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AIR DEFENSE ARTILLERY NOVEMBER/DECEMBER 1992

**T** THEATER      **H** HIGH      **A** ALTITUDE      **A** AREA      **D** DEFENSE





AIR DEFENSE ARTILLERY NOVEMBER/DECEMBER 1992

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Diversifying threat ensures Air Defense Artillery a critical diplomatic as well as combat role.

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*Front cover illustration courtesy of Lockheed Missile & Space Co.*



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# Intercept Point

## *Patriot Diplomacy*

In past decades, U.S. presidents sent gunboats. Today, at the first sign of crisis, the national command authority turns to Patriot. As an extremely visible element of national security policy, Patriot has become the war deterrent of the '90s. As a defensive weapon, it serves as a powerful deterrent, sending a forceful message without threatening a potential adversary.

Today, Patriot batteries in Saudi Arabia, Kuwait and Bahrain stand as symbols of U.S. resolve and Air Defense Artillery's emergence as a weapon of diplomacy. Lt. Col. Martin Leek, Task Force 3-43 ADA commander, reports our Patriot firing batteries are "proud and ready."

We must see to it that Air Defense Artillery remains proud and ready, for the air threat, despite the Cold War's end, seems to be diversifying rather than shrinking and evaporating. This trend ensures that ADA elements will continue to be among the first assets the United States will deploy in times of crisis.

Staying prepared means guarding against the temptation to make drawdown force structure decisions that would rob us of our new-found deterrent capability by reducing our ability to deploy an effective Patriot defense. Also, it means bringing advanced air defense systems to complement Patriot on line more quickly.

Are these achievable goals in light of the troubled economy and the lack of a readily apparent threat? I think they are. The lessons of the immediate past, evolving threat scenarios and emerging doctrine seem to present inexorable arguments in our favor.

Today's tactical ballistic missiles (TBMs) are many times more sophisticated than the Scuds Iraq unleashed during the Gulf War, and they continue to grow in range, accuracy and lethality. Twenty countries now field TBMs in the 300- to 1,000-kilometer range,

and the list continues to grow. Several may soon have missiles in the more than 1,000-kilometer range. Guidance technology will improve TBM accuracy to within a circular error probable (CEP) of 100 meters or less by the year 2000 and, shortly afterward, to a CEP of 50 meters or less. Meanwhile, enhanced munitions will increase TBM war-

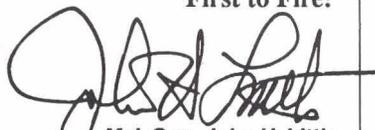
head lethality while solid-propellant motors and related technologies will make them cheaper and easier to fire.

At the onset of Operation Desert Shield, the United States inserted the 82nd Airborne Division onto the desert sand with only their organic Vulcan crews and Stinger teams and a few U.S. Air Force interceptors to protect them against air attack. They

had no defense against TBMs or cruise missiles. Would you want to roll those dice again in future scenarios, knowing that paratroopers, air and sea ports of debarkation, or, indeed, any resupply or troop ships approaching within hundreds of miles would be vulnerable to precision targeted TBMs and cruise missiles?

Despite some short-term uncertainties, a growing awareness of air threat trends makes our long-term prospects bright. The Army recently awarded industry contracts to define Corps Surface-to-Air Missile options and to demonstrate and evaluate Theater High Altitude Area Defense prototypes. That the nation would commit millions of dollars to programs that will eventually cost billions signifies the importance our military analysts and national leadership attach to the missions assigned to those who will be . . .

**First to Fire!**



— Maj. Gen. John H. Little  
Chief of Air Defense Artillery



Last night [Jan. 21, 1991] could have been the turning point of the war. If he [Saddam Hussein] had hit Riyadh Air Base and destroyed six AWACS or put chemicals on the F-15s at Dhahran, think of how the attitude and support of the American people might have changed. No one should underestimate the value of the Patriot system in this war.

— Lt. Gen. Charles A. Horner  
CENTCOM air commander



The geographical separation of Patriot fire units exceeds the doctrinally recommended configuration, but spans of control and logistical support, though stretched very thinly, are within acceptable levels for the near term. The morale of the soldiers is high, tactical and technical proficiency exceeds normal standards and a high percentage of the deployed air defenders are Desert Storm veterans. Many of the deployed soldiers are serving their third tour of duty in the theater. As is stated by the TF 3-43 ADA motto, the "Original Patriot Scudbusters" are "Proud and Ready."

— Lt. Col. Martin Leek  
TF 3-43 ADA commander

# ADA DIGEST

## PERSONNEL

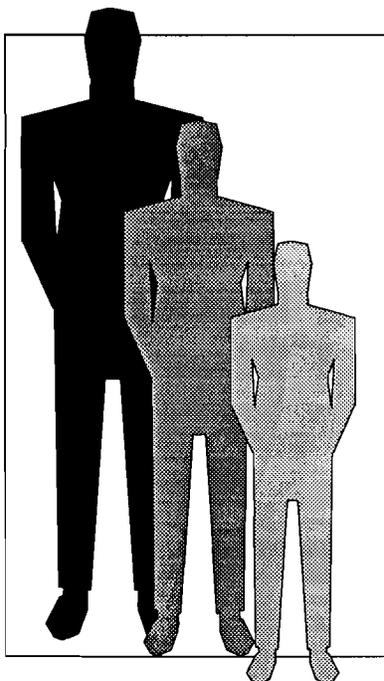
### EVERYTHING YOU WEREN'T AFRAID TO ASK ABOUT THE DRAWDOWN

The U.S. Army Personnel Command (PERSCOM) has developed responses to frequently asked questions about the Army drawdown. These questions, though not all inclusive, appear to most interest commanders and personnel officers who have called the Chain Teaching Hotline and other drawdown hotlines.

*Will time on station increase due to the Army drawdown?*

Eventually, yes, for most of our soldiers. Currently the turbulence caused by the drawdown, ongoing career management field (CMF) restructuring and unit realignments has altered established time-on-station requirements. Once these disruptions have run their course, time on station should increase for most military occupational specialties (MOSs).

The European drawdown will have the most impact. Prior to FY91 and the start of the drawdown, the Army stationed approximately 55 percent of our personnel in the continental United States and 45 percent outside the continental United States. When the current programs are finished, the percentages will change to approximately 77 percent in CONUS and 23 percent OCONUS. This, coupled with a smaller Army, will result in longer time on station for CONUS assignments. Some MOSs,



however, due to their unique missions, will still have most of their strength OCONUS. Time on station for these personnel will be shorter due to rotational requirements.

*How are soldiers selected for the Basic Noncommissioned Officer Course (BNCOC)?*

PERSCOM manages and reserves BNCOC slots for soldiers with combat support and combat service support MOSs. All PERSCOM Noncommissioned Officer Education System selections are based on an Ar-

mywide order of merit list. Initial scheduling for soldiers who will attend BNCOC in a temporary duty (TDY) and return status is accomplished through the BNCOC Automated Reservation System Report.

The appropriate career branches in PERSCOM verify the list and schedule soldiers who will attend in a TDY enroute status. All information concerning BNCOC classes for combat service and combat service support is available through the installation regional Army Training Requirements and Resources System.

Regional NCO academies manage BNCOC for soldiers who have a combat arms MOS. The regional NCO Academy maintains the OML and allocates BNCOC slots to the installations it manages.

*Will other than Category III officers be eligible for voluntary separation incentives (VSIs) or selective separation benefits (SSBs) in FY93?*

Yes. A message announcing the FY93 VSI/SSB categories and criteria was transmitted to personnel officers in September. The FY93 program will be very similar to the FY92 program.

*How many officers are in the Selective Early Retirement Board zone, and how many will be selected?*

Each board in each officer category (major, lieutenant colonel and colonel) is still being finalized. By law (Title 10, U.S. Code) each board can select up to 30 percent of the eligible population for selective early retirement. Chain Teaching Update 2, page 012, gives our best estimate of what to expect in FY93.

*I was previously considered for selective early retirement. Shouldn't I only be considered for selective early retirement once in a five-year period if I hold the same grade I held during the previous Selective Early Retirement Board?*

Modification rules to Title 10, U.S. Code, allow the secretary of the Army to convene unlimited or enhanced Selective Early Retirement Boards that may consider an officer for selective early retirement each year a board is held. The "one time in five years" consideration rule does not apply to the FY93 Selective Early Retirement Boards. The boards will convene under the unlimited selective early retirement rules contained in Section 638A, Title 10, U.S. Code.

*Is the idea to get rid of serving field grade officers to speed the promotion process and retain younger officers?*

NO. Congressionally mandated officer strength reductions have reduced the total number of officers allowed on active duty.

*What are my chances for being selected for selective early retirement?*

Selective Early Retirement Boards operate in a manner similar to promotion boards. They consider all eligible officers and vote the files on a positive basis, identifying those officers with the greatest potential for future service. An officer has at least a 70-percent chance of being retained since, by law, the board cannot recommend more than 30 percent of the eligible officers for retirement. As is true with promotion boards, the criteria for selection are contained in a memorandum of instruction (MOI) to the board. The MOI for FY93 is currently being developed. We anticipate the MOI will be similar to previous ones. Officers desiring a copy of the MOI used during FY92 should

write CDR, PERSCOM, ATTN: Career Management Branch.

*I am a colonel (or lieutenant colonel) and thought I was guaranteed I could serve on active duty for 30 years (or 28 years). Is this true?*

Many officers believe that the Defense Officer Personnel Management Act (DOPMA) guarantees service on active duty for 28 years as lieutenant colonel and 30 years as colonel. While DOPMA does discuss service until these points, it also gives the secretary of the Army discretionary authority to manage the force as conditions or law dictate. Given the congressionally mandated cuts and the concurrent reduced DOPMA field grade ceilings limitations, not all lieutenant colonels and colonels will be allowed to serve tenures of 28 and 30 years. The Army is working to keep faith with the officer corps by doing what is best for the long term interests of the *entire* officer corps and the Army given our present and future circumstances of tighter budgets and reduced strengths.

*If I am selected for selective early retirement, what are my options?*

Retirement options include mandatory or voluntary retirement no later than July 1, 1993, if an officer has completed 20 years or more of active federal service, or mandatory or voluntary retirement the first day of the month following the month he or she completes 20 years of active federal service.

*If selected for selective early retirement, to whom can I appeal my selection?*

The law does not provide for any appeal or special reconsideration. If an officer believes his or her official record is in error or an injustice has occurred, he or she may apply to the

Army Board for Correction of Military Records for correction of any error. However, this will not delay processing of retirement while the case is being adjudicated.

*Since selective early retirement is an involuntary separation, will I be entitled to separation pay?*

No. The Department of Defense pay manual provides that separation pay will not be paid to anyone who separates who is retirement eligible. Selective early retirement is retirement. An officer cannot, by law, receive both separation and retirement pay.

*If selected for selective early retirement, can I be PCS'd prior to retirement?*

Officers who have sufficient years of active federal service to be retired within a year will be stabilized at their current duty station. Officers with more than one year of service remaining until their mandatory retirement date will be subject to normal PCS constraints and could be PCS'd based upon the needs of the Army.

*If selected for selective early retirement, can I return my family to CONUS before I return?*

Officers selected for early retirement have the option, as do any personnel stationed overseas, of returning their family members to their CONUS retirement location prior to their retirement date. Their retirement orders provide the means for the relocation. However, do not relocate family members or household goods prior to the issuance of retirement orders. Movement or relocation of family members or shipment of household goods prior to issuance of retirement orders will be at the officer's own expense.

*Will lieutenant colonels or majors who are selected for selective early retirement, but do not have three years time in grade by their mandatory retirement date, retire in their current grade?*

Yes. Officers selected for selective early retirement will retire in the grade they currently hold regardless of their time in grade.

*If DA civilians opt to resign or retire under the voluntary early retirement authority, will they receive a cash bonus up to \$20,000?*

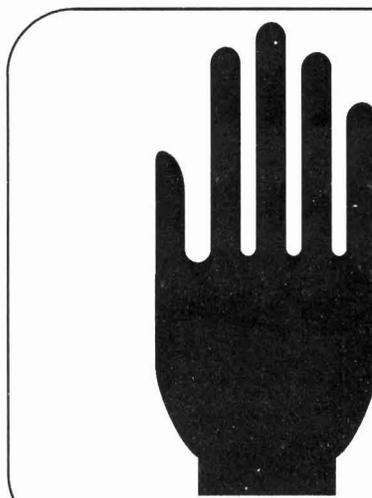
No. Cash bonuses of up to \$20,000 for individuals who resign or who opt to retire under the voluntary early retirement authority are strictly a legislative proposal — repeat, *proposal* — that the Department of Defense supports. The passage of this proposal is not guaranteed.

*What should soldiers and DA civilians do to get a copy of the Chain Teaching Update 2 package if they did not get a copy through normal distribution?*

A copy of Chain Teaching Update 2 can be obtained through normal chain of command channels. Copies were forwarded to all major commands, major subordinate commands, field operating agencies and Department of Defense activities and should be distributed down through the chain of command to every organization with DA civilians.

*Are there differences in the travel and transportation allowances received if a soldier elects voluntary separation incentives over selective separation benefits?*

No. The benefits are the same. Basically, if a soldier has eight or more years of service, he or she will receive travel and transportation allowances to their home of record.



## **DANGER! HISTORIAN AT WORK**

### *ADA historian solicits input for comprehensive history of Air Defense Artillery*

Were you at Corregidor or Remagen? Were you involved in guided missile research during the Cold War era? Did you serve with an AAA unit in Korea or an ADA unit in Vietnam? Did you help bring down Scud missiles during Operation Desert Storm?

The ADA branch historian, Lt. Col. Thomas E. Christianson, is seeking current and former air defenders who have a story to tell or pictures to share. Christianson, who has served on the history department faculty at the United States Military Academy and the Command and General Staff College at Fort Leavenworth, Kan., is conducting research in preparation for the publication of a comprehensive history of U.S. Army Air Defense Artillery.

This official publication will span ADA's entire history, from its origins, through both World Wars, Korea and Vietnam, up to and including the Persian Gulf War. Peacetime ADA activities, especially training and development of air defense weapons and



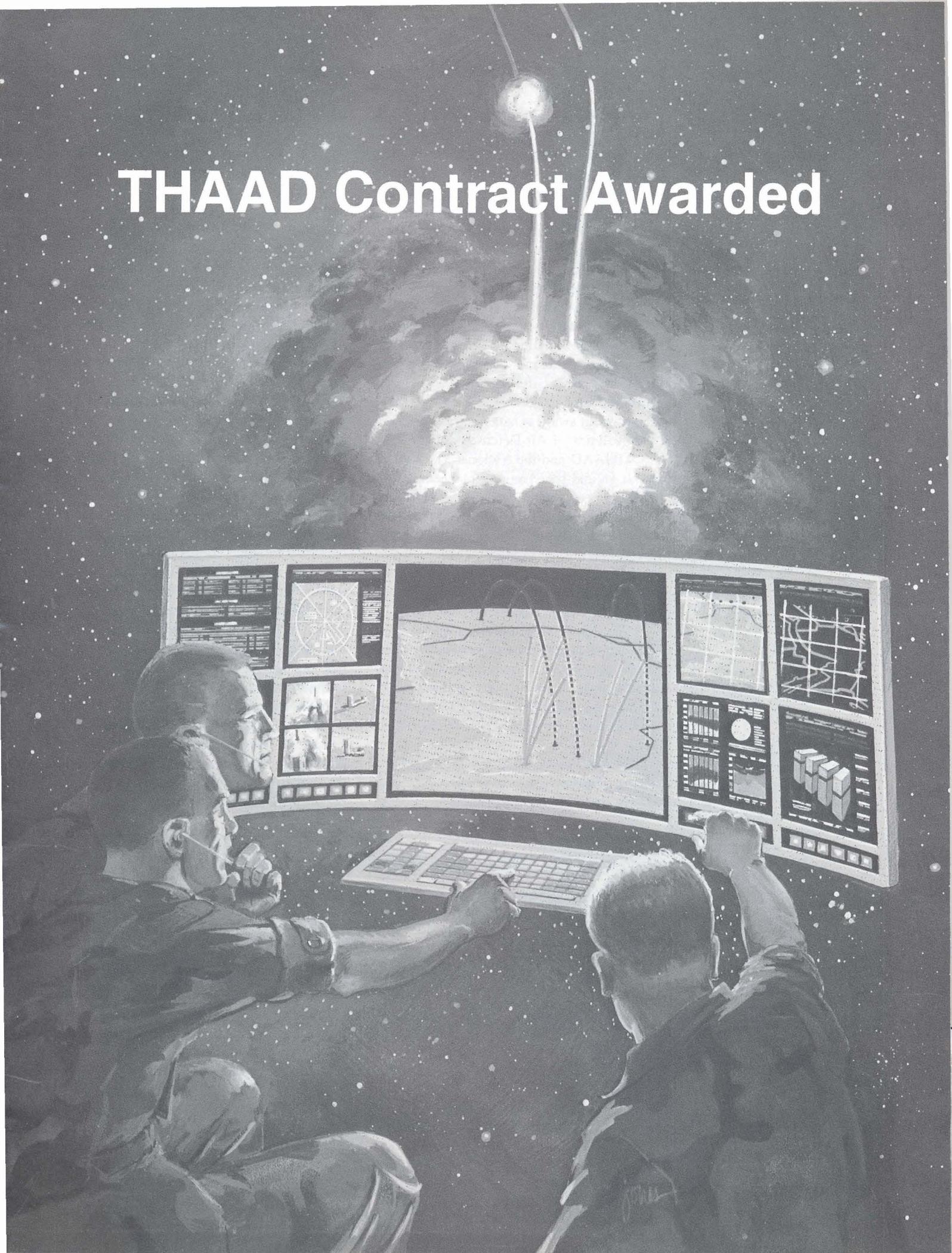
Christianson

doctrine, will also be covered. Photographs, letters and other historical documents are also welcome.

If you would like to help tell the ADA story, please contact either Christianson or Mrs. Patricia Rhodes, research historian, at the Office of the Historian, ATZC-CSH, Fort Bliss, TX 79916-0058; (915) 568-6906/4797 (DSN 978).

*(Digest continued on page 11)*

# THAAD Contract Awarded



Since those first dramatic Patriot intercepts over Tel Aviv, Riyadh and Dhahran, the very notion of foregoing greater investment in missile defense — especially ground-based systems — seems absurd. Indeed, should U.S. and allied military forces and civilian populations find themselves unprotected against the more sophisticated tactical ballistic missiles that will almost certainly be pointed at them in the mid to late 1990s, they will have every reason to angrily wonder why.

— Charles M. Perry, *Institute for Foreign Policy Analysis*

I cannot think of a more urgent requirement for us to meet in terms of our long-term strategic needs than the need to be able to deploy defenses against ballistic missiles.

— Dick Cheney, *Secretary of Defense*

The Theater High Altitude Area Defense (THAAD) system has begun the metamorphosis from concept to reality. In September, the U.S. Army selected a contractor team led by Lockheed Missile and Space Company to demonstrate and test THAAD prototypes and a second contractor team led by Raytheon Company to demonstrate and validate THAAD and National Missile Defense Ground-Based Radar (GBR) prototypes.

The THAAD system is designed to intercept and destroy tactical ballistic missiles at longer ranges and higher altitudes than the Patriot air defense missile system that countered Iraqi Scuds during Operation Desert Storm. Senior air defense leaders are billing the contract award as a monumental event in the evolution of Air Defense Artillery.

“THAAD and the National Missile Defense ground-based interceptor seem almost certain to become the only major new weapon systems introduced during the remainder of the 20th Century,” said Maj. Gen. John H. Little, chief of Air Defense Artillery. “Corps SAM [surface-to-air missile] stands a good chance of being the first major new weapon system fielded in the 21st Century.

“That our country’s military and civilian leaders, during a time of economic woes, force reductions and budget restraints, have placed these items so high on the national priority list signifies the importance they attach to missions assigned Air Defense Artillery.

“THAAD will position Air Defense Artillery to respond to the challenges of the new global strategic environment and prepare

the branch to meet the challenges that await it in the 21st Century,” Little continued. “The THAAD system will literally broaden Air Defense Artillery’s tactical and strategic horizons, shifting our perspective from area and point air defense to theater air defense. The ‘system of systems’ triad will enable us to provide air defense against the entire spectrum of air threats, including tactical ballistic missiles, cruise missiles, unmanned aerial vehicles and fixed- and rotary-wing aircraft, over an entire contingency theater of operations.”

The THAAD contract awards came less than two years after A Battery, 2nd Battalion, 7th Air Defense Artillery, poised on the perimeter of a Saudi Arabian air base, launched a Patriot missile that scored history’s first combat intercept of a tactical ballistic missile. Operating in the cauldron of combat, with experimental software and missiles that had been rushed to the theater of operations, the Patriot batteries hurriedly deployed to Saudi Arabia and Israel during the Gulf War effectively blunted the Iraqi tactical ballistic missile offensive. However, they did not “bat a thousand” against Scuds which, by breaking up in the downward portion of their trajectory, presented more difficult targets than expected. Scuds that leaked through the Patriot umbrella to impact in populated areas and falling debris from successful intercepts inflicted damage and casualties. Patriot demonstrated both the plausibility of tactical missile defense and the need for improvements, thus creating a presidential and congressional mandate for

### Lockheed THAAD Team Members

**Lockheed Missiles and Space Company**  
*System design, integration and testing*

**United Technologies Corporation, Chemical Systems Division**  
*Thrust vector controlled solid rocket booster*

**Westinghouse Marine Division**  
*Missile protective launch canister*

**Loral Infrared and Imaging Systems**  
*Kill vehicle infrared seeker*

**Lockheed Sanders**  
*Training devices and special test equipment*

**Honeywell Space Systems Group**  
*Missile avionics*

**Rockwell International Rocketdyne Division**  
*Bi-propellant kill vehicle divert attitude control*

**Litton Data Systems Division**  
*Major portions of the BM/C<sup>3</sup>I*

**Lockheed Austin Division**  
*Communications relays*

**Dornier GmbH**  
*Transporter erector consultation*

## Raytheon GBR Team Members

Raytheon Equipment Division  
*Prime GBR contractor*

TRW Incorporated  
*Software*

Texas Instruments  
*Solid state transmitter, receiver modules*

Digital Equipment Corporation  
*Signal and data processors*

Datatape  
*Data recorders*

Hughes Aircraft Company  
*National Missile Defense traveling wave tubes*

EBCO  
*National Missile Defense radar turrets*

a more leakproof tactical ballistic missile defense shield.

Once fielded, THAAD will engage attacking tactical ballistic missiles first at long range and high altitudes. Tactical ballistic missiles not destroyed by THAAD will be engaged at lower altitudes and closer to their intended targets by the shorter range air defense systems. Unlike Patriot, which destroys incoming tactical ballistic missiles by exploding in close proximity to them, THAAD will achieve kinetic energy kills with direct hits at speeds greater than seven times the speed of sound. The THAAD interceptor missile system will be capable of long-range, hit-to-kill intercepts more than 100 miles from the intended target, greatly reducing the chance of falling debris causing damage to civilian populations. It also will intercept targets at altitudes high enough to ensure safe diffusion of chemical weapons.

The \$688,892,607 Lockheed contract award funds design, fabrication and testing of a demonstration weapon system; components of a prototype THAAD system consisting of two mobile battle management/command, control, communications and intelligence (BM/C<sup>3</sup>I) units; 20 missiles for flight and system tests; mobile missile launchers; and related support equipment. A contract valued at \$80,150,609, if exercised, will procure an additional 40 test missiles. The user operational evaluation system, which will serve as a prototype system for the Army to evaluate prior to full production, could be deployed during a crisis. THAAD system requirements call for limited production late in the decade with full production to follow. Because the system must be rapidly deployable, the interceptors

and support equipment will be transportable on C-130 aircraft.

The initial Raytheon contract provides \$492,200,291 in funding for the demonstration and validation of three Theater Missile Defense and one National Missile Defense GBR prototypes. The total contract, including options, could reach \$614,717,000. Design and fabrication will be based on the concept of a family of X-band radars that take advantage of common technology and design, especially in signal, data processing and software.

The Theater Missile Defense GBR prototypes will support THAAD prototype testing at White Sands Missile Range, N.M. Two will be incorporated into the THAAD user operational system and could be deployed with THAAD in case of national emergencies. They will be C-130 compatible and road transportable. Solid state technology will make the mobile Theater Missile Defense GBRs light and easy to maintain. A full field of view phased array antenna will allow a Theater Missile Defense GBR to acquire and track theater missile threats at ranges of 500 kilometers or greater.

The National Missile Defense GBR, which will employ traveling wave tubes and ferrite phase shifters, will be built at Kwajalein Atoll in the central Pacific for joint testing with the National Missile Defense Ground-Based Interceptor. The contract contains a \$120,454,000 option for a second National Missile Defense GBR as a user operational evaluation unit. This GBR would be built at the initial National Missile Defense site and could be used for actual defense of the continental United States in case of a limited or accidental missile strike.

THAAD is the latest thing in Scudbusting antimissile defense. Its rockets are smaller, faster and smarter than those shot from a Patriot battery. And unlike the Patriot missile, which aims to get close to an incoming missile before its warhead explodes and disables its enemy, the THAAD missile destroys its target by ramming into it so fast (seven times the speed of sound) that the two are obliterated on impact.

— *Washington Post*

The immediate threat posed by rogue nations isn't from intercontinental missiles. They're at least a decade away. The real threat comes from tactical weapons like Saddam Hussein's Scud missiles that can strike U.S. forces abroad.

— *USA Today*

The tactical ballistic missile genie is out of the bottle, and there's no putting it back in.

— Lt. Gen. Donald M. Lionetti,  
Commander, U.S. Army  
Strategic and Space  
Command

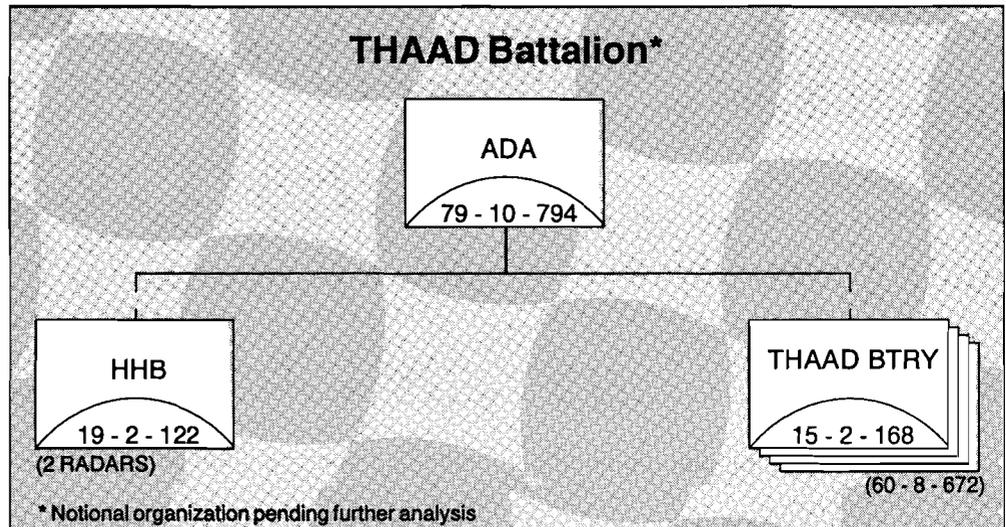


Corps SAM and THAAD will greatly increase ADA capability against a variety of air threats, including tactical ballistic missiles.

— Gen. Frederick M. Franks,  
TRADOC Commander

The world is making a transition to a condition where multiple centers of military power and economic power exist. This multipolarity is likely to be less predictable, less stable and perhaps a bit uncomfortable while we adjust to new rules of the international arena. There are dangerous trends as well, such as the proliferation of sophisticated weapons, including tactical ballistic missiles and chemical and nuclear weapons.

— Gen. Gordon R. Sullivan,  
U.S. Army Chief of Staff



Although DoD may eventually invest more than \$6 billion to field THAAD, the program conforms to Secretary of Defense Dick Cheney's new strategy of acquisition austerity with production decisions delayed until the end of prototype testing. ADA combat developers, working in light of today's new threat scenarios, expect to resource two THAAD battalions.

"If the prototype delivery schedule is met, a provisional THAAD battalion will be organized in 1996 at Fort Bliss to test the system prototypes," said Lt. Col. Frank Caravella, chief of Force Development, Directorate of Combat Developments, U.S. Army ADA School. "The provisional battalion, with 305 soldiers, will be less than half the size of the projected 883-man TOE [table of organization and equipment] THAAD battalion. The provisional battalion will fall under the command of the 6th ADA Brigade, Fort Bliss, Texas, a TDA [Table of Distribution & Allowances] unit that serves as the ADA School's training unit. Since the contract requires us to deploy the THAAD prototypes in case of crisis, the battalion will work and train closely with the 11th ADA Brigade, a Fort Bliss Forces Command unit.

"We expect to begin training a THAAD cadre to form the nucleus of the provisional battalion at Fort Bliss during late 1995," Caravella said. "MOS requirements and issues of personnel allotments are still under study. Many soldiers will convert from ADA systems that are being drawn down into the THAAD battalions.

"We hope to equip the first battalion in 2001 and the second in 2002, but the program's high visibility and technological maturity might make it happen faster," he continued. "The urgency is so great that TRADOC [U.S. Army Training and Doctrine Command] has asked us to present a THAAD TOE design for approval in mid-November."

The Lockheed team beat out contractor teams led by Hughes and McDonnell Douglas to win the coveted THAAD contract. "We are extremely pleased with the announcement," said David Montague, president of Lockheed Missile & Space Company's Missile System Division.

"Lockheed is the only company to successfully intercept mock ballistic warheads outside the earth's atmosphere, first with the Homing Overlay Experiment in 1984 and again with the Exoatmospheric Re-entry Vehicle Interceptor Subsystem in 1991. Lockheed's team brings a tremendous amount of experience and expertise to the THAAD program and is looking forward to providing the Army and the country with this critical system."

"This was a team win all the way," said Tom McKenzie, the THAAD program manager with Lockheed Missile and Space Company.

"Lockheed has significant system capabilities and, with our team members, we came up with a design that met or exceeded all Army requirements, using proven technology to minimize program and cost risks."

The initial THAAD system design work will be done at Lockheed's Sunnyvale, Calif., facility with engineering efforts both at Sunnyvale and Lockheed's Huntsville, Ala., facilities. The Lockheed team has begun using Lockheed Missile & Space Company's System Integration Laboratory to test hardware and software for the missile, launcher, BM/C<sup>3</sup>I and ground-based radar components of the THAAD system. The laboratory allows designers to simulate all phases of a mission and prove system components before flight testing to reduce risk and control costs.

Lockheed also plans to build a THAAD missile processing facility on a recently acquired 1,000-acre site in the George C. Wallace Industrial Air Park, Courtland, Ala. The park was an Army Air Corps base in World War II. "The Air Park is ideally suited to our

needs, with its own runways and excellent access to local transportation routes," said Montague. At a time when defense-related industry jobs are disappearing by the thousands, Montague predicted the missile processing facility could generate as many as 200 jobs.

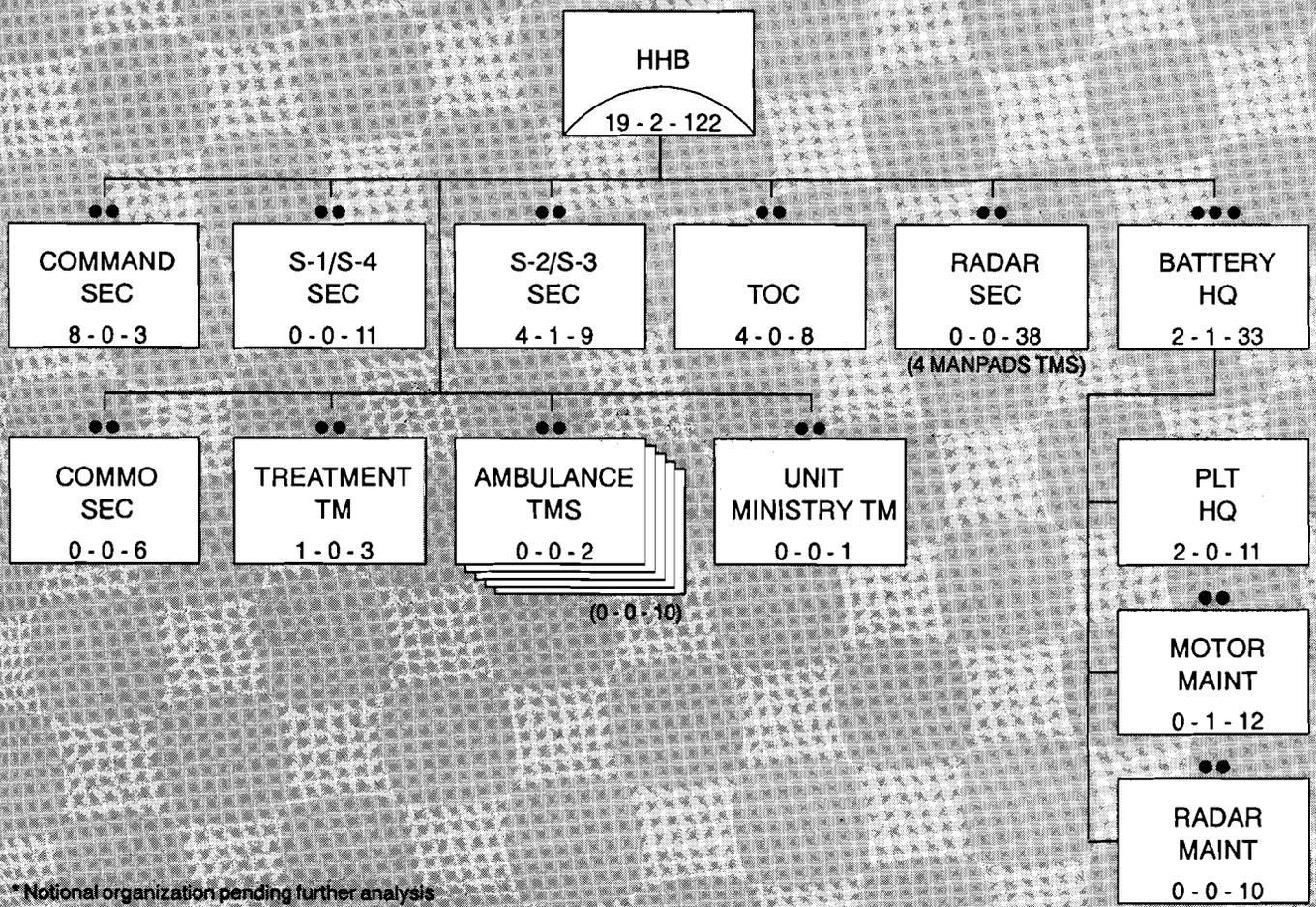
THAAD is the cornerstone of the Strategic Defense Initiative Organization's Theater Missile Defense Program. Today, it is one of several programs managed by Maj. Gen. William S. Chen, the Army Program Executive Officer, Global Protection Against Limited Strikes (GPALS). Col. Fred Kilgore is the GPALS THAAD project manager.

Most of the high-level THAAD acquisition work was accomplished by the Air Defense Artillery Program Executive Office (ADA PEO), headed by Brig. Gen. Robert

The Army's request for proposals (RFP) for the national missile defense Ground-Based Interceptor (GBI) is expected to be released shortly, after having been delayed by several weeks as Army and Office of the Secretary of Defense officials focused on selecting a contractor for the Theater High Altitude Area Defense program. Now that Lockheed has been selected for THAAD, the GBI RFP is expected to move quickly through OSD channels.

— Inside the Army

### THAAD Headquarters and Headquarters Battery\*



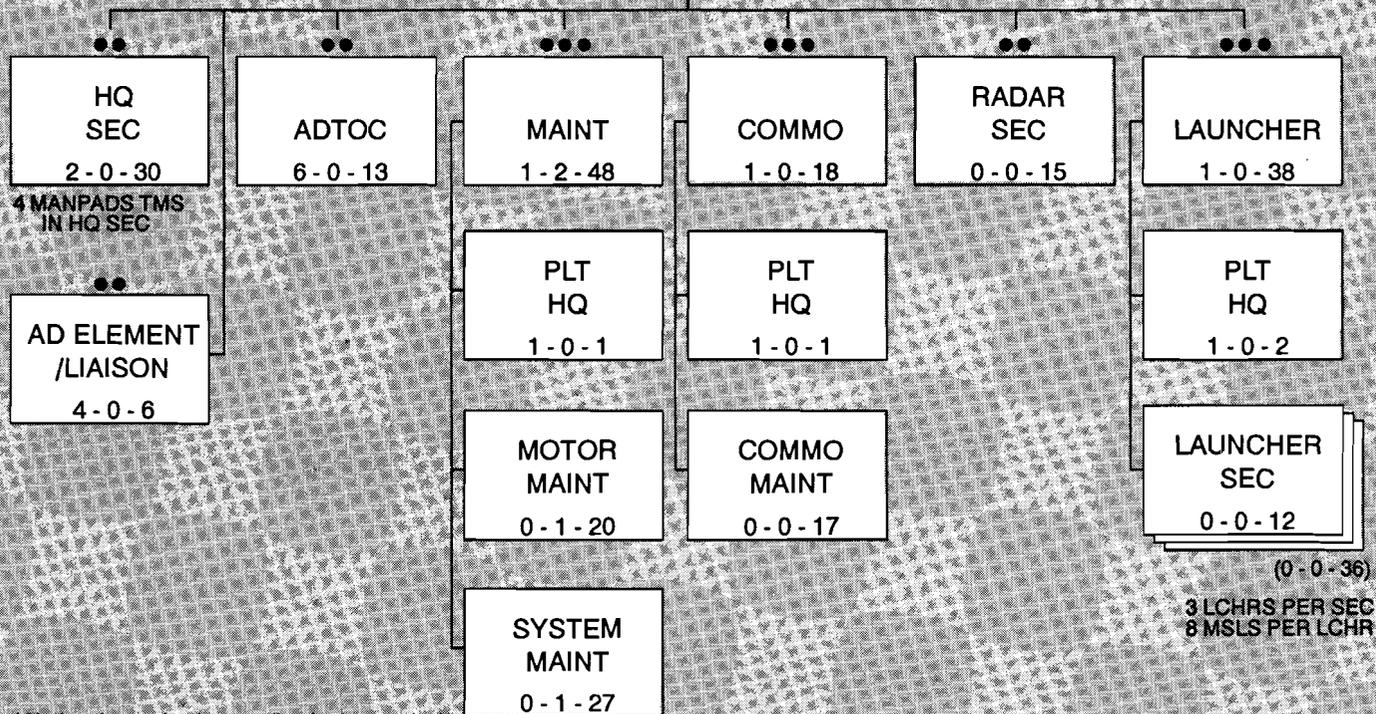
\* Notional organization pending further analysis

# THAAD Battery\*

185 PERSONNEL

THAAD  
15 - 2 - 168

1 RADAR  
9 LAUNCHERS  
72 MISSILES  
4 MANPADS TEAMS



\* Notional organization pending further analysis

One reason THAAD has attracted the interest — and investment — of so many contractors is that it is among the least controversial of the Strategic Defense Initiative programs. While there is still considerable skepticism about “Star Wars” and the need to field a space-based shield against missile attacks on the United States, Saddam Hussein’s Scud attacks last year provided a prime-time briefing on the need for battlefield missile defense.

— *Washington Post*

Drolet, prior to its dissolution in July. The ADA PEO’s anti-tactical ballistic missile and national missile defense functions and personnel were integrated into the newly created GPALS PEO. Other programs formerly managed by the ADA PEO, including Avenger and air-to-air missiles, were absorbed by the newly created Tactical Missile PEO.

Col. Alan Hasbrouck led an Anti-Tactical Missile Defense/High- to Medium-Altitude Air Defense Special Working Group that was assembled at Fort Bliss, Texas, to ensure THAAD requirements were carefully integrated with complementary weapon and C<sup>3</sup>I systems. Working under intense pressure and short deadlines, the Special Working Group put together an enormously complex jigsaw puzzle, carefully and tediously integrating the requirements for each of the components that will one day comprise our

theater high-altitude air defense system of systems.

Hasbrouck’s key players included his deputy, Lt. Col. J.R. Limones, and team leaders Lt. Col. Sam Krug (Analysis), Col. Jeff Ellis (Patriot PAC-3), Lt. Col. Gary Wilson (High-Altitude Theater Missile Defense), Lt. Col. Bruce Carleton (Corps SAM) and Col. Chuck Ronald (BM/C<sup>3</sup>I). The Special Working Group was disbanded in June after system operational requirements documents were completed.

Air defenders have dreamed of devising an effective defense against tactical and intercontinental ballistic missiles since the first Nazi V-2 rocket impacted in London during 1944. Patriot’s successful Gulf War intercepts were the beginning of that dream. The fielding of THAAD and the national missile defense ground-based interceptor will be the dream’s full realization.

# ARMY AWARDS CORPS SAM CONTRACTS

*Six industry teams working to define missile characteristics*

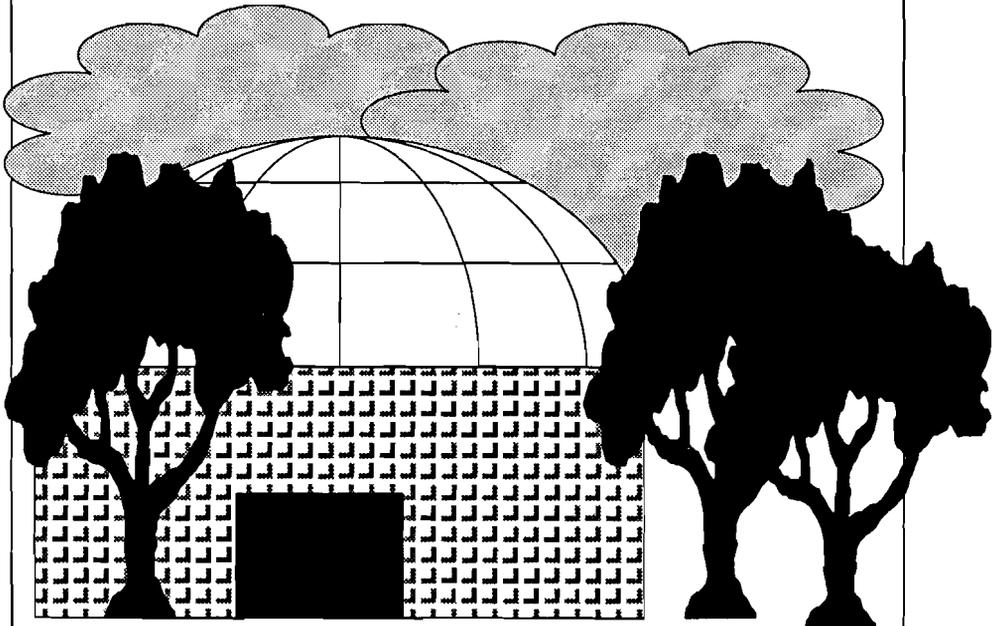
The U.S. Army has awarded \$2.5 million contracts to six industry teams working to define options for the Corps Surface-to-Air Missile (Corps SAM), a highly mobile, rapidly deployable air defense system scheduled to replace Hawk in the ADA arsenal. The industry teams are headed by British Aerospace, London; Hughes Aircraft Co., El Segundo, Calif.; Lockheed Missiles and Space Co., Sunnyvale, Calif.; Loral Vought Systems Corp, Dallas; Martin Marietta Corp., Bethesda, Md; and Raytheon Co., Lexington, Mass.

Projected 21st Century airborne threats and the shortcomings of current air defense systems against those advanced systems establish materiel need for the Corps SAM system and provide the framework for system concept exploration/definition and cost, schedule and performance tradeoffs. The Army expects the recently awarded Corps SAM contracts to generate innovative operational and technical approaches that will give Corps SAM an optimum mix of operational and performance capabilities.

Corps SAM will be forward deployed or deployed from within the continental United States for contingencies in mature and non-mature theaters around the world to support unilateral U.S. operations or coalition warfare. The U.S. Army Air Defense Artillery School, Fort Bliss, Texas, released a Corps SAM operational requirements document in August 1991. The operational requirements document places a high premium on strategic deployability

and tactical maneuverability and emphasizes the need to minimize required manpower while maintaining effectiveness through personnel integration. The Defense Acquisition Board will review Corps SAM proposals next July. The Army hopes to award Corps SAM demonstration

and validation contracts in mid-1994. Corps SAM acquisition and funding management has shifted from the recently abolished Air Defense Program Executive Office to the newly created Global Protection Against Limited Strikes Program Executive Office.



## MTS/STPT FUNDS APPROVED

*Modifications will improve training realism*

Despite drawdown budget cuts, the U.S. Army Air Defense Artillery School, Fort Bliss, Texas, has obtained funds to improve Stinger training realism and effectiveness.

In July, the Air Defense Program Executive Office, Redstone Arsenal, Ala., released Improved Moving Target Simulator (IMTS) funds to upgrade at least eight of the Army's 11

MTSs. Housed in large domes, the MTS, developed by AAI Corp., attains realism through the use of audio and video representations of moving aircraft against a large simulated landscape. Students use Stinger launcher replicas called tracking head trainers to track targets and simulate Stinger engagements. IMTS

*(Digest continued on page 23)*

## 50th WWII Commemoration

# Forged in Battle

## *The Victory Plan of 1941 created World War II's Antiaircraft Command*

by Hubert L. Koker



In launching war, the Germans and Japanese had pushed the world over the watershed into a new age, outside their or anyone's control, full of marvels and unspeakable horrors.

— Paul Johnson,  
*Modern Times*

Antiaircraft artillery is a new arm. It is added to the military team, but the older members of the team tend to see only that their proportion of the forces is reduced and resist it. For the same reason, air increases have been resisted. Soldiers have known that the air force must be added to the defense forces, but resisted a reapportionment of available funds that appeared to be to their own detriment. The air force that we all admit we need was forced on the Army by popular demand and congressional action, however little we like to admit it. The antiaircraft artillery is in the same category. It is incredible to the older arms that this upstart should need more men and money than they are allowed. But this is just as certain to happen as the air corps expansion which already has taken place. With the development of the airplane must come protection against it. Every increase in our own air force is a signal that an increase is needed for antiaircraft defense.

— Maj. Thomas R. Phillips,  
*Coast Artillery Corps, 1940*

“Caught with a mere semblance of an army in 1917, our available forces had to be increased by a hundredfold with no trained men to fill our ranks and with resources still further unready,” warned Gen. John J. Pershing. “We were placed in a much discouraging dilemma. Our officials scarcely knew which way to turn. There was no plan to meet the problem and confusion reigned supreme . . . The same thing,” he warned, “will occur again unless we plan otherwise.”

Despite the warning, the Japanese attack on Pearl Harbor on Dec. 7, 1941, caught the United States unprepared, but the nation did, at least, have a plan. Drafted by anonymous War Department staff officers led by an unheralded major named Albert C. Wedemeyer, the Victory Plan of 1941 became the U.S. engine of victory, a document as decisive as Midway, Stalingrad or El Alamein.

“The Victory Plan predicted the future organization for an army that did not yet exist, outlined combat missions for a war not yet declared and computed war production requirements for industries that were still committed to peacetime manufacture,” explains ADA Maj. Charles E. Kirkpatrick in *An Unknown Future and a Doubtful Present: Writing the Victory Plan of 1941*. “It did all this with remarkable accuracy, considering that the intentions of the United States government were anything but clear in 1941. Very few staff papers have ever had its prescience, its impact or its far-reaching consequences. Fewer still have dealt so concisely, yet comprehensively, with grand strategic concepts.”

Adhering to the Victory Plan, the United States raised its war production to the total of all three Axis powers together by the end

of 1942, the first year of the war, and by 1944 had doubled it again. The Army mustered barely 150,000 soldiers during most of the 1920s and 1930s and, by mid-1940, had attained a strength of just more than 500,000. Forty-eight months after the attack on Pearl Harbor, however, the Army numbered eight million men with equipment second to none.

Antiaircraft artillery was to become one of the prime beneficiaries of the Victory Plan, whose authors were not oblivious to the havoc wrought by German close combat support aircraft and strategic bombers on the continent. "Thinking small in terms of anti-aircraft defense for so many years has resulted in almost no defense," complained Coast Artillery Corps Maj. Thomas R. Phillips in 1940. Yet by the end of the war, the U.S. Army's new Antiaircraft Command had created, equipped and trained so many AA regiments that Allied commanders regarded them as manpower reservoirs and often siphoned off their personnel for other combat roles.

The priority allotted to the building of a strong AA force was remarkable considering the scant attention paid it during the decades leading up to World War II. The United States had organized 10 antiaircraft artillery and six antiaircraft machine gun battalions in World War I. But the war was soon over, and by May 1919 the antiaircraft artillery (AA) service in the United States and overseas had ceased to exist.

The National Defense Act of 1920 formally assigned the air defense mission to the Coast Artillery Corps, and token antiaircraft units were organized in the Regular Army and the Organized Reserves. Lean budgets for almost two decades prohibited equipping and expanding antiaircraft units until 1937, when the War Department gave top priority to modernization of existing AA guns and fire control equipment.

Congress took the first significant step toward improving AA when the allotted three-inch AA guns were increased from 135 to 472, enough to equip 34 mobile AA regiments. However, the Army had only five skeletonized regiments in the U.S. and most of its three-inch weapons were installed as fixed guns in harbor defenses. The new plan promised to provide enough weapons by the summer of 1940 to give at least some protec-

tion to military installations and industrial areas along the coasts.

As the war started in Europe, an antiaircraft study forecast an initial need for 87 battalions of three-inch or larger antiaircraft guns, and 57 battalions of 37mm automatic weapons guns for continental coastal defense. This estimate was the equivalent of 72 AA regiments for continental defense, in contrast to 30 regiments allocated under the Protective Mobilization Plan of 1933. By the autumn of 1941, the Army actually had 37 AA regiments and nine separate gun battalions in service in the continental United States. One regiment was on a war footing, but the rest lacked training, equipment and ammunition. The War Department allotted 18 AA regiments for continental defense, but due to weapons and ammunition shortages, it did not expect any units would be fully operational before the summer of 1942.

Harbor Defense Coast Artillery was the principal defense of the Panama Canal. The existing system of fixed antiaircraft batteries lacked sufficient depth and mobility to offer an effective defense against high-speed, high-altitude bombers. In January 1939 Congress authorized additional troops and provided the funds necessary to strengthen the Canal's defenses. The 6,580 coast artillery troops in the Zone were subsequently reorganized into two AA and two harbor defense regiments, with one of each type at each end of the canal.

The United States had first garrisoned Oahu in the Hawaiian Islands during the war with Spain. During the years following World War I, and despite the limited military budget, formidable coastal defenses were constructed to protect the Pearl and Honolulu harbors. These coastal defenses were the first to receive air defenses when the 41st Artillery was organized there in 1921.

The War Department, concerned over the aggression of Japan, reinforced Oahu in 1940. Troops were sent to man antiaircraft artillery guns already there, and the 251st AA Regiment, the first National Guard unit to leave the continental United States for overseas duty during World War II, also arrived to bolster the island's defenses. By September 1941, 84 mobile and 26 fixed three-inch guns, 144 of the newer 37mm automatic weapons, and 516 .50-caliber anti-

They have attacked us at Pearl Harbor. We're all in the same boat now.

— Franklin D. Roosevelt  
in a Dec. 7, 1941,  
telephone conversation with  
Winston Churchill



I thought of a remark which Edward Grey had made to me more than 30 years before — that the United States is like "a gigantic boiler. Once the fire is lighted under it there is no limit to the power it can generate." Being saturated and satiated with emotion and sensation, I went to bed and slept the sleep of the saved and thankful.

— Winston Churchill,  
Dec. 7, 1941

The current war — so much aerial — has confirmed definitely that anti-aircraft is a vital form of defense, not only of ground establishments, but of ground combat units as well. Our anti-aircraft strength of 1943 will be double that of 1942.

— Gen. Lesley J. McNair,  
CG, Army Ground Forces



We have a job to do that dwarfs anything ever before undertaken by this country. In the last world war our armies were equipped and armed by our allies. This time it is the other way 'round. We must equip and arm our own Army, and we must help in equipping and arming the armies of our allies. That is the size of our task. Our big job will be on the fighting front where we will have American soldiers the equal of any fighting men in the world. Our other big job is on the home front, where we must produce the machines and guns which will enable our soldiers to gain victory in battle.

— Robert P. Patterson,  
Undersecretary of War, 1942

aircraft machine guns were allotted for Oahu. Further, the department had four AA regiments on Oahu and was scheduled to receive a fifth before the end of 1941. Three of the four regiments present were at half strength, and the equipment on hand was 60 mobile and 26 fixed three-inch guns, 109 anti-aircraft machine guns and 20 37mm automatic weapons.

The 37mm guns had been in Hawaii for almost 10 months before ammunition for them arrived on Dec. 5, 1941. Ammunition was so limited for the anti-aircraft machine guns that firing practice was out of the question. Half of the mobile three-inch guns were located on private property and the crews carefully kept from trespassing. Except during practice, crews were billeted some distance from their battle stations.

The possibility of advance warning was dubious. Three of the Anti-aircraft Warning Service's six fixed detectors had not arrived and the other three were in the process of installation. Six mobile sets were on hand, but in service for only a few hours of each day. Five of these sets were out of service on the morning of Dec. 7. The sixth detected the approach of enemy aircraft, but the warning it relayed was never received by higher headquarters.

The anti-aircraft artillery defenses in Hawaii never got the advance warning they needed, so most of the Army's anti-aircraft guns were out of action during the Japanese air attack that began at 0750, Dec. 7, 1941. None of the mobile three-inch batteries were in position. The Hawaiian Coast Artillery Command alerted 53rd Coast Artillery Brigade (AA) units at 0810, and within three or four minutes, AA batteries at Fort Kamehameha (next to Hickam Field and Fort Weaver on the other side of the Pearl Harbor entrance) opened fire with small arms.

At 0830 a fixed three-inch battery at Weaver began to fire, and similar batteries at Kamehameha and on Sand Island in Honolulu Harbor opened up; the Sand Island battery claiming two planes shot down. Other AA units at Camp Molekoi and Schofield Barracks fired only small arms at the enemy. The Schofield unit claimed two planes: one Japanese and one American. Unfortunately, only a small fraction of the Army's anti-aircraft potential was brought into play on that

fateful morning, so its contribution when it was needed most was insignificant.

The next day, Japanese planes bombed American airfields in the Philippine Islands. Their primary target was Clark Field, protected by gun batteries of the 200th Coast Artillery (AA), a New Mexico National Guard unit that arrived in the Philippines three months earlier. The attack came as a complete surprise and little opposition was offered by the defenders. The 200th Coast Artillery (AA) experienced considerable difficulty with its three-inch ammunition, the most recent of which had been manufactured in 1932. Only one out of every six rounds fired actually exploded.

Prior to the arrival of the 200th Coast Artillery (AA), the only anti-aircraft artillery in the Philippines consisted of several batteries of the 60th Coast Artillery (AA), which was responsible for the defense of the Manila Bay area. Both regiments were equipped with three-inch and 37mm guns, .50-caliber machine guns and 60-inch Sperry searchlights. In late November several batteries from the 91st Coast Artillery were converted to anti-aircraft and once the shooting started, elements of the 200th Coast Artillery (AA) protecting Manila were reorganized as the 515th Coast Artillery (AA). Three additional AA regiments scheduled for the Philippines in November never arrived.

On Dec. 11, 1941, the western coast of the United States was declared a theater of operations by the War Department and immediate steps were taken to beef up its anti-aircraft defenses. When the war started, there were five AA regiments assigned to that area. They all lacked two-thirds of their equipment. Seattle had one three-inch gun and one automatic weapons battery; San Francisco, an AA brigade; and Los Angeles, an AA regiment.

All of these cities, and many others whose citizens worried their hometowns might be targeted, began clamoring for more protection. Within a week, nine additional AA regiments were rushed to the west coast from various parts of the United States, and with some assistance from Marine Corps units, the vital installations in the Seattle, Portland, San Francisco, Los Angeles and San Diego areas were provided with some AA protection.

Another 15 AA regiments were concentrated on the east coast. Until January 1944, the number of regiments engaged in continental defense remained approximately the same, between 24 and 32.

AA units were among the first troops sent to Australia for defense against the threat of Japanese invasion. The initial force consisted of two AA brigade headquarters, one mobile and two semi-mobile AA regiments and three separate semi-mobile AA battalions. All except the mobile regiment were National Guard. The mobile AA regiment was newly activated and officered by newly called-up reserve officers. The battalions had just completed their first record fire and were issued new and untried equipment at the port of embarkation.

Shortly after landing, the 102nd Antiaircraft Automatic Weapons Battalion participated in the first airborne movement of an antiaircraft artillery unit under combat conditions. Using Dutch, Australian and American airplanes of all types and sizes, the battalion was flown from Brisbane to Port Darwin. In May, the 101st Antiaircraft Automatic Weapons Battalion was sent to New Guinea to protect Port Moresby. The remaining units were positioned at strategic points on the threatened Australia mainland.

A continuous state of alert was maintained. The few antiaircraft troops available did not permit withdrawing any units for training. Such training as existed was done at the guns while they were in combat position. Unit schools were conducted and "instructor" schools were attended by battalion representatives who went back and trained their own organizations.

The 37mm antiaircraft gun was replaced by the 40mm Bofors early in 1942. Units received the new guns and ammunition but no training manuals. Officers, coordinating with Australian gunners familiar with the Bofors, developed a training manual of their own and the guns were operating against Japanese planes before the official publications reached the theater.

As 1942 began there was no longer a shortage of either personnel or money. But time was of the essence as the United States tried to meet its worldwide commitments. Shortages continued to exist in various types of equipment: there were only 1,100 antiair-

craft guns available at the time and thousands more would be needed to meet the needs of the rapidly expanding Army. In January the President informed Congress that among other things the United States needed to produce 55,000 antiaircraft guns during the next two years. That goal was almost met: by September 1945 there were 46,700 antiaircraft guns in the hands of the armed forces.

In May, the United States took steps to protect its South Pacific lines of communication by garrisoning a number of key islands along that route. In addition to the three AA regiments and three AA battalions in Australia, AA regiments were sent to New Caledonia, Bora Bora and Tongatabu.

After the battle of the Coral Sea and the landing of the Japanese at Buna, it was evident that New Guinea was to be a major battlefield. Port Moresby was the main operational base of the Fifth Air Force and antiaircraft artillery defense of the area was needed; however, the invasion of Australia was still a threat. Thus, another expedient, that of the composite battalion (consisting of a single gun battery, two automatic weapons batteries and a platoon of searchlights) was developed for use in major operations. At this time the primary mission of the antiaircraft was the defense of landing strips against enemy air attack. The defense of supply installations had second priority.

After the battle for Buna ended in December 1942, Allied forces in the Southwest Pacific area grasped the initiative. AA defense of beachheads, installations and perimeters was recognized as a necessity in every assault operation and AA units were included in every task force: Goodenough Island, Lae, Arawe, Manus, Hollandia, Biak and Morotai, as well as Leyte, Luzon and other islands in the Philippines.

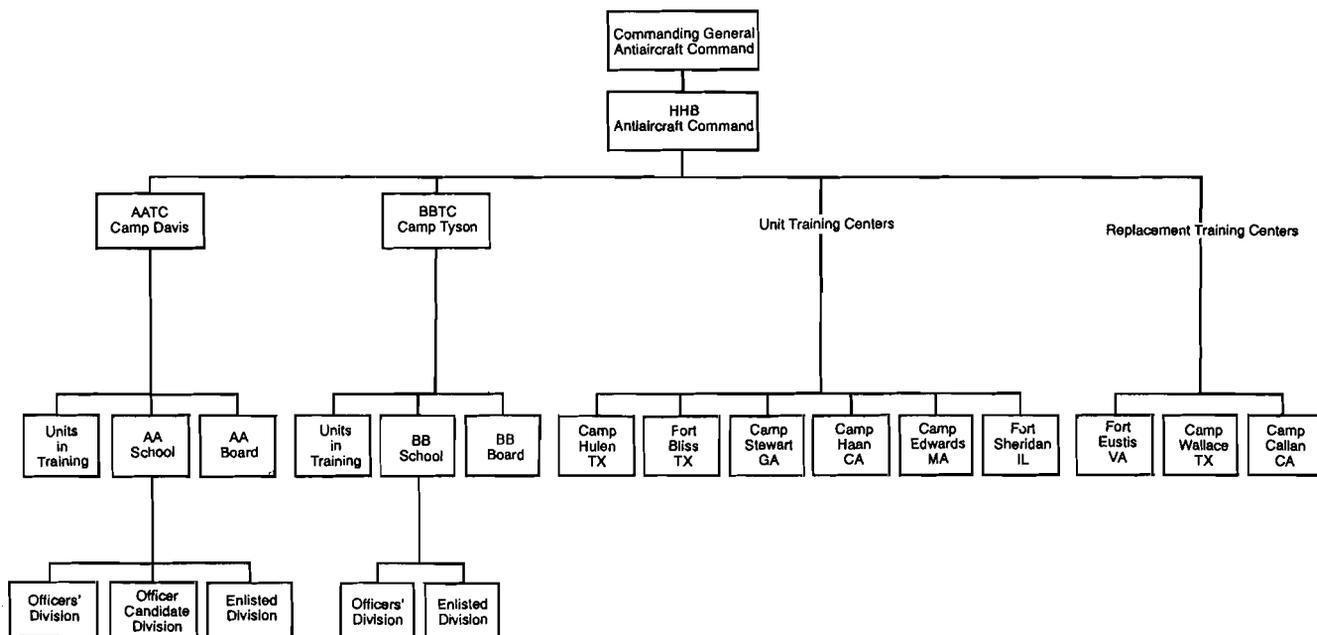
Farther east, in the South Pacific area, AA units at Guadalcanal, Bougainville and on the Green Islands were in action against the Japanese and faced the same privations, the same shortages of men and equipment as AA artillerymen in New Guinea.

In Spring 1942 a new table of organization and equipment added a searchlight battalion to each regiment. This battalion was authorized 36 searchlight units and 36 multiple-carriage .50-caliber machine guns.



Hitler's understanding of America's commitment to the war was almost exactly contrary to the truth. Isolationism was certainly a powerful force in American politics before December 1941, while America's parents remained naturally reluctant to see their sons depart to a foreign war up to the moment of Pearl Harbor. Few Americans, however, objected to the measures of rearmament enacted in 1940, which doubled the size of the fleet, allocated funds for an air force of 7,800 aircraft — three times the size of the Luftwaffe — and increased the size of the Army from 200,000 to one million men, to be raised by conscription. When war came, moreover, the nation reacted enthusiastically. The sense of being "out of things" had waxed powerfully in the United States during the 18 months of the Blitz and the Battle of the Atlantic; so too had hostility to Hitler, as a paradigm of everything for which American civilization stood. As in Europe in 1914, the coming of war was ultimately almost a relief, since Americans had been oppressed by indecision and inactivity and were untroubled by any fear of defeat.

— John Keegan,  
*The Second World War*



We have secured a basis for unity of action as to strategy, operations, shipping, materiel and virtually every phase of this warfare, in a manner without precedent in history . . . the way will be far from easy, the losses heavy, but the victory certain.

— Gen. George C. Marshall

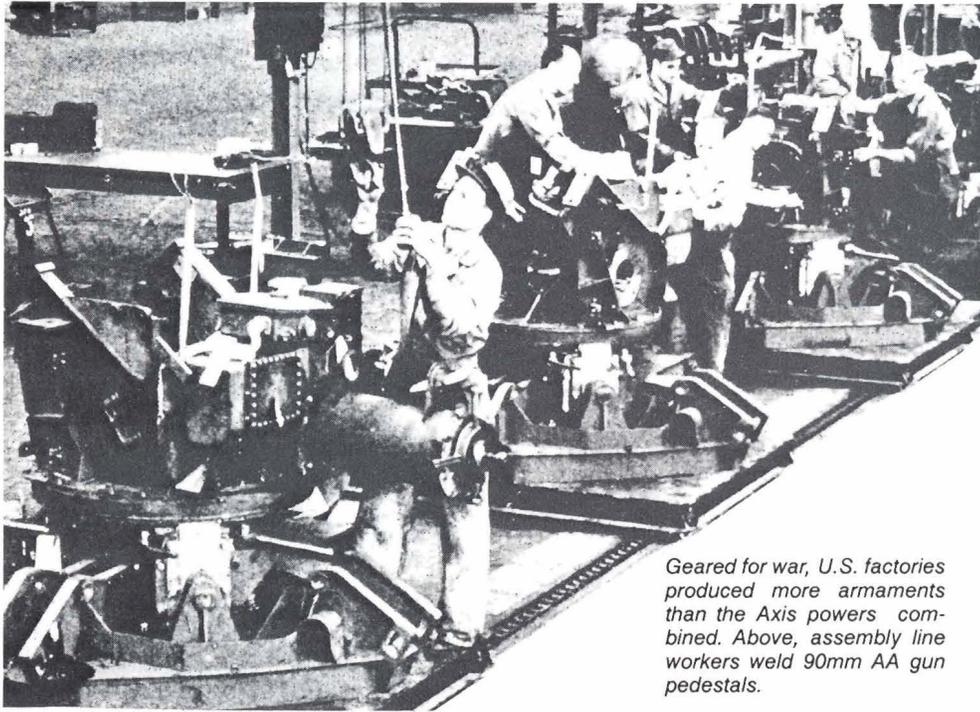
In addition to searching the skies for enemy aircraft, anti-aircraft searchlights provided beacon lights for friendly aviation and illuminated battlefields for ground action. Pairs of searchlights, placed at intervals of from 1,000 to 2,000 yards, could cover an entire division front with “artificial moonlight.”

To provide the enlisted personnel required to fill units being activated or brought up to war strength, several Coast Artillery Replacement Training Centers began operation during March 1941. However, they only provided cadres and replacements for unit losses. The normal method of filling newly activated units was to assign inductees directly to units from reception centers. Basic training was given them after they had joined their unit.

Effective March 9, 1942, the Anti-aircraft Command came into being as an agency with command functions under the Headquarters Army Ground Forces, which had

been created at the same time. Its primary mission was to control the development of anti-aircraft equipment and doctrine and supervise the training of its enlisted men and officers. The AA Command possessed a service school at Camp Davis, N.C., and commanded all anti-aircraft units in the United States except those in defense commands.

The AA Command was hampered in its supervision over training by the wide dispersion of its training centers and by the large number of units it had to train. Because of this, the Anti-aircraft Command failed to regularize and stabilize its training policies to the degree achieved by most other elements of the ground forces. A limited system of inspections was adopted by the Anti-aircraft Command; however, no standard test at the close of unit training, similar to those given in other arms, was developed. The Army Air Forces, which controlled the aviation on which the Anti-aircraft Command was dependent for realistic training, could not sup-



*Geared for war, U.S. factories produced more armaments than the Axis powers combined. Above, assembly line workers weld 90mm AA gun pedestals.*

ply all the tow-target missions that were urgently needed in 1942. Units shipped overseas with only a minimum of proficiency with their weapons and no combined training with other ground arms or with aviation. Throughout 1942 it was usual for antiaircraft battalions to reach combat stations after only 12 weeks of unit training and with individual members, who because of personnel turnover had even less.

At the beginning of World War II it was customary to assign AA regiments to three levels: corps, army and general headquarters. For example, an AA brigade was assigned to an army and an AA regiment was assigned to each corps. However, the fixed regiment lacked the flexibility to meet the wide assortment of antiaircraft missions that existed during the war. The weapons were seldom used together in the proportion in which they were organized in the regiment.

On Dec. 24, 1942, permission was granted to reorganize AA regiments into separate gun, automatic weapons and searchlight battalions and activate group headquarters at a ratio of one to each four battalions. The group differed from the regiment in that component battalions were attached instead of assigned as conditions dictated. Battalions dealt directly with the Army on administrative and supply matters. Group head-

quarters provided tactical control in combat and might have contained only a single battalion or as many as six battalions, although three or four were normal. For command over several groups, a brigade headquarters was provided, and more of them were organized in the antiaircraft artillery than in any other branch of the service.

The chief of staff transferred responsibility for development of barrage balloons from the Air Corps to the Coast Artillery in 1941. When the Coast Artillery took over the Army had three barrage balloon companies but only three balloons. Plans were developed during the summer and fall of 1941 to expand the barrage balloon force to 85 batteries, each flying 35 balloons, and use them only for continental defense.

Antiaircraft Artillery ended 1942 with 391 active AA battalions, and the force was rapidly growing toward the force envisioned by the Victory Plan. Indeed, once set in motion, the rate of growth was so explosive that, later in the war, once Allied air forces had achieved air superiority in both the European and Pacific theaters, U.S. commanders were to find themselves blessed with a surplus of antiaircraft firepower.

**Hubert Koker** is an ADA magazine editor and staff writer.

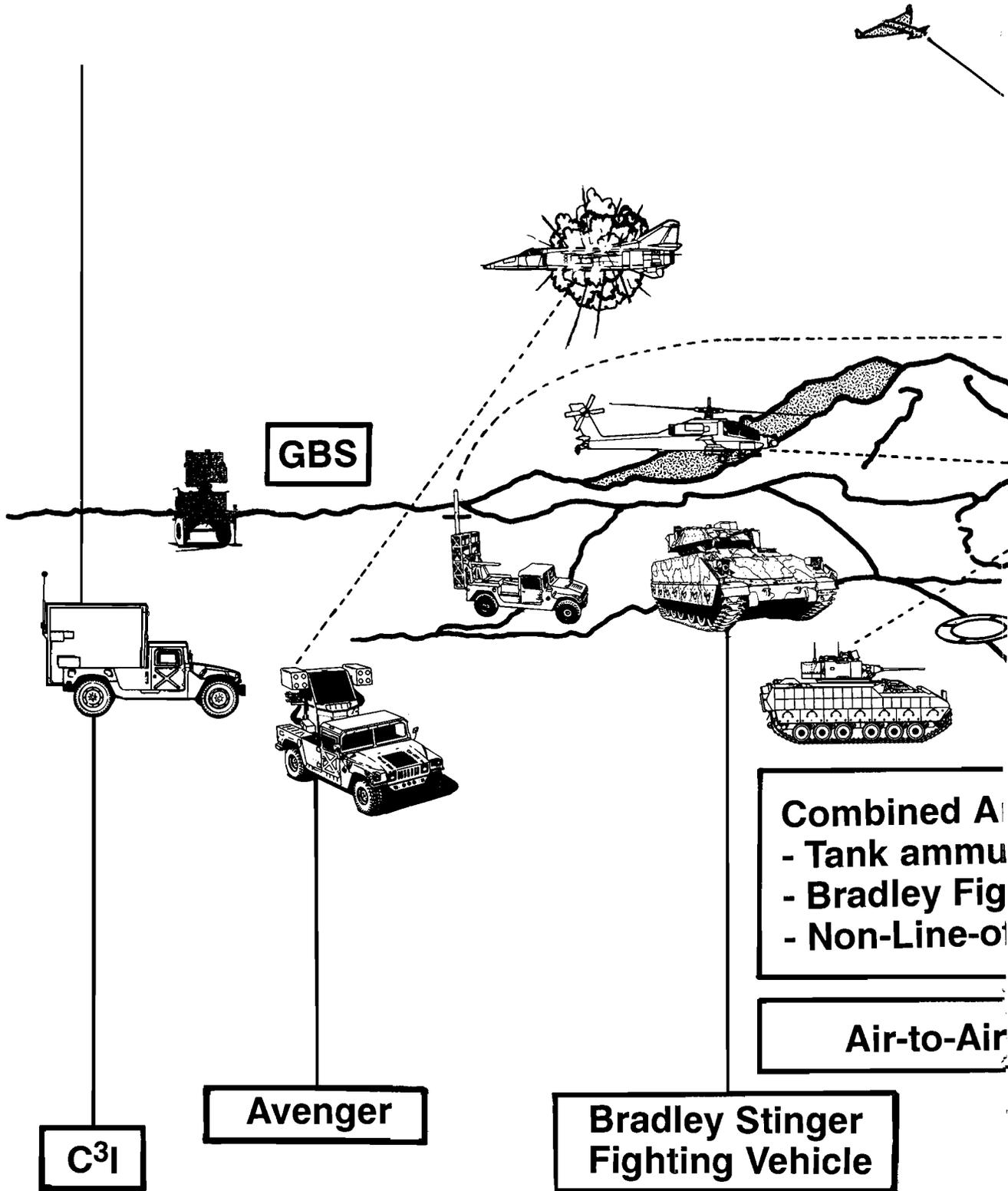
During 1942, when American forces were on the defensive throughout the world, blue star banners began appearing in windows across the nation. The banners, which had red borders edged with gold fringe at the bottom, contained a white shield with a blue star in the center for each service member in harm's way.

The banner's origin dates from the commercial practices of five-and-dime stores during World War I when a banner was sold to mothers and sweethearts who had a loved one serving overseas. During World War II, shops and businesses sold or gave away lapel pins, badges and other jewelry with variations on this same design. In addition, the practice of replacing the blue-star banner by one with a gold star on notification of a service member's death became commonplace.

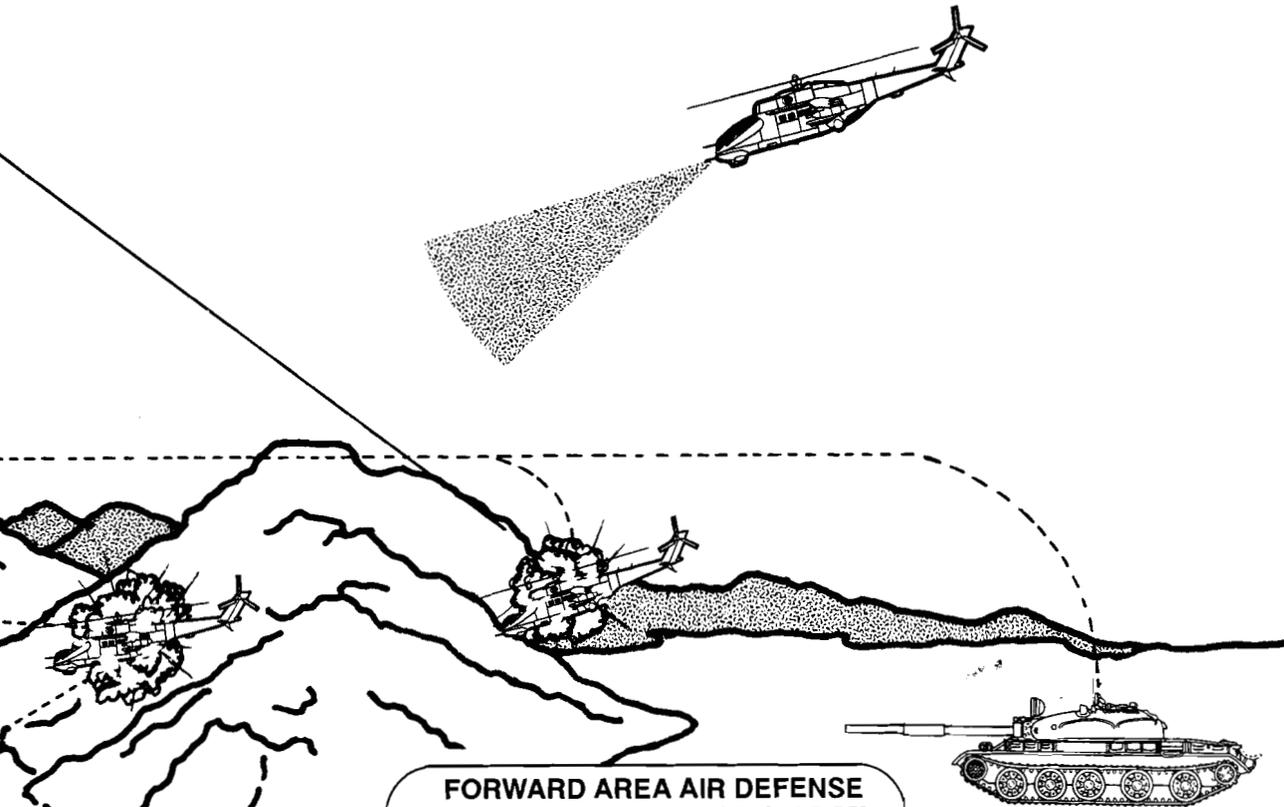
The blue star was the yellow ribbon of its day, the very visible symbol of patriotism and public support displayed by a nation determined to prevail over the Axis.

— *Military Review*

# ACQUISITION UPDATE



# ACQUISITION UPDATE



## FORWARD AREA AIR DEFENSE

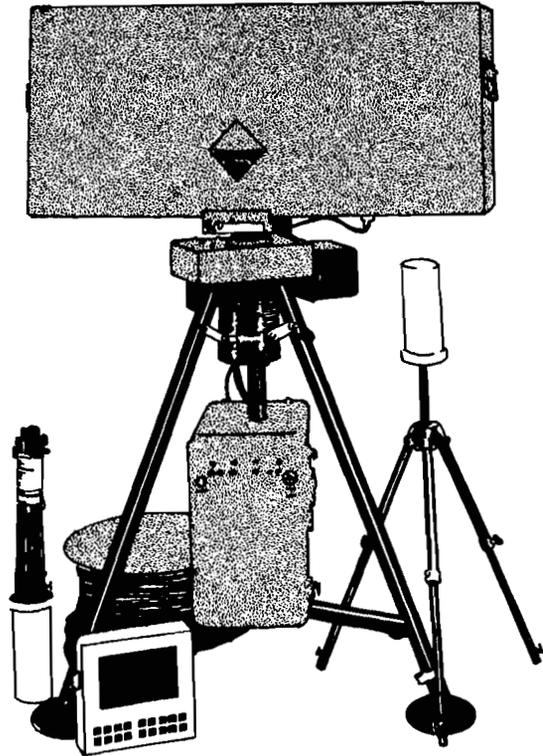
DESPITE THE CANCELLATION OF ADATS FUNDING, THE FORWARD AREA AIR DEFENSE (FAAD) SYSTEM'S LINE-OF-SIGHT FORWARD COMPONENT, AND THE RECASTING OF THE FAAD NON-LINE-OF-SIGHT COMPONENT AS A COMBINED ARMS RATHER THAN AS AN ADA WEAPON SYSTEM, THE FAAD SYSTEM CONTINUES TO MAKE GOOD PROGRESS TOWARD ULTIMATE FIELDING. BRADLEY STINGER FIGHTING VEHICLES WILL SERVE AS AN INTERIM REPLACEMENT FOR THE OBJECTIVE LINE-OF-SIGHT FORWARD (HEAVY) COMPONENT WHILE LIGHT AND SPECIAL DIVISION INTERIM SENSORS WILL SEE TEMPORARY DUTY UNTIL THE NEWLY SELECTED FAAD GROUND-BASED SENSOR CAN BE FIELDED. ADA LEADERS DESCRIBE THE EMERGING FAAD SYSTEM AS "NOT EXACTLY WHAT WE WANTED, BUT A LOT BETTER THAN WHAT WE STARTED OUT WITH."

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Stinger



# ACQUISITION UPDATE



## LSDIS

LOCKHEED SANDERS' LIGHT AND SPECIAL DIVISION INTERIM SENSOR (LSDIS) WILL PROVIDE EARLY WARNING TO FAAD WEAPON SYSTEMS UNTIL ITS REPLACEMENT BY THE OBJECTIVE FAAD C3I SYSTEM, FEATURING HUGHES' GROUND-BASED SENSOR, BEGINNING IN 1996. THE LSDIS PROPOSED FIELDING SCHEDULE APPEARS BELOW.

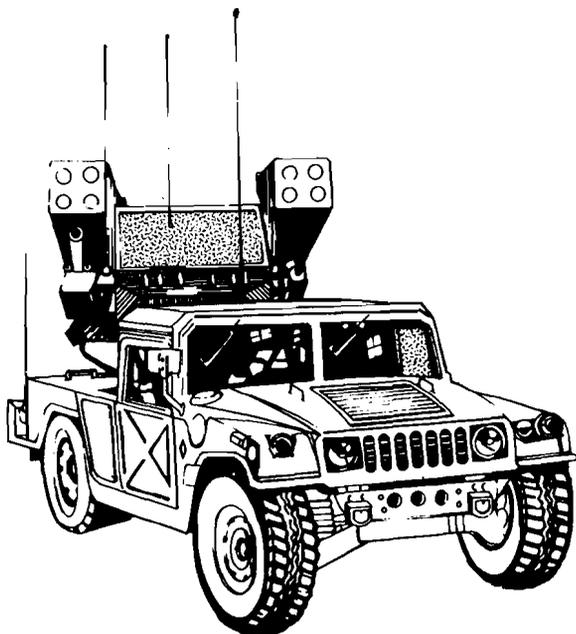
• TRADOC	4QFY92
• 2ND ID	2QFY93
• 7TH ID	3QFY93
• 82ND ABN	4QFY93
• 101ST AA	4QFY93
• 1-2 ADA	1QFY94
• 2-200 ADA	2QFY94
• 25TH ID	2QFY94
• 1-233 ADA	3QFY94

## STINGER RMP

THE STINGER REPROGRAMMABLE MICROPROCESSOR (RMP), A MORE FLEXIBLE VERSION THAN PREVIOUS MODELS, ALLOWS NEW COUNTERMEASURE DEVELOPMENTS OR GUIDANCE ENHANCEMENTS WITHOUT MISSILE MODIFICATIONS. FY90 DELIVERIES START IN OCT 92, WITH THE WESTCOM FUE IN JAN 93 AND THE ARNG FUE IN JAN 94.



# ACQUISITION UPDATE



## AVENGER

BOEING IS SCHEDULED TO DELIVER THE 300TH AVENGER FIRE UNIT IN OCTOBER. TO DATE, 225 FIRE UNITS HAVE BEEN ACCEPTED. THE AVENGER FIELDING HIGHLIGHTS ARE:

- PRODUCTION RATE AT 12 PER MONTH
- TOTAL OF 1,004 UNDER CONTRACT THROUGH FY95
- FIELDING TO 3D ACR, 4-5 ADA, 5-5 ADA AND 1-5 ADA
- FIELDING NEXT 12 MONTHS TO 1-2 ADA, 2-62 ADA AND 2-44 ADA
- FIELD ECU/PPU BY JAN 94

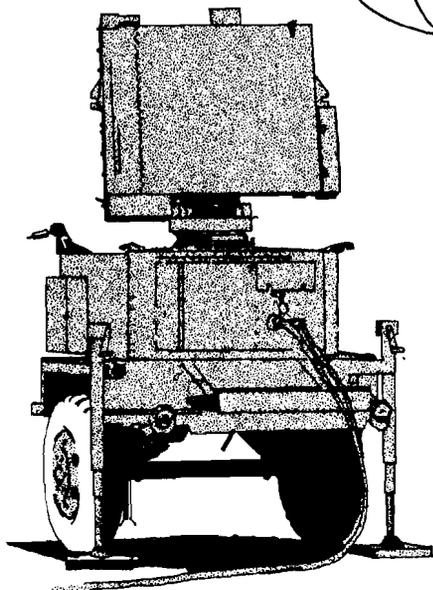
PRODUCT IMPROVEMENTS INCLUDED IN THE AVENGER ARE:

- HEAVY HMMWV
- ECU/PPU
- COMMAND, CONTROL AND INTELLIGENCE
- NON-COOPERATIVE TARGET RECOGNITION
- IMPROVED FIRE CONTROL COMPUTER
- ADJUNCT MISSILE (NON-INFRARED)

## GBS

HUGHES AIRCRAFT WAS AWARDED A FIRM FIXED-PRICE CONTRACT FOR PRE-PRODUCTION ON 28 FEB 92. LOW RATE INITIAL PRODUCTION IS SCHEDULED FOR AWARD IN AUG 94, AND A FULL RATE PRODUCTION CONTRACT AWARD IS SCHEDULED FOR MAR 95. FIELDING OF THE FULL-SCALE PRODUCTION SENSOR IS:

- 6 + 1 FLOAT PER ADA BATTALION FY96
- 2 + 1 FLOAT PER ARMORED CAVALRY REGIMENT FY96

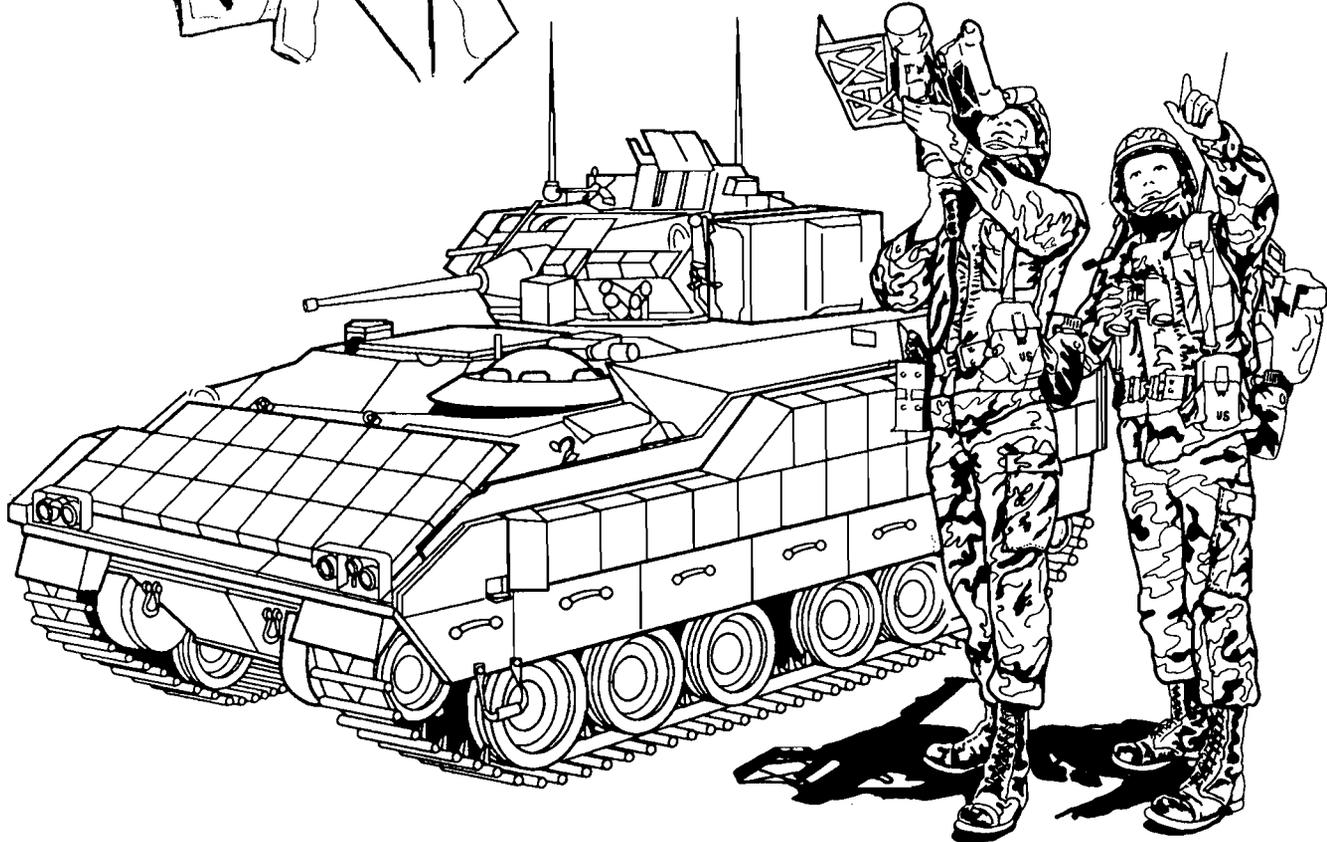


# ACQUISITION UPDATE

## BSFV

THE BRADLEY STINGER FIGHTING VEHICLE (BSFV) WILL SERVE AS THE INTERIM FAAD LINE-OF-SIGHT FORWARD (HEAVY) COMPONENT UNTIL FUNDING CAN BE OBTAINED TO DEVELOP, TEST AND FIELD THE OBJECTIVE SYSTEM. HERE ARE THE BSFV FIELDING HIGHLIGHTS:

- FIELD BSFV (267 FU'S) TO HEAVY DIVISIONS
- OCONUS: M-2A2 PRE-POSITIONED WAR RESERVE
- CONUS: M-3A0
- FUE FY92
- TOTAL PACKAGE FIELDING EXECUTED BY PM-BRADLEY
- PM-ATAM PROVIDING STINGER TECH SUPPORT
- INTERIM STINGER STORAGE/LOAD PLAN BEING DEVELOPED
- ENGINEERING DEVELOPMENT UNDERWAY TO PROVIDE MISSILE STORAGE RACKS NO LATER THAN FY93



improvements include friendly aircraft scenarios for antifraticide training and enhanced realism by modifying the tracking head trainer to make it more closely resemble the actual Stinger launcher.

The IMTS fielding priorities are three MTSs at Fort Bliss, Texas, and MTSs at Vilseck, Germany; Fort Bragg, N.C.; Fort Hood Texas; Fort Stewart, Ga.; and Fort Campbell, Ky. Next in priority are Camp Stanton, Korea; Fort Lewis, Wash.; and Schofield Barracks, Hawaii.

Also in July, the Air Defense Artillery School provided \$2.5 million to the Office of the Project Manager for Training Devices, Orlando, Fla., for pre-fielding modifications to the Stinger Troop Proficiency Trainer (STPT). Kollsman Military System Division developed the STPT, which consists of a Stinger with an attached sight unit that houses a video display.

As the gunner looks through the sight, a computer-generated image (CGI) appears on the video display. The display consists of a simulated background view overlaid with a CGI simulated target and sight reticle. The image is updated dynamically as the gunner moves the weapon, so that the image seen accurately reflects the gunner's motions. Aural and tactile cues are transmitted to the gunner via the Stinger weapon speaker and bone vibrator to enhance the sensation of realism.

During target engagement tasks, the computer monitors and evaluates the gunner's actions during the tracking and firing sequence and determines if a hit was scored.

The STPT instructor station permits an instructor to select training scenarios, monitor and evaluate the gunner's actions and performance, and replay a video that displays performance curves representing tracking errors, time on target and scoring.

## ARMY MISSILE COMMAND INACTIVATES ADA PEO

*Air Defense Artillery programs are transferred to newly created program executive offices*

The U.S. Army Missile Command, Redstone Arsenal, Ala., has inactivated the Air Defense Program Executive Office (PEO) and transferred its projects, functions and responsibilities to the newly created Global Protection Against Limited Strikes (GPALS) and Tactical Missiles PEOs. As part of the major reorganization, most of the soldiers and civilian employees who worked for the Air Defense PEO have been reassigned to the new organizations.

The new GPALS PEO absorbed the Theater High Altitude Area Defense (THAAD), National Missile Defense, Patriot and Corps SAM air defense programs. The new Tactical Missiles PEO absorbed the ADA PEO Avenger project and former Fire Support PEO projects including Javelin, Multiple Launch Rocket System, Army Tactical Missile System, Air-to-Ground Missile System, TOW Missile, Ballistic Aerial Target and Non-Line-of-Sight component. The purpose of the restructuring is to consolidate the management of systems with common technologies and contract bases and to encourage their effective integration on the battlefield.

As the first GPALS program executive officer, Maj. Gen. William Chen, formerly commander of the U.S. Army Missile Command, will report directly to the Army Acquisition Executive. The National Missile Defense components that will come under the new organization's control

include the Ground-Based Interceptor, Ground-Based Radar, Ground Surveillance and Site Development. Theater Missile Defense components include the Theater High Altitude Area Defense system, Patriot, Extended Range Interceptor missile, Corps SAM, Air Defense Test Bed and Arrow missile.

"It's a needed change, a healthy change, it's something we needed to do," said Brig. Gen. Robert Drolet, the former ADA program executive officer. "It's good for the Army, good for the soldiers. It's a necessary reorganization because we need to get the management of Theater Missile Defense and National Missile Defense centralized and organized under a central leader and central command."

He said that the former Air Defense PEO soldiers and civilians were looking forward to their reassignments to the new GPALS PEO because its mission will be essentially the same.

"It's the same mission as all the PEOs," he said, "to direct the programs, develop hardware and put hardware in the hands of soldiers — hardware that is cost-effective and performs to the needs of the users.

"The main emphasis on air defense in the near future," Drolet continued, "will be on theater missile work. Desert Storm highlighted the critical nature of protecting countries against tactical missile attacks."

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# ARMY STUDIES BEAM-RIDING STINGER

*New laser technology could double Stinger's range*

The U.S. Army Missile Command, Redstone Arsenal, Ala., is evaluating the possibility of improving the heat-seeking Stinger missile by converting it to a laser beam-riding missile with a new guidance system. According to Hughes Missile Systems Co., the system's prime contractor, the improvements could double Stinger's range and make it a more effective weapon against attack helicopters concealed by ground clutter at standoff ranges.

First fielded in 1981, the original version of Stinger was successfully combat tested in Afghanistan by Afghan guerrilla fighters. Today, ADA Stinger teams and Avenger crews are equipped with the new Stinger-RMP, or reprogrammable microprocessor, version.



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# TRW JOINS ARMY ASAT TEAM

*Firm will build system architecture*

The U.S. Army has awarded a \$12.2 million contract to TRW's Systems Engineering and Development Division to develop the system architecture for an antisatellite (ASAT) battle management and control system. U.S. Army Air Defense Artillery is the "proponent" agency for ASAT.

The ASAT program has been restructured to focus on technology development involving continued work on the control system and prototype interceptor. The Army expects to spend approximately \$25 million per year over the next four years, in addi-

tion to previously authorized funds, to take ASAT through the demonstration and evaluation phase.

The ASAT weapon system, as currently envisioned by ADA planners, will consist of a battle management and control system and a kinetic energy missile subsystem. The battle management system will continuously monitor target satellites to select the best way to destroy or disrupt them.

The Army selected Rockwell International in August 1990 as the prime contractor for the ASAT demonstration/validation phase. A

subsequent decision to eliminate ASAT funding was reversed and ASAT funding was restored when Operation Desert Storm dramatically demonstrated the importance of satellite surveillance in modern warfare. Gulf War analysts pointed out that the massive clandestine shift of coalition forces west along Tapline Road would not have gone undetected by Iraqi commanders had they had access to information beamed from orbiting surveillance satellites.

Based in Redondo Beach, Calif., TRW expects to complete the battle management system in late 1994.

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# TRW DELIVERS FAAD C<sup>2</sup> PACKAGE

*On schedule, under cost, exceeding user requirements*

Divisional air defense took a major step forward in September when the Army formally took delivery of the forward area air defense command and control (FAAD C<sup>2</sup>) Version 3 software and test system hardware. The Version 3 software is for light and special divisions; Version 4 software is for heavy divisions.

The FAAD C<sup>2</sup> system integrates ground and aerial sensors and provides digital data communications. It presents a consolidated divisional air picture to the division and air defense battalion commander and transmits target information to fire units in a matter of seconds. It will help commanders employ air defense assets more effectively and allow fire units to engage hostile aircraft earlier with less risk of fratricide.

The system has successfully completed all required contractor testing and will now undergo extensive in-field testing by the Army for verification of suitability for use by air defense soldiers. Fielding to light and special divisions is on target to begin by the end of FY93.

In 1986, the Army awarded a \$176 million contract to the software developer, TRW Inc. of Dominguez, Calif.

"At this office since 1986 we've been working on an automated command and control system," said Col. Dan Montgomery, project manager for Air Defense Command and Control Systems. "And today we stand on the doorstep of delivering to our Army units that automated capability. The program is on schedule, slightly under cost, while exceeding user requirements."



Fielding will begin next summer to the 7th Infantry Division, which is relocating from Fort Ord, Calif., to Fort Lewis, Wash.; the 101st Airborne Division (Air Assault) at Fort Campbell, Ky.; and the 82nd Airborne Division at Fort Bragg, N.C.

Version 4 fielding is expected to begin as early as spring of 1995. The

main differences between the Version 3 and Version 4 software are the communications equipment used to transfer data, the sensors and Version 4's ability to interface with high- to medium-altitude air defense units. Version 3 does, however, interface with the Airborne Warning and Control System.

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## "CHAPFIRE" KO'S TANK

The Army recently demonstrated a new mobile launcher capable of firing both Hellfire and Chaparral missiles. The "Chapfire" consisted of a modified Chaparral launcher mounted on a wheeled trailer. During the demonstration at White Sands Missile Range, N.M., one missile launched from the "Chapfire" scored a direct hit on a tank while a second downed a hovering helicopter.

Top gunners from A Battery, 4th Battalion, 200th Air Defense Artil-

lery, New Mexico Army National Guard, also fired Chaparral missiles against ballistic aerial targets, a jet-powered Streaker drone and a remote-controlled surrogate Soviet Hind helicopter.

The Army is seeking buyers for the Chaparral, which is being withdrawn from inventory. Nations present at the White Sands demonstration included Spain, Korea, Japan, Sweden, Taiwan, Saudi Arabia, Great Britain and Egypt.

## 3-43 ADA REDEPLOYS

*"Scudbusters" return to Southwest Asia*

In July of this year, the 3rd Battalion, 43rd Air Defense Artillery, Fort Bliss, Texas, returned to the Persian Gulf and quickly set up shop. By mid-July, the battalion's Patriot batteries were operational and prepared to perform their designated tactical ballistic missile defense mission.

Patriot units were redeployed to Southwest Asia shortly after the Gulf War, when a series of tense standoffs between U.N. inspection teams and Iraqi officials threatened to re-ignite hostilities.

Initially the Patriot units deployed from the 32nd Army Air Defense Command in Darmstadt, Germany. In July, 3-43 ADA replaced these units. In August, 3-43 ADA was augmented with B Battery and D Battery from 1-7 ADA in Kaiserslautern, Germany, as a result of increased tensions in southern Iraq.

"The resolve of our soldiers to accomplish the mission is remarkable," said Lt. Col. Martin W. Leek, 3-43 ADA commander. "They worked hard and long hours, and they did things the right way."

Leek expressed confidence in his battalion's ability to provide a highly effective defense. "The geographical separation of Patriot fire units exceeds doctrinally recommended configuration," he said, "but spans of control and logistical support, though stretched very thinly, are within acceptable levels for the near term.

"The morale of the soldiers is high, tactical and technical proficiency ex-



3-43 ADA Commander Lt. Col. Martin W. Leek unfurls the battalion colors in Saudi Arabia.

ceeds normal standards and a high percentage of the deployed air defenders are Desert Storm veterans," he continued. "Many of the deployed soldiers are serving their third tour of duty in the theater. As is stated by the TF 3-43 ADA motto, the 'Original Patriot Scudbusters' are 'Proud and Ready.' "

Chap. (Capt.) Leon G. Kircher said living conditions, despite 115-degree heat, sweltering humidity and constantly blowing sand, are better than those 3-43 ADA soldiers were forced to endure during their previous tour of duty in Southwest Asia.

"All is not heat, work and lack of sleep," Kircher reported. "Air-conditioned billeting is available at all locations. Upon arrival, most of the rooms had no furniture, including beds. But after determined resolve and innovation by the 3-43 ADA leadership, furniture was acquired.

Most areas have TVs and VCRs, and there is a satellite hookup that allows soldiers to receive a television signal from the Southern European Broadcasting Network. Extensive morale, welfare and recreational support manned by both the Army and the Air Force is in place. Sight-seeing tours are also sponsored.

"Morale is high among soldiers as they continue their mission here. Heat, long hours and many short nights are tempered by a desire of the leadership to provide soldiers with as much free time and as many off-duty activities as possible," he added.

"The difficult deployment conditions are also moderated by the high sense of mission each soldier carries. By carrying on the already proven spirit of the Army Patriot soldier, 3-43 ADA will continue to carry on this vital mission of defense here in Southwest Asia."

# ADA PARATROOPERS INVADE GERMANY

*Reciprocal unit exchange sends 3-4 ADA soldiers to Germany*

On July 23, 1992, SFC Gregory T. Allen and I landed at Frankfurt Airport, Germany, after a long flight from Fort Bragg, N.C. The airport was bustling with people from all over the world and the loudspeakers echoed in both German and English. Yet we two Americans seemed misplaced in a country rich in both art and history. In a sense, it was like another invasion by paratroopers of the 82nd Airborne Division.

As part of a U.S. Army Forces Command reciprocal unit exchange, two soldiers from the 3rd Battalion (Airborne), 4th Air Defense Artillery, were to travel to Germany and train with *Flugabwehrrregiment 12* (12th Air Defense Regiment), located in Hardheim, Germany. Hard-

heim is near Wurzburg, the headquarters of the U.S. 3rd Infantry Division. The *flugabwehrkanonenpanzer*, more commonly known as the Gepard (AAF), is this unit's weapon system.

As the air defense for a heavy division, the 12th Air Defense Regiment is comprised of two air defense command groups. These two command groups form two task forces with a varied number of batteries. In general, the regiment has six line batteries, a service battery and a headquarters battery. Each of the six line batteries has six Gepard firing units for a total of 36 fire units in the regiment. Within a Gepard section, there is a wartime table of organization and equipment for nine personnel.

The squad forms three shift crews. One crew operates the Gepard while the second crew provides security or additional air defense with the Red-eye and the third crew rests. The mission of the regiment is to defend troops and installations against air attacks, survey the airspace, monitor operational theater activities, analyze the air situation and establish and maintain contact with air defense installations.

Since its mission is to defend troops in a heavy division, the Gepard must be able to survive on the modern battlefield. The mobile air gun system weighs about 46 tons. Built on a Leopard battle tank chassis, it can travel 65 kilometers per hour and has a maximum range of 550 kilometers. Its radar search and tracking range is 15 kilometers. The system has identification, friend or foe capability with dual automatic, belt-fed 35mm guns. The Gepard gun has a rate of fire of 1,100 rounds per minute and can easily engage enemy ground targets with a salvo of armor-piercing rounds.

Gepard training includes an annual live fire and extensive hours in a moving target simulator, affectionately known as the MTS (sound familiar?). A room in the MTS that houses control panel trainers allows the Gepard commander and gunner to operate the switches and controls in a classroom environment.

The Gepard can be driven into a larger MTS bay and connected to a central computer. The computer simulates targets, system faults and en-

*(Digest continued on page 34)*



1st Lt. Jason Kuroiwa fires the Koch machine gun as SFC Gregory Allen observes.



Nothing is more worthy of the attention of a good general than the endeavour to penetrate the designs of the enemy.

—Machiavelli



And Moses sent them to spy out the land of Canaan, and said unto them, Get you up this way southward, and go into the mountains. And see the land, what it is; and the people that dwelleth therein, whether they be strong or weak, few or many.

—Numbers 13:18-19



## 3-62 ADA IPB Refinements Stop Air Threat Dead in its Tracks

*The commander's intent was clear and simple:  
"Kill enemy air where it is likely to attack."*

by Capt. Shawn C. Weed

The bottom line of the 3rd Battalion, 62nd Air Defense Artillery, commander's intent for the Warfighter 92-6 Battle Command Training Program was clear and simple: "Kill enemy air where it is likely to attack." But for the commander to effectively place air defense assets to stop the enemy air threat right in their vapor tracks, he first needed an accurate picture of the enemy air commander's battle plan from his S-2.

The plan that drove our counterair operations was pieced together through the metic-

ulous use of the air intelligence preparation of the battlefield (IPB) process. And judging by our success — we virtually eliminated the "Marcalan" (a fictitious enemy) opposing force's offensive air capability by destroying 92 of his 214 combat aircraft while permitting no significant damage to division priority of protected assets — it seems the process worked.

We began our initial estimate of the situation by analyzing the information we received from XVIII Corps through the as-

sistant division air defense artillery officer (ADADO) and the division G-2. From this analysis, we defined the ADA battalion's area of operations and area of interest, the ground situation, the enemy's aircraft inventory, a terrain and weather overview and probable division mission. Together, these gave us the basics we needed to begin the five-step IPB process (battlefield area evaluation, weather evaluation, terrain evaluation, threat evaluation and threat integration) as defined in FM 34-130, *Intelligence Preparation of the Battlefield*.

The Marcalan commander's fixed- and rotary-wing air assets, with the exception of Mi-6s and Mi-8s assigned to his special operations command, belonged to his air force. From the start we worked on the assumption that our enemy in this Latin American scenario would use his aircraft to support his ground effort. Therefore, to understand how he would use his aircraft against us, we had to understand what the Marcalan ground commander's plan would be at the tactical, operational and strategic levels. Our analysis of the Marcalan ground commander's plan revealed that the Marcalan activities in our division area of operations were not the enemy's main effort, but were instead an economy-of-force mission designed to protect the flank of his main effort defense to the west. Based on this, we were later able to make some assumptions on how the Marcalan air force would allocate sorties to support ground defense. As we continued through the process and analyzed weather and terrain, we looked at these aspects from both the Red and Blue ground and air perspectives. We looked for things we or the enemy could or couldn't do because of the weather or terrain. The weather and terrain analysis enabled us to draw some significant conclusions.

The rugged terrain, while conducive to infiltration, would limit mechanized and armor operations. The key ground terrain would be the high ground overlooking choke points along the main axis of approach. The key air terrain would be likely forward area rearming and refueling points, regional airfields and aerial choke points along projected air avenues of approach. The terrain provided covered and concealed rotary-wing aircraft avenues, but precluded the use

of fixed-wing, high-speed, low-level avenues in sector. Terrain masking would often degrade both Red and Blue air defense systems. Among the tools we used to help us with terrain analysis was a detailed modified combined obstacle overlay on a 1:50,000 scale map, some bridge data provided by the engineers and a variety of TERRABASE (copywrite name of software package) products from the G-2 (we had no organic TERRABASE capability because of software integration problems with our laptop computer).

One of our problems at the very beginning of the planning cycle was how to look at the division area of operations as a whole. The distance from the division rear boundary to the limit of advance line was close to 150 kilometers, and we had no 1:100,000 scale maps. After several variations we finally decided on one huge mapboard, seven feet high by six feet wide, with 35 mapsheets to use for pre-deployment planning and future operations in the field.

The resulting products from the first three phases of the IPB cycle were the modified combined obstacle overlay that showed rotary-wing air avenues of approach with landing zones, fixed-wing air avenues of approach with drop zones and line of sight analysis, and visible area plots from TERRABASE.

Once we had developed a good feel of where we were going to fight and how the weather and terrain in the area of operations and area of interest would affect both friendly and enemy operations, we turned our attention to the enemy and evaluated him in terms of what he had, where it was and what it could do.

We started by studying the enemy's ground force composition (what he had to fight with), where those forces were on the battlefield and what their mission was. The ground force analysis is crucial because we worked on the assumption that the enemy would synchronize his air assets to support the ground force mission. We bolstered this postulation with our assessment that the Marcalan air force did not have the capacity to conduct an independent air campaign.

Other ground-based threats we examined were enemy nuclear, biological and chemical capabilities, tactical ballistic missile

The finest theories and most minute plans often crumble. Parade ground formations disappear. Our splendidly trained leaders vanish. The good men which we had at the beginning are gone. Then raw truth is before us.

— Maj. Gen. Charles O'Daniel

A great part of the information obtained in war is contradictory, a still greater part is false, and by far the greatest part is of a doubtful character.

— Clausewitz



In order to conquer that unknown which follows us until the very point of going into action, there is only one measure, which consists in looking out until the last moment, even on the battlefield, for information.

— Marshal Ferdinand Foch

inventory, artillery systems, special operations and unconventional forces, and terrorist or insurgent forces. We asked ourselves how these capabilities could affect ADA battalion soldiers on the ground or determine how the enemy might use his air assets (such as using Mi-8s or Mi-6s to insert or resupply special operations forces in the rear area). The primary source for intelligence on the ground threat was G-2. We also analyzed the enemy's ADA weapon systems capabilities and templated where we thought those assets were located based on the situational template of ground forces we received from the G-2. We in turn provided our analysis to the G-2, because the division looks to the ADA battalion as the subject matter experts in both air IPB and enemy ADA analysis.

Now that the ground picture was beginning to come into focus, we started to evaluate the air threat. To ensure thoroughness and speed we followed the outline below.

#### **Enemy Air Order of Battle**

*Where are the air assets and to whom do they belong? Special operations operating bases (forces that might use air assets for transport or resupply).*

#### **Air Assets by Mission Type**

##### **Air Assets Capabilities**

*Total number, high and low speeds with and without weapons, ceiling, runway requirements, type of weapons, weapons performance, ordnance release characteristics, electronic countermeasures, range with and without combat loads, day and night, look down and shoot down, navigational radars and troop-carrying capacities.*

##### **Sortie Generation Capabilities**

*Estimates for various staging bases.*

##### **Operational and Survival Rates**

*Projected by mission type and aircraft.*

##### **Tactics and Flight Profiles**

*Based on air doctrinal templates by mission type.*

#### **Air Force Objectives**

*Tactical, operational and strategic.*

#### **Enemy Air Commander's Intent**

##### **Air Command & Control Systems**

*For rotary- and fixed-wing forward operating bases, forward area rearming and refueling points, vectoring target designation points, remote navigational points, forward aligning areas, forward area controllers and others as appropriate.*

By the time the threat evaluation, both ground and air, was complete, one major question remained: How would they fight? The goal in the final step of the IPB cycle, threat integration, is to answer this question by taking the above collective analysis and input from G-2 on the possible enemy ground courses of action, and then developing air courses of action to support them.

In this operation, for example, the enemy's most probable course of action was to defend in depth along the main ground avenue of approach with both light and mechanized forces. We took this situational template and "time-phased" how we thought the enemy would support this type of defense with available air assets to achieve his tactical and operational objectives. We used an overlay with an accompanying sequencing chart that outlined in detail where and what type of air forces the enemy would commit, and how and when they would fly. We did the same for the enemy's most dangerous course of action, a counterattack with both mechanized and light forces.

We combined these air avenues with accompanying drop zones and/or landing zones and postulated command and control nodes onto another overlay, which became the air situational template. We then looked for points on the map that would, if observed, confirm or deny the enemy's projected air course of action or give warning to yet another. We then passed these "named areas of interest," both ground and air, to the division's collection manager to be incorporated into the division's overall reconnaissance and surveillance plan. This became the event template.

One of the problems with this, however, was that we had no organic assets to inspect our named areas of interest (we had not practiced using ADA scouts), so we had to rely on high- to medium-altitude air defense radars and airborne warning and control systems coverage to provide intelligence on those areas. We could only cover our ground named areas of interest if they coincided with those of the division (in practice, this occurred about half the time). Assets, such as long-range surveillance detachment or special operations forces, were not tasked to look specifically at our named areas of interest. An obvious lesson learned is that ADA scouts should cover some of our own named areas of interest so the ADA battalion would not have to rely solely on information gathered by assets outside of its own organization.

With the enemy mosaic almost complete, we were ready to start looking at what actions we, as an ADA battalion, could take to meet the commander's intent and "kill enemy air." The tool for this was the decision support matrix and its accompanying template. We based the decision support template on the event template with some key additions: decision points and target areas of interest that graphically depicted points in space and time where decisions and actions could be synchronized to best thwart the enemy's plan.

We placed the decision points at a location where activity, or possibly inactivity, in a named area of interest indicated an enemy action such as an enemy air assault into the division rear or a reconnaissance screen across the forward line of own troops. We then tied these decision points to a combat action at a target area of interest. For example, if two MiG-21s were reported at a named area of interest moving across the enemy front line trace, we would follow quickly with a decision to activate a weapons free zone so the MiG-21s could be engaged at a target area of interest. In this case the target area of interest and the weapons free zone are collocated. The corresponding decision support matrix outlines the specific decisions and actions to be taken at a decision point.

The doctrine regarding the decision support matrix and what events should trigger

which actions is very refined for maneuver forces, but is still evolving for ADA units. There seem to be two primary schools of thought: one that ties decisions and actions to the immediate tactical situation (such as reorienting primary target lines or activating weapons free zones), and one that looks at big picture changes in enemy intent (such as commitment of a counterattack force) and makes a decision to task organize to meet this changing situation. Each school of thought has its pros and cons, and the solution is probably a hybrid of the two. Initially, our direct support template and decision support matrix reflected the former.

Once we finished brainstorming, war-gaming and refining our direct support template, decision support matrix and intelligence estimate, we went to print, so to speak, and got the word out through briefings and products. We literally briefed every player, from PFC Joe Wintergreen to the battalion commander, at least once. Some key players, such as battery commanders and liaison officers, received the brief so many times they probably could have functioned on the Marcalan board of tourism. But their firm grasp of the overall situation was to pay dividends later. We also disseminated a number of products to help principal players in their own planning. These included the intelligence annex to the order (estimate, reconnaissance and surveillance plan and country study), enemy ADA reference packet, the DATA PAK (a 70-page, pocket-sized reference book that contains virtually anything you want to know about the battlefield area and enemy, both ground and air), overlays and templates.

This concluded our predeployment intelligence preparation and set the stage for the even more challenging task of providing tactical intelligence during the combat phases of the division's operations. Currently, the doctrine outlining tactical ADA intelligence operations is vague, so we tried to base our field operations on common sense and what we had seen work or not work at other units. Our trip to the 2nd Battalion, 44th Air Defense Artillery, 101st Airborne Division (Air Assault) proved particularly helpful. Working with the infantry was also a big asset as it gave us a constant reminder not to just look skyward, but also to look hard at the ground

We have men's lives hanging on our decisions. We cannot assume anything . . . We must get the facts. How are you going to feel when you make a decision and several hundred men are killed? You want to try assuming they are not dead.

— Gen. George S. Patton



There is a right time to make every decision. Trying to select the right time is the most important factor for every decision. It is a mistake to make the decision too early and a mistake to make the decision too late. Every old maid will agree with me! The longer the decision can be delayed, the more facts we can collect on how to make the best decision. When the time is right, and we have the facts, we should never hesitate.

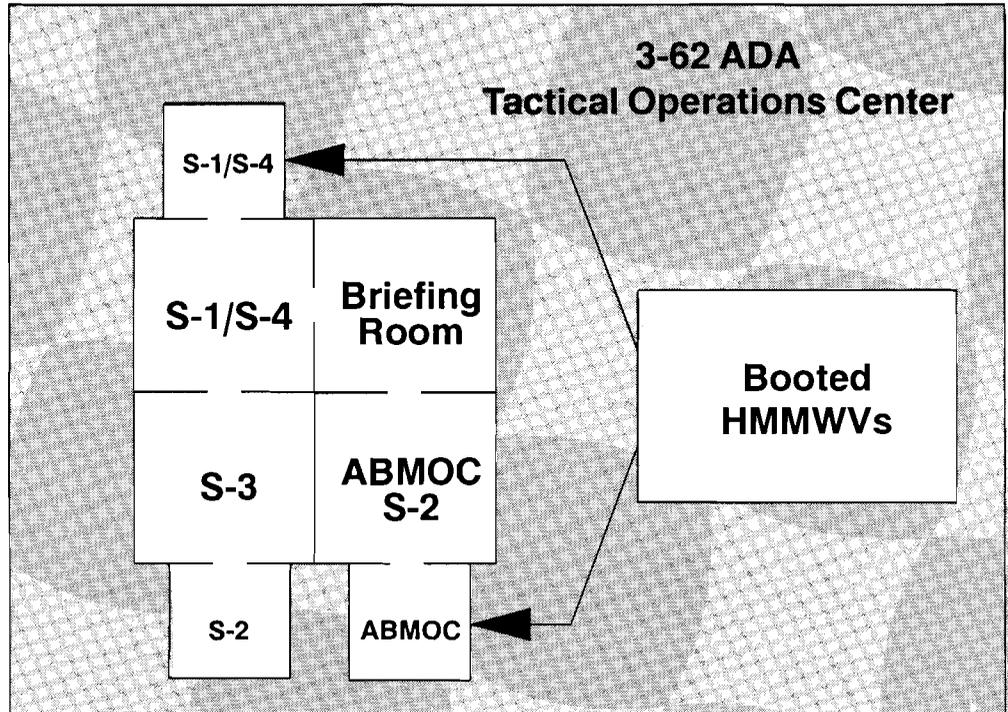
— Gen. George S. Patton

The essence of a failure to anticipate is not ignorance of the future, for that is inherently unknowable. It is, rather, the failure to take reasonable precautions against a known hazard.  
— *Military Misfortunes*

Air power is the most difficult of all forms of military force to measure or even to express in precise terms.  
— *Winston Churchill*



To be defeated is pardonable; to be surprised — never!  
— *Napoleon*



action and to analyze potential air courses of action relative to what the enemy's ground forces were trying to accomplish.

We operated off three maps: the monster 1:50,000 scale map in the briefing tent (which had the big picture modified combined obstacle overlay, direct support template, recent significant events and current enemy situation); a 1:50,000 scale map that paralleled the ABMOC's with the direct support template, enemy situation, recent significant events and a six-hour (depending on volume) track summary; and a 1:250,000 scale map that also paralleled the ABMOC's with friendly graphics and track summary.

The S-2 section's tactical function was fourfold: postulate future air courses of action based on analysis of the ground activity provided by the G-2 (we received and distributed intelligence summaries [INSUMs] every six hours); confirm, deny or modify our estimates of what the enemy air would do through analysis of flight track activity and spot reports; identify and nominate specific targets for destruction (forward operating bases, forward area rearming and refueling points, etc.) through the ADADO and the division's targeting cell; and maintain and disseminate key information using battle books and our own graphic INSUMs.

Tracking the enemy ground situation, as laid out for us by the G-2, was key in developing what we thought were the enemy's most likely and dangerous air courses of action. As the enemy continued with his battle plan, we could postulate (based on his likely objectives, force allocation and rate of march) when and where we could expect certain types of aircraft to be deployed to support his attack. Once this was displayed graphically, we used the tracks from the ABMOC to confirm or modify our estimate.

One example of how this worked was with the enemy aerial reconnaissance. We originally postulated that the enemy would use both fixed- and rotary-wing assets to conduct reconnaissance along the border and likely axes of advance. The tracks we received, however, showed that the enemy was actually conducting an aerial screen across his front line trace (10 to 15 kilometers south of the border). Based on this we modified our estimate of how the enemy would use his assets, which helped us later as the enemy's force disposition changed.

The tracks also showed us that the enemy initially tried to go deep, as we had envisioned, but he suffered heavy losses in this attempt and altered his tactics to combat air support missions against targets at the for-

ward edge of the battle area that, while risky, were not quite as dangerous. The ABMOC section provided us our best intelligence on the enemy's fixed- and rotary-wing assets staging areas. During terrain and threat doctrine evaluation we situationally templated places we expected the enemy to use as forward area rearming and refueling points and forward operating bases — the open areas needed for these sites stood out in the convoluted Marcalan terrain — but the tracks really confirmed or denied our situational template. Based on tracks from the ABMOC, we were able to send the ADADO and G-2 track evidence of enemy air activity at certain areas and either cue an intelligence collection asset for further target resolution or nominate the area for targeting through the ADADO and the division's targeting cell.

The one problem we had with this system was the turnaround time between when we noted activity until the target was fired upon. Stationary targets, such as fixed-wing, fast-mover staging bases (military airfields), can be attacked as planned targets in a large time frame, but for a successful interdiction of temporary targets, such as forward area rearming and refueling points or forward operating bases, quick action is crucial once they are acquired. Eyes on the objective (ADA scouts) might have sped up this process by providing real time intelligence and targeting data at named areas of interest, but we are still weighing the feasibility of such a detachment.

While finding and destroying enemy air assets on the ground is the most desired case (as we can kill them before they can destroy any divisional assets), it's more often the exception than the rule. Therefore, to plan the effective use of ADA assets, all planners must have an accurate, up-to-date air picture (event template) at their fingertips. Our INSUMs provided this, but producing and disseminating them to the ADADO, G-2 and supported units was the most frustrating and time-consuming part of the whole IPB process. Sending the completed report to the different stations was also time-consuming, requiring as much as two hours of facsimile transition time for one INSUM! All told, we had nine separate locations, from the division main to the supported brigade tactical operations centers, that received our IN-

SUM every six hours. The INSUMs consisted of a short summary of the ground situation, significant activities over the last six hours (engagements, sightings, etc.) and what aircraft were left in the enemy inventory, an analysis paragraph and a graphic summary of the tracks drawn on a miniature of the area of operations.

Our most difficult part was accounting. Every time we prepared to send out an INSUM, we couldn't get our numbers to match what the S-3, ADADO or division-rear had, and we had to go back and painfully account for each destroyed or damaged aircraft. While our numbers matched more closely as the battle went on, we were never able to get the number-crunching down to the degree of efficiency we would have liked. In retrospect, we think that the S-3 should have been the "keeper of the truth" because engagement reports that attrition figures are based on go to him first. Inaccurate or duplicate reports caused many accounting problems.

Our efforts gave the G-2, liaison officers and ADA commanders an up-to-date synopsis of the air war in an easily usable format. For the G-2 and S-2 side of the house, the INSUMs provided a look at a portion of the threat often overlooked in the traditional maneuver intelligence cycle. The graphic track summary was particularly useful. Support commanders could see, in an instant, the pattern of enemy sorties and make air coverage adjustments accordingly. In one instance the ADADO used the track summaries to help in a bid to get additional high- to medium-altitude air defense support to counter air attacks in our sector.

Overall, 3-62 ADA did exceptionally well in living up to the commander's intent to "kill enemy air." To do so required a thorough pre-deployment IPB, continuous revision of our assessments based on the tactical situation and continuous coordination with the division G-2 and supported unit fire support planners to input offense counterair nominations in the targeting process. Our efforts paid off, and it was the air IPB that helped focus the enemy air picture to make killing them that much easier.

**Capt. Shawn C. Weed**, a Military Intelligence officer, is the S-2 for the 3rd Battalion, 62nd Air Defense Artillery, Fort Drum, N.Y.



The commander must decide how he will fight the battle before it begins. He must then decide how he will use the military effort at his disposal to force the battle to swing the way he wishes it to go; he must make the enemy dance to his tune, and never vice versa.

— *Field Marshal  
Bernard Montgomery*

Ahead of written doctrine.

— *3-62 ADA BCTC  
evaluator's assessment*

bat multipliers such as jamming. We tracked and engaged enemy aircraft with much difficulty. *Oberteldwebel* (Sergeant First Class) Ralf P. Hess, our "Gepard commander," was very patient with our futile attempts to kill aircraft the first time.

Included with our training, we had the opportunity to participate in an event equivalent to our annual STRAC requirement with the M-16A2. This involved shooting the Walther P1, Heckler and Koch G3, and Heckler and Koch machine gun.

In the U.S. Army, we focus on engaging a variety of targets at different ranges. In the German army, accuracy at a particular range is the emphasis. Here, with the Heckler and Koch G3, a soldier has six 7.62mm rounds to engage a target and try to get the maximum score of 60 points. The *Schutzschnur* is the marksmanship medal for the German army (gold is the equivalent of an expert rating in the U.S. Army).

Being paratroopers, we also participated with part of the 1 *Luftlande-division* (German First Airborne Division) in Bruchsal. Since there are no habitual airborne air defense assets in the German army, the soldiers from this division were infantry. Headquarters battery *Hauptfeldwe-bel* (First Sergeant) Ullrich was airborne infantry, so there are parachutist qualified soldiers in the German air defense artillery.

To earn the coveted *Fallschirms-pringerabzeichen* or German Parachutist Badge, we were required to do three jumps out of an aircraft. This particular aircraft was a UH-1D and all the equipment used was the same as in the 82d Airborne Division.

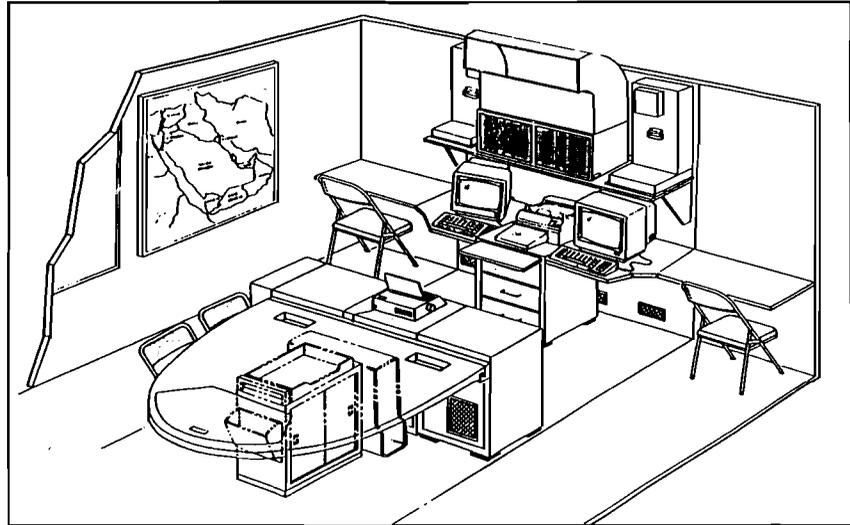
Traveling to Stuttgart, Bad Mergentheim, Tauberbischofsheim and Wurzburg, we took in a lot of the beautiful scenery and culture that Germany has to offer. Our exchange

program at an end, Allen and I returned to Fort Bragg to apply what we observed and learned as part of the German army.

I'll have fond memories of the days I spent in Germany and, to the

soldiers from *Flugabwehrregiment* 12 who were very courteous to and patient with these American paratrooper "invaders," *Danke schoen.*

1ST LT. JASON I. KUROIWA



## 11TH ADA BRIGADE GETS FIRST AUTOMATED BTOC

In September, the 11th ADA Brigade, Fort Bliss, Texas, received and began training on automated Patriot Battalion Tactical Operations Centers (BTOCs).

The Patriot Project Office is fielding the BTOCs to capitalize on lessons learned with the Patriot Command Post Automation System and to fill a void until the Air Defense Tactical Operations Center can be developed and fielded. The BTOC automates tactical planning and features situational awareness displays, which show the air picture received over a dedicated cable link from the information coordination central (ICC), and also incorporates airborne warning and control system and other external source air pictures.

This allows operators to view a much larger geographic area than the ICC area of interest. The display can be recorded and played back for training and after-action critiques.

The BTOC consists of a standard five-ton expansible van modified by the installation of a BTOC kit made up of two tactical planner workstations, a BTOC communications processor, a tactical information broadcast service receiver unit and two color inkjet printers.

11th ADA Brigade Patriot units participated in a one-week BTOC training course with blocks of instruction on deployment planning and air picture displays. BTOC fielding to other Patriot units should be complete by September 1993.

## LEGEND OF THE FIGHTING 200TH

*An antiaircraft regiment fights to the last ditch*

### ***Beyond Courage***

by Dorothy Cave

431 pages, Yucca Tree Press  
Las Cruces, N.M., 1992. \$18.95  
ISBN 0-9622940-7-1

Dorothy Cave's *Beyond Courage* presents, at last, the full story of World War II's most storied antiaircraft regiment, the New Mexico Army National Guard's 200th Coast Artillery Regiment, in one volume.

*Beyond Courage* is a wrenching look at the small band of New Mexico National Guardsmen of the 200th Coast Artillery Regiment who were trained at Fort Bliss, Texas, and sent to the Philippines just before World War II and captured there at the fall of Bataan. Their irrepressible spirit

and unshakable faith that their country would liberate them enabled them to survive. The men joined the Army for adventure, fun and a few extra dollars. They found themselves facing a Japanese juggernaut with old weapons, little food and only their *esprit de corps* as a defense.

Acknowledged in 1941 as the Army's best antiaircraft regiment, the 200th (and the battle-born 515th) fought the Japanese from Clark Field to Bataan's "last ditch." The 200th mounted the last organized resistance to the Japanese as they drove to the tip of Bataan. Little did they know the worst was yet to come.

The 200th's story is a testament to the human spirit, taken from personal interviews and diaries, that shocks yet inspires. Their story is told in un-stinting, horrifying, yet believable detail. The author's original research gives the reader personal, first-hand accounts of the 200th's and 515th's long travail. At every chance, using every wile imaginable, the men sabotaged Japanese work projects and machinery. They maintained their faith in their country and in their ultimate deliverance. American POWs from other units marveled at how "those damned New Mexicans" looked out for each other, shrugging off repeated Japanese attempts to break unit cohesion.

The 200th "buried its own" as it left the Philippines aboard Japanese "hell ships" during the death throes of Japan's war machine. The survivors sustained themselves through faith, guts and some intangible quality beyond courage.

## BEST LAID PLANS

*Fate's fickle hand on the battlefield*

Why do competent armies fail? What explains these "lost victories," as Field Marshal Erich von Manstein called them? For the most part, historians answer these questions by charging commanders with incompetence. Others explain folly as the product of the pathological "military mind" and sometimes diagnose institutions as collective sufferers of a fatal military psychosis.

Often, however, such theories do not fit the facts. Mixing narrative and analysis, the authors describe five campaigns in depth and explain how it is that fortune — evenly balanced at the outset of a battle — turns against one side and favors the other.

Drawing on material in four languages, interviews with key participants and documents from a score of

### ***Military Misfortune***

by Eliot A. Cohen & John Gooch

296 pages, The Free Press  
New York, N.Y., 1990. \$22.95  
ISBN 01-02-906060-5

archives and collections of personal papers, the authors shed new light on their case studies: the British debacle at Gallipoli, U-Boat operations on the U.S. east coast, the sudden collapse of the French in 1940, the surprise Chinese intervention in Korea and the Arab-Israeli Six Day War.

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# COMBAT ALONG THE DMZ

*Names to place along Iwo Jima and Tarawa*

The battles the U.S. Marine Corps fought along Vietnam demilitarized zones were devastating in their intensity, numbing in their length, appalling in their casualties and inspiring in terms of individual heroism. *Operation Buffalo* is the story of one of the bloodiest campaigns fought in the desolate, blow-torched and shell-pocked wasteland that lay in the shadow of the DMZ.

In his fifth book on Vietnam, Keith William Nolan (*Into Laos: The Story of Dewey Canyon II/Lam Son 719, Vietnam 1971; Death Valley: The Summer Offensive, I Corps, August 1969; Battle for Hue: Tet 1968; and Into Cambodia: Spring Campaign, Summer Offensive, 1970*) contends

## **Operation Buffalo:**

*USMC Fight for the DMZ*  
by Keith William Nolan  
389 pages, Presidio Press  
Novato, Calif., 1991. \$24.95  
ISBN 0-89141-417-7

that, while Marine units in Vietnam may have lacked the cohesiveness of WWII units, they fought with a bravery and tenacity that should make their Iwo Jima and Chosen Reservoir forebears proud.

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# DESERT CANNAE

*Israel turns the tide of battle*

## **On the Banks of the Suez**

by Avraham "Bren" Adan  
479 pages, Presidio Press  
Novato, Calif. \$24.95  
ISBN 0-89141-043-0

In 1973, the peace of Israel's High Holy Day was shattered when the Egyptians launched their Oct. 6 attack across the Suez Canal. How the Israeli Defense Forces recovered from complete tactical surprise so that, when the cease-fire was imposed, their forces were 70 miles from Cairo and 25 miles from Damascus, is the substance of *On the Banks of the Suez*.

The author, an Israeli general whose encirclement of Egyptian forces has been compared to Hannibal's famous victory over the Roman army in 217 B.C., accounts for every move of the Yom Kippur War with accuracy and passion.

*An Unknown Future and a Doubtful Present: Writing the Victory Plan of 1941* by Maj. Charles E. Kirkpatrick, 158 pages, Center of Military History, Wash., D.C., 1990. (Sold through Government Printing Office.) The ADA officer who wrote *Archie in the A.E.F.* tells how U.S. leaders forged the fighting force that beat the Axis.

*Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts* by Lt. Col. Charles M. Westenhoff, 217 pages, Air University Press, Maxwell Air Force Base, Ala., 1990. (Sold through Government Printing Office.) A compendium of quotable quotes on the nature and employment of air power.

*Force and Accommodation in World Politics* by Dr. Stanley E. Spangler, 359 pages, Air University Press, Maxwell Air Force Base, Ala., 1991. (Sold through Government Printing Office.) Devising post-Cold War geopolitical strategy.

*A Soldier Supporting Soldiers* by Joseph M. Heiser Jr., 323 pages, Center of Military History, Wash., D.C., 1991. (Sold through Government Printing Office.) Logistics as the key to U.S. success in World War II.

*Recurring Logistic Problems As I Have Observed Them* by Carter B. Magruder, 134 pages, Center of Military History, Wash., D.C., 1991. (Sold through Government Printing Office.) Why things aren't there when you need them the most.

*U.S. Army Special Operations in World War II* by David W. Hogan Jr., 158 pages, Center of Military History, Wash., D.C., 1992. (Sold through Government Printing Office.) Rangers and commandos in both the European and the Pacific theaters.

**T**  
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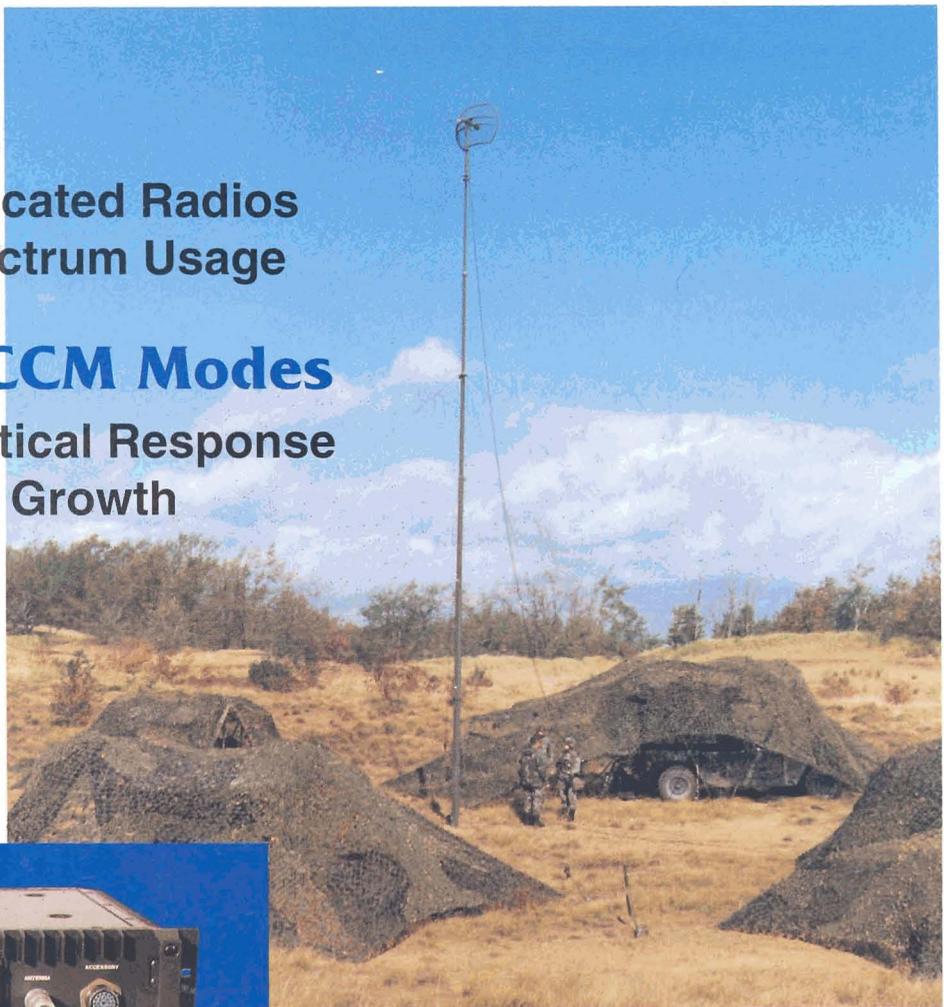
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