned both Hell and Texas, I would rent out Texas and live in Hell." But the quality of life at Fort Bliss has improved considerably since the 1860s.

The Fort Bliss Deputy Commanding General resides in Pershing House, the turn-of-the-19th-century quarters where General John J. "Black Jack" Pershing lived when he learned that his wife and children had perished in a fire at the Presidio of San Francisco. Pershing House and other historic homes along Fort Bliss' "Colonel's Row" have been carefully preserved. But just about everything else at Fort Bliss is either going up or coming down.

The 1990s at Fort Bliss have been a decade of "urban renewal." We bulldozed the worst of our old houses

and dilapidated barracks and replaced them with homes and single enlisted quarters that no longer make our soldiers feel like paupers in uniform. We've built new morale, welfare and recreation facilities that are among the Army's best. Next year, the Post Exchange will move into a new building and donate the facility it abandons to Fort Bliss for conversion to a consolidated Fort Bliss-Air Defense Artillery Museum.

Organization. For the most part, Fort Bliss organizations mirror those of other TRADOC installations, at least those that also serve as major U.S. Army Forces Command installations, regional mobilization centers and power-projection platforms. But some Fort Bliss organizations are unique to TRADOC and the Army.

The U.S. Army Sergeants Major Academy makes Fort Bliss the center of the Army's Noncommissioned Officer Education System.

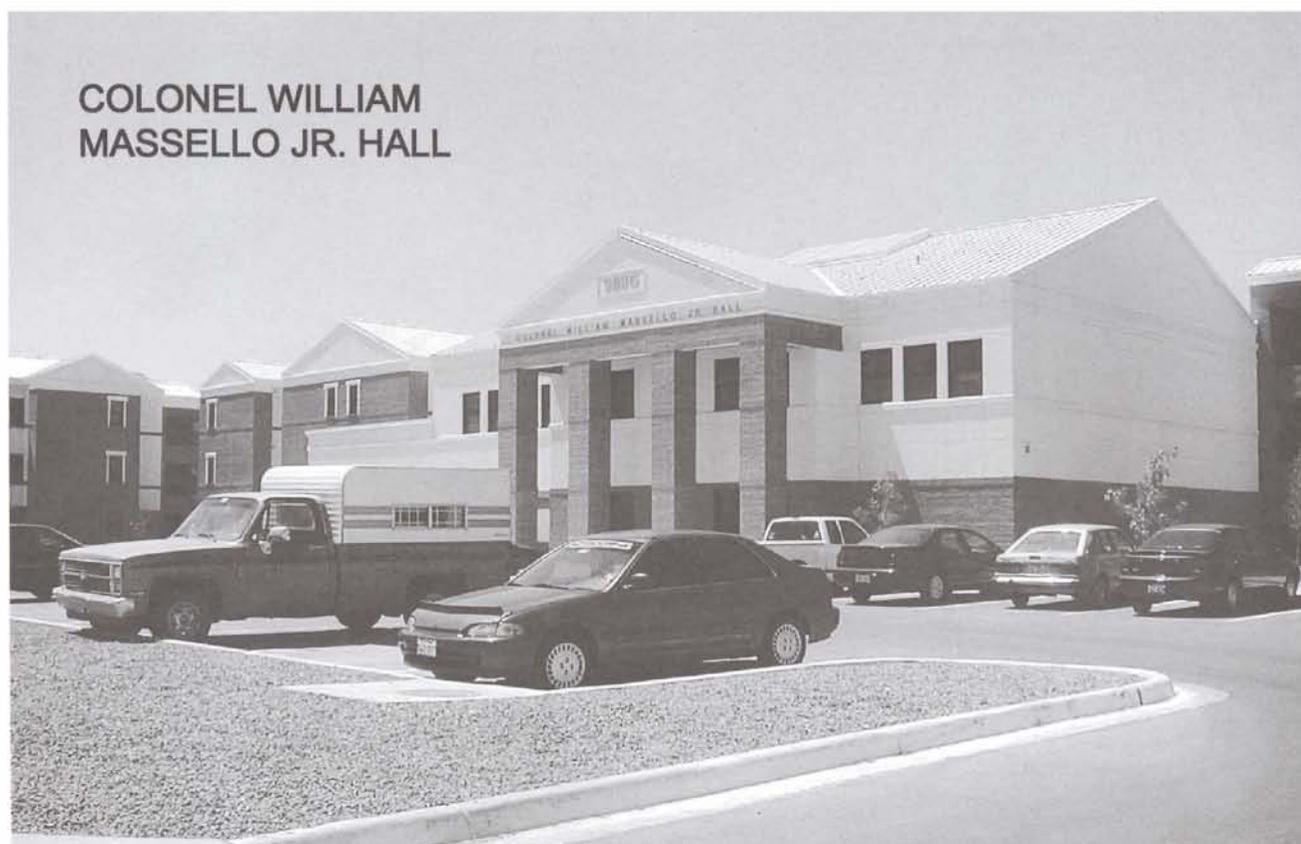
Soldiers at the German Air Force Air Defense School make up the largest contingent of German soldiers stationed outside Germany.

Joint Task Force 6 and the El Paso Intelligence Center are winning the war against the illegal import and use of drugs and other contraband.

William Beaumont Army Medical Center is a wonderful asset for soldiers and their families, and a magnet for military retirees. Its presence also enhances Fort Bliss' capacity for growth and mission expansion.

Future of Fort Bliss

The growth of American power and the spread of American ideals made the 20th century the "American Century." As the "First American Century" draws to a close, America has triumphed over its Cold War antagonist — the Soviet Union — but the future holds vast uncer-





STATE-OF-THE-ART DINING FACILITIES

tainties and authentic dangers as well as enormous hope and unprecedented opportunities. The fragmentation of power, the struggle for resources to fuel expanding economies and exploding populations, and the rapid proliferation of sophisticated weaponry has set the stage for new clashes of civilizations and cultures.

America and American soldiers must continue to serve as the champions of freedom and democracy in the approaching millennium. Destiny in the guise of Army Vision 2010 has assigned Fort Bliss — the Army's power-projection platform for air and missile defense — a decisive role to play in making the 21st century the "Second American Century." It's a destiny the installation is prepared to fulfill.

Our efforts to expand our power-projection capabilities are robustly funded. We've already spent \$21.5 million and have an additional \$14.6

million allotted for this year. We have an additional \$17 million approved to build the Air Deployment Facility Complex and expect to award a construction contract in December. A newly forged partnership between Biggs Army Airfield and El Paso International Airport has also begun to produce tangible results.

We have designed an ambitious growth plan to stimulate and guide future expansion. Highlights include the proposed relocation of Texas Army National Guard units to Fort Bliss, the McGregor Range Renewal Project and new partnerships with local, state and federal agencies.

Our goal is to centralize, expand and enhance Fort Bliss' supply support activity, creating a logistic center of excellence that will provide maintenance, supply, service and information management systems to enable rapid deployment and sustainment of units worldwide.

Missions. In the first part of the 20th century, Fort Bliss served as the center of gravity for American forces massed along the Rio Grande to shield the borderland from the violent revolutionary storm that swept Mexico from 1910 to 1920. During the first part of the 21st century, Fort Bliss will deploy air and missile defense units to protect our forces and host population centers against a storm of ballistic and cruise missiles.

The renaissance that is currently transforming Fort Bliss into not only the Army's air and missile defense power-projection platform, but also the world's Air Defense Artillery Center of Excellence, will continue well into the next century. Fort Bliss will continue to absorb new missions and activities. It will emerge as the nation's premier joint, combined and Total Army testing and maneuver center. Fort Bliss' missions will assume even greater importance as



32ND ARMY AIR AND MISSILE DEFENSE COMMAND TACTICAL OPERATIONS CENTER, ROVING SANDS 99

Army 2010 becomes the Army After Next.

ADA missions will grow more diverse and Fort Bliss' importance as a power-projection platform will increase as ballistic and cruise missile technologies proliferate. To succeed, we must strongly reinforce the efforts and initiatives that are rapidly transforming the ADA School, ADA force and Fort Bliss.

Roving Sands. Our base environmentalists tell us that roving, nomadic dunes — the type of sand dunes most often associated with the Sahara — are evolving in the heart of the Chihuahuan Desert — the ecological system of which Fort Bliss is a part. Fort Bliss' Exercise Roving Sands has already evolved into our nation's premier air and missile defense, joint and multinational exercise.

Roving Sands is the only exercise that pits combined, joint and multinational theater air and missile defense against a realistic air and missile threat, and each year it more fully replicates the air and missile threat of the 21st century. We scaled down Roving Sands 98 because of Operation Desert Thunder, but Roving Sands 99 exceeded

the previous exercise in scale and scope: more than 16,000 soldiers, sailors, airmen and marines participated. Each Roving Sands makes the specter of saturation missile attacks less haunting and moves us closer to victory on the battlefields of the new millennium.

Training Initiatives. To accomplish our mission, we must not just continue, but must also reinforce, the efforts and initiatives that are rapidly transforming the ADA School, ADA force and Fort Bliss. We have seen the future of Air Defense Artillery in TRADOC battle labs, Force XXI advanced warfighting experiments, distance-learning classrooms, and frequent crisis deployments. ADA School XXI's digitized training programs will produce ADA soldiers and units fully attuned to the digitized battlefield. Fort Bliss will also serve the Total Army and joint and combined forces as a premier training installation.

The ADA schoolhouse is in relatively good shape, considering that it suffers from the same staffing and budget shortfalls that plague other TRADOC schools. But the paint has begun to peel, the roof has sprung some leaks and the foundations are

beginning to shift. We cannot put off repairs much longer without incurring — both literally and figuratively — serious structural damage. We must spend a significant portion of the \$12-billion increase the administration has pledged to the fiscal year 2000 defense budget — and the additional billions promised over the next six years — to repair our doctrinal and training infrastructures.

Facilities. The Community of Excellence transformation is well underway at Fort Bliss. Changes already wrought — modernized living quarters, new morale and recreation facilities — are astounding. Their favorable impact on our soldiers and federal civilian employees is readily apparent. We are aggressively pursuing privatization and outsourcing, including gas, electricity, water and sewer services. We will beat the Army's 2005 deadline for privatizing family housing by three years.

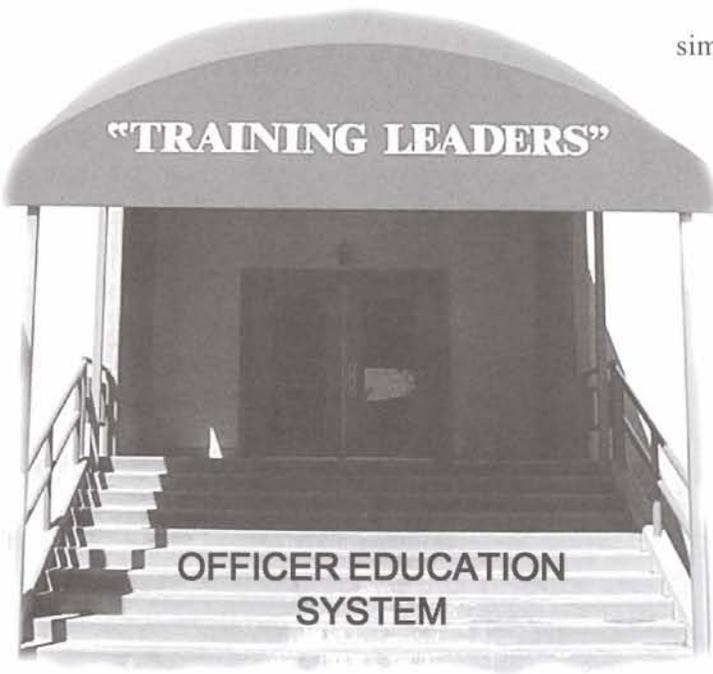
We realize that the future doesn't just happen; tomorrow is shaped by actions we take today. Fort Bliss standards are already high, but we will raise them higher still. We have only begun to tap the potential of our human and material resources, and our future is bright with promise.



ADA TRAINING XXI: PRODUCING WARRIORS ATTUNED TO THE DIGITIZED BATTLEFIELD

"The soldier is the reason I command Fort Bliss and the U.S. Army Air Defense Artillery School. If not for the individual soldier, all the resources, all the time, all the efforts are worth nothing. Training the soldier and giving him outstanding leaders, officers and non-commissioned officers is our most important function."

— Major General Dennis D. Cavin



It's tempting to think of the Force XXI process that is transforming the Army and Air Defense Artillery into a 21st-century fighting force only in terms of high-tech weapon systems and organizational redesigns, but the process is also transforming the way we train ADA soldiers and units. The battlefield of the near future will be an increasingly complex and hazardous environment, an arena from which only the best-trained soldiers and units will emerge victorious. With this in mind, the U.S. Army Air Defense Artillery School is reengineering and digitizing air and missile defense training to produce ADA warriors adept at information-age technologies and fully attuned to the digitized battlefield.

We have glimpsed the future of digitized, 21st-century ADA training in battle labs, warfighter simulations, advanced warfighting experiments, distance-learning classrooms and frequent crisis deployments – and the future works.

ADA Training XXI methodology relies heavily on information-age technologies, “distance-learning” techniques, and training devices,

simulators and simulations. But at the Air Defense Artillery School, we have drawn our own “line in the sand” to defend and perpetuate the small-group instruction methodology. Beyond this line we shall not retreat. We are resolved to make any sacrifice necessary to maintain small-group instruction in both the ADA Of-

ficer Education System and the ADA NCO Education System because we have seen the results — confident, competent and technically proficient leaders whom soldiers willingly follow.

Officer Education System

The Air Defense Artillery School commandant continues a unique ADA tradition by personally interviewing and selecting every small-group instructor (SGI) for the Officer Basic, Officer Advanced and Pre-Command Courses. Newly assigned Officer Basic and Officer Advanced Course SGIs conduct “dry runs” in front of seasoned SGIs. This permits former battery commanders to formally critique their teaching performance before these new instructors stand at a podium before real students.

Our SGIs are top-notch, branch-qualified professionals who personify the warrior ethic. Their ranks include instructors drawn from allied countries (Canada and Australia) and other combat arms. Thanks to them, ADA Officer Education System programs rank with the best in the Army.

Noncommissioned Officer Education System

ADA NCOs can go from the bottom to the pinnacle of the Army's NCO Officer Education System without ever leaving Fort Bliss. The installation is the home of the U.S. Army Sergeants Major Academy. The standards of excellence set by the academy are emulated throughout the ADA Advanced NCO Course at the Fort Bliss NCO Academy, one of the best institutions of its kind in the Army.

This past year, soldiers and students of the Fort Bliss NCO Academy moved the entire institution from its dilapidated and isolated Logan Heights facilities into more modern quarters on the installation's main post. They also moved the spirit of the NCO Academy along with the furniture. Almost overnight, corridors, classrooms and office space took on a vibrant, spit-and-polish ambiance. Cadence calls echoed through the hallways as future NCOs assembled for classes. The ADA NCOs of the 21st century, at last, had arrived at the heart of Air Defense Artillery.

We are rapidly creating common programs of instruction with a new emphasis on “how to think” rather than “what to think” to provide seamless training within the academy for active and reserve component soldiers and leaders. The Air Defense Artillery School delivered Total Army Training System (TATS) courseware to the U.S. Army Training and Doctrine Command (TRADOC) this spring, and the school will implement the new programs of instruction throughout fiscal year 1999. The TATS courseware will ensure that Army National Guard ADA soldiers train to the same standards of excellence

as their active component counterparts.

Our ADA NCO Education System continues to produce superb NCOs. Surveys produce one constant—ADA officers consider themselves blessed by the best NCOs the Army has to offer. Our ADA NCO Education System is working at near optimal performance.

Initial Entry Training

ADA drill sergeants personify Army values and serve ADA soldiers as expert counselors and mentors. At the moment, there's not quite enough of them. But we are working hard to reduce the drill sergeant student load, which is acceptable but not yet at the level required for optimum coaching and mentoring.

The Army reacted to a recent flurry of sexual harassment charges by requiring psychological and character analysis for soldiers selected to attend the Drill Sergeant School. Time consumed by the screening process has produced a temporary shortage of drill sergeants. At present, we have 14 drill sergeant authorizations but need 20 authorizations to meet the objective ratio of one drill sergeant per 35 soldiers. This shortage will vanish as more "screened" candidates enter our Drill Sergeant Apprenticeship Program, and we will have a steady supply of drill sergeants to serve ADA soldiers as role models.

Our Cadre Certification Program is on track, with 100 percent of our cadre members completing the Initial Entry Training Cadre Training Course, including Human Relations/Values Training. Our instructor-to-student ratio is acceptable, but not optimal. We'd like to have one instructor per five students rather than one instructor for 10 in some seg-

ments of our Patriot training. A shortage of ADA weapons systems to use as trainers makes the objective ratios difficult to achieve.

The Air Defense Artillery School experience has been that gender integration enhances the performance of both sexes. We have fully implemented gender-integrated training policies and measures. As a result, ADA gender-integrated training is working well, and our soldiers are safe and secure. We have not experienced the volume of gender-related problems reported at other posts, and our "sensing sessions" consistently produce positive feedback. They show that our female soldiers trust the chain of command to do the right thing.

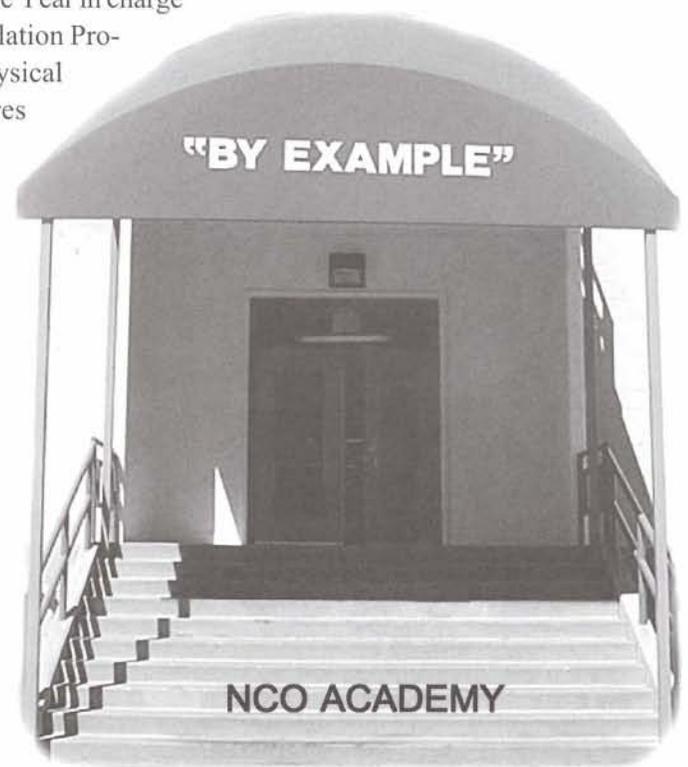
We are conducting a more aggressive drug abuse awareness campaign and are using William Beaumont Army Medical Center staff members to teach our drill sergeants how to detect early signs of foot and lower extremity injuries, thus reducing the two major nonacademic causes of attrition. We now place our Drill Sergeants of the Year in charge of the Special Population Program for Army Physical Fitness Test failures and have our drill sergeants more actively involved in mentoring and in teaching traditional Army values.

ADA Training XXI

As we create ADA Force XXI, we are concurrently developing and implementing new ADA training strategies, method-

ologies and technologies. These initiatives fall under the overarching umbrella of the Army Training XXI concept. This concept integrates ongoing initiatives and future developmental efforts to produce a coherent, integrated training system and strategy based on three pillars—self-development, institutional and unit training.

Army Training XXI incorporates three strategic campaign plans: Warfighter XXI (unit and collective training), Warrior XXI (institutional and self-development training), and Warmod XXI (force modernization training). Readers who wish to explore Army Training XXI in greater depth may visit TRADOC's "Army's Future Training Strategy" web page (www-dcst.monroe.army.mil/atxxi/atxxi-hp.htm). The visit entails a journey through labyrinths of unrecognizable acronyms and mazes of newly coined jargon. But while the going might get a little tough, you will emerge with a new and inspiring vision of a fully integrated, standardized, fine-tuned,



future-focused, high-performance training system that will maintain the U.S. Army's present status as the world's predominant land power for at least another century.

ADA Distance Learning on the Move

Distance learning technology, along with embedded training devices, battlefield simulators and simulations, is one of Army Training XXI's defining strategies. It is the common thread that supports Warrior XXI, Warfighter XXI and Warmod XXI. It brings the classroom to the soldier, rather than the soldier to the classroom.

Distance learning translates Army Training XXI concepts into reality. This education process delivers standardized self-development, individual, and collective training to the soldiers and units at the right place and right time through the application of multiple technology. It is the engine of change for implementing the Total Army School System.

The Air Defense Artillery School is the lead school in the implementation and compilation of lessons learned from Classroom XXI training platform applications. The transition from today's resident learning structure to a distance-learning environment is well underway at Fort Bliss. We took the first step by converting conventional ADA courses to TATS courseware. The TATS concept blends active and reserve component training products into "one training packet for all," and ensures that ADA programs of instruction train both active and reserve component ADA soldiers to perform like tasks to the same standard. Once the TATS conversion is complete, the transition to distance

learning and multimedia courseware will begin.

The ADA school has constructed an infrastructure that guarantees access to distance-learning training products and creates a baseline of distance learning. ADA instructors and developers will learn to use the electronic training platform, the five levels of Classroom XXI and the techniques of providing small-group instruction using automated electronic media.

We are building the Classroom XXI environment by leveraging information-age technology to gain

Libraries without walls connect local and remote areas with the schoolhouse

training efficiencies while maximizing training effectiveness and saving the Army money. The success of Classroom XXI depends not only on the success of Warrior XXI initiatives, but also upon the technology modernization of the training institution itself. Classroom XXI will use current and future technology to transform conventional classrooms from an instructor-centered environment to a student-centered multimedia, interactive-courseware learning laboratory.

We are upgrading our classroom facilities to capitalize on distance-learning applications. Our Digital Training Access Center (DTAC), the "heart" of Classroom XXI, became operational during the first quarter of fiscal year 1998. This DTAC "library without walls" connects local and remote areas with the schoolhouse. It contains our automated library, training publications, comput-

erized training (lessons) and the connectivity for battle simulations. The DTAC provides informational support to the field through local area networks and the worldwide web. It also provides the same support for institutional training through the campus area network. The Air Defense Artillery School provided TRADOC with a short-range (FY97-01) classroom summary plan that requested funding for 37 high-tech classrooms. We completed the first classroom in October 1997, and it became operational the same month. Classroom XXI has capabilities for simultaneous use by our professional development instructors within our Officer, Warrant Officer and NCO Education Systems.

The Air Defense Artillery School is also working on a long-range plan (FY02-05) that adds 29 classrooms to the training base. Once the short-range plan and Classroom XXI have proven to be both training- and cost-effective, we will implement the long-range plan. These classrooms must capitalize on distance learning, distributed interactive simulations, virtual reality and emerging training technologies to provide an institutional and distance-learning environment with a worldwide scope.

The School is working with the University of Texas at El Paso's (UTEP) Technology and Distance Learning Department to offer college classes to military personnel and family members using the distance learning application. UTEP developed training for our instructors and developers on how to use multimedia presentations and develop multimedia courseware. As UTEP moves forward in the implementation of their distance-

learning program, they intend to become part of the proposed University of Texas System's virtual university. We will ensure that all ADA soldiers and family members have the opportunity to participate in the virtual university.

We have also developed a partnership with the New Mexico Army National Guard (NMARNG) in Santa Fe, N.M. This twofold partnership provides us with the capability to validate distance-learning courseware and leverage Guard resources to help develop the courseware. The State of New Mexico is installing a fiber-optic backbone that connects all the armories in the state. We will connect to this backbone through White Sands Missile Range, N.M., and then to GUARDNET, which establishes connectivity between Fort Bliss and all 50 states and U.S. territories. This connectivity will allow us to provide distance-learning courseware to every ADA reserve component unit.

Finally, the Air Defense Artillery School has established and is maintaining working relations with functionally aligned regional schools, under the Total Army School System concept, to ensure that we achieve and maintain functional electronic connectivity. We will validate and test our training products and strategy before full implementation by America's finest, our ADA soldiers in the field.

We must continue to identify key enabling investments to improve ADA training as well as our distance-learning infrastructure. Classroom XXI will help the Air Defense Artillery School set the TRADOC training standard for the total Army.

Doctrinal and Training Literature

We have spanned the "intellectual gap" that separated the Army of Excellence from Army 2010 to produce doctrine that is relevant to the new millennium. Our theater-, corps- and division-level doctrinal and training publications are funded and on schedule.

We expect to print FM 100-12, *Army Theater Missile Defense*, and FM 44-100, *U.S. Army Air Defense Operations*, in October. In April, our group writer project produced the initial draft revision of FM 44-100,

We have spanned the gap to produce doctrine relevant to the new millennium

and we have handed over the remainder of the work to a contractor.

ADA units are currently using the final draft version of FM 44-71, *ADA Brigade Operations*, and we plan to print the field manual by September. We have produced the initial draft of FM 44-71-1, *Air and Missile Defense Planning and Control*, and will employ contractors to complete the project. Our division-level Force XXI field manuals should be ready for delivery by December.

Training Aids, Devices, Simulators and Simulations

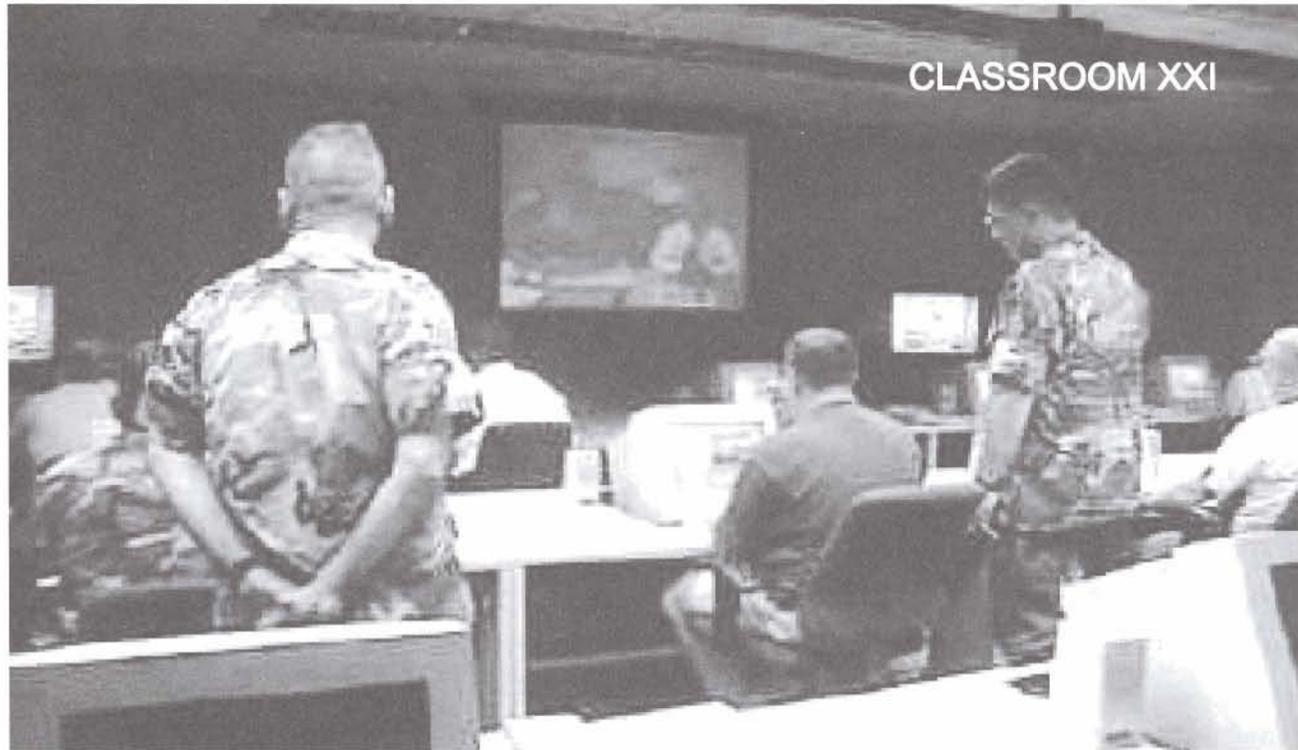
Air and missile defense training aids, devices, simulators and simulations (TADSS) augment tactical systems and permit us to bring the full potential of future training technology to bear in a virtual training environment. Embedded or "inserted" into our new systems, these

portable, netted, soldier-friendly, cost-effective training solutions augment tactical systems and provide "on demand" training to ADA units in the field.

The Avenger tabletop trainer, a "take it with you anywhere" conduct-of-fire trainer, has filled a critical training void and radically improved the readiness status of active duty Avenger units. We need \$3.3 million to field tabletop trainers to National Guard Avenger units. South Carolina and Florida have already purchased some Avenger tabletop trainers for unit training, while New Mexico is evaluating its resources to determine if it can purchase several.

We graduated the first Bradley Linebacker class in January and trained all requirements, even though only three of nine Bradley Linebacker training devices have been fielded. Bradley Linebacker training devices presently on hand are the captive flight trainer, precision gunnery system and through-sight video. Still to come are the Bradley Linebacker conduct-of-fire trainer, tabletop trainer, force-on-force trainer, embedded troop proficiency trainer, institutional maintenance trainer and air defense close-combat tactical trainer. The needed training devices are in the pipeline, and fielding should be complete by fiscal year 2002.

The yet-to-be-fielded Theater High-Altitude Area Defense (THAAD) system includes an embedded, menu-driven training capability, allowing soldiers to use the system to fight air battles by displaying homemade or real-time derived scenarios. Soldiers can store and call up these scenarios



as needed for operator, crew, or collective training. They can also modify the scenarios to meet real or fictitious threat parameters or to emphasize doctrine and techniques, tactics and procedures training in the unit.

The Medium Extended-Range Air Defense System (MEADS) will have extensive embedded training capabilities. The training device strategy is to teach individual and collective tasks using embedded capabilities and TADSS, and to sustain training during tactical operations and joint training exercises. MEADS will interoperate with real-world command, control, communications and intelligence (C³I) systems and with simulators and simulation systems that train the unit.

MEADS will link to a networked training capability and into the family of simulations training systems (e.g., the Corps Battle System and WARSIM 2000) for

training, rehearsals and course-of-action determinations. We will leverage core technologies to provide mission rehearsals in synthetic theater-of-war environments. MEADS will not require logistically intensive support. As envisioned, it will be the first air and missile defense system requiring only two levels of maintenance (no institutional maintenance trainer will be necessary).

The Patriot's embedded training capability provides a controlled training environment for operator training and evaluation within the engagement control station and the information and coordination central. Performed under simulated conditions, this training supports individual, crew, collective and unit training by providing simulated situations that replicate actual mission operations. The Patriot Advanced Capabilities-3 (PAC-3) system requires intermediate maintenance trainers that simulate problems in the radar set

as well as the engagement control station, and that allow practice of troubleshooting and repair techniques.

Many of our training problems are the result of the urgency with which ADA systems (such as the Bradley Linebacker) and system enhancements (such as PAC-3) are being fielded. For example, the incremental fielding of PAC-3 missiles, hardware components and software requires us to train some soldiers on the PAC-2 system while training others on the PAC-3 system. These are the sort of problems that are nice to have, since new weapon systems and system enhancements better prepare us to accomplish our mission. Other fielding programs cause more difficulty. For example, our Air and Missile Defense Combat Arms Tactical Trainer is an approved requirement that has no funding or program managers. The delay postpones Air Defense Artillery's entry onto the virtual battlefield.



PATRIOT CONDUCT-OF-FIRE TRAINER

Real-World Training

The only soldiers who deploy more often than ADA soldiers are Special Forces support soldiers. And while crisis deployments tend to reduce the combat readiness of combined arms units tasked to perform peacekeeping missions, Patriot battalions assigned to Operation Southern Watch or Northern Watch perform their combat missions around the clock. A decade of crisis deployments and Southwest Asia rotations has honed the readiness of our Patriot battalions to a razor-sharp edge.

“Southwest Asia rotations create the sort of unit cohesiveness that’s normally forged under combat conditions,” said one Patriot task force commander. “They are tremendous confidence builders that make soldiers believe in themselves and their ability to accomplish the mission under trying circumstances.”

Thanks again to Saddam Hussein, the newly activated but frequently deployed 32nd Army Air and Missile Defense Command is already a veteran organization. Operation Desert Thunder witnessed an early example of distance-learning applications when soldiers assigned to the 32nd Army Air and Missile Defense Command tactical operations center in Kuwait trained on simulations generated by the Space and Missile Defense Command’s battle lab in Huntsville, Ala.

The success of our divisional air defense battery during the Heavy Division Force XXI Advanced Warfighting Experiment shows that we are doing a good job of training ADA soldiers and units to feel at home on the digitized battlefield.

The Combat Imperative

When designers first set out to create computer wargames based

on actual orders of battle, they ran headlong into a major problem. They discovered they could not replicate actual historical campaigns unless they arbitrarily assigned icons that represented some units’ elevated “strength factors” — factors that could not be justified by troop strength or firepower. Otherwise, numerically superior forces that had been trounced on real-world battlefields simply “walked over” numerically inferior forces on their computer-simulated battlefields. The game designers learned through digital simulation what military professionals have always known—whatever the odds, well-trained soldiers usually beat poorly trained and poorly led soldiers.

Training was the “combat imperative” when warriors fought with spears and swords. Training will remain the combat imperative in the next millennium.



AIR DEFENSE ARTILLERY ASSOCIATION

"First To Fire"

THE NEW FORT BLISS MUSEUM NEEDS YOUR SUPPORT!

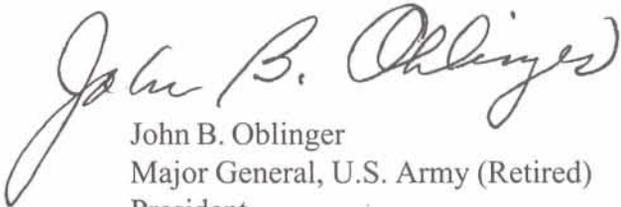
On behalf of the Air Defense Artillery Association, I invite you to join in our unwavering support of Fort Bliss and the Air Defense Artillery branch. By placing your ad in the 2000 Air Defense Artillery Yearbook, you can help the Association support the renovation and expansion of the new Fort Bliss Museum while expanding your own business as well.

The yearbook has long been the Air Defense Artillery's showcase publication, distributed to Congress, the Pentagon, major military commands, and ADA soldiers at Fort Bliss and around the world. But the relocation of ADA brigades to Fort Bliss has revolutionized the ADA Yearbook's impact! This relocation guarantees that El Paso will now welcome a revolving customer base of more than 12 thousand soldiers, more than 16 thousand military dependents, and nearly 50 thousand military retirees. This incredible economic boom will benefit your company when you advertise in the 2000 ADA Yearbook!

Not only will your yearbook advertisement receive unprecedented exposure to the Fort Bliss military community, it will also support the entire El Paso-Fort Bliss community! A percentage of the yearbook advertising proceeds will support the new Fort Bliss Museum Project. The new Fort Bliss Museum will use a 108,000-square-foot renovated building for its exhibits portraying the U.S. Army on the frontier, during its horse cavalry days, and through two world wars, Korea and Vietnam.

The ample space in the renovated building will allow for a full presentation of the history of the Air Defense Artillery branch, its people and its equipment. Space will also be devoted to William Beaumont Army Medical Center's history, the Museum of the Noncommissioned Officer, as well as documenting the roles of all ethnic groups who played an important part in the Fort Bliss-El Paso history.

I urge you to contact our yearbook publisher and place your ad in the 2000 ADA Yearbook. Your support will help the Association and the Museum preserve our heritage for all El Pasoans.


John B. Oblinger
Major General, U.S. Army (Retired)
President

CAS inc.

WEAPON SYSTEMS ANALYSIS

PROUD OF OUR PAST



FOCUSED ON THE FUTURE

CORPORATE HEADQUARTERS:

650 DISCOVERY DRIVE

HUNTSVILLE, AL 35806

(256) 895-8600

EQUAL OPPORTUNITY EMPLOYER

13 FOUNDERS BLVD.

EL PASO, TX 79906

(915) 779-6458

1725 JEFFERSON DAVIS HWY

SUITE 204

CRYSTAL SQUARE 2

ARLINGTON, VA 22202

(703) 413-0175

11838 ROCKLANDING DR.

SUITE 220

NEWPORT NEWS, VA 23606

(757) 873-7292

With over forty years of experience in designing and manufacturing Air and Missile Defense Systems, Raytheon is proud to partner with the U.S. Army as we enter the new millenium. Together, we'll lead the way. To learn more about Raytheon's Air and Missile Defense Programs, contact us at (781) 999-2222, or visit www.raytheon.com

DUTY, HONOR,
COUNTRY. THEY'RE
NOT ONLY YOUR
VALUES, THEY'RE
OURS AS WELL.

Patriot ◉ Stinger ◉ THAAD Radar ◉ JLENS ◉ MEADS ◉ XBR ◉ EKV ◉ Sentinel Radar ◉ EPLRS ◉ GBR-P



For Raytheon employment opportunities, visit www.raytheon.com

RAYTHEON SYSTEMS COMPANY

Raytheon
EXPECT GREAT THINGS