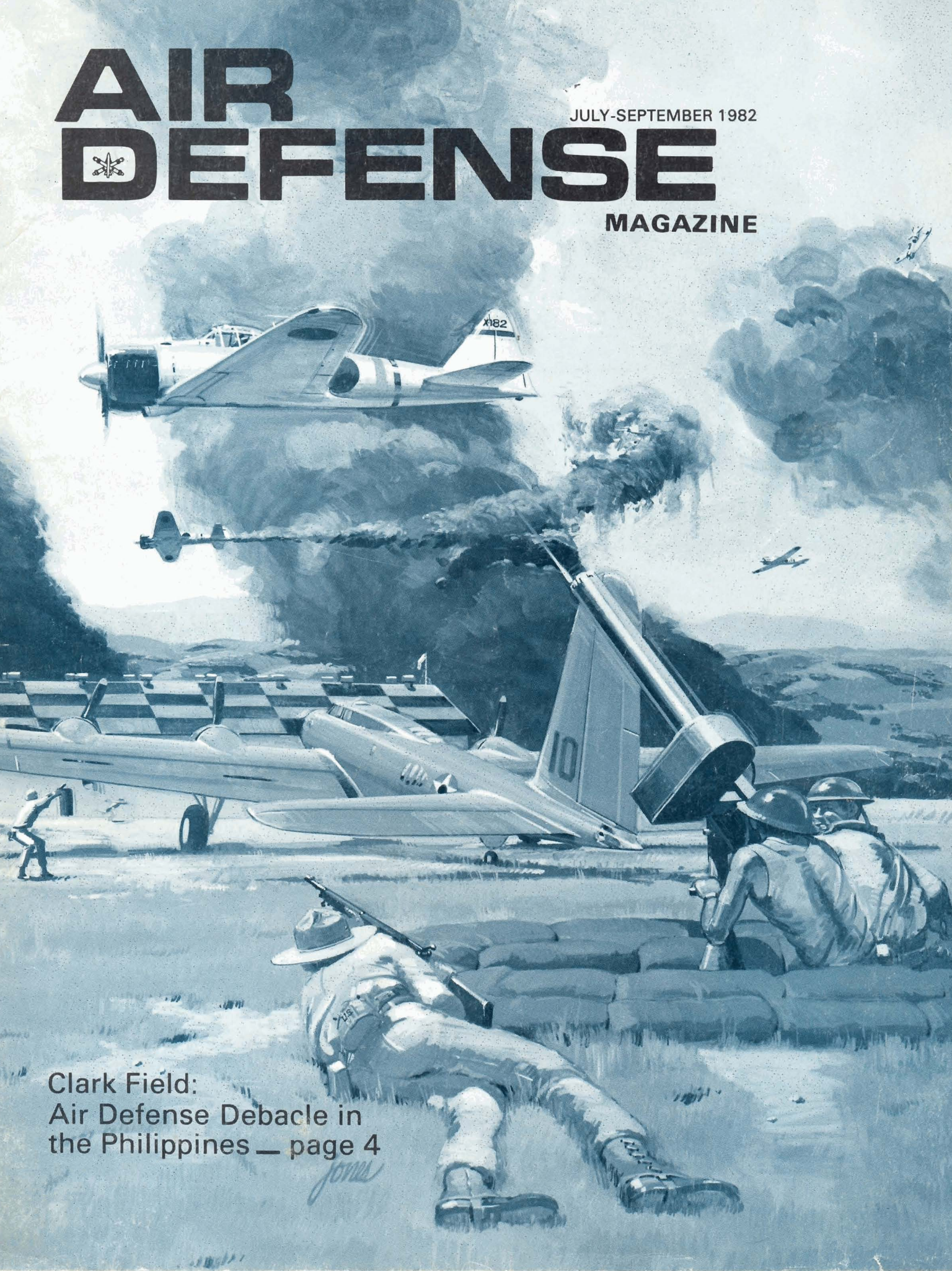
AIR DEFENSE MAGAZINE

JULY-SEPTEMBER 1982



Clark Field:
Air Defense Debacle in the Philippines — page 4

AIR DEFENSE MAGAZINE

Secretary of the Army
John O. Marsh, Jr.

USAADS

Commandant
MG James P. Maloney

Assistant Commandant
BG Stanislaus J. Hoey
CSM Charles Toynes

Deputy Assistant Commandant
COL Thomas J. Manning

DIRECTORATES

Training Developments
COL Leslie L. Custer
SGM Archie W. Hartsfield

Combat Developments
COL Russell W. Parker
SGM James H. Larson

Training & Doctrine
COL James J. Kernan
SGM Floyd L. Norton

Support
MAJ Van A. Collins

Evaluation & Standardization
LTC Richard B. Wessling, Jr.

UNITS

The School Brigade
COL Travis N. Dyer
CSM Raymond H. Godfrin

1st ADA Training Brigade
COL Edmond S. Solymosy
CSM Pete Dawkins

USAADCEN

Commanding General
MG James P. Maloney
CSM Frederick T. Stafford, Jr.

Deputy Commander
COL (P) J. Hollis V. McCrea, Jr.

Chief of Staff
COL J. Lapsley Smith

Headquarters Commandant
LTC Antonio G. Gonzales
CSM Melvin A. McGregor

UNITS

11th ADA Brigade
COL Gerald H. Putman
CSM Thomas Morgan

3d Armored Cavalry Regiment
COL William A. Fitzgerald
CSM Guenter H. Heibich

Range Command
COL Joe M. Box
CSM Twyman D. Kirkpatrick

US Army Air Defense Board
COL Philip E. Holman
SGM Jessie Chandler

TRADOC SYSTEM MANAGERS

Roland —
COL Ronald L. Peden
Patriot —
COL Kurt L. Keene
SGT York Gun —
COL Charles C. Clarke, Jr.
Stinger —
COL James E. Leach

AIR DEFENSE MAGAZINE: Published quarterly by the US Army Air Defense School to keep air defense personnel informed of the latest tactical, doctrinal, and technical developments in air defense worldwide, and to maintain a stimulating and mutually productive dialog between the School and units in the field, with a view toward increased efficiency in all aspects of air defense. Articles appearing in this publication do not necessarily reflect the position of the US Army Air Defense School or the Department of the Army. Material submitted for publication is subject to edit by the AIR DEFENSE Magazine staff. Footnotes and bibliographies may be deleted due to space limitations. Use of the masculine pronoun is intended to include both genders where appropriate. Unless copyrighted or syndicated, material may be reprinted. Please credit AIR DEFENSE Magazine and the author.

Use of funds for printing of this publication was approved by Headquarters, Department of the Army, 25 April 1980, in accordance with AR 310-1.

SUBSCRIPTIONS: Subscriptions may be obtained through the Custodian, US Army AIR DEFENSE Magazine Fund, USAADS, ATTN: ATSA-TDL-S, Fort Bliss, Texas 79916. **Domestic:** $13.00 one year, $25.00 two years. **Foreign:** $14.00 one year, $27.00 two years. **Single Copy:** $3.50. Make checks payable to: **TREASURY OF THE UNITED STATES.**

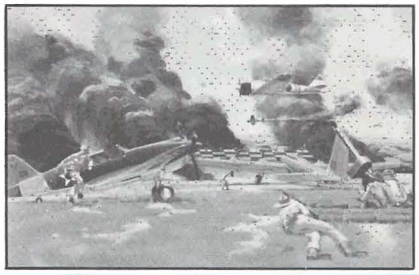
CORRESPONDENCE: Address articles and letters to: The Editor, AIR DEFENSE Magazine, USAADS, ATTN: ATSA-TLD-S, Fort Bliss, Texas 79916. Telephone 915-568-5603 (AUTOVON 978-5603).

POSTMASTER: Controlled Circulation postage paid at El Paso, Texas 79916, Department of the Army (DOD 314) AIR DEFENSE Magazine (USPS 307-010).

This publication contains no advertising.

About the Cover

The cover illustration is a reproduction of USAADS artist John Paul Jones' original painting depicting the air raid on Clark Field. In preparing the illustration, Jones carefully researched details of the raid so that even the serial number on the strafing Japanese Zero is authentic.



FEATURES

Clark Field: Air Defense Debacle in the Philippines 4
Covert/Passive Air Defense Sensors: Part II 15
Chaparral on Future Battlefields 22

page 4

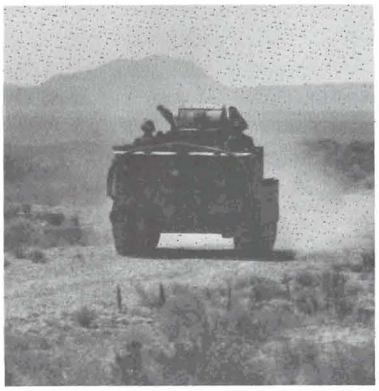
ARTICLES

Habitual Association: Redefining the Concept of Air Defense Artillery 8
USAADS Branch Develops ADA Targets 11
The Evaluation of Patriot 19
Training Support Package Teaches Military Ethics 25
MSCS: The Future of SHORAD Early Warning 27
The Last to Leave 31
New System Monitors White Sands Missile Tests .. 33
Air Defense Artillery Transition Plan 35
Promotion Board Critiques ADA Career Fields 37
Writing for Branch Magazines 40
Oblinger Helps Japanese Celebrate ADA Anniversary 42
Lineage and Honors 44

page 15

DEPARTMENTS

Intercept Point 2
Scanning 48
Enlisted Career News 50
Bars to Stars 52
Bulletin Board 53
Combined Arms Corner 55
Intelligencewatch 57
Developments 60



page 22

New Subscription Rates

AIR DEFENSE Magazine has increased its subscription rates for the first time in more than a decade. Effective immediately, APO and domestic rates will increase to $13.00 for a one-year subscription and to $25.00 for a two-year subscription. Foreign subscription rates will rise to $14.00 for one year or $27.00 for two years. Three-year subscriptions are no longer available. Single copies will cost $3.50 each. The rate increases are needed to offset rising production and distribution costs and to comply with Army regulations which dictate that subscription rates cover production and distribution costs.

AIR DEFENSE MAGAZINE

Editor
William Blair Case

Assistant Editor
Claire Starnes

Associate Editor
Brian R. Kilgallen

Art Director
Terry G. Smith

Circulation Manager
Trinydad Ramirez

INTERCEPT POINT

During a time when most Europeans thought of Africa as the "Dark Continent," a Zulu chieftain named Chaka armed his tribe with a weapon that revolutionized tribal warfare on the Central African Plain.

The weapon was called an assegai. It could be used either as a short throwing spear or as a short stabbing sword much like the Roman blade Julius Ceasar's legionnaires carried into battle. Chaka persuaded his reluctant but fiercely disciplined warriors to abandon their traditional long throwing spears in favor of the new weapon: a weapon perfectly suited to Chaka's mass and shock concept of battle.

Formed in crescent formations — the "head of the water buffalo" in the center and its "horns" on the flanks — the Zulu regiments, armed with the assegai, swept all opposition off the African plains during a few, brief and bloody decades remembered in the Bantu tongue as the *Mfecane* (the Crushing). They were invincible in battle until a generation later when, after annihilating a British column at Isandhlwana, they were shattered by superior firepower at the Battle of Blood River.

The Zulu assegai is but one early example of the tremendous impact even rudimentary advances in weapon design can have on the outcome of battle. We are reminded of the dramatic introduction of the English longbow at the Battle of Crécy in 1346 and the six-shooter and repeating carbine during the Plains Indian Wars of the late 1800s. Putting advances in weapon technology to effective use on the battlefield, however, requires faith in the new weaponry and a willingness to adjust battlefield tactics and training strategies. The timidity with which German infantry followed up the first gas attack of World War I at Ypres in 1915 and the Allied misallocation of tanks to achieve only local successes during the same war are but two examples of how lack of faith and tactical vision can blunt the effectiveness of innovative weaponry.

Major General James P. Maloney

The reluctance to adopt new weaponry and adjust tactics and strategies accordingly has its roots in the fear of change. The fear of change is an inbred human emotion, a phobia we must learn to overcome just as we, as small children, once learned to vanquish our dread of the dark or fear of high places. This aversion to change is of particular concern to me as I assume command of the US Army Air Defense Center and Fort Bliss, because the 1980s promise to be a decade of changes and challenges for Air Defense Artillery. No other branch of our armed forces, in fact, will be so transformed by the impact of new weapon technology over the next few years as will Air Defense Artillery.

The changes are welcome ones. The fielding of Patriot, Stinger, and the SGT York Gun and the development of a new, lightweight, 40-mm air defense gun can only improve our effectiveness and survivability on the AirLand Battlefield. We should accept these new weapons with the enthusiasm they deserve. The transition from older weapon systems to new weapon systems cannot be accomplished without dedication, determination, and faith in the new systems.

The introduction of these new weapons to the air defense arsenal will be accompanied by a flood of new field manuals, technical manuals, and how-to-fight manuals. We all may have to go "back to school" to learn how to operate the new systems and how to deploy them in battle. Manning these new systems will also entail an extensive restructuring of air defense career fields and MOSs (see "Air Defense Artillery Transition Plan," page 35).

Some soldiers will feel the rules have been changed unfairly in the middle of the game. The transition from old to new, however, will not make obsolete soldiers who presently man older systems. These soldiers will be retrained and given new MOSs. Plans are underway, meanwhile, to modernize older systems like Chaparral (see "Chaparral On Future Battlefields," page 22). Continuing exploration into fields such as covert/passive sensor technology (see "Covert/Passive Sensors: Part II," page 15) promises to make all air defense systems less vulnerable to Threat countermeasures.

This is not to say that the transition period will be easy. We are embarked on an era of rapidly accelerating change in weapon technology that is unlikely to end as long as the balance of power between Allied and Warsaw Pact forces remains in its current precarious state.

Recent hostilities in the Falkland Islands have proven that "high tech" weapons are not — as some critics have claimed — sophisticated toys. They are highly potent instruments of destruction that can, when properly integrated into a well-thought-out combined arms scheme, sway the course of battle. On the

other hand, the startling success of Israeli drones against Soviet-designed air defense systems in Lebanon during the recent Israeli incursion demonstrated that technological edges on the battlefield last only as long as the time it takes for countermeasures to be developed.

There can be no standing still, no truce, no cease-fire in the technological battle. Weapons based on laser or electromagnetic energy may well become the air defense systems of the 1990s just as Patriot, SGT York Gun, and Stinger are the air defense weapons of the 1980s.

This means we must learn to institutionalize an acceptance of change just as we have learned to institutionalize *esprit de corps* and other military traditions. To do this, we must dispel the many myths that surround "high-tech" weaponry. Today's highly sophisticated, computer-based weapons are not more difficult to operate than older weapon systems, nor do they require soldiers more intelligent than those who fought in the Argonne Forest, on the ridges overlooking the Chosen Reservoir, or waist-deep in the rice paddies of the Mekong Delta. Computer technology, in fact, has often simplified the soldier's task, sometimes eliminating altogether many target engagement functions once performed by the soldier.

We should welcome competition in the technological arena, for it is an arena in which Americans are uniquely prepared to win. American technological inventiveness was the driving force behind the Industrial Revolution which changed the structure of human society. Adaptability to change, forged on the fringes of the American frontier, remains a hallmark of the national character.

Air Defense Artillery, moreover, has long been in the vanguard of new weapons development. It is something we have been doing well for a long time and it is something in which we excel. It is something in which we must continue to excel. History teaches us that failure to adapt military strategy and tactics to new technology has only one consequence — military defeat.

CHANGE OF COMMAND

Major General James P. Maloney assumed command of the US Army Air Defense Center and Fort Bliss on 23 June 1982, replacing Major General John B. Oblinger, Jr. who became Combat Development Director at the US Army Training and Doctrine Command, Fort Monroe, Virginia.

General Maloney comes to Fort Bliss from Washington, DC, where he had served as Director, Weapon Systems, Office of the Deputy Chief of Staff for Research, Development, and Acquisition since June 1980. He was promoted to major general on 8 September 1980.

A native of Pittsburgh, Pennsylvania, General Maloney considers El Paso, Texas, home. He is a 1954 graduate of Texas Western College, now the University of Texas at El Paso. Upon graduation, he was commissioned a second lieutenant in Field Artillery through the Reserve Officers Training Corps program. After completing the Officer Basic Course at Fort Bliss, he was assigned to the 88th Airborne Antiaircraft Artillery Battalion at Fort Campbell, Kentucky.

From November 1955, his career has taken him through various battery and battalion positions, several officers' courses, and Vietnam, and he also served as an aide-de-camp.

A 1972 graduate of the US Army War College at Carlisle Barracks, Pennsylvania, General Maloney's assignments include the Air Defense Directorate, Office of the Assistant Chief of Staff for Force Development, Department of the Army; Commander, 7th Battalion, 61st Artillery; Chief, Missiles and Air Defense Systems Division in the Office of Research and Development, Department of the Army; Commander, 108th Air Defense Group, 32d Army Air Defense Command in Europe; Air Defense Systems Director, Battlefield Systems Integration Directorate, US Army Materiel Development and Readiness Command, Alexandria, Virginia; and Deputy Director, Combat Support Systems Directorate, Office of the Deputy Chief of Staff for Research, Development, and Acquisition.

General Maloney is married to the former Mariwyn Blythe of El Paso. They have 3 children and 2 grandchildren.

GEN Glenn K. Otis (left), TRADOC Commander, passes the colors to MG James P. Maloney (center) from MG John B. Oblinger, Jr. during the change of command ceremony. CSM Frederick Stafford (right), Fort Bliss Command Sergeant Major, observes the ceremony.

CLARK FIELD: Air Defense debacle in the Philippines

by Blair Case

On the December day in 1941 that America became involved in World War II, the US Armed Forces suffered two humiliating and devastating military catastrophies. The first blow came at Pearl Harbor in the Hawaiian Islands and left the US Pacific Fleet in smoking ruin. The second blow fell out of the midday sky on Clark Field in the Philippine Archipelago and destroyed most of General Douglas MacArthur's Far Eastern Air Force on the ground.

The attack on Clark Field came a full 10 hours after the attack on Pearl Harbor, but it caught Army aviators there as defenseless as fighter pilots at Oahu's Hickam Field were when the first Zeros hurtled over the pineapple fields to begin their strafing runs.

Japanese pilots said after the war that they were surprised to find the B-17 Flying Fortresses of the Far Eastern Air Force still lined up like sitting ducks on the broad expanse of Clark Field so many hours after the outbreak of hostilities. Clearly, someone had blundered. The destruction of the Flying Fortresses demolished MacArthur's hopes of waging an active defense of the Philippines and sealed the fate of thousands of American and Filipino soldiers on Luzon, the main island of the archipelago. There was never a board of inquiry convened to investigate this disaster, as there was at Pearl Harbor. The disaster at Pearl Harbor overshadowed the debacle at Clark Field and even Major General Henry H. (Hap) Arnold, Chief of the Army Air Forces, admitted he was never able "to get the real story of what happened in the Philippines."

The night before the Japanese bombed Pearl Harbor, the 27th Bombardment Group threw a party for Major General Lewis B. Brereton at the Manila Hotel. Brereton was the new commander of General

Douglas MacArthur's Far Eastern Air Force, with headquarters at Nielson Field on the outskirts of Manila. Army aviators, after the war, recalled the party as one of the best of the year, but the atmosphere was vaguely ominous.

As the men of the 27th Bombardment Group toasted their new boss, carriers of Japanese Task Force *Kido Butai,* thousands of miles across the Pacific on the other side of the international dateline, were racing at full steam for their launch positions off the Hawaiian islands. Everyone expected war. The American commanders in the Far East, however, expected the first blows to fall on the Philippines or Malaya. During the party, a naval officer told Brereton, "It's only a question of days or perhaps hours until the shooting starts," and moments later MacArthur's chief of staff, Major General Richard K. Sutherland, told him that the War Department expected war at any time.

Brereton took time out from the party to call his headquarters and order his chief of staff to place all airfields on combat alert. His command included the V Bomber Command, the V Interceptor Command, and the Far Eastern Service (Air Warning) Command. The main element of the bomber command, under Lieutenant Colonel Eugene L. Eubank, was the 19th Bombardment Group with its 35 B-17s at Clark Field, 50 miles northwest of Manila. There were fighter support bases at Nichols and Iba Fields near Manila and at Del Carmen in northern Mindanao.

Brereton had plenty of reason for concern. On Formosa, 500 miles away, ground maintenance crews were loading Mitsubishi high-level bombers and Zero fighters with bombs and gasoline. Their chief target was Clark Field and their mission was to knock the Far Eastern Air Force out of the war. Squadron leaders of the Japanese 11th Air Fleet waited anxiously for news from *Kido Butai* and the signal to take off.

There were seven radar sets in the Philippines, but only two had been set up and were in operation. To compensate for the lack of adequate radars, the Army had established a network of native air watchers stationed at strategic points to report plane movements by telegraph or telephone to the Interceptor Command at Nielson Field.

Brereton had warned the War Department that sending heavy bombers to the Philippines without adequate air defense was suicidal and there were not enough air defense weapons to go around. Major General George F. Moore commanded the Philippine Coast Artillery Command. His plans provided air defense of the four fortified islands in Manila Bay (Corregidor, El Fraile, Capallo, and Carabao) and the southern tip of Bataan. They included only the Manila Bay area and Clark Field; all other installations were left virtually without defense against air attack.

One antiaircraft battery with a

"I knew," Brereton later wrote, "that we could expect an attack any time after daylight."

platoon of searchlights was stationed at Fort Wint in Subic Bay. The 200th Coast Artillery (AA) at Fort Stotsenburg protected the Flying Fortresses at Clark Field. Both antiaircraft units were equipped with 3-inch and 37-mm guns, .50-caliber machine guns, and 60-inch Sperry searchlights. The 3-inchers were old models with a vertical range of 27,000 feet.

Major General Joseph A. Green, Chief of Coast Artillery, suggested elements of the harbor defense be reassigned to antiaircraft duty, but the proposal was rejected. Three additional antiaircraft regiments were expected but never arrived.

Brereton had one other reason to worry about the Flying Fortresses at Clark Field. MacArthur didn't think the bombers should be at Clark, where they were exposed to air attack from the Asiatic mainland. In November, he had decided to build a heavy bomber base at Del Carmen, further south and supposedly out of enemy reach. The base was ready by December and MacArthur told Brereton to move the bombers south. But Brereton resisted the move, finally sending only two squadrons. After the war, Brereton said sending the entire 19th Bombardment Group to Del Carmen would have left no room at the Mindanao base to accommodate two new B-17 squadrons expected to arrive shortly from the States. The new squadrons, en route to the Philippines, showed up over Pearl Harbor in the midst of the Japanese attack and were shot up by American antiaircraft fire. They never reached the Philippines.

At 0230 on the 8th (0800, 7 December, Pearl Harbor time), the radio operator at Asiatic Fleet headquarters intercepted the startling message: "Air Raid on Pearl Harbor. This is no drill." The message reached Admiral Thomas C. Hart, Asiatic Fleet commander, within half an hour. MacArthur got the news at 0330 in his penthouse apartment in the Manila Hotel and notified all commanders that a state of war existed with Japan.

"I knew," Brereton later wrote, "that we could expect an attack any time after daylight." The attack Brereton expected would have been winging toward him at that moment but the 11th Air Fleet was grounded by thick fog that shrouded their base in western Formosa. The Japanese naval pilots waited through the midmorning hours in agony, expecting the bombers of the Far Eastern Air Force to appear overhead at any moment and catch the 11th Air Fleet on the ground. Their hopes of launching a surprise attack against Clark and its supporting bases would have been dashed.

Brereton, meanwhile, was trying to persuade MacArthur to let him launch the B-17s at Formosa. At about 0500, Brereton went to MacArthur's headquarters to request permission to bomb Formosa. Sutherland told him to prepare the attack but wait for MacArthur's authorization. Brereton repeated the request at about 0714, and was told to stand by.

Japanese army pilots, by this time, had taken off from bases in northern Formosa and were spotted by the aircraft warning service on Luzon. They were headed south over Lingayen Gulf in the direction of Manila but turned east and bombed Tuguegarao and Baquio about 0930. The warning service report sent the Flying Fortresses aloft without bombs. The 20th Pursuit Squadron at Clark took off to intercept the strike and the 17th Pursuit Squadron flew out of Nichols Field to cover Clark. The Japanese army pilots dropped their bombs and returned to Formosa without spotting an American plane.

At 1000 Brereton repeated his request to launch a strike against Formosa. He was told to launch a reconnaissance mission instead. MacArthur changed his mind about 40 minutes later and gave Brereton permission to take offensive action.

By this time, the fog had lifted over Formosa and, at 1015, 108 twin-engine bombers escorted by 84 Zeros set out for Clark and Iba, the fighter base near Manila. About the time the last Mitsubishi cleared the runway on Formosa, the Flying Fortresses circling aimlessly above Clark Field were given the all clear and told it was okay to land. The 20th Pursuit Squadron returned to Clark after failing to intercept Japanese planes over Lingayen Gulf and the 17th Pursuit Squadron returned to Nichols to refuel. The 3d and 34th Pursuit Squadrons were standing by at Iba and Del Carmen. As the 11th Air Fleet approached Luzon, not a single American aircraft was aloft over the Philippines.

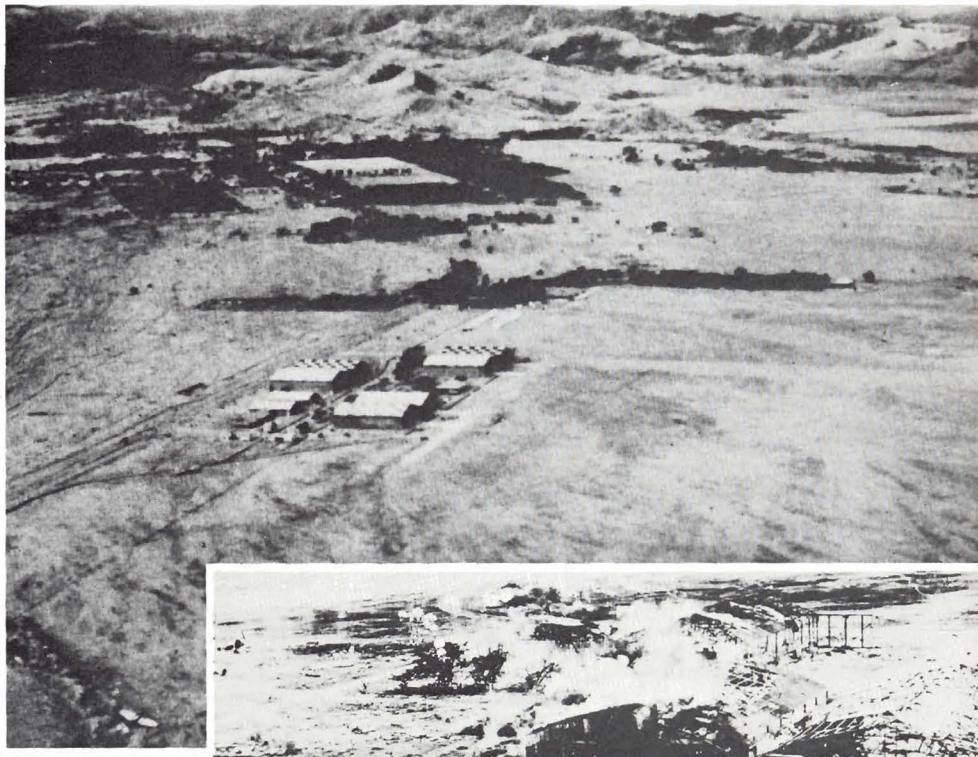
Radar and warning service reports began pouring into the Interceptor Command at Nielson Field shortly before 1130 as the Japanese planes, flying in a massive V-formation, neared their targets on Luzon. Colonel Alexander H. Campbell, Brereton's chief of staff, guessed correctly that the major target was Clark Field. At about 1145, the Interceptor Command sent a warning message to Clark Field by teletype, but for some reason the message failed to get through. An attempt was made to reach Clark by radio over the Far Eastern Air Force net, but without success. The radio operator at Clark Field had gone to lunch. Campbell talked to a junior officer at Clark by telephone and was told the message would be relayed to the base com-

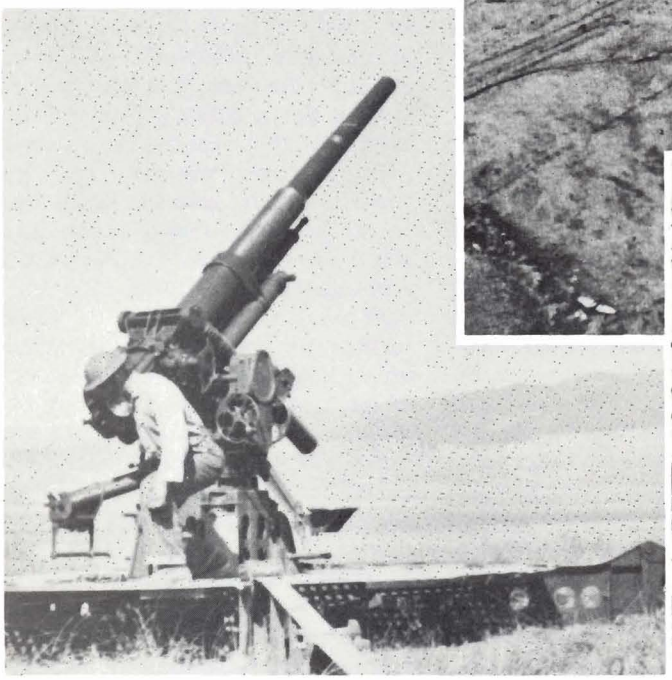
mander or the operations officer. Apparently, the message was never delivered.

The Interceptor Command ordered the 34th Pursuit Squadron to cover Clark Field, the 17th Pursuit

Japanese bombers met only token resistance in the skies over the Philippines after the US Far Eastern Air Force was crippled by the devastating air raid on Clark Field.

This view of Clark Field taken prior to the Japanese attack on 8 December 1941 shows Clark's six airdromes and Fort Stotsenburg in the background.





New Mexico National Guardsmen of the 200th Coast Artillery (AA) (shown in training at Fort Bliss, Texas, before leaving for the Philippines) never fired a live round until the Zeros appeared over Clark Field.

American air raids which began 20 December 1943, during MacArthur's return to the Philippines, left Clark Field's six airdromes in smoking ruin. Clark Field was recaptured by American infantry on 28 January 1943.

The men of the 200th Coast Artillery were firing live ammunition for the first time.

Squadron to guard the Bataan Peninsula, and the 21st Pursuit Squadron to defend the Manila area. The 3d Pursuit Squadron went aloft to intercept the enemy planes over the South China Sea. The 34th, which was to cover Clark Field, was prevented from taking off by a thick dust cloud.

At Clark Field, the Flying Fortresses and the 20th Pursuit Group were still on the ground. The B-17s were parked, peacetime style, in straight lines and were being loaded with bombs and fuel for the raid on Formosa. Some witnesses say the bombers were parked wingtip-to-wingtip, but photographs taken during the attack mysteriously disappeared after the war.

Pilots and mechanics were strolling casually back to the flight lines from the mess halls. At the edge of the field, New Mexico National Guardsmen of the 200th Coast Artillery (AA) were eating lunch around their 37-mm and 3-inch antiaircraft guns. One guardsman looked up and saw a formation of planes approaching the airfield.

"Here comes the Navy," he called. A second guardsman grabbed a movie camera and began taking pictures. At first they thought the bombs were tinfoil.

There were 27 Mitsubishi high-level bombers in the first flight. They came over the unprotected field in a V-formation at a height of 22,000 to 25,000 feet, releasing their bombs just as the air raid siren began shrieking.

The first flight was followed by a second which stayed over the field for about 15 minutes, completely unmolested by American fighters and untouched by antiaircraft fire.

The men of the 200th Coast Artillery were firing live ammunition for the first time. Much of their training had been with broomsticks and boxes or wooden models. The 3-inch gun ammunition was old. The most recent rounds had been manufactured in 1932. The bursts exploded far below the targets and most of the shells were duds. One observer estimated that only one of every six exploded.

During the attack, three P-40s of the 20th Pursuit Squadron managed to get into the air, but five were destroyed on the ground by bombs and others were caught in strafing attacks. The three airborne fighters managed to down three enemy planes despite the fact the Zeros proved faster and more maneuverable than the P-40s.

The Mitsubishis left the hangers, barracks, and warehouses in flames, but miraculously only a few B-17s were destroyed by the high-level bombing. A momentary lull fell over the field as the Mitsubishis winged their way back toward Formosa and then the Zeros came screaming in on low-level strafing runs. The Flying Fortresses began exploding as tracers ignited their fuel tanks.

Simultaneously with the raid against Clark Field, other 11th Air Fleet planes were attacking the fighter base at Iba. The P-40s kept the Zeros from carrying out low-level attacks but the losses at Iba were almost as great as at Clark.

The Far Eastern Air Force had been eliminated as an effective fighting force. Only 17 of the original 35 B-17s remained, the ones that had been sent to Del Carmen. Three P-35s and 53 P-40s had been destroyed. An additional 25 or 30 miscellaneous aircraft (B-10s, B-18s, and observation planes) were gone. Many of the planes listed as operational were heavily damaged. Casualties for the day were 80 killed and 150 wounded.

MacArthur issued a statement blaming the losses on the "overwhelming superiority of enemy forces" but that did little to pacify General Arnold who "could not help thinking there must have been some mistake made somewhere in my Air Force Command." Arnold called up Brereton and asked him "how in hell" an experienced airman could be caught with his planes on the ground. Brereton was sufficiently upset that he reported the conversation to MacArthur and asked him to help him present his case to the Army Air Force.

Military historians, after the war, apportioned the blame for the Clark Field disaster equally between MacArthur and Brereton. MacArthur hesitated too long before giving Brereton permission to launch the B-17s against Formosa. Brereton failed to provide fighter cover for the Flying Fortresses while they were being fueled and loaded with bombs.

Many historians suspect the Philippines were doomed the moment Japanese bombs rained down on Pearl Harbor and cut supply lines between the Philippines and the US. The destruction of the Far Eastern Air Force, however, robbed the "Battling Bastards of Bataan" of their only real fighting chance. The Navy, realizing the Far Eastern Air Force was in no shape to provide air defense for the fleet, prudently steamed south, and without the Navy there could be no active defense of the Philippines.

Many of those who were directly or indirectly involved in the Clark Field disaster rescued their reputations and careers by their heroism during the desperate defense of Bataan. For too many, though, the only epilogue to Clark Field was death on the nightmarish Bataan Death March which followed the Japanese conquest of the Philippines.

HABITUAL ASSOCIATION: Redefining the Concept of Air Defense Artillery

by Captain Al Landry

"Air power is indivisible. If you split it up into compartments you merely pull it to pieces and destroy its greatest asset — its flexibility."

Field Marshall Bernard L. Montgomery

These words describe the predicament that had befallen the aviation assets of the US Army at the outset of the Allied invasion of Algeria and Morocco during World War II. The results of the US concept for the employment of aviation were predictable and conclusive. American troops on the front lines quickly grew discouraged as massed enemy aircraft penetrated the forward airspace and struck repeatedly and successfully against troops, supply points, and communications centers. There was no immediate recognition that the occasional friendly fighter passing overhead on patrol was both the cause of the problem and the potential solution.

The American ground commanders of the day were virtually unanimous in their belief that direct support of the ground battle was the principal reason for the existence of the Army Air Corps. As such, command of those aircraft was given to the ground commanders. The aviation assets were insufficient in strength and quality to fulfill a direct support mission, yet they were divided and parceled out for that purpose. The resulting protective air umbrella was, therefore, more illusion than reality. As long as the aviation assets were split apart, the air leaders could not consolidate their strength sufficiently to counter the enemy successes. The attempts made by the Allied bomber units to relieve pressure by interdicting German rear areas were largely unsuccessful because fighter escorts were not available. The aircraft capable of performing escort missions were tied down by the unsuccessful front-line patrols.

Air power was a relatively new element of combat power in 1942. Where experience and understanding were lacking, prejudices and misconceptions decided the "proper" use of Army aviation. The improper allocation of these limited and valuable aircraft had a devastating effect on the combat power of the Allies. It was not until General Eisenhower reorganized his command for completing actions in Tunisia and was preparing for the invasion of Italy that the American policy for employing aviation was reversed and separate air commands were established. Even then the American ground commanders vigorously protested the loss of their command authority over Army aviation. In spite of the protests, Eisenhower stood firm in the reversal of policy, and the new method of employing aviation to support the force as a whole contributed greatly to the successful completion of the campaign.

The relationship between the WW II situation and air defense artillery (ADA) in the AirLand battle merits investigation. It provides an excellent example of the consequences of misallocating scarce, valuable assets on the battlefield. Today, air defense artillery represents just that kind of resource to the division. Its proper employment in the AirLand battle will be critical to success in that future conflict. Unlike the situation at the outset of hostilities in Africa during World War II, the AirLand battle is projected to be a short-duration, high-intensity conflict. Mistakes in the employment of ADA at the start of hostilities would almost certainly prove catastrophic to our force and could very well decide the outcome of the conflict.

History has taught us an additional lesson: forces fight the way they have been trained to fight. Improper allocation of ADA resources in peacetime training exercises will likely be reflected by similar misallocation in time of war. Because the implications are so significant, the peacetime allocation of ADA in these exercises must fit within the operational concept of the AirLand battle.

The operative tactics which support this concept are discussed in detail in TRADOC Pamphlet 525-5, The AirLand Battle and Corps 86. Our forces are required to:

- See the battlefield in depth and begin early to

disrupt, delay, and destroy follow-on and reinforcing echelons.

- Move fast against the enemy echelons.
- Strike the enemy assault echelons quickly to prevent them from achieving their objectives.
- Finish the opening fight against the enemy assault and follow-on echelons rapidly, destroying the assault armies before follow-on armies can join the conflict.

The success of these operative tactics is contingent upon the protection and preservation of three specific type assets: sensor and surveillance systems, long-range delivery systems, and command and control systems. These form the nucleus of the deep strike capability of our force. The protection of these assets is not simply desirable; it is critical for force survival. Failure in the deep strike permits the enemy to multiply his initial numerical advantage by joining his follow-on echelons with lead echelons in the battle. The consequences of this situation to our force are clearly developed in TRADOC Pamphlet 525-5. Obviously, the operational concept of the AirLand battle is impossible without success in the deep strike.

The need to protect these deep strike assets is clear. The air threat against them is well known; hence, the primary responsibility for defending deep strike resources falls to air defense. Within the division, these ADA resources are already strained by the defense of too many traditionally defended critical assets. The inadequacy of organic ADA at corps and echelons above corps may result in the additional stretching of divisional ADA resources to extend a measure of protection to the assets responsible for conducting the deep strike.

Thus, the AirLand battle presents the divisional ADA battalion commander with the challenge of defending an increasing array of assets in operations that will be intense, brief, and fluid. Transitions between defense and offense will be common. Tremendous amounts of flexible, active air defense support will be required in these operations. The ADA battalion commanders supporting the forces in the AirLand battle must make frequent adjustments to the allocation of their ADA resources in response to those operations.

The fallout from these considerations is simple and direct. Neither the present nor projected Army structure provides a sufficient number of ADA weapons to adequately protect the increasing number of assets requiring ADA protection. Even if the Army did possess sufficient ADA resources to protect all of its critical assets, the process for allocating air defense in the dynamic, fluid operations of the AirLand battle would still necessitate a flexible ADA task organization. In combination, the limited number of ADA resources and the nature of operations in the AirLand battle mandate the calculated employment of *each* ADA weapon system to maximize its value in *each* operation.

The difficult conclusion to this analysis is that the degree of ADA protection, if any at all, afforded an asset will vary depending on its value to rapidly changing operations. Many of the division's assets, including maneuver units, will not receive *any* active ADA protection. Depending on the particular tactical situation, it is conceivable that a maneuver brigade not designated to conduct the main effort might not be allocated any dedicated ADA resources. As unpleasant as this is to maneuver commanders, misallocating limited ADA resources to low-priority assets could prove catastrophic to the entire force.

Based on the projections of the AirLand battle presented in TRADOC Pamphlet 525-5; FM 100-5, Operations; and the revised FM 44-1 (Coordinating Draft), US Army Air Defense Artillery Employment, the situation described above will be the rule rather than the exception. Training in peacetime must incorporate those realistic projections. For divisional ADA units, this mandates substantial modifications to the frequent practice of habitually associating a specific ADA unit with a specific maneuver force.

The peacetime practice of habitual association normally establishes the allocation of one ADA battery for each brigade. Whenever practical, it is certainly desirable for units who have trained together to fight together. Seldom, however, will the tactical situations projected for the AirLand battle permit the allocation of the organic ADA battalion's resources equally and exclusively among the division's brigades. Automatically allocating ADA resources in this manner during peacetime, therefore, gives maneuver units a false impression about the degree of dedicated ADA support available for their operations. Additionally, the development of effective passive air defense measures might be compromised, thus impacting on the survivability of maneuver units assigned minimal dedicated ADA protection in wartime.

The impact of this type of habitual association on the divisional ADA battalion is equally significant. The delicate and difficult task of properly allocating limited ADA resources to support the complex and varying AirLand battle operations is ignored. The peacetime misallocation of ADA resources to maneuver units through habitual association might degrade the effectiveness of the ADA response to the varying requirements of the AirLand battle. The solutions to wartime problems of prioritizing divisional assets, allocating limited ADA resources to defend those assets, supporting frequent and rapid transitions from defense to offense, and protecting dispersed deep strike assets must be realized and practiced prior to the initiation of hostilities.

Although the current practice of habitual association does not lend itself to these objectives, it does have some peacetime benefits. It may serve as a confidence builder for members of the combined arms team. The complex, interrelated functions of combined arms operations rely on concentrated efforts of all its members, and habitual association may contribute to such efforts by fostering esprit de corps and cohesiveness.

The positive results of habitual association can be maintained while avoiding the negative results discussed above through the use of the ADA liaison teams included in the division ADA battalion organization. Habitual association applied to the relationship between specific liaison teams and specific maneuver units maximizes these benefits to the force and fits easily within the operational concept of the AirLand battle. Such limited mutual association enhances the development of confident, capable, and properly trained combat arms teams, without limiting the ADA commanders' tactical flexibility. Regardless of the degree of ADA protection provided a particular unit, each brigade will be assured of continuing support and integration into the divisional ADA picture through the habitual association of a specific ADA liaison team. ADA liaison teams are currently available for each maneuver brigade. Efforts are ongoing at the US Army Air Defense School, Fort Bliss, Texas, to provide additional liaison teams for the division artillery (DIVARTY) and division support command (DISCOM). In the meantime, ADA liaison teams should be provided to both DIVARTY and DISCOM through use of resources within the ADA battalion.

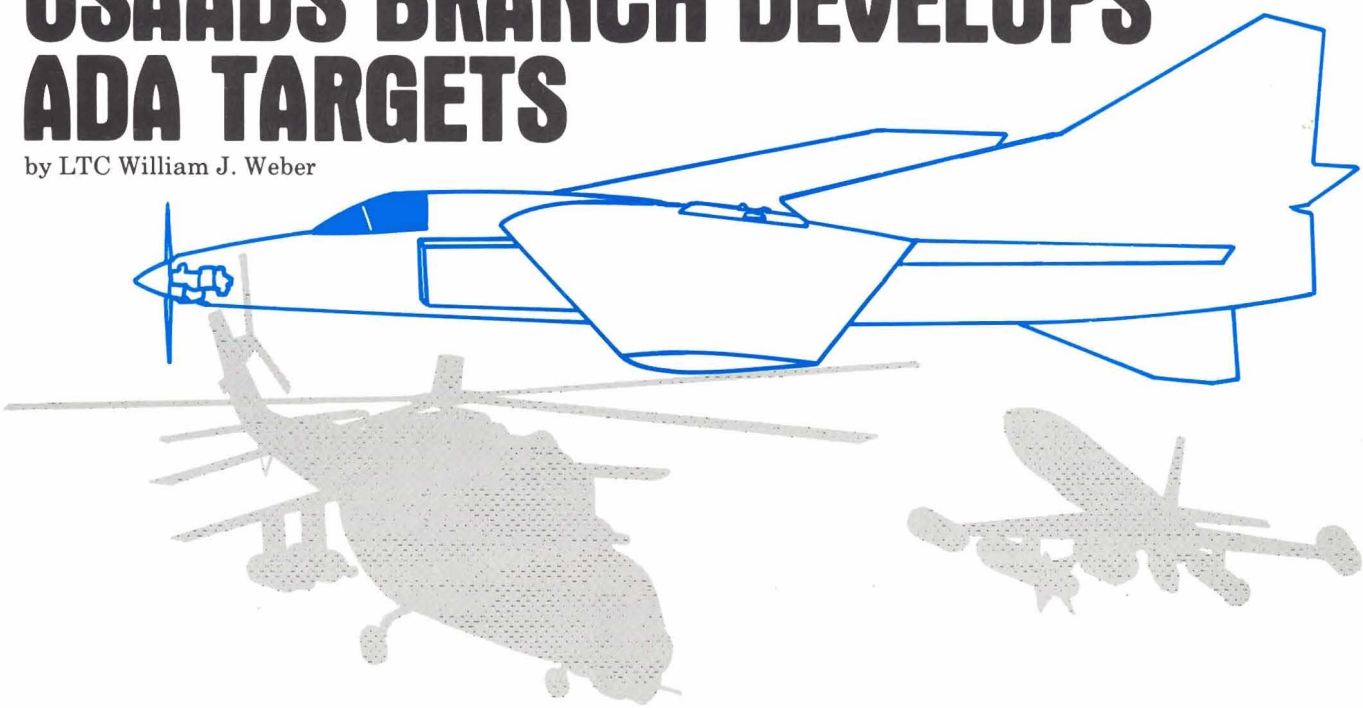
The lessons learned by US forces in the employment of aviation assets during the African campaign of World War II have application to the ability of our force to survive and win in the AirLand battle. As the capabilities of both our forces and threat forces continue to multiply, the importance of properly allocating scarce resources on the battlefield increases correspondingly. The peacetime allocation of those resources in field training exercises should correspond with their anticipated allocation in the AirLand battle. The proper allocation of ADA resources supported by the habitual association of ADA liaison teams with each brigade, DIVARTY, and DISCOM contributes to the preservation of our combat power within the framework of the approved operational concept of the AirLand battle and enhances our ability to defeat the enemy.

CAPTAIN LANDRY *is a 1974 graduate of the United States Military Academy and the ADA Officers Advanced Course. He is currently assigned with the Tactics Department of the US Army Air Defense School, Fort Bliss, Texas, and has previously served with 4th Bn, 61st ADA (C/V); 1st Squadron, 10th Cavalry Regiment; 2d Bn, 44th ADA (Nike-Herc); 2d Bn, 71st ADA (Hawk); and HHC, III Corps.*

During the Revolutionary War, not a single successful air strike was conducted against American Forces. In spite of this, the air defender's greatest problem has always been convincing the maneuver unit commander that the air needed defending. . . *AFTER ALL, WHO WAS GOING TO STEAL IT!*

USAADS BRANCH DEVELOPS ADA TARGETS

by LTC William J. Weber



The skyrocketing costs of air defense training, limitations on training areas, and the increased sophistication of air defense weapons have created an increased demand for realistic, cost-effective aerial targets and training devices.

To meet this demand, the Directorate of Training Developments, United States Army Air Defense School, Fort Bliss, Texas, has a branch specifically designated to study the development, testing, and fielding of air defense targets and training devices. This branch, not so strangely, is named Targets and Training Devices Branch (TTDB).

To convert a training device into a field training device is a rather involved process. US Army Training and Doctrine Command (TRADOC) Circular 70-1 outlines this process which is basically the same for an aerial target as for a training device.

To initiate the process, the proponent school or center prepares an appropriate device requirements document. This document outlines the characteristics of the device, the need for it, and its performance characteristics, as well as logistical and cost information. This document is forwarded to TRADOC for review, evaluation, and approval. TRADOC then confers with the US Army Materiel Development and Readiness Command (DARCOM), the materiel developer, and outlines the strategy for investigating the potential use of the device.

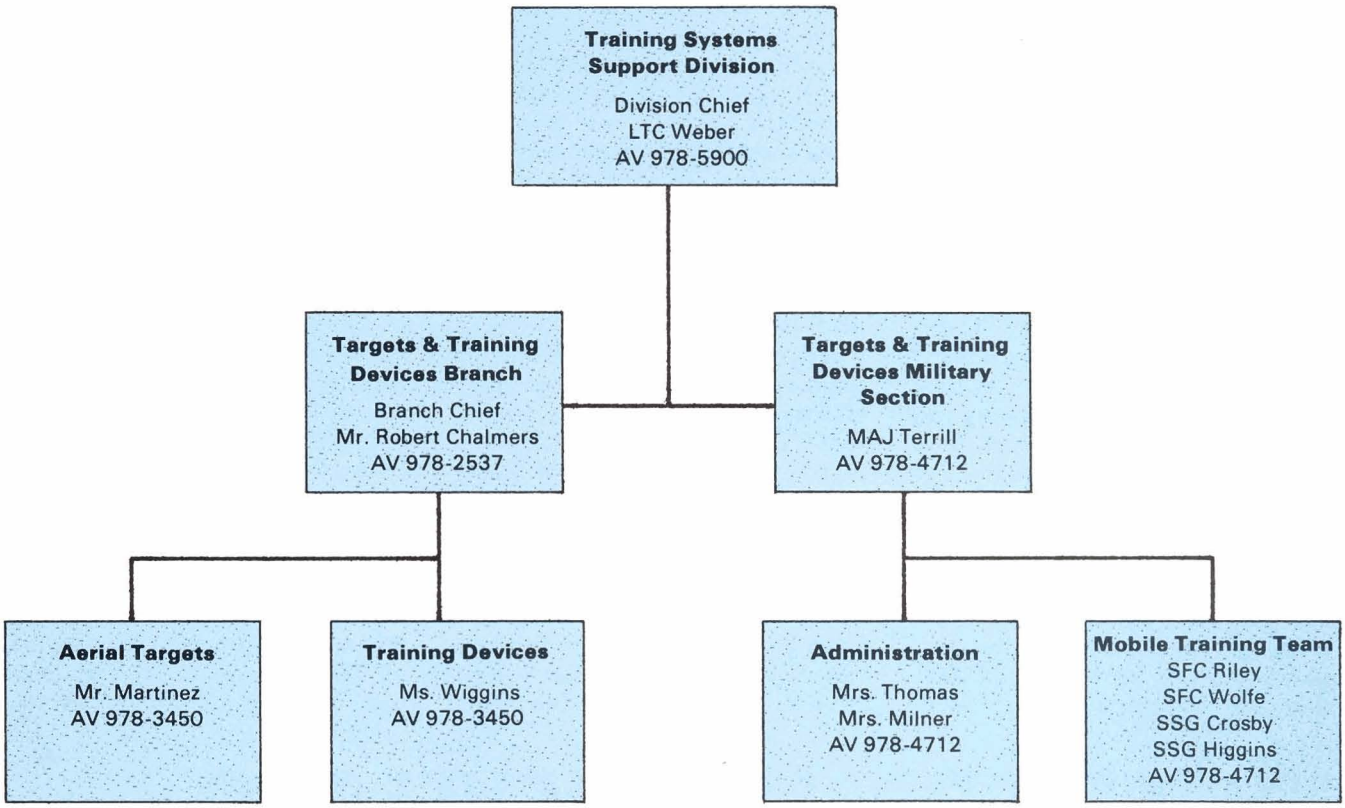
Once TRADOC and DARCOM agree on a strategy, contractor bids are solicited. A contractor is selected and the device is made and tested. When the device meets specifications, the Army places an order with the contractor to produce a specific number of devices. When the devices are ready for fielding, the proponent school provides necessary training to line units. As stated earlier, the process is rather involved but well worth the effort if the device improves our ability to train more effectively. Among training devices that TTDB is presently working on is the Multiple Integrated Laser Engagement System/Air Ground Engagement Simulation, Air Defense (MILES/AGES-AD). Other laser devices have been developed for the Chaparral, Vulcan, and Stinger. These devices were field tested in an operational test at Fort Bliss in August 1981. Refinements were made following this test and a contract was written to purchase the MILES/AGES-AD system. Initial fielding is scheduled to begin in July 1983.

The TTDB continuously seeks to field improved aerial targets. A replacement for the delta-wing, radio-controlled miniature aerial target (RCMAT) has been developed and tested. This target, shaped like a 1/9th scale MiG-27, operates much like the delta wing. Fielding is scheduled for the second quarter of FY 83. To provide more trained operators for this target, an RCMAT operators course was designed. A program of instruction has been forwarded to TRADOC for approval. The course is scheduled to begin during the first quarter of FY 84. To identify these RCMAT operators, an additional skill identifier has been approved by DA and is published in Change 18 to AR 611-201.

Personnel of TTDB are diligently working to field realistic, functional targets and training devices. Your input will greatly aid in this process. The attached questionnaire mailer offers you a chance to contribute to TTDB programs. Tell us your needs and concerns. Together we can

develop and field more effective systems and produce better trained soldiers.

Shown below is an organizational chart which reflects the current Training Systems Support Division staffing according to individual areas of expertise. The Targets and Training Devices Branch has been designated as USAADS' single point of contact for targets, training devices, National Training Center, and MILES. Personnel who do not have access to an AUTOVON line should dial area code 915 plus the prefix 568 and the last four digits listed.



LIEUTENANT COLONEL WEBER *is presently Chief, Training Systems Support Division, Directorate of Training Developments, USAADS. He is a 1958 graduate from LaSalle College and he attended the Field Artillery Basic Officers Course, the Armor Officers Advanced Course, and the Armed Forces Staff College. His various assignments include company command in the 24th Infantry Division, battalion command in the 1st Cavalry Division, and staff assignments at HQ, Department of the Army.*

QUESTIONNAIRE

1. Training Devices

Do you use the training devices you have? ☐ yes ☐ no

What locally fabricated training devices do you use? _____

_____

_____

What kind of training devices do you need? _____

_____

_____

2. Targets

Do you use the RCMAT? ☐ yes ☐ no

Do you have sufficient RCMAT pilots? ☐ yes ☐ no

Do you have sufficient RCMAT repair parts? ☐ yes ☐ no

Do you have a problem with
RCMAT radio control frequency interference? ☐ yes ☐ no

3. Questions, comments or requests: _____

_____

_____

_____

_____

_____

_____

_____

FOLD

Commander
US Army Air Defense School
ATSA-TD-TT
Fort Bliss, TX 79916

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S.MAIL

TO: Commander
US Army Air Defense School
ATSA-TD-TT
Fort Bliss, TX 79916

FOLD

Cut along line at right then fold and mail postage free.

COVERT/PASSIVE AIR DEFENSE SENSORS: PART II

by Mike Maxfield

The following unsolicited manuscript is one author's concepts of ways covert/passive air defense sensors could be applied to existing air defense weapon systems. The Army has not approved the concepts or made plans to purchase the covert/passive sensors described in the story.

This second article in a series on covert/passive air defense sensors (CPADS) describes the adaptation of CPADS to air defense weapon systems. The lead article, published in the April-June issue of AIR DEFENSE Magazine, explained CPADS technology. The third article in the series, scheduled to appear in the October-December issue of AIR DEFENSE Magazine, will explore the impact of CPADS on air defense strategy and tactics.

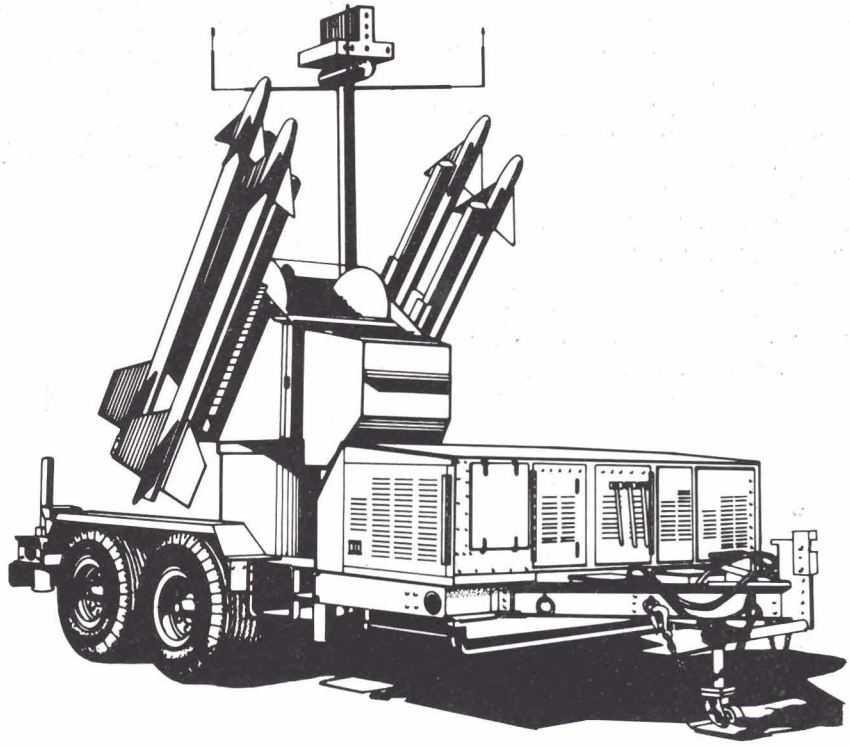
Covert/passive sensor technology provides the air defender with new opportunities to exploit weapon systems already in the field. Due to their light weight, small volume, and minimal power requirements, CPADS require only minor changes for installation on systems such as Vulcan, SGT York, Chaparral, Hawk, Stinger, or Patriot.

PASSIVE/ACTIVE SENSOR SYNERGISM

Texas Instruments Incorporated and Westinghouse Electric Company are currently developing a multisensor concept which will combine passive and active sensor technology. The multisensor system will employ Westinghouse's F-16/SGT York radar with Texas Instruments' passive sensors (radio frequency/direction finding (RF/DF) cueing, acoustic and forward looking infrared radar (FLIR)). The passive/active system will be integrated at a single operating station with one display and sensor control panel.

This type of interface allows an individual soldier to receive, correlate, and discriminate data from four different sensors. The multisensor man-machine interface will also allow the squad or platoon leader to concentrate on command, control, and communications (C^3) within his unit and to effectively coordinate with the rest of the combined arms team.

The following paragraphs describe the relative benefits various air defense weapon systems would derive from a multisensor target acquisition system.



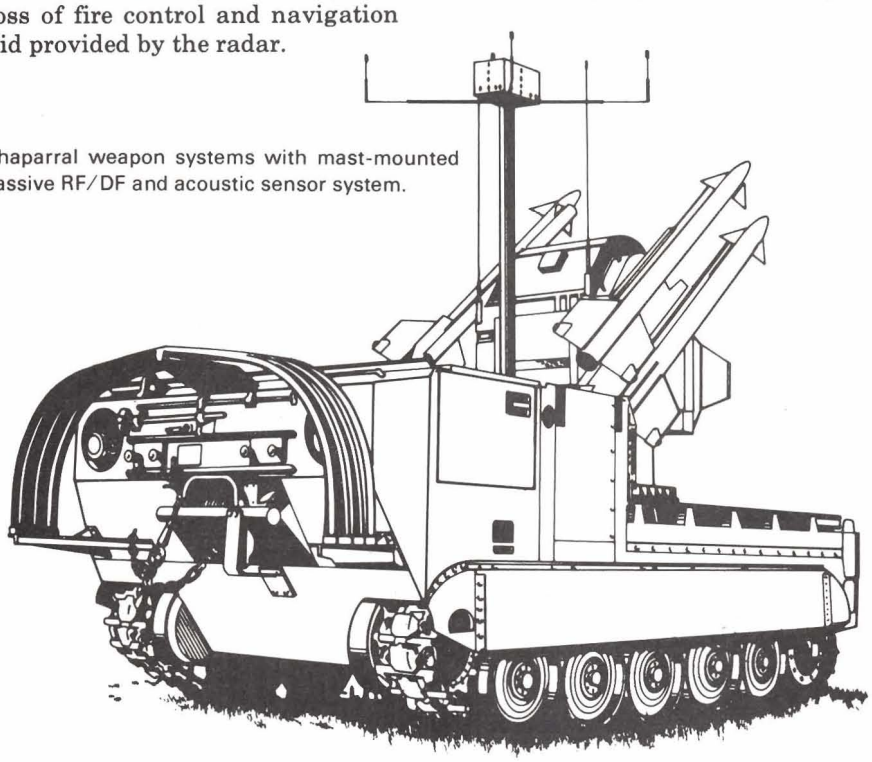
Ford Aerospace trailer-mounted version of MIM-72C Chaparral with a mast-mounted passive sensor system (RF/DF, FLIR, and acoustic sensors).

CHAPARRAL

Utilizing the forward engagement capabilities of the MIM-72C missile, a Chaparral platoon could provide effective, long-range target engagement and destruction of high-performance aircraft attacking both divisional and corps area targets through the use of a multimode passive/active sensor using RF detection, FLIR, and forward area alerting radar (FAAR) for target acquisition, correlation, and identification.

The addition of a passive sensor for target acquisition would provide Chaparral with an enhanced acquisition capability. With the introduction of the night Chaparral FLIR system, the Chaparral has an excellent capability for long-range detection of targets during periods of reduced visibility. A passive RF detection system would "cue" the

FLIR to look at a specific azimuth and elevation where an emitting target has been detected. The passive sensor operation is extremely difficult to detect and defeat due to its nonemitting nature. Specifically, it requires the aircraft pilot to either severely limit or completely shut down his aircraft RF emitter for fear of being detected. The "passive" effect of this action is the degrading effect on the aircraft's ability to accomplish its mission through the loss of fire control and navigation aid provided by the radar.



Chaparral weapon systems with mast-mounted passive RF/DF and acoustic sensor system.

This dual-mode passive sensor system also decreases the requirement for FAAR target acquisition data (although the Army would still require positive visual identification) and, through the collocation of weapon and sensor systems on a single mount (M48), reduces the communications required between operating units, thus enhancing survivability and decreasing the probability of enemy detection.

SGT YORK

The SGT York will be introduced in late 1982 and early 1983. This powerful addition to the air defense forces of the armored and mechanized divisions utilizes a derivative of the APG-66 radar found in the F-16 "Fighting Falcon" for target acquisition and tracking. The radar features excellent electronic counter-countermeasures (ECCM) capabilities against standoff jamming targets. The low side-lobe design of the antenna acts as a deterrent to enemy direction-finding equipment and antiradiation missiles.

To provide for postulated enemy systems which could degrade the SGT York's effectiveness in the mid- to late 1980s, a passive sensor system using passive RF/DF, acoustic, and FLIR sensors could be added to provide an alternative means of target acquisition and to assist engagement procedures in various battlefield scenarios. The RF/DF sensor working with the radar could provide continuous coverage against any radar-emitting aircraft. This would allow the SGT York radar to act in a "burst" mode for ranging and target correlation. This passive/active combination would complicate enemy efforts to DF, jam, or launch antiradiation missiles against the SGT York due to reduced radar emissions.

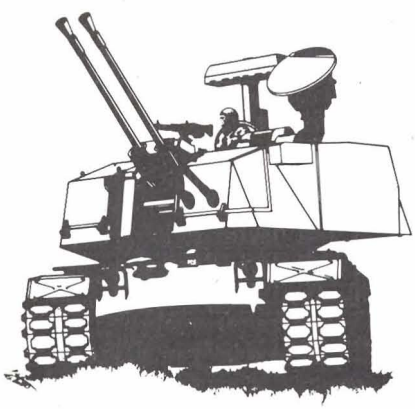
Acoustic sensors acting in concert with the radar would allow the passive acquisition and target tracking of nap-of-the-earth (NOE) flying helicopters and would again use the radar in a "burst" mode to provide target range. This method of covert ranging of the target lessens the probability of detection by the helicopter's radar warning receiver and would allow rapid engagement of the helicopter during its "pop-up" maneuver. The addition of FLIR would give the SGT York system an enhanced detection capability against low-flying, high-speed aircraft operating during periods of darkness or poor weather conditions.

STINGER

To optimize the Stinger forward engagement capability, a lightweight, low-power FLIR could be added to each item, allowing the gunner to acquire, track, and identify the target, particularly in periods of poor visibility due to adverse weather conditions and darkness.

A further enhancement of the Stinger platoon's ability to engage targets (especially high-speed, low-altitude operating aircraft like the Mi-24 Hind) would be the addition of a dedicated sensor system to allow the platoon leader to control the engagement of aircraft within his sector of responsibility.

Ford Aerospace & Communication Corporation, in conjunction with Litton Data Systems and Rockwell/Collins, has developed the Platoon Coordination Center (PCC), a dedicated C^3 system mounted on a General Dynamics Land Systems Division high-mobility multipurpose, wheeled vehicle (HMMWV). The PCC would be used to provide command, control, and communica-

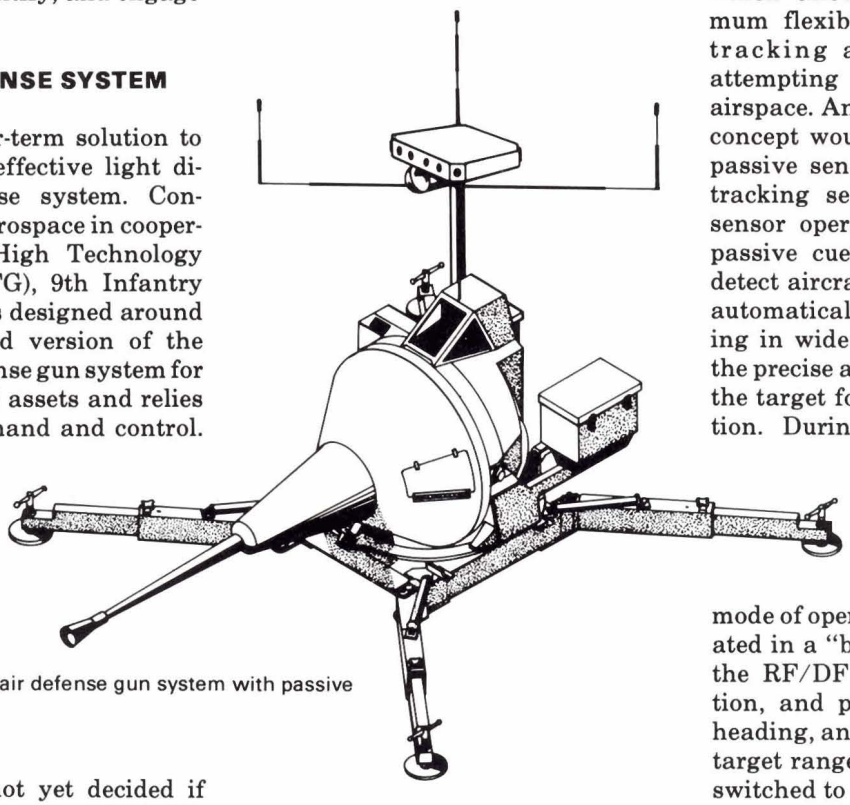


Ford Aerospace SGT York air defense gun with Westinghouse APG-66 derivative radar.

tions for both manportable air defense (MANPAD) and short-range air defense (SHORAD) systems assigned to light infantry divisions and separate brigades, or to the Rapid Deployment Force (RDF). This increased early warning capability for Stinger units is necessary due to the recent TOE reorganization of MANPAD units. Platoon leaders will find it nearly impossible to give the necessary C^3 to the increased number of teams operating with the greater capabilities (head-on engagement, IFF, etc.) that Stinger affords over Redeye. Employment of a passive/active sensor system with automatic or semiautomatic target handoff and cueing to multiple MANPAD teams will allow the Stinger gunner time to acquire, track, identify, and engage Threat aircraft.

LIGHT AIR DEFENSE SYSTEM (LADS)

LADS is a near-term solution to the need for an effective light division air defense system. Conceived by Ford Aerospace in cooperation with the High Technology Test Group (HTTG), 9th Infantry Division, LADS is designed around a prototype towed version of the SGT York air defense gun system for defense of critical assets and relies on PCC for command and control.



Ford Aerospace light air defense gun system with passive multisensor system.

The Army has not yet decided if LADS will be towed, HMMWV-mounted, or light armored vehicle-mounted. As currently projected, the PCC sensor package would include a modified SGT York radar for target acquisition, FLIR for target identification and evaluation, and a laser range finder for target ranging when range data from the radar is not available due to electronic countermeasures. Additional sensors such as RF/DF cueing and acoustic sensors could be added to the PCC as the enemy air threat intensifies throughout the decade.

The LADS gun sensor system would utilize a FLIR to maximize target acquisition and destruction during periods of darkness and poor weather conditions. Target acquisition and cueing information will be transmitted from the PCC to the gun system via a Rockwell/Collins packet radio system using a Litton briefcase terminal (BCT) in the PCC and the digital communication terminal in the fire unit to display sensor target data and improve command and control of the fire units.

Such a system would be lightweight and applicable for the air assault, airborne, and light infantry units assigned to the RDF. A multisensor system using passive sensors collocated on the fire unit with input data from a SHORAD command and control (C^2) or PCC system equipped with radar could also provide the Chaparral batteries with effective early warning data for long-range target acquisition and early engagement.

SHORAD C^2 SYSTEM

The purpose of the SHORAD C^2 program is to provide alerting and cueing to the SHORAD weapons as well as to distribute other command and control data.

Ford Aerospace, Litton Data Systems, Rockwell/Collins, Texas Instruments and Westinghouse have put together a SHORAD C^2 concept to show how existing air defense equipment can be used to increase force effectiveness. The purpose of this cooperative effort is to show that an effective coordinated SHORAD capability can be provided quickly at a cost the Army can afford.

The objective of Westinghouse and Texas Instruments is to develop a passive/active sensor system which allows the operator maximum flexibility in acquiring and tracking any hostile aircraft attempting to penetrate division airspace. An example of this sensor concept would be a passive-active-passive sensor target acquisition/tracking sequence. This mode of sensor operation uses the RF/DF passive cueing sensor to initially detect aircraft radar emissions and automatically slew a FLIR, operating in wide field-of-view (FOV), to the precise azimuth and elevation of the target for initial visual acquisition. During this initial passive mode of operation, the radar is operated in a "burst" mode to correlate the RF/DF sensor track information, and provide accurate range, heading, and speed of the target. As target range decreases, the FLIR is switched to a narrow FOV for more exact visual identification and analysis of the target. Throughout the sequence of operation, the RF/DF system is consistently providing target analysis based on the frequency, pulse repetition rate, and pulse repetition interval of the aircraft radar. This target information is displayed on the Litton BCT in the SHORAD C^2 system and transmitted via data link over the Collins

USAADASCH LIBRARY

communications systems to the digital communication terminals located at the individual fire units, providing immediate target information for all SHORAD units.

CPADS have obvious application to SHORAD C^2 systems, but the concept described above is only one of many approaches to the problem. Other corporations and other industrial consortiums are working on their own approaches and no one approach has emerged as the difinitive solution. The Army has not solicited studies or recommendations from private industry in this area.

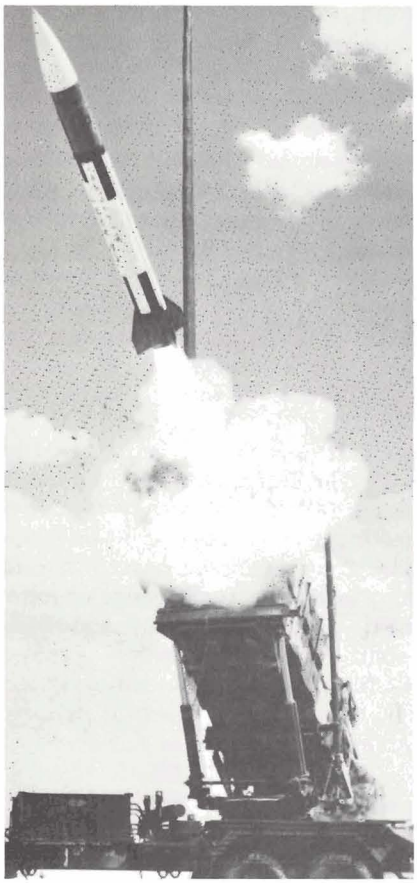
Hand-held digital communications terminal (AN/PSC-2).

Ford Aerospace Platoon Coordination Center mounted on a General Dynamics Land Systems Division HMMWV prototype. Sensor system includes Westinghouse F-16/SGT York radar derivative and mast-mounted passive sensors produced by Texas Instruments. (Drawing courtesy Brennan Keyworth.)

MIKE MAXFIELD *is a former air defense officer with assignments to 2d Battalion, 71st ADA (Korea), and the 101st Airborne Division (Air Assault) to his credit. He attended the Airborne, Air Assault, and Jungle Warfare School while on active duty. A native of Indiana, he holds a bachelor of science from Indiana State University and a master of science in systems management from the University of Southern California. He is now employed as a product marketing engineer in the Defense Suppression/HARM Division of Texas Instruments, Incorporated, in Dallas, Texas.*

THE EVALUATION OF PATRIOT

by Colonel Richard C. Dean



The Army's first Patriot battalion was activated in May and soldiers will soon be training on the new missile system designed to cope with the air threat of the 1980s and beyond. Patriot, the Army's most sophisticated air defense weapon system, is the product of a 15-year test program that makes it the most evaluated Army weapon system ever fielded.

Patriot will replace Nike Hercules. The advanced surface-to-air guided missile system has a high single-shot kill probability, can operate in a severe electronic countermeasure (ECM) environment, and can conduct multiple simultaneous engagements against any high performance aircraft likely to be encountered on the battlefield for the remainder of the century.

Patriot was designed with three goals in mind: reduce manpower requirements; reduce maintenance requirements; and increase performance. The following key design features enable Patriot to meet the assigned goals:

- A trainable, electronically scanned, phased-array radar.
- A digital computer to automatically control system functions or allow the operator, through various displays, to monitor and control system operations.
- A guidance scheme that combines command guidance and semi-active homing.

Patriot's single radar performs functions that require nine radars in older systems. These functions include high and low altitude volumetric search, detection, identification, target tracking, missile tracking, and guidance. Automatic operation gives Patriot far more firepower than the system it will replace and substantially reduces manpower requirements. Computer-aided maintenance, standardized modules, and built-in test equipment mean Patriot will require fewer maintenance personnel than Hawk or Nike Hercules.

The 15-year Patriot test program ranged from relatively simple propulsion tests to highly complex tests involving the interaction of multimillion-dollar simulators with system production hardware.

A review of Patriot testing, or any complex system testing for that matter, is incomplete without addressing simulation. As system capabilities expand, actual field tests become prohibitive due to cost constraints, safety constraints or, in many cases, technological constraints. Simulations, therefore, are powerful tools required to fill gaps in knowledge gleaned from testing. In fact, tests are often constructed to validate a simulation with each succeeding test adding to simulation validity and confidence. A short discussion of major Patriot simulations is appropriate prior to addressing testing.

The flight mission simulator (FMS) is a multimillion-dollar, highly sophisticated system specifically designed to test the Patriot fire unit. The FMS is required since Patriot can track and engage more aircraft than can safely or economically be flown in a test scenario. It is the only method of checking out the fire unit's target-locating capability, realistic multiple simultaneous engagement, rate of fire, and saturation alleviation logic using tactical software. The information and coordination central (ICC), the control facility at battalion level, is also checked by this method since inputs to each fire unit also input to the track load at battalion level. The FMS consists of 13 computers interacting to provide both target and missile simulations to the fire unit operator. It is transparent to both the operator and the radar and operates by inserting radio frequency signals into the radar front end. An additional capability is provided through use of an attached electronic warfare system generating 25 types of ECMs.

Due to limitations in the quantity of equipment, a command and operations evaluation facility (COEF) (consisting of two weapons control computers, a UNIVAC 1108, and three display consoles) was built to simulate the Patriot ICC and engagement control station (ECS), the fire unit's control facility. The COEF is used to test firing doctrine, man-machine interface, and display functions.

To insure the readiness of the missile for flight during the test program, a missile round test set was developed. This device can simulate the radar guidance expected during a specific flight test and cause the missile guidance to "fly" the expected mission. It is a useful tool in an engineering program.

Separate computer simulations have been developed for surveillance, guidance, and end-game lethality. These assure success during flight testing through the use of

Monte Carlo schemes. They are also a primary tool used to map system capability under varying conditions of maneuver, altitude, range, and ECM. Surveillance capabilities are also verified by use of search/track tests in which aircraft are flown against the system under various ECM conditions. Guidance actions are verified in the guidance test and simulation facility (GTSF) as well as by flying a target against a captive instrumented missile. The GTSF is a marriage of guidance hardware, guidance software, the Patriot weapons control computer, and a CDC 7600 computer. Lethality is determined by combining flight test data with lethality end-game simulation using target vulnerability models.

The feasibility study and concept formulation phases of Patriot were concluded in 1965 and contract definition was concluded in 1967. Advanced development was initiated at that time to include "bread-boarding" of critical components and subsystem design. The missile airframe, rocket motor, autopilot, and control actuators were developed and tested in a series of propulsion and control test vehicle flights at White Sands Missile Range, New Mexico. The track-via-missile (TVM) guidance seeker was developed and tested in a series of bay and captive flight tests. During 1973 and 1974, the construction of White Sands Missile Range Patriot test facilities was completed, and the advanced development fire unit was delivered for testing. Ten control test vehicle firings validated the rocket motor, missile aerodynamics, and control surfaces at different mach numbers and altitudes. Also in 1974, a 24-month halt in the program was called to demonstrate proof-of-principle for the TVM guidance with 16 missile fights. Due to outstanding success, only 14 of the 16 were fired. Three missiles scored direct hits.

Engineering development resumed in late 1976 and by January 1980 a total of 52 flight tests had been conducted. During this period, several special test capabilities were developed specifically for Patriot testing and used primarily during missile flight testing and search track tests. Big Crow, a US Air Force KC-135, and Little Crow, a US Air Force T-39, were both configured with especially designed ECM transmitters. ECM pods for use on both manned and drone target aircraft were designed to simulate the ECM threat environment expected by Patriot. A drone formation control system (DFCS) was developed to permit target aircraft to fly formation during Patriot missile firings. The National Training Center also expanded its control capabilities to enable Patriot to conduct multiple simultaneous engagements.

Due to the overwhelming amount of data collected in a program of this magnitude, joint data analysis was the rule rather than the exception. The project office, the prime contractor, several support contractors, and several other Army test and evaluation agencies formed joint teams, tailored to the specific task at hand, and avoided, to a large extent, duplication of effort. This approach was highly successful, although at times intensive discussions were required to obtain agreement.

In June 1979, troop training for Operational Test II was initiated. The test began in November 1979 and included nine missile firings, a 2-week field exercise, a test of troop training, and a "mini-war." This "mini-war" involved approximately 50 manned aircraft, including several friendlies, and a severe countermeasures environment. Three waves of aircraft per day attacked three Patriot fire units over a period of several days. Additionally, two flight mission simulators, which generated additional targets to load the systems, were used. Each fire unit was connected to nontactical peripheral equipment which allowed tape recordings of each track, fire unit action, and missile engagement to be maintained for subsequent tests. ECM types included current US Air Force ECMs as well as types from ECM pods developed specifically to test the Patriot system.

Development Test II started in May 1980 and involved firing an additional eight missiles plus various technical tests to verify system capabilities. A second "mini-war" involving fewer manned aircraft was also successfully conducted.

Patriot entered limited production in the fall of 1980; however, further testing was required prior to entering full rate production, due to shortcomings in the areas of reliability, software maturity, maintainability, and performance against ECM. A confirmation test program (CTP) structured to permit periodic progress reviews was developed to address these problems and to verify successful transition of Patriot from engineering development into production. The CTP is scheduled to be completed in mid-1983.

The color guard of the 1st Battalion (Patriot), 43d Air Defense Artillery, paraded at Fort Bliss, Texas, 12 May 1982 as the Army activated its first Patriot battalion.

The CTP reliability effort emphasized both the missile and ground support equipment (GSE). Seven development missiles were upgraded to correct several reliability deficiencies disclosed during Development Test II environmental testing and were then subjected to a strenuous environmental test simulating 3 years of wear. All seven missiles were subjected to temperature shock and humidity tests. Rail impact was conducted on two hot missiles and two cold missiles. Drop testing, mechanical shock, and vibration testing were conducted on three hot missiles and four cold missiles. The missiles were also temperature conditioned in a shroud, three hot and four cold, for firings. The missiles met the established criteria. Prior to firing, four production missiles will undergo a similar environmental test simulating a lifetime greater than 3 years.

The GSE reliability efforts were more extensive. The power plant received extensive modification to increase its reliability. Analysis of reliability data on the developmental fire units also identified numerous modules and several amplifiers which required redesign. It had been planned to redesign, build, and qualify them at the subsystem level, and then install them into production equipment; however, the CTP required production models of these redesigned elements to be installed in a developmental fire unit, the fire unit environmentally conditioned, and reliability data obtained during a reliability, availability, and maintainability (RAM) demonstration. The RAM demonstration required more than 1,000 hours of operational test time on the reliability upgraded developmental fire unit. The first 300 hours were obtained while conducting formal operations in a static mode, including reorientation, initialization, tracking targets of opportunity, etc. Twenty moves over hard surface and gravel roads, as well as cross-country movements, were interspersed throughout the remaining test period. Reliability during this period was compared to reliability obtained during the static mode and also to the reliability obtained during Operational Test II. Soldiers checked the maintenance procedures, diagnostics, and capability of status monitors during this test. Fire unit reliability assessed during the demonstration was significantly greater than the established criteria. Reliability of the production equipment will be assessed during component design, confirmation/system design, confirmation (CDC/SDC), and during the Operational Test and Evaluation Agency's (OTEA) test phase.

Software maturity was successfully demonstrated during a 24-hour software endurance test conducted to demonstrate time between computer "crashes." The test was conducted with two fire units and an ICC. Inputs to each of the fire units were obtained from targets of opportunity and from the FMS. Electronic counter-countermeasures growth, as well as additional data on software maturity, was obtained during a third "mini-war." Although the number of live aircraft was less than in previous "mini-wars," the FMSs had greater capabilities (including the capability of simulating engagement of both live and simulated targets) and a greater variety of highly sophisticated ECM waveforms was used. This was the most severe test of the Patriot system to date and Patriot performance was outstanding. The first testing on production equipment was begun during CDC/SDC testing in mid-1982. During this phase, the project manager confirms that the contractor has successfully made the transition from development hardware into a production status that produces hardware of equal or greater capability to that designed for engineering development. This test phase lasts several months and again involves search/track tests, seven missile firings, and reliability and maintainability tests.

The testing by OTEA will be conducted in two phases, Follow-On Evaluation (FOE) I and II. FOE I trains an operational battalion to operate the system and evaluates the training methodology and effectiveness. FOE II is the proof of the pudding. Newly trained soldiers are given the equipment (a battalion-minus in this case) and a mission. Both the equipment and the Patriot-trained soldier are evaluated. Current planning for FOE II involves firing missiles against targets in a tactical and heavy ECM environment. A second phase involves conduct of an additional "mini-war" against the battalion-minus and its defended assets. Initial planning includes Air Force participation. The Air Force will provide various types of aircraft and helicopters as well as Air Force command and reporting center facilities. The FMS will again be used to simulate multiple targets and provide the operator the capability to fire simulated missiles. A third phase of FOE II is a mobility phase in which the troops operate the equipment, move the equipment in a tactical scenario, and maintain the equipment. Independent evaluation reports are prepared for FOE by both OTEA and the Army Materiel Systems Analysis Activity.

A total of 100 missile firings and hundreds of search/track tests will have occurred prior to the first Patriot unit being certified as operational. Testing, however, will still not be completed. Further environmental testing is planned on the ground support equipment. There are presently missiles in long-term storage in various environmental locations. These are monitored and periodically checked to determine both their shelf life and their susceptibility to the environment. Reports will come back from the field on reliability data and, when required, changes will be made to the production line or fielded systems. The evaluation of field data is a function which continues throughout the life of the system.

COLONEL DEAN *graduated from the US Military Academy in 1957 and received a Master of Science in electrical engineering from the University of Arizona in 1967. He has served in a variety of air defense and research and development assignments. He is currently the assistant project officer for readiness with the Patriot Project Office, Huntsville, Alabama.*

CHAPARRAL ON FUTURE BATTLEFIELDS

by CPT Steven F. Waters

With the introduction of new air defense weapons like Patriot and SGT York, there's a tendency to think of the Chaparral as a dated system. The article below is one air defender's description of how effectively a modernized Chaparral could fight on a future battlefield if proposed funding is authorized for improvements.

The year is 1989 and the tranquil German countryside has been torn by columns of tanks and fighting vehicles of a dozen nations seeking a military solution to geopolitical problems diplomacy could not solve. On the side of a hill shorn of trees by artillery fires, SP5 Shelton sat at his gunner's controls in a Chaparral mount. His outfit was providing air defense for the brigade trains. The division was holding its own and had done well since the fighting began, despite the odds. Although the air defense warning status was still "red," Soviet air activity had almost come to a halt. Perhaps it was the calm before the next storm, Shelton mused.

The weapons control status was "free," and he was glad that the long controversy over the use of identification, friend or foe (IFF) radar had finally been resolved so that he could use his IFF for identification at night just like Hawk and Patriot crewmen. Just then he was jarred back to reality by a voice in his ear phones. "Hey, Shelton! You awake?" It was the squad leader.

"Yeah, I'm awake. No way I'd fall asleep at a time like this."

"Way you used to rack out on me during those FTXs, I thought I'd keep you honest," the squad leader said. They both laughed.

At that moment, Shelton's weapon display began flashing target information over the forward looking infrared radar (FLIR) scope. The automated short-range air defense (SHORAD) command and control system was providing him data from the nearby improved forward area alerting radar. "Hey, Sarge! I've got a possible target," Shelton yelled. "Heading 95 degrees, speed 420 knots,

altitude 400 meters, range 10 kilometers. He's coming right for us! Get ready! Do you see him yet?"

"Yeah, I got him on the FLIR scope," came the reply.

The training was beginning to pay off. Even though it was a moonless, dark night, the jet could not hide from the Chaparral's eye. Shelton switched to the narrow field of view to magnify the incoming aircraft. Then his finger flipped the auto track switch and he challenged the jet with the IFF. The response was "unknown."

"Enemy! Fire him up when you have lock on!" the squad leader yelled.

Shelton had missile tone on the incoming aircraft. Its range was now 5 kilometers, according to the information on the video display. He fired and could see it all on the FLIR scope. It was over in a matter of seconds. The squad enjoyed the fireworks. "Kill," Shelton said over the line to the squad leader. "Roger," came the reply.

The squad leader then relayed the information of the engagement to his platoon leader over the secure communications net. Secure commo beat the heck out of trying to encode the message in the darkness. It was hard enough to do when you could see during the day. Besides, red filter or not, he didn't like any kind of light at night that might give away their position to enemy patrols or unfriendly partisans. The brigade trains area was still too close to the front as far as he was concerned, especially when you had to provide your own security 24 hours a day. Long time since the good old days of the night defensive position when they used to circle the wagons and everyone got a lot of sleep. The FLIR did wonders for the Chaparral but it made manning the weapon system a 24-hour-a-day operation. The night passed slowly.

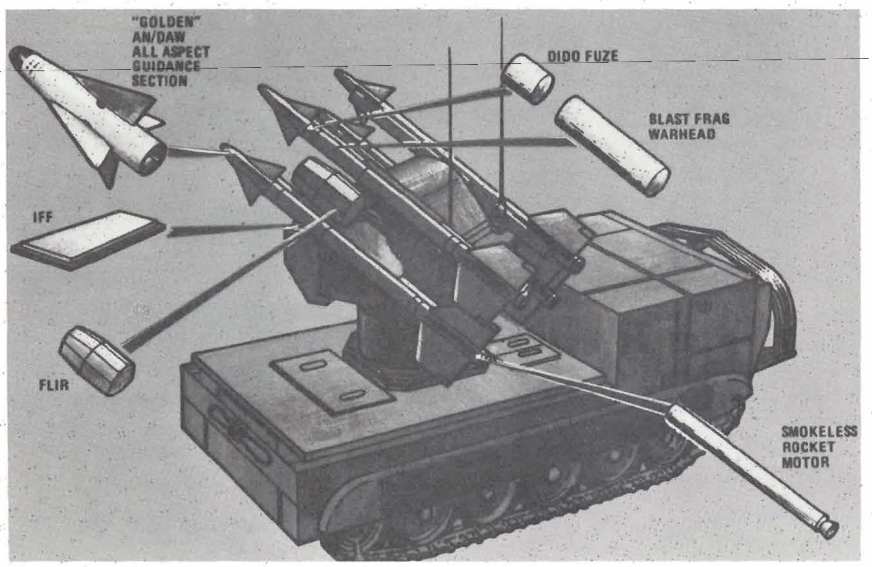
The next morning the squad received status "white" and began to take advantage of the lull in the action. The first order of business was the main power unit. It was getting low on diesel and the squad had already dumped in the spare 5 gallons they always held in reserve. A few minutes later, the platoon sergeant showed up with the battalion fuel tanker. "Am I glad to see you. Another half hour and we'd be out of diesel," the squad leader said. "Well, if you could read a map better we might have found you sooner."

They both laughed. "Hey, driver!" shouted the platoon sergeant to his driver. "Break out the food packs for these guys and trade 'em their empty water and fuel cans. How you doing on missiles?"

"Not good," was the response. "All the fast movers are dropping flares as fast as they can the moment they get in the area. We have to use the POST missiles everytime. I'll never get to use the old 'C' missiles. They just can't compete against those guy's fast flare drop rates. If the action keeps up like it has, I'm only going to have 'C' missiles left by tonight. Get me some from one of the other squads. One of 'em's got W-30 cable problems again." "No way. Everyone's short, just like you. Besides, we had that section of W-30 cable he needed this time. I gave it to him this morning. By the time I left his position he just about had it together. The old man says we'll be getting a big resupply of missiles today. Should be some more POST missiles. Keep your fingers crossed."

The platoon sergeant left. The squad leader had his squad go through preventive maintenance drills on the system and carrier. Even though the air compressor and its parts rarely failed now, things had to be checked. The new fault isolation capability within the launcher helped to detect the rare failures when they did occur. Even the rear compartment had been improved. The blowers, improved ducting, bafflers, and insula-

"Enemy! Fire him up when you have lock on!" the squad leader yelled.



Artist's rendering showing Chaparral improvements.

tion all reduced high temperatures that used to cause high failure rates in Chaparral equipment. The master control indicator panel and hardened radios also did a lot to reduce the maintenance burden. Good thing. With the FLIR device, Chaparral crews worked 24 hours a day when the enemy was around.

By noon the squad was back in "hot" status. An hour later they were into another engagement. SP5 Smith was in the saddle this time, going through the engagement sequence. He pressed the firing button and watched the missile narrow the gap between itself and the ancient MiG-27. The missile flew smokelessly. A shudder went through his spine as he thought what it would have been like with the old missiles, waiting for the smoke to clear, wondering if he'd have time to get a second shot off if the first missile missed or if he was already a dead man because that guy's buddy was flying around with him and tracing the smoke trail back to the Chaparral position. An orange ball appearing in front of him jarred his thoughts back to reality. "Kill," he said. "Roger," came the reply.

An orange ball appearing in front of him jarred his thoughts back to reality. "Kill," he said. "Roger," came the reply.

That night the brigade trains moved out; the line units were too far forward now for the trains to provide timely support. The squad packed up to move. The move forward was uneventful. The squad's driver preferred uneventful moves. It meant less work for him. That hadn't always been true. Up until 2 years ago, he remembered that it was the engine or U-joint or differential that was always going out. Why did they ever put such a good system on such a lousy carrier? The system hardly ever broke down; it was always the carrier. But since they made those improvements to the engine, gave it more power, and put in a different power train, it had been heaven.

Night slowly dawned into day. By noon they were under artillery barrage. Yellow, misty clouds began to waft from where the impacts occurred. "GAS, GAS!" came the alarm.

Immediately the squad began to fully button up their protective chemical suits they had been ordered to don, but leave open, earlier that morning. The gunner put on the ventilated face piece (VFP) protective mask. The air conditioner, with its chemical filter, allowed him to keep his clothing open for the time being, at least until the canopy was opened when he would have to rotate with one of his buddies in the squad. Too bad the VFPs up in the cab could only be used when the squad was on the move. But, he thought, there is a limit to what you can do to a 20-year-old system.

Two hours later they were given the all clear. Another false alarm. The enemy was up to his old tricks again, firing yellow smoke rather than yellow death into our positions. It was better to play it safe, however. He had used the yellow death in the past.

Day turned into night again and the routine of war dragged on. The squad liked the night best. Enemy patrols were still a danger, but at least the infrared source could no longer be seen by the enemy because of the latest electronic counter-countermeasure fix. The night was silent, for now.

The war of the future? Maybe. The Chaparral of the future? Yes. If funding works out and the current improvements planned for Chaparral test successfully, this will be Chaparral, one of the deadliest air defense weapons on the modern divisional battlefield of the future as it is today.

CPT WATERS *is a graduate of the US Military Academy with a master's degree in management/human relations. His past assignments include Chaparral platoon leader (4-61 (C/V) ADA, Fort Carson, Colorado), Redeye section leader (Fort Carson, Colorado), assistant S3 (2-61 (C/V) ADA, Korea) and headquarters battery commander (2-71 ADA, Korea). He is presently assigned to the Directorate of Combat Developments, Fort Bliss, Texas, as the Chaparral project officer, representing the Chaparral field user in the research and acquisition process to insure Chaparral improvements meet requirements and are fielded.*

Training Support Package Teaches Military Ethics

by Chaplain (MAJ) Richard H. Whaley

I am not bound to win; but I am bound to be true. I am not bound to succeed; but I am bound by the best light I have. I will stand with anybody that stands for right, and I will part from anybody when he goes wrong.

— Abraham Lincoln

The past 15 years have seen the nation, the Army, and the Officer Corps shaken by a series of minor and major disclosures of wrongdoing. My Lai brought with it a vicious side of men in war — brutal, vengeful killing of innocent noncombatants: a clear violation of the Rules of Land Warfare. The dual reporting system maintained by the Seventh Air Force Commander, General John Lavelle, was a deep embarrassment to the military establishment. This was clearly a violation of professional ethics and law and resulted in the eventual relief, reduction in rank, and early retirement of General Lavelle. The cases of readiness report falsifications are too numerous to mention. They are ethical violations that jeopardized the soldier in the field as well as, ultimately, the safety of our nation.

The questions raised by these sad events are legion: Why did it happen? How could these officers commit such acts? What has happened to the traditions and professionalism of such a select body of people? Is the West Point code "Duty, Honor, Country" not enough anymore? What is being done to correct the apparent deficiencies in ethical training the Peers Report intimated? These are tough questions without easy answers, but there are answers nevertheless.

A fundamental answer may be found in the oath an individual takes upon becoming an officer. The officer takes an Oath of Allegiance, not to a man but to the United States Constitution, in which is embodied a governing set of principles. These principles are a codification of eternal and religious truths: honesty, human dignity, the value of life, loyalty, and equality. Because these truths are unchanging, the officer stands upon a stable foundation unshaken by the fleeting whims of generations with constantly changing philosophies.

Yet there is a weakness present here which has been demonstrated most clearly over the past few years. If an officer knows little about the principles contained within the Oath of Allegiance, what they are or what they stand for, the words become simply that: words repeated when required — a mere formality to be endured then forgotten.

The liberalization of our society since World War II has resulted in our being less sensitive to the importance of these principles. "Individual rights" seemed to negate responsibility; "duty" became something to avoid; "honor" was a joke that died with King Arthur and his knights; and "country" was only where a person happened to be born. The oath for many became a mere formality.

Too many of our officers were either unconcerned or ill prepared to handle the sensitivities of the profession of arms. In a real sense, a whole generation of officers has functioned in far too many instances without a true understanding and sense of their calling as professional soldiers.

It was against this background that professional ethics, training, and education were addressed as part of the Review of Education and Training for Officers (RETO) Study of 1978. In an effort to correct these ethical shortfalls with adequate, consistent, and progressive training, the RETO Study personnel developed an overall strategy to meet the need, and recommended a cell of individuals to further develop and implement the strategy. In September 1980 this cell was established at the Soldier Support Center.

Subsequent months saw the development of a comprehensive Professionalism and Ethics Training Support Package for the precommissioning phase of officer training (May 1981). A second sequential package consisting of 12 hours of professional ethics

for the officer basic courses was developed and fielded in October 1981. The third sequential package for the officer advanced courses is being developed and will be fielded in late 1982. Subsequent packages for other levels of commissioned and warrant officer courses, as well as the Noncommissioned Officer Education System (NCOES), are anticipated. In time, all soldiers, private through general, will have received formal training in this vital area.

What is the content of the package? Are the students in for a philosophical "head trip" or will they be exposed to unrealistic situations? No, on the contrary, the objective of the training is to accomplish, as a minimum, the following:

- Develop an understanding of how traditional Army values function to support the accomplishment of the mission and to enhance the quality of professional life.
- Improve the ability to reason logically and consistently about ethical issues in the profession.
- Raise sensitivity to the ethical dimension present in many routine military decisions.

These objectives are most supportive of the military mission and enhance the professionalism and competence of the officer.

To accomplish these objectives, the instruction focuses upon the traditional values essential to the military: honesty, obedience, courage, selflessness, etc. The concept of principles and how these are used to establish appropriate standards of behavior are discussed in order to establish a framework for deriving solutions to ethical case studies.

Role-modeling, ethical decision-making, how to identify an ethical problem, and how to foster a positive ethical climate in the unit are all discussed. The long- and short-range consequences of unethical behavior are explored in depth.

The subject of war and morality is discussed wherein the responsibilities of the professional are made clear. Respect for human dignity and moral restraint are presented as clear-cut responsibilities for the professional officer. The use of historical examples serves to emphasize the need for, and the actual practice of, morality and ethics in the combat environment.

Student reaction, from the author's experience, has been generally positive. Students have come to see clearly the broad dimensions of the military profession in tactical, technical, and human terms. They freely admit they are challenged intellectually with new, yet old, ideas, traditions and values. They are surprised that most of the values they grew up with fit comfortably within the military profession. They are eager to make their contribution to the military. They are honest, motivated, and desirous of maintaining a strong positive ethical role model throughout their career.

There are obstacles to the success of this educational undertaking. At all levels of the Officers Corps, there are a few who present a less-than-favorable ethical role model. There are others who deny a problem actually exists. Some resent training in this area, or relegate it to a lower priority because of a perception that ethics is a "soft skill." Yet others falsely interpret ethics training as an attack on or an indictment of their personal morality or their leadership style. The majority of officers strive to be persons of integrity, to be honest and forthright in their careers, and to be ethical in their daily duties within their units. These individuals welcome additional training to broaden their abilities and skills in order to more effectively serve.

With dedication and perseverance, these obstacles will be largely overcome. Misunderstanding, ignorance, and false perceptions about what ethics is, and what the study of it will do, will be gradually eliminated.

Is all this too idealistic? I don't think so. This closing thought by General of the Army Omar N. Bradley may give the reader pause to reflect as to whether we really have an alternative to anything other than the ethical course if we are to survive: "Ours is a world of nuclear giants and ethical infants — we know more about killing than about living."

CHAPLAIN WHALEY *graduated from San Jose College and was commissioned a 2LT in Air Defense Artillery. He graduated from the ADA Officer Basic Course and served as a unit commander in Germany and Vietnam. He later received a master's degree at Brigham Young University and was subsequently granted a branch transfer into the Chaplain's Corps. He is a graduate of the Chaplain's Basic and Advanced Courses and has served as a chaplain in the US and in Germany.*

MSCS: The Future of SHORAD Early Warning

by Frank Schoch

Recent improvements in short-range air defense (SHORAD) weapons have given fire units the capability to engage aircraft several kilometers to their front. Following such improvements as the passive optical seeker technique (POST) and the forward looking infrared radar (FLIR) for improved Chaparral and Stinger, SHORAD commanders found themselves in a position somewhat like the poker player who had the rules of the game changed. Engaging head-on targets today at extended ranges means yesterday's early warning system in which the forward area alerting radar (FAAR) alerted fire units to aircraft via their target alert data display sets (TADDS) is outmoded.

SHORAD commanders did what any poker player worth his salt would do: improvised new plays. They already knew that high-to-medium-altitude air defense (HIMAD) units were a good source of early warning since these units obtained quick and reliable early warning through assorted radar and automatic data links.

Consequently, commanders in the field simply selected a team to deploy to the nearest HIMAD source, which most often was a Hawk missile battalion command post (CP). At the CP, the team leader would view a radar scope and radio information to the SHORAD tactical operations center about approaching targets of interest to the SHORAD battalion. The battalion would then transmit the alert information to its fire units to warn them of the approaching targets.

This was not the end of troubles for SHORAD fire units, however. Having patched over the early warning problems, commanders soon discovered that crew members transferring from another organization became confused when confronted with the new organization's early warning system.

Most commanders realized that the solution to the problem was to standardize the wide variety of early warning systems in existence. Therefore, a conference for this purpose was called for and held at the Directorate of Combat Developments (DCD), US Army Air Defense School, Fort Bliss, Texas, in April 1981.

The outcome of this conference was the manual SHORAD control system (MSCS), a plan which has four distinct phases of implementation: basic MSCS, improved MSCS, enhanced MSCS, and the ultimate objective, SHORAD command and control (SHORAD-C^2) system. Although basic MSCS is still a manual and voice transmitted system, it establishes the groundwork and serves as a model for future MSCSs which will employ enhanced technology.

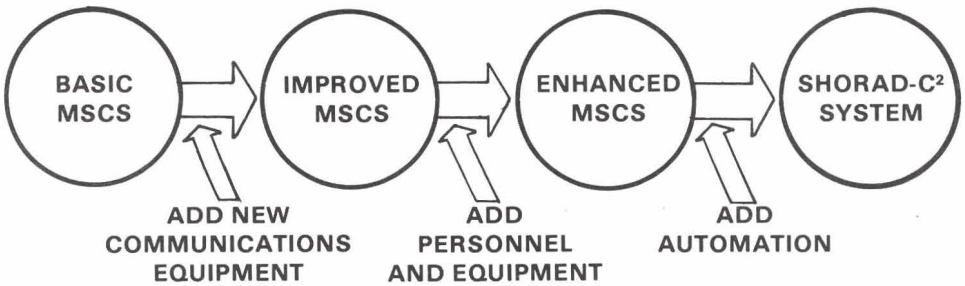
As each phase of MSCS is perfected and advances are made toward the next phase, improvements will be added as funds become available. For instance, communications equipment will be added as improved MSCS is fielded. Equipment and personnel will be added for the enhanced MSCS phase. And in the SHORAD-C^2 phase, the system will be fully automated.

BASIC MSCS:

The first MSCS literature was published as appendix D to FM 44-18 and appendix L to FM 44-3 (Change 2). Appendix D was distributed to the field in extract form. Since that time, appendix D, FM 44-18, has been updated to incorporate procedural changes and will appear in this manual when distributed. This updated version of appendix D was distributed to the field in June 1982 in extract form. The new appendix outlines the basic MSCS, a system that will improve early warning accuracy and reliability by using a refined SHORAD grid and track report format. (See extract 1.)

Under basic MSCS, early warning information received from HIMAD sources by the division's air defense coordination section (ADCS) is

PHASES OF MSCS



relayed to the SHORAD fire units through two other sections: the battalion SHORAD tactical operations center (TOC) and the FAAR.

Located at a HIMAD source, the ADCS officer extracts information applicable to the SHORAD battalion area of interest and relays the early warning to the SHORAD TOC by voice communications on an AN/GRC-106A AM radio. Receiving the information from the ADCS, personnel attached to the SHORAD TOC, in turn, relay the information to the FAAR on their AN/VRC-46 FM radio. The FAAR operator monitors the TOC's broadcast and relays the information by voice transmission to the SHORAD fire units. Fire units receive the early warning information either on an FM radio or the FM receiver of the TADDS.

The additional FM relay between the battalion TOC and the fire unit is required because of the FM line-of-sight limitation, the probable terrain-masking problem between the two posts, and the range limits of radios. FAAR operators, in addition to relaying early warning from higher sources, also report any aircraft not already reported by higher sources that they detect on their radar scopes.

Even though basic MSCS greatly improves SHORAD early warning, communications equipment limitations and personnel shortages reduce the system's efficiency. The limited range of all radios and the line-of-sight restriction of FM radios mean that early warning broadcasts over distance and rugged terrain must be relayed often. Furthermore, the chance a mistake or misunderstanding will occur increases each time the information is relayed.

Basic MSCS with some improved radio capabilities and a 9th Infantry Division model for enhanced MSCS (known as swift target identification notification grid or Reliable STING) were tested during REFORGER 81, which took place in Germany during September 1981.

During the exercise in Germany, the MSCS FAAR operator was often overloaded in periods of intense air activity because he was required to operate his system as well as manually process HIMAD target data. In addition, mistakes attributable to personnel shortages most often occurred during 24-hour manning periods.

Another problem discovered during the exercise was that airspace management information under basic MSCS was not timely enough for the division airspace management element (DAME), the Army flight coordination center (FCC), and division aviation battalions to use. AirLand battle management encompasses the principles for the control and coordination of tactical air and ground air defense resources, both in terms of airspace management and air defense command and control. The integration of air defense operations and offensive air operations demands exacting centralized coordination to prevent mutual interference, especially over the battlefield.

IMPROVED MSCS:

Remedies for equipment and personnel shortage problems discovered during REFORGER 81 and other tests are planned in successive phases of MSCS implementation. For instance, during improved MSCS, new AM radios will be added at the division, battalion, battery, and platoon levels. This will insure early warning information is transmitted in a more effective and timely manner. Radios to be issued are the 400-watt AN/GRC-193 and the 20-watt AN/PRC-104. Replacement will begin within the next 2 years.

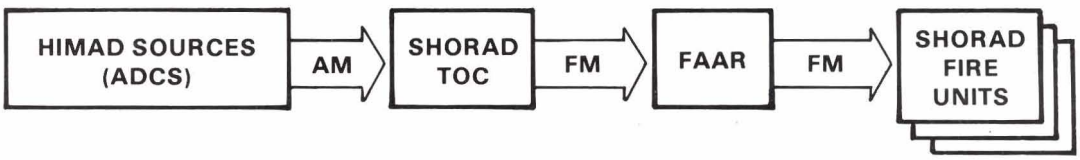
Nevertheless, basic and improved MSCS manage early warning information in the same manner. Early warning under improved MSCS, as in basic MSCS, is still relayed from the ADCS through the SHORAD TOC and the FAAR to the fire units. Therefore, some of the same problems described earlier under basic MSCS also exist with improved MSCS. Enhanced MSCS will make marked changes and improvements in early warning procedures by adding personnel and equipment. These improvements will allow the SHORAD battalion to conduct manual air battle management. This system will also serve as the model for the automated C^2 system of the future and will serve as the manual backup for the automatic system.

ENHANCED MSCS:

Under enhanced MSCS, all early warning information will be centralized at the air battle management operation center (ABMOC).

Receiving early warning data from FAAR and HIMAD sources and possibly airborne early warning platforms such as the E3A Airborne Warning and Control Systems (AWACS), the ABMOC will relay early warning information to retransmission elements, where it will be automatically relayed to the fire units. It will also transmit airspace management information to the DAME and the Army FCC.

RELAY OF EARLY WARNING INFORMATION UNDER BASIC MSCS



EXTRACT 1

DEVICES USED TO FACILITATE MSCS COMMUNICATIONS

SHORAD GRID SYSTEM:

The SHORAD grid system is a clear acetate overlay sheet which divides the division's area into a 200 kilometer matrix of 10 kilometer squares. Each square is assigned a code name; code names run alphabetically by columns. Further division of the squares into 1 kilometer increments enables personnel to report an aircraft within 1 kilometer accuracy. The ADCS, SHORAD TOC, FAAR, and fire units use the SHORAD grid system or a portion of it, depending on their area of concern.

Since the grid system is printed on clear acetate overlay sheets, it can be laid over military maps. This allows soldiers to mark aircraft location in the appropriate grid square with a grease pencil. And since the fire units know their own map and grid locations, they will have a better idea of the aircraft's approaching azimuth when the FAAR operator broadcasts its SHORAD grid locations. This also alerts fire units, telling them to prepare to engage aircraft within their area.

A PORTION OF THE SHORAD GRID SYSTEM

FELIX	GIBSON	HATCHET	INFANTRY	JAMES	KENNEDY	LAVA	MARS	NEON	OLYMPIC
FIGHTER	GINGER	HAWAII	INFERNO	JAPAN	KENOSHA	LEGION	MATRIX	NEPTUNE	OMAHA
FIJI	GLACIER	HAWK	INSECT	JASPER	KENTUCKY	LEMON	MEDIC	NEUTRON	ONION
FINLAND	GOLD	HAZEL	INVADER	JAVELIN	KILDARE	LEOPARD	MERCURY	NEVADA	ONTARIO
FIRE	GORDON	HEMLOCK	IOWA	JELLO	KING	LEWIS	METEOR	NIAGRA	OPAL
FLORIDA	GORILLA	HENRY	IRISH	JERSEY	KIOWA	LICORICE	MEXICO	NICHOLAS	ORANGE
FLAG	GRANITE	HICKORY	IRON	JESSICA	KIWI	LILAC	MIAMI	NILE	ORBIT
FLAME	GRAVITY	HOLLY	IROQUOIS	JEWEL	KLONDIKE	LINE	MIDAS	NITRO	ORCHID

TRACK REPORT FORMAT:

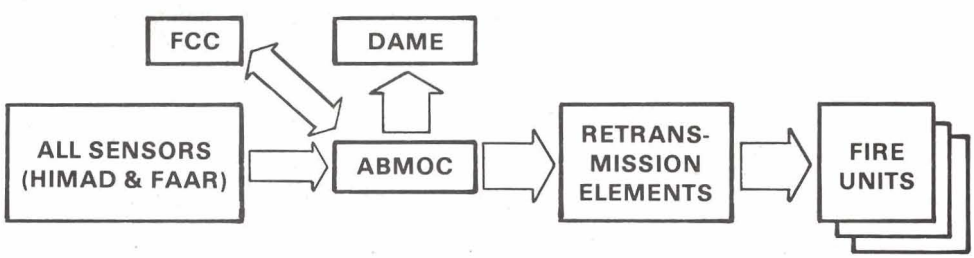
Another device that facilitates communcations in MSCS is the track report format. A track report format is a communications procedure for reporting early warning information of aircraft in a predetermined sequence. For example, each track report begins with a preface which tells the listener whether the report is an initial track, multiple track, track update, or termination. Information reported in the track report format is transmitted in the following chronological sequence:

- Preface.
- Aircraft location.
- Aircraft heading.
- Raid size.
- Aircraft type.
- Tentative identification (it is only tentative because gunners must visually identify aircraft before firing).

This information is provided when available and as time and tactical situation permits. Further information on the track report format and the SHORAD grid system can be found in appendix D to FM 44-18, Air Defense Artillery Employment, Stinger, published on 16 June 1982.

Proposals to add personnel and equipment for the implementation of enhanced MSCS in the next 4 to 5 years have been made to the Department of the Army. If approved, these changes will take place in the battalion table of organization and equipment (TOE) in heavy, light, air assault, and airborne divisions.

RELAY OF EARLY WARNING UNDER ENHANCED MSCS



Additions to TOEs will vary with the division type to which the air defense artillery battery is assigned. An increase of approximately 19 personnel has been requested to support the enhanced MSCS operation. The majority of personnel added will help operate the ABMOC. Equipment additions proposed include radios, shelters, generators, and transportation of configurations to suit each division's mobility needs and still accomplish the early warning function.

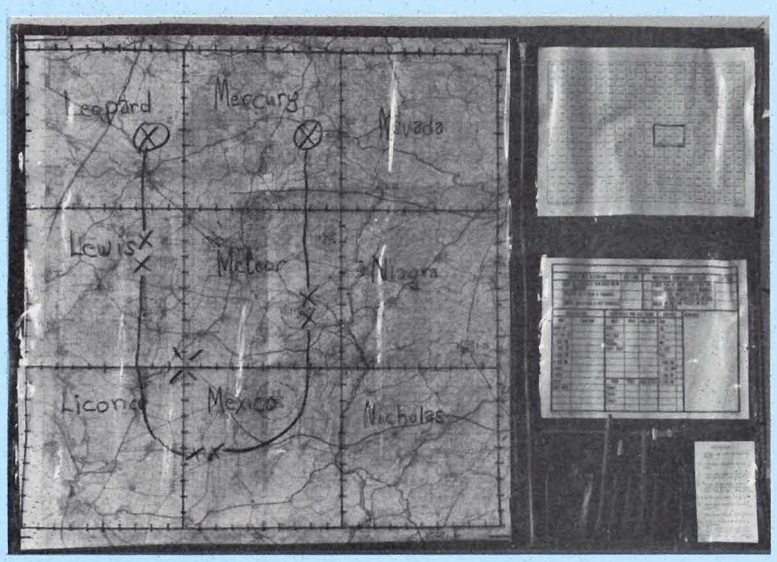
SHORAD-C²:

The final phase of MSCS, the SHORAD-C² system, is in an extensive planning stage. Under this system, all maneuver elements on the battlefield will interface with each other through various digital devices. A time-sharing system will be used to allow the exchange of time essential information between necessary command levels.

Some principal objectives of this system are:

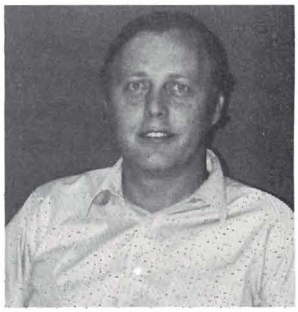
- To alert SHORAD and maneuver forces of pending air attack.
- To rapidly disseminate select air defense artillery weapons control information.
- To cue SHORAD gunners to aircraft location.
- To exchange, process, and display air defense artillery command information.
- To disseminate airspace management information to appropriate users.
- To integrate air defense artillery with other battlefield functional areas, such as field artillery, intelligence, and logistics.

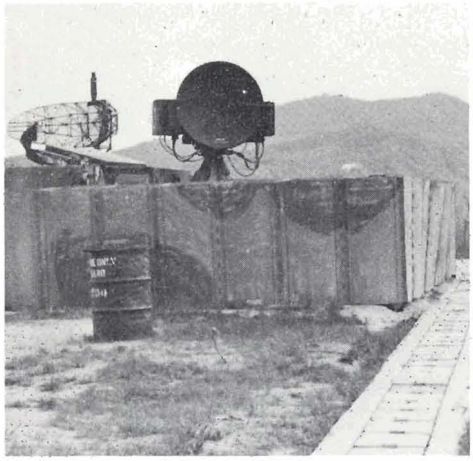
The ability to defeat the enemy depends on accurate and lethal SHORAD weapon systems and a quick and reliable early warning system that will enable SHORAD units to concentrate their fire effectively against attacking aircraft. The accurate and lethal weapons are already in the hands of SHORAD fire units. The development of the SHORAD-C² system, meanwhile, promises to augment these weapons with an early warning system that is not only quick and reliable but also improves communications between all maneuver elements on the battlefield.

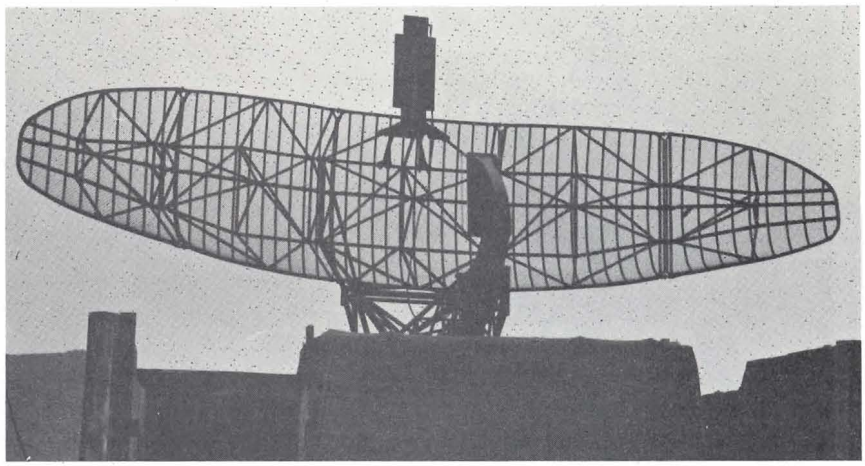


This is the map/plotting case that SHORAD air defenders have been waiting for. They are in production and will be distributed to the field as they come off the assembly line. Their distribution will be a one-time issue to divisional and non-divisional units. Replacements will have to be procured through local training and audiovisual support centers. Questions or recommendations regarding the map/plotting case or SHORAD MSCS are welcomed by C³I Branch, Directorate of Combat Developments, USAADS. Points of contact are MAJ Miles Bramblett and CPT Mike Conley, ATTN: ATSA-CDM-C, USAADS, Fort Bliss, Texas 79916/AUTOVON 978-6231.

FRANK SCHOCH, *a technical writer intern with the Training Literature Division, Directorate of Training Developments, US Army Air Defense School, Fort Bliss, Texas, received a BA in English from the University of Texas at El Paso in 1974. Presently, he is working on a master's in English from the same university. He has worked as an Army and civilian electronic technician.*

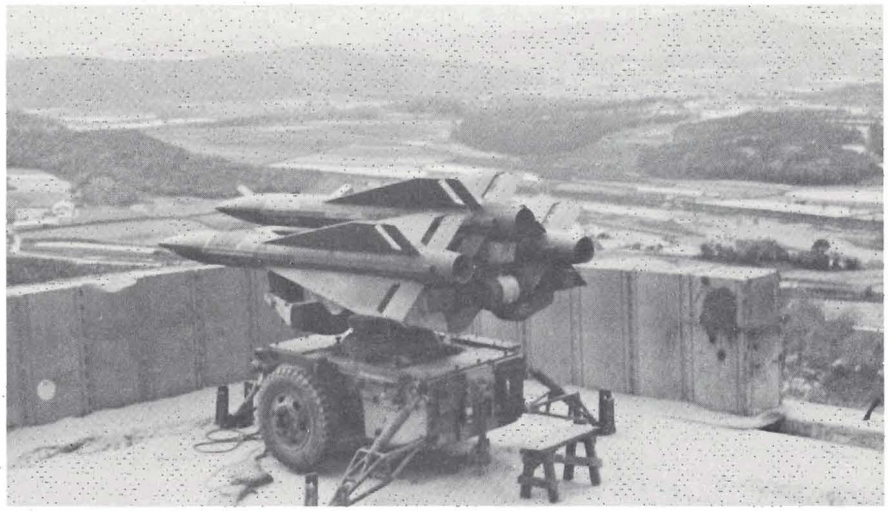






THE LAST TO LEAVE

by LTC Frederick P. Weichel



On 20 July 1982, the men of the US Army's first operational Hawk battalion handed over its equipment and its mission to South Korean soldiers on the hills outside Seoul. The inactivation was the final page in the history of the battalion that began more than two decades ago at Fort Bliss, Texas.

The sun was unrelenting for the 700 soldiers who stood in formation that day on the polo field at Fort Bliss. Monday, 4 August 1960, was a typically hot summer day in El Paso. The previous months of intensive training and hard work in the sand, heat, and sometimes punishing wind had paid off. This formation would establish these soldiers as members of the US Army's first operational Hawk battalion. They were all members of the 2d Missile Battalion, 71st Artillery, whose motto, "First of Its Kind," was soon to gain real and permanent meaning.

The soldiers stood at attention and watched as MG Sam Russell, Commanding General of Fort Bliss, presented their battalion commander, LTC Elwyn E. Leslie, a commemorative plaque attesting to the unit's unique historical status as the first operational Hawk battalion. The deployment of this battalion would provide field commanders with extremely effective low-to-medium-altitude air defense. This was a momentous occasion for all the members of the battalion as well as the more than 16,000 soldiers who served as members of the battalion during the next 22 years. The ceremony completed, the battalion marched from the polo field and into the pages of military history. The first page of that historical document would read: Korea!

After leave, the next stop for the members of the battalion and their equipment was Inchon Harbor, Korea, aboard the USS General J.C. Breckenridge. They arrived on a chilly, overcast Tuesday, 4 October 1960, and immediately prepared for deployment. They were sited in a semicircle to the north and northwest of Seoul. Over the next decade, elements of the battalion deployed and redeployed many times as US forces in Korea were realigned. Despite the constant reshuffling of positions, the battalion's mission of providing air defense for Seoul never changed. To date the battalion has provided nearly 8,000 continuous days of air defense for US and Korean forces. No one could have done it better.

Days turned to weeks, weeks to months, and months to years. The rain, cold, wind, and mud all took their toll on the men and the millions of dollars worth of equipment. By design, the equipment had to be exposed. It could not be protected in shelters or garages from the harsh winters or blistering summers of Korea. The Hawk system, to be effective, needed the high ground; and one of the firing batteries of the battalion had its Hawk's nest perched high on a rugged hilltop

which became the highest operational US Hawk site in the free world. Many of the roads over which these soldiers traveled each day to and from their tactical sites appeared to have been designed as a rough-terrain, vehicle-testing ground. Up on these isolated sites the soldiers of the battalion had their "stick-to-it-ness" tested. Despite their rugged existence, the members of the battalion still used their spare time to help build schools, homes, orphanages, and even a bus station. They sponsored Christmas and Thanksgiving parties at the orphanages and planted thousands of trees on the 22 Arbor Days the battalion spent in Korea. Over the years, the soldiers developed a proud tradition as expert air defenders and splendid American citizen-diplomats.

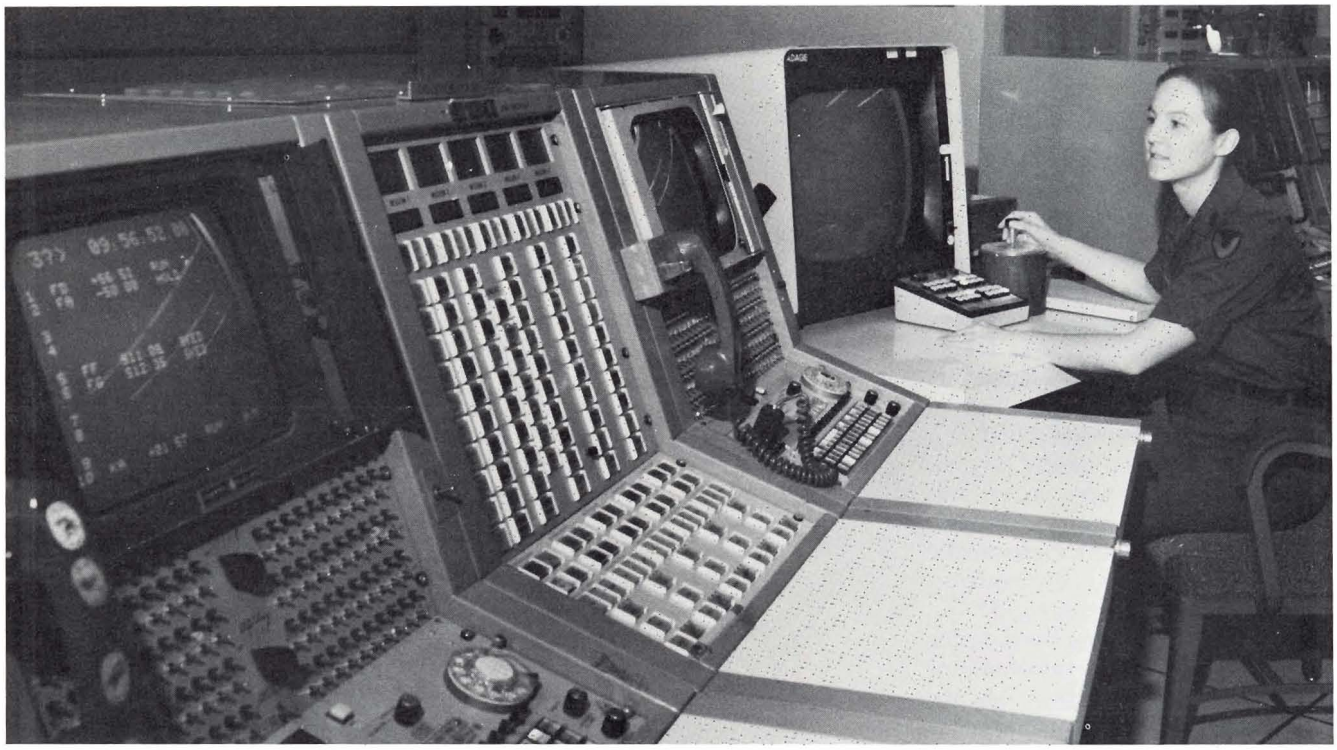
On 1 September 1971, another page in the battalion's history was turned; on this day the battalion was redesignated the 2d Battalion, 71st Air Defense Artillery. Now the name could match the mission: Air Defense!

Standing guard over the approaches to Seoul, the battalion witnessed and participated in some important events. The capture of the USS Pueblo brought the battalion to the front of the foxhole. Then again, the North Koreans struck by downing an Air Force EC 121. Again, the battalion stood ready in determined defense. In 1968, in the valley just below the battalion's Battery C, several North Korean infiltrators were killed by Republic of Korea (ROK) soldiers. At Panmunjom in 1976, US soldiers were set upon by North Korean soldiers wielding axes. This vicious and unprovoked attack, which occurred just 16 miles from Battery C, resulted in the murder of two American officers. Once more, soldiers of the battalion brought their equipment to its highest state of readiness, poised and ready in case the murders were a prelude to an invasion. During these years, the soldier's activities were practically countless. Coupled with the daily manning requirements were field training exercises, conventional maintenance, and other training classes which would insure that the soldiers and their equipment remain ready at a moment's notice. In every case, their individual and team performance was outstanding.

After nearly 22 years of superb service in the Republic of Korea, the battalion was inactivated and the final page of history of the battalion in Korea was written. The first to arrive was the last to leave. The mission and equipment of the battalion were assumed by ROKAADCOM Battalion 188 of the ROK Army, who themselves are deft air defenders. They will carry on the tradition of uninterrupted air defense: scanning the skies, protecting Korea's frontier, prepared to defend, but hoping to deter aggression through readiness.

The fond memories and, for more than 16,000 American soldiers, the once in a lifetime experience gained in Korea are treasures to keep forever. The first to arrive; the last to leave.

LTC WEICHEL *is a graduate of Clemson and the University of Texas. He has served in command positions in Korea, Germany, and Okinawa. He was the last Commander of the 2d Bn, 71st Air Defense Artillery, Combined Field Army, Camp Red Cloud, Korea.*



New System Monitors White Sands Missile Tests

by James Eckles

The TV screen lights up and a map of White Sands Missile Range, New Mexico, appears. The boundaries, along with the various launch complexes, roads, and sites are there. In the middle of the map a jet airplane image moves across the screen. As I watch, a voice from the room's speaker system goes through a countdown. At zero a small missile on the screen moves from its southern launch complex toward the jet. The plane takes evasive action as the missile closes in.

To get a better view, the display operator zooms in on the action. Now the screen shows just a small portion of the range with the missile chasing the plane. The plane's evasive action doesn't fool the missile and the two collide over the western part of the range. Both crash to the desert floor.

As I watch the display operator manipulate the presentation on the monitor, I am reminded of the video arcade games now so popular. There are flashing lights and numbers and action. The new Range Control Center system gives a visual presentation of missile tests on the range. The system is called "Real-Time Interactive Computer Graphics with Large Screen Display." It is a flexible system designed to replace the old plotting boards in the control center.

The old system of tracking missiles is still being used while the new system is being fully activated. The old system, which impressed most visitors, employed plotting boards and digital readouts to track missiles and targets. 1LT Dolores Anderson, who is teaching range controllers to use the new system, says the old plotting boards and digital readouts are outdated. The plotting boards occupy hundreds of square feet of wall space and yet are hard to read, she explains. The mechanical arms and pens which travel across the plotting boards at computer command sometimes go crazy and stick in one place or spray ink on the maps.

The new interactive graphics system displays data on a compact 21-inch TV-like monitor. The new system is also more flexible than the old plotting board technology. Any number of variables and displays can be presented on the system's four monitors or on special projection screens measuring 4 by 4 feet.

The new system divides the monitor screens into several parts. The left side shows a map of the range and traces targets and missiles as they move across the range. Up to four targets or missile images can be displayed at one time. Meaningful symbols are used to designate the targets and missiles. They resemble the actual aircraft, drones, and missiles used. There is even a symbol for tanks. The impact prediction also appears on the screen as a special

symbol which precedes the missile and target images as they travel across the screen.

The map display can show a map image at the scale of 64,000 yards per inch or zoom in to 200 feet per inch for a much closer view of the action. Instead of having the map remain stationary and the target move across it, the computer can be commanded to make the target stay in the center of the picture and have the map move behind it. A trace line, which indicates the complete history of movement during a test, can be used behind missiles and targets. Any number of optics, radar, and telemetry sites along with landmarks, boundaries, and roads can be selected. Additional information can be displayed on command.

The top right corner of the monitor is devoted to digital information. The computer can interpret the data in a number of ways and display it as requested. Speed, for example, can be displayed as knots, miles, or kilometers per hour.

The bottom right corner of the screen is often used to visually display altitude and the distance from point of origin. More than 60 variables can be used to describe a missile's performance.

In addition to displaying graphics on a special high-resolution monitor, hard copies can be made of the images. The line art appearing with this article is a reproduction of screen images from the hard copier. Images projected onto the large screen are in color and are easier to read than the old boards.

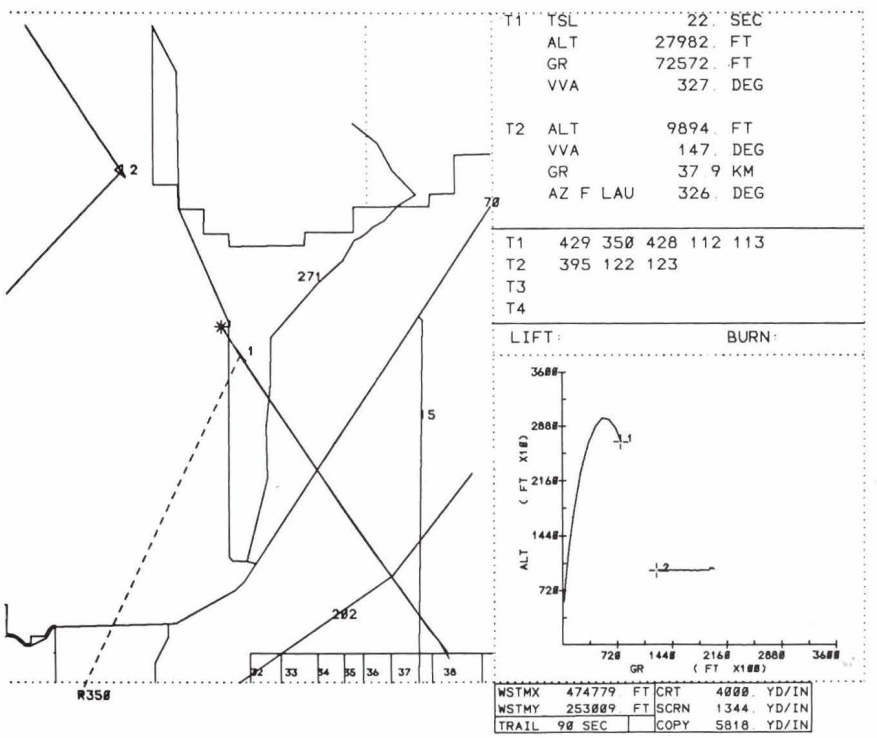
The new system's most important aspect is its flexibility. The operator is able to change the units of the digital readouts on demand. Knots per hour suddenly change to miles per hour. A touch of a button projects instrumentation sites on the map or makes them disappear. A joystick moves the map and its images around the screen.

The graphics system is made by Adage Corporation based in Massachusetts. It is used widely throughout industry as a tool to electronically display design drawings. The missile range's application is unique. To make the Adage computer draw the images needed at White Sands, a special computer program was written to allow data delivered by range instrumentation to be processed by the graphic computer. The software program developed by the National Range Directorate took 2 years to develop and the enhancement of the system's display capability is a continuous process.

Range Control Center operators, like 1LT Anderson, say the new system will allow range instrumentation and control to keep pace with the latest developments in improved weapons technology.

Sample symbols for the new graphics display system

Graphic Display



A reproduction of the TV-like monitor during a sample mission using the new "Real-Time Interactive Computer Graphics" system shows a map of a portion of the missile range. The image labeled "1" is the missile. The line behind it shows its flight history. The star in front of the missile is the predicted impact spot if the missile were destroyed at the instant the hard copy was made. The image labeled "2" is the target. The line behind it shows its flight history. The solid line coming from the left shows that a radar has a beacon track of the target. The dotted line to the missile shows there is a radar skin track and at the beginning of the line, the radar's number is listed. The top right-hand portion of the display is for data in numerical form. For instance, "TSL" stands for time since launch and "ALT" stands for altitude. The bottom right-hand corner shows the altitude of both objects and also their distance from their point of origin. The figures below this graph are the scales used in the displays.

JIM ECKLES *is a public affairs specialist assigned to the White Sands Missile Range Public Affairs Office. He holds a Bachelor of Arts in English from the University of Nebraska and a Master of Arts in English from the University of Washington.*

AIR DEFENSE ARTILLERY TRANSITION PLAN

by LTC Rick Pokras

The 1980s will be a decade of change and challenge for air defense artillery. The introduction of new weapon systems to our air defense arsenal will increase our battlefield effectiveness and survivability only if we succeed in meeting the training and personnel management challenges of this important transitional period.

During the remainder of the decade, the Active Army will:

- ☐ Field Patriot.
- ☐ Field the SGT York Gun.
- ☐ Continue fielding Stinger.
- ☐ Phase out Nike Hercules.
- ☐ Phase down Hawk.
- ☐ Phase down Vulcan.
- ☐ Phase out Redeye.
- ☐ Develop and field a new, lightweight, modular 40-mm gun for light, airborne, and airmobile divisions.
- ☐ Reorganize Chaparral/Vulcan elements into a new Division 86 configuration.

In the past, Army personnel planners charged with the resolution of personnel management problems associated with the introduction of new weapon systems normally addressed system requirements in relative isolation. There was little emphasis placed on the association of one weapon system to any other incoming, outgoing, or static system within the same functional grouping. Times have changed. Personnel planners assigned to the Office of the Deputy Chief of Staff for Personnel (ODCSPER) are deeply engrossed in completing the final stages of the Army's first personnel management plan dedicated to the effective fielding and sustainment of an entire family of interrelated weapon systems — a transition plan for air defense artillery.

The following information is provided in advance of final publication of the transition plan for soldiers within the following career management fields (CMF): CMF 16 (Air Defense Artillery), CMF 23 (Air Defense Missile Maintenance), and the air defense-related MOSs (24M, 24N, 24W, 27P, 27G, 27N, and 27Q) of CMF 27 (Ballistic/Land Combat Missile and Light Air Defense Weapon System Maintenance). These are soldiers whose careers will be directly affected by the plan.

CMF 16

Approximately half of those CMF 16 personnel who become available for reassignment due to the phased deactivation of Nike Hercules or Hawk units will be retained within the CMF to satisfy either the personnel requirements of new Patriot units or Hawk units which remain active. The remaining high-to-medium air defense (HIMAD) CMF 16 personnel will be retained within the career field to satisfy short-range air defense (SHORAD) — primarily SGT York — personnel

requirements or Stinger personnel requirements. These soldiers will require new MOS qualification training and subsequent reclassification.

In addition to those HIMAD personnel who will become available for reassignment, projections indicate that — depending on the fiscal year in question — personnel surpluses within MOS 16H, 16J, 16P, and 16R will make other soldiers available for qualification training and reclassification into different CMF 16, HIMAD, SHORAD, or manportable air defense system (MANPADS) MOSs.

CMF 23

Approximately half of those CMF 23 HIMAD soldiers who become available for reassignment due to the phased deactivation of Nike Hercules or Hawk units will be retained within the career field to satisfy new Patriot (MOS 24T) personnel requirements. These soldiers will require new MOS qualification training and subsequent reclassification. The remainder will receive new qualification training and reclassification into CMF 27 to fill new SGT York personnel requirements in MOS 24W, 27P, and 27Q.

In addition to CMF 23 HIMAD soldiers who become available for reassignment, projections indicate that, depending on the fiscal year in question, personnel surpluses in MOS 25L and 26H will also occur. These soldiers will be retrained and reclassified into a Patriot MOS within CMF 23 or a SGT York MOS within CMF 27.

CMF 27

Soldiers within CMF 27 who become available for reassignment due to a reduction of spaces within their MOS (primarily within MOS 24M and 27F) will receive new qualification training and reclassification within CMF 27. Most will be placed in SGT York MOS 24W, 27P, or 27Q. Approximately three-fourths of the soldiers required to sustain the eight air defense-related MOSs within CMF 27 during the 1980s will be reclassified from CMF 23.

The Air Defense Artillery Transition Plan emphasizes voluntary reclassification. Involuntary reclassification will occur when HIMAD, SHORAD, and MANPADS personnel requirements can not be satisfied voluntarily. All reclassifications will be by HQDA orders directing personnel to attend new qualification training prior to assignment in their new PMOS.

To merit reclassification, soldiers will have to demonstrate that they meet all specifications pertaining to their prospective new PMOS, as prescribed in AR 611-201. This means they must satisfactorily complete formal MOS qualification training at one of the US Army Training and Doctrine Command (TRADOC) service schools. Soldiers reclassified from one air defense PMOS to another will retain their former PMOS as an additional MOS.

INTERNAL SUSTAINABILITY

Projected CMF 16 HIMAD, SHORAD, and MANPADS personnel requirements will be satisfied by the redirection of available CMF 16 soldiers and a planned influx of first-term personnel beginning in FY 84. Projected Patriot personnel requirements through FY 88 will be satisfied by the reclassification of CMF 23 personnel. CMF 27 air defense-related personnel requirements — except for a small number of skill level 4 requirements — through FY 86 will be filled by redirecting available CMF 23 and CMF 27 personnel and by a planned influx of first-time personnel beginning in FY 85.

OVERSEA CURTAILMENTS

When air defense units are deactivated, air defense soldiers having served less than five-sixths of their oversea tour will be reassigned, for the duration of their tour, to other duties within their PMOS, SMOS, or AMOS, or will be curtailed in accordance with the provision of AR 614-30. Soldiers who are receiving oversea extension incentives and who are involuntarily curtailed will not be required to reimburse the Army for leave or incentive pay. Incentive pay, however, will not be made for any unfulfilled portion of a tour extension.

REENLISTMENT

Nike Hercules and Hawk personnel will continue to receive reenlistment options through FY 85. Army Selective Reenlistment Bonuses will be based, during the period of transition, on a consideration of Army needs and availability of funds. Most soldiers reenlisting in or for Nike Hercules or Hawk MOSs may anticipate eventual retraining and reclassification into another air defense MOS. Those who have been awarded bonuses and who are subsequently retrained and reclassified into another air defense MOS will be permitted to retain their bonuses.

PROMOTIONS

Current Army policy is to adjust personnel authorization projections to insure soldiers serving in MOSs scheduled for curtailment or elimination can compete equally with soldiers in other MOSs for promotion. This policy is designed to protect soldiers who reenlist for service in an outgoing air defense MOS.

GENERAL

The Air Defense Artillery Transition Plan provides a "road map" for the execution of personnel management policies concerning Air Defense Artillery and will serve as a model for similar plans which will affect the Infantry, Armor, Field Artillery, Aviation, Communications-Electronics, and Military Intelligence Branches.

HQDA will release additional force modernization information which affects air defense soldiers, including commissioned and warrant officers and Reservists, as changes occur. Air defense soldiers who have specific questions about the transition plan should direct their questions to personnel managers within their chain of command.

The development of personnel management plans lacks the drama that attends the development of new weapon systems like Patriot or SGT York, but little has more impact on the morale, motivation, and competency of the soldiers who will man those weapon systems on future battlefields. The Air Defense Artillery Transition Plan should enable us to produce soldiers as effective as our sophisticated new weapon systems.

PROMOTION BOARD CRITIQUES ADA CAREER FIELDS

The FY 82 E-7 Promotion Selection Board (PSB) was tasked to critique career management fields (CMF) as closely as it critiques sergeants up for another stripe. The results are the following analytical reviews from PSB panels.

CMF 16

"The Air Defense Artillery CMF 16 has a generous supply of well-qualified, highly motivated soldiers who possess great potential," the panel said. The panel went on to point out that CMF 16 soldiers achieve their full potential in some areas while falling short in other areas.

PHYSICAL FITNESS

The CMF 16 panel compared current height and weight data with tables contained in AR 600-9 and discovered 5 percent of the soldiers in the career field fail to meet required weight standards. The panel recommended that physical fitness and weight control programs receive continued emphasis by commanders and proponents.

TRAINING AND EDUCATION

The panel determined soldiers serving in MOS 16B (Hercules Missile Crew Member) and MOS 16C (Hercules Fire Control Crew Member) are not being given ample opportunities to attend Noncommissioned Officer Education System (NCOES) schools. "Evidently," the panel said, "important TOE duty in Europe followed by assignments of a varied nature in CONUS, usually in a secondary MOS and of short duration prior to returning overseas, makes it difficult for these soldiers to compete for the limited school quotas."

The panel noted, however, that soldiers in MOS 16E (Hawk Fire Control Crew Member) and MOS 16D (Hawk Missile Crew Member) attend NCOES schools and technical schools in greater numbers.

The panel recommended that efforts should be made to increase attendance of soldiers in MOS 16B and MOS 16C at appropriate NCOES schools.

UTILIZATION

"Hercules missile and fire control crew members who are not assigned to MOS positions in CONUS are performing other duties such as supply, range control, instructor, and drill sergeant in a highly commendable manner," the panel said.

The panel also observed that soldiers in MOS 16R (ADA Short-Range Gunnery Crewman) serving with Vulcan weapon systems are well utilized in CONUS and overseas. "Efficiency reports reflect a high degree of leadership and technical skills," the panel noted.

The panel was less enthusiastic about the utilization of soldiers in MOS 16S (Manportable Air Defense System).

"Unlike soldiers in MOS 16R, soldiers in MOS 16S appear to be disadvantaged by poor utilization," the panel said. "In many cases, soldiers in maneuver and artillery battalions, trained in the employment and use of the Redeye missile, are assigned duties relating to secondary or additional MOS skills. They are tasked to perform such duties as company armorer, supply sergeant, motor sergeant, and staff duty NCO. Furthermore, this group of soldiers seems to carry more than its share of additional duties like repairs and utilities coordinator or reenlistment counselor."

The panel said that measures should be taken to put Redeye crewmen to work in their MOS rather than divert them to other duties.

PERFORMANCE AND POTENTIAL

"Soldiers in MOS 16J (Defense Acquisition Radar Operator) have been performing their duties extremely well," the panel said, noting that a large number of soldiers in MOS 16J have attended NCOES schools.

"MOS 16H (ADA Operations and Intelligence Assistant) requires duties of such a varied nature (plotter, console operator, communicator, etc.) that specific skills are difficult to attain and proficiency is hindered," the panel observed. It also noted that soldiers reclassified into the MOS are not as well qualified as those who had advanced within the 16H specialty.

The panel recommended that job descriptions and duties associated with MOS 16H be reviewed to determine if a narrower range of skills can be defined.

CAREER MANAGEMENT

"Numerous records reveal that soldiers built solid careers and established excellent reports until they were assigned to duties or weapons with which they were unfamiliar," the panel noted. "At this point, their enlisted efficiency reports reflect a decline in manner of performance. This occurred mostly among MOS 16P, 16R, and 16S and involved cross-assignments among Redeye, Chaparral, and Vulcan weapon systems." The panel suggested that cross-assignments could be eliminated by reevaluating the requirements for MOS 16P, 16R, and 16S in an effort to provide enough skilled soldiers for Redeye, Chaparral, Vulcan, and new weapon systems such as Stinger or Patriot.

CMF STRUCTURE AND CAREER PROGRESSION

"Assignment opportunities in MOS 16D and 16E seem to be balanced between CONUS and oversea commands," the panel said. "Therefore, crew members associated with the Hawk missile system are receiv-

USAADASCH LIBRARY

ing excellent duty positions and are well trained at the E-6 level.

"Although MOS 16J is comprised of high-quality, technically proficient soldiers, there is concern that those selected for promotion might have difficulty assuming the full duties of an ADA operations and intelligence assistant without some additional training," the panel said.

The panel recommended that MOS 16J training and career progression be analyzed to determine if additional schooling or training is appropriate prior to promotion into MOS 16H at the E-7 level.

CMF 23

"The potential of the entire CMF 23 is impressive," the panel said. "The soldiers are high-quality, possess initiative, are eager to learn (as evidenced by the number who have enrolled in off-duty classes), and are success-oriented. While loss rates were not readily available, with talent of this nature, the proponent and the Army should take steps that will encourage these soldiers to remain in uniform for full and meaningful careers." The panel went on to point out other bright spots and some problem areas in CMF 23.

PHYSICAL FITNESS

In determining the number of CMF 23 soldiers who did not meet the height and weight standards, the panel's review revealed 4 percent of CMF 23 soldiers are overweight.

TRAINING AND EDUCATION

"MOS 22L (Nike Test Equipment Repairer) and MOS 26H (Air Defense Radar Repairer) consist of highly trained soldiers who have performed well throughout their careers. These soldiers have had excellent schooling and technical instruction," the panel noted.

"Although 32d AADCOM and USAADS conduct superb Noncommissioned Officer Education System (NCOES) programs of instruction, many NCOs with potential to become E-7s and E-8s are not, for various reasons, attending these career schools," the panel added.

UTILIZATION AND ASSIGNMENTS

The panel concluded that soldiers in MOS 23N (Nike Track Radar Repairer) are being fully utilized both in CONUS and overseas. The board noted that CONUS assignments include electronic instructor duties at the US Army Missile and Munitions Center School, Redstone Arsenal, Alabama, and electronic technician assignments at Fort Bliss, Texas, and White Sands Missile Range, New Mexico.

PERFORMANCE AND POTENTIAL

"MOS 25L (AN/TSQ-73 Air Defense Artillery Command and Control System Operator/Repairer) had superior enlisted efficiency reports and, because of projected requirements, enjoyed a promotion rate this year well above the overall average for all MOSs," said the panel, which lauded the overall potential of soldiers in CMF 23.

CAREER MANAGEMENT

"MOS 24C, 24R, and 24V (Hawk Missile System Repairers and Mechanics) are not as well managed as MOS 23W, 24Q, and 24P (Nike Missile System Repairers and Mechanics), the panel observed. "We found that some Hawk personnel are being diverted to other duty positions such as supply, re-up, motor pool, and prescribed load list clerks. Additionally, they are not attending NCOES schools in sufficient numbers."

CMF STRUCTURE AND CAREER PROGRESSION

The panel was critical of MOS compatibility within CMF 23, pointing to promotional inequities it blamed on the complexity of MOSs within the CMF. "This CMF contains 18 MOSs at the E-6 level which compress to 11 MOSs at E-7 and E-8," the panel noted. "While all MOSs relate to specific equipment and each MOS is highly specialized and technical, managing assignments, schooling, and promotion on a somewhat equitable basis is virtually impossible. For instance, our promotion rate by MOS ranged from 1 percent to over 60 percent and oversea duty requirements varied widely."

The panel pointed out that, "Although all MOSs in CMF 23 offer a wide variety of technical assignments, most CMF 23 E-6s spend their time working in MOS-related jobs. This allows CMF 23 E-6s to use and improve teamwork and leadership skills along with technical skills. Nonetheless, some Nike MOSs such as 23W and 24P offered less promotion opportunities than other CMF 23 MOSs."

The panel was enthusiastic about CMF structure and career progression inside CMF 23. "While some MOSs have E-6s who have more time in service because of slower promotion in past years, generally all specialties have highly talented, fully qualified soldiers," the panel said. "One area of concern is the stress placed on families through repeated oversea duty with minimum time in CONUS assignments."

The panel made the following recommendations:

- Continue to emphasize physical fitness.
- Identify and select only the best soldiers for NCOES schooling.
- Develop and adjust force structure while providing balanced strength levels so that soldiers are fully utilized in their specialty.
- Review and realign Hawk MOSs so that a soldier is available for each position, while discouraging commanders from using these "richly talented soldiers" in non-MOS-related duties.
- Review and restructure CMF 23 organizations to provide equitable promotion opportunities across all MOSs.
- Study oversea duties (particularly Nike) to determine what changes can be made to lessen the hardships on service members and their families.

CMF 27

"Your soldiers in CMF 27 (Ballistic/Land Combat Missile and Light Air Defense Weapon Systems Maintenance) are serving this nation and the Army with great devotion and dedication. Their mission is to maintain vital weapon systems. Comments regarding rapid response to problems, swift technical correction of them, and sound maintenance programs to prevent such occurrences appeared frequently in evaluation ratings. This signals the important point that soldiers in CMF 27 are focused correctly on

mission accomplishment through the operational readiness of the weapon systems they maintain," the panel said.

AWARDS PROGRAM

"The awards program for soldiers in CMF 27 is administered unevenly, a situation not unique to this CMF. Repeated examples surfaced where a soldier's performance over an extended period was outstanding and was recorded on the evaluation report, but no award was presented. Another soldier in another unit with equal responsibility and outstanding performance received an award for a seemingly equal level of meritorious service. Soldiers who serve in administrative fields at the headquarters level receive awards at a much higher rate than individuals in CMF 27. Circumstances and individual performances are different, but uneven award policies and practices are stark," the panel continued.

"The award of a Good Conduct Medal is a sham. This situation is not unique to CMF 27. The panel feels the Good Conduct Medal is awarded automatically and indiscriminately to the point where its award is neither selective nor meaningful. The panel found numerous cases where the medal was awarded despite court-marital convictions, multiple Article 15 actions, and reliefs for cause in periods covered by the award."

UTILIZATION AND ASSIGNMENTS

"On balance, soldiers of CMF 27 do work in their MOS. This may be a result of the CMF's strength posture — all MOSs were either short or balanced in strength. A number of personnel serve in positions that call for lower grades, a puzzling situation since the MOSs are short or balanced. One answer found in several cases was that specific technical requirements of a position were so exacting that a soldier was assigned to it regardless of grade. Action should be taken to ensure these situations are short-term exceptions because they detract from quality of life on the job and deter professional development growth of the soldier. We are pleased to report that instances of your soldiers working in totally unrelated skills are rare. Yet they do occur, and continued emphasis on proper use of soldiers is in order," the panel said.

"One observation worth mention is the large proportion of foreign-born spouses and divorces that seem to prevail in this CMF. No count was made, nor any comparisons drawn against other CMFs. This observation may be an outgrowth of the situation of frequent oversea assignments for members of CMF 27."

"You should examine MOS 24M (Vulcan System Mechanic). Among all other MOSs in CMF 27, soldiers in MOS 24M seem to score lower on EERs and have a record of more Article 15 actions. These are our observations, not empirically derived, that bear further examination by your staff."

TRAINING AND EDUCATION

"Your training program of CMF 27 seems adequate. Technical resident courses are available, and seldom did we find comments where a new individual was criticized in an EER as being technically deficient. Attention, however, should be paid to the Noncommissioned Officers Education System (NCOES). Your soldiers appear to have limited opportunities to attend Advanced Noncommissioned Officer Courses, an extremely vital part of NCOES, especially since members of the CMF serve extensively as technicians rather than leaders at the E4 through E6 levels. This is highlighted by the large number of recent evaluation reports of senior E6 soldiers who were criticized for deficiencies in leadership. More aggressive emphasis on NCOES, coupled with a strong NCO development program at field command levels that stresses leadership skills, may correct this situation and strengthen CMF 27," the panel said.

CAREER PROGRESSION

"We examined your career progression model and found it to be sound. MOSs within the CMF are compatible. The ballistic/land combat systems maintenance side of the CMF looks good, although we are dealing with small numbers of soldiers at certain grade levels. There are choke points such as MOS 27B where 75 E5s are authorized, but 84 E6s are authorized with no outside feeder pattern. We are sure you are dealing with these issues. On the light air defense systems maintenance side, a similar pattern does not exist with merger of MOS related to weapon systems at the E7 level. A hasty examination indicates that MOS 27C and 24N should merge at the E7 grade since both MOSs deal with Chaparral. Also, perhaps MOS 27F and 24M should join at grade E7 since both MOSs deal with Vulcan.

"The panel looked at no female records for CMF 27 in either the primary or secondary zones. All MOSs except two, 24M (Vulcan Systems Mechanic) and 24N (Chaparral Systems Mechanic), are open to females. This situation may be caused by the nontraditional nature of CMF 27 skills for females and because the CMF has not been open long enough for female soldiers to achieve sufficient seniority to be considered for promotion to sergeant first class. It will be a number of years before you see sizeable female representation in your CMF at the senior enlisted grades."

PHYSICAL FITNESS

"Physical fitness does not receive adequate command emphasis. There was great disparity between height and weight data certified by soldiers and medical data. Many soldiers were at the exact maximum authorized weight; and in many cases, that weight was questionable when compared to the most recent photograph. Nine percent of individuals considered in the primary zone were overweight, in poor physical condition, or below Army standards of appearance," the panel continued.

"In general terms, the panel considers CMF 27 to be healthy in accomplishing the readiness mission of the Army. The dedication, sacrifices, and professional competence of your soldiers shine through their individual files."

The US Army Air Defense School, Fort Bliss, Texas, is assigned proponency for the critiqued air defense CMFs. The school is currently studying the PSB evaluation and searching for ways to put these suggestions and recommendations into effect.

WRITING FOR BRANCH MAGAZINES

During a climactic scene from the Academy Award winning movie, *Patton,* actor George C. Scott, as the brilliant but profane Third Army Commander, General George S. Patton, watches his troops smash a German panzer column and exclaims, "Rommel, you brilliant _____, I read your book!"

The book referred to was one Field Marshal Erwin Rommel published prior to the outbreak of World War II. The volume describes his theories of armored warfare. It influenced strategies on both sides during the war and won Rommel a reputation for military brilliance long before his exploits in North Africa won him the name, "Desert Fox."

Rommel's book is one example of how a soldier can have an impact on strategy and tactics while promoting his own career by publishing his ideas in manuscript form. It's an opportunity too many soldiers ignore, even though today's profusion of military magazines, bulletins, newsletters, and journals makes getting a story in print easier than ever before.

The 1981 edition of *Markets for the Military Writer*, published by the Office of the Chief of Public Affairs, Department of the Army, lists 87 military or military-oriented publications which accept manuscripts from soldiers of all ranks. The obvious place for combat arms soldiers to begin is with their own branch magazine. This is true for a number of reasons. Stories which appeal to editors of combat arms branch magazines, because they deal with specific problems encountered by soldiers within the branch, are likely to be rejected as too narrow by editors of Army publications which cover a broader spectrum of military life. Branch magazines, too, are relatively short-staffed in comparison to many Army magazines. This means they must rely heavily on submitted manuscripts to fill their pages. This reliance improves the chances of your manuscript being accepted for publication. Writing for your own branch magazine keeps you safely within your field of expertise and allows you to reach the audience probably most important to you — your fellow combat arms soldier.

The first step in getting a manuscript into print is conceiving and then developing a good idea for a story. Check your branch magazine to see what kind of stories seem to appeal to the editor. The editors of branch magazines are always interested in stories that tell how units put new weapons or tactics into effect or how a unit solves a nagging maintenance problem. There's always a market for historical articles, especially first-hand accounts of small unit actions that teach lessons still applicable today.

It's best to check out your story idea with the editor in advance. You can do this by writing a letter to the editor or by simply picking up a phone and dialing the magazine's AUTOVON number. Don't waste your time researching and writing a story only to discover the magazine ran one just like it in a previous issue or has an identical story set in type for an upcoming edition.

Before you begin to write, check out the length, format, and style that your branch magazine uses. Notice that most branch magazines seldom print stories longer than four or five magazine pages. Stories shorter than one full page, on the other hand, are sometimes difficult to fit into a magazine format; your manuscript, therefore, should be at least 4 and no more than 20 double-spaced, typewritten pages long.

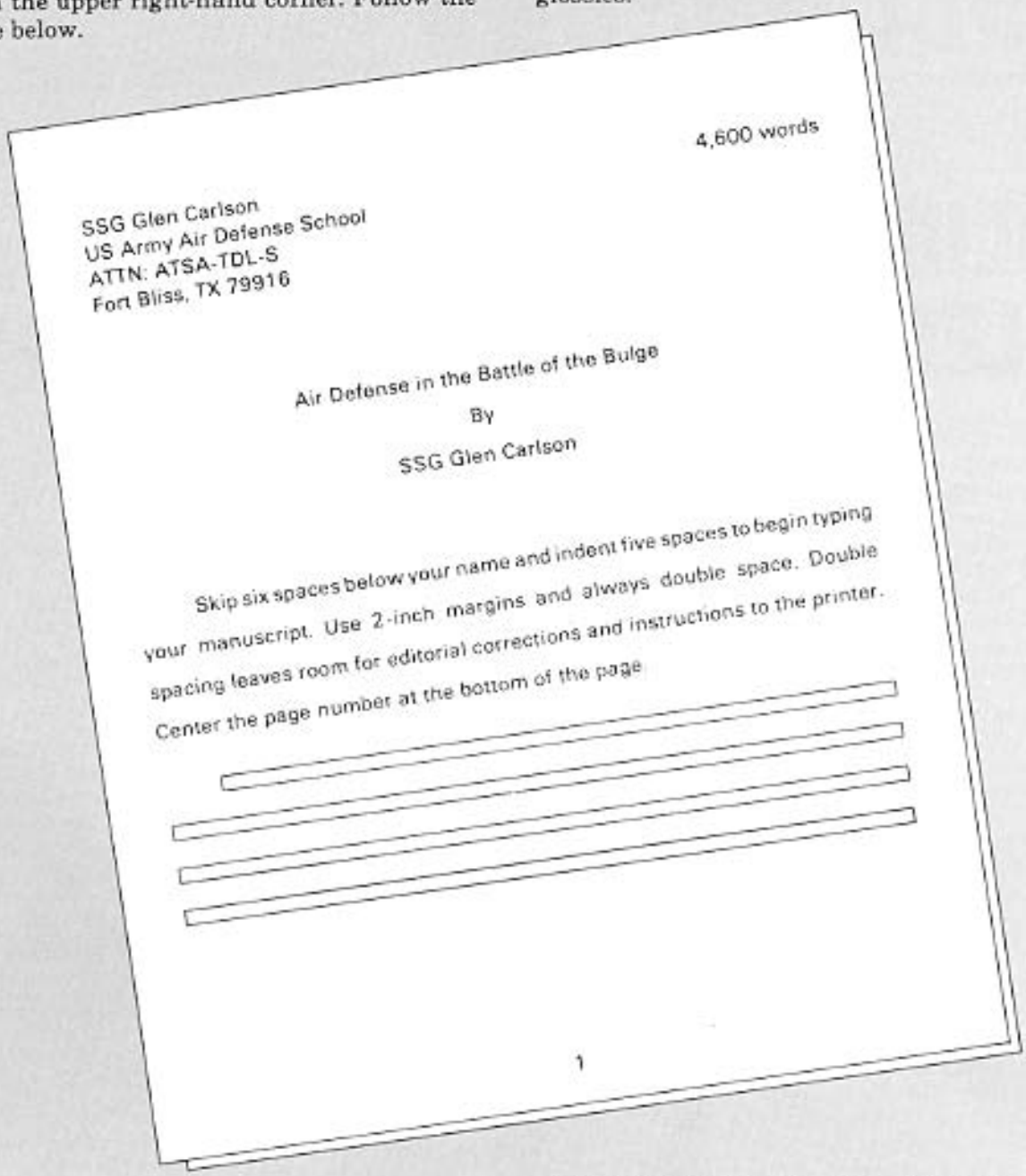
Once you begin to write, use action verbs and short sentences. Avoid words readers will have to look up in dictionaries. Write in the "active" rather than "passive" voice. First drafts seldom succeed. You may have to rewrite your story two or three

times. Once you're satisfied, it's time to put your story into manuscript form.

Army magazine editors are usually happy to receive even poorly typed manuscripts, but it takes little extra effort to make your manuscript look professional.

The first page of your manuscript should contain your name and address in the upper left-hand corner. Many authors place an approximate word count in the upper right-hand corner. Follow the example below.

Always make a carbon copy or a photocopy of your manuscript. Editors will return rejected manuscripts if the author sends a self-addressed envelope, but they are not responsible for manuscripts lost in the editorial process. Sending photographs or artwork to illustrate your story is a good idea, or you might suggest ideas for photographs or artwork to the editor. Most Army magazines prefer black and white, 5 by 7 or 8 by 10 glossies.


4,600 words

SSG Glen Carlson
US Army Air Defense School
ATTN: ATSA-TDL-S
Fort Bliss, TX 79916

Air Defense in the Battle of the Bulge

By

SSG Glen Carlson

Skip six spaces below your name and indent five spaces to begin typing your manuscript. Use 2-inch margins and always double space. Double spacing leaves room for editorial corrections and instructions to the printer. Center the page number at the bottom of the page

1

Army magazines are generally not allowed to pay for manuscripts. Most send free magazine copies to authors. That doesn't mean, however, that writing for military markets is without reward. It gives you the satisfaction of seeing your story in print and a chance to make a meaningful contribution to the military profession.

素晴しい練度に自信を

(". . .be justly proud of your fine skills and high morale." — Oblinger)

OBLINGER HELPS JAPANESE CELEBRATE ADA ANNIVERSARY

MG John B. Oblinger, Jr., prior to turning command of the US Army Air Defense School (USAADS) and Fort Bliss over to MG James P. Maloney, visited Japan to help the Japanese Army Air Defense School celebrate its 28th anniversary. He was interviewed by the editor of Bōkū, the Japanese counterpart of AIR DEFENSE Magazine.

Q: Welcome to the Japanese Army Air Defense School, Camp Shimoshizu. I understand that you served in Japan in the US Army many years ago.
A: Yes, I was stationed in Kumamoto and Beppu from 1954 until 1955 as a young second lieutenant and a forward observer of the 187th Airborne Regiment Combat Team.

Q: Comparing Japan at that time and at present, what is your impression?
A: I am impressed with the many improvements that have taken place, especially the Tokyo International Airport and the freeways. Around 1955, I traveled from Kumamoto to Yokohama by civilian POV and I find the road system has been remarkably improved since that time.

Q: You seemed to enjoy the Shimoshizu Festival in honor of the 28th anniversary of our Air Defense School. Do you have such events in the US Army Air Defense School?
A: Yes, we have several events a year to promote better understanding between the military and the civilian community. On Armed Force's Day, which is in May, we invite military and civilian families to attend and view the displays. Also, there are Memorial Day and Independence Day celebrations, where we have the opportunity to introduce the military to the public.

MG Oblinger

Q: What is your impression of the Shimoshizu Festival, General?

A: Everything was interesting. I enjoyed the parade and the simulated antiaircraft battle was exciting. It was the first time I had seen such talented military motorcyclists in an aerobatic demonstration. The music presented by the Shimoshizu band was very impressive.

Q: Twenty years have passed since we began the Annual Service Practice with Nike missiles at Fort Bliss. Today about 800 Japanese Army personnel participate in the ASP. What is your impression of them, General?
A: They tackle the ASP seriously and eagerly and the results of their firings are always distinguished. Their skills in maintenance and operations are exceptional and we are pleased to have them at Fort Bliss each year. Personnel of the ASP Support Unit not only have a high level of skill but are also well organized, and their military discipline is exemplary.

Q: Compared with other countries' ASPs, what do you think of our Japanese ASP?

私も「防空」を毎号楽しみに見ています

("I look forward to seeing each issue of your air defense magazine, Bōkū." — Oblinger)

A: Each country has its own method of evaluation so we can't directly compare your ASP with another country's; however, the Japanese Army and Air Force have always achieved brilliant results at the ASP. Japanese students at our Air Defense School seem eager to study and they work diligently to overcome any language handicap. They spend a lot of time studying and I'm sure this is one of the reasons they get such good results. We are deeply impressed by their attitudes.

Q: What is you main concern during your stay here in Japan?

A: First, I'd like to promote the friendship between the US Army Air Defense School and the Japanese Army Air Defense School. When General Miki, commandant of the Japanese Army Air Defense School, visited our Air Defense School, he was very active and displayed a great interest in everything, especially our air defense. I'm also interested in the initiatives of the Japanese Army Air Defense School. Secondly, I wanted to see Japan again.

Q: As editor of the Japanese Air Defense Magazine, I am interested in what points you emphasize in your publication, the AIR DEFENSE Magazine.

A: There are three main points. First of all, we must pass on information we receive to air defense units and other branches of service. Secondly, we must introduce new US Army policies and training doctrines to the readers as soon as possible. I have emphasized important matters in air defense and the US Army, taking advantage of the "Intercept Point" articles. Lastly, we introduce current issues about successful training, techniques, and tactics which are not in some field manuals and we publish suggestions and recommendations which sometimes lead to improvements in military activities. We encourage the units to contribute articles about their experiences with equipment, training, and effectiveness and lessons learned which will help them accomplish their missions. Unlike the Bōkū, the articles in the AIR DEFENSE Magazine are not only for young soldiers but are also for officers and senior NCOs.

Q: Compared with other branches of service such as armor and field artillery, tell us about the status of the air defense unit in the US Army and its future trend.

A: Air defense units support armor, infantry, and field artillery units. They have a mission to provide air defense for divisions as well as vital areas in the theater. It is extremely important that we get the funding we need to field air defense weapons such as Patriot, SGT York Gun, and Stinger. The US Army recognizes that air defense is vital and I know air defense will become even more important in the future.

Q: Finally, could you please give some suggestions for our readers of Bōkū?

A: You and the Japanese Ground Self-Defense Force personnel should be justly proud of your fine skills and high morale. Hawk and Nike missiles are being phased out of the US Army, but they are still excellent weapons. Certainly other branches of your service will realize they can and must rely on air defense units.

Thank you, General Oblinger, for granting me this interview in spite of your tight schedule. I hope you will have a pleasant trip home.

DEPARTMENT OF THE ARMY

Lineage and Honors

44th AIR DEFENSE ARTILLERY

Organized 26 March 1918 in the Regular Army in France as the Howitzer Regiment, 30th Brigade, Coast Artillery Corps

Redesignated 7 August 1918 as the 44th Artillery (Coast Artillery Corps)

Inactivated 31 August 1921 at Camp Jackson, South Carolina

Redesignated 1 July 1924 as the 44th Coast Artillery

Redesignated 13 January 1941 as the 54th Coast Artillery

Activated 10 February 1941 at Camp Wallace, Texas

Regiment broken up 28 February - 5 June 1944 and its elements reorganized and redesignated as follows:

Headquarters and Headquarters Battery on 5 June 1944 as Headquarters and Headquarters Battery, 152d Coast Artillery Group
1st Battalion on 5 June 1944 as the 606th Coast Artillery Battalion
2d Battalion on 28 February 1944 as the 49th Coast Artillery Battalion
3d Battalion on 5 June 1944 as the 607th Coast Artillery Battalion

After 5 June 1944, the above units underwent changes as follows:

Headquarters and Headquarters Battery, 152d Coast Artillery Group disbanded 3 August 1944 at Camp Livingston, Louisiana
Reconstituted 28 June 1950 in the Regular Army and redesignated as Headquarters and Headquarters Battery, 54th Field Artillery Group
Activated 17 January 1955 at Fort Bragg, North Carolina
Redesignated 21 June 1958 as Headquarters and Headquarters Battery, 54th Artillery Group
Inactivated 7 November 1969 in Vietnam

44th AIR DEFENSE ARTILLERY

606th Coast Artillery Battalion disbanded 3 August 1944 at Camp Livingston, Louisiana

Reconstituted 28 June 1950 in the Regular Army; concurrently, consolidated with the 54th Armored Field Artillery Battalion (active) (see ANNEX 1) and consolidated unit designated as the 54th Armored Field Artillery Battalion, an element of the 3d Armored Division

Inactivated 1 October 1957 in Germany and relieved from assignment to the 3d Armored Division

49th Coast Artillery Battalion inactivated 20 January 1946 at Zambalas, Philippine Islands

Consolidated 28 June 1950 with the 49th Field Artillery Battalion (active) (see ANNEX 2) and consolidated unit designated as the 49th Field Artillery Battalion, an element of the 7th Infantry Division

Inactivated 1 July 1957 in Korea and relieved from assignment to the 7th Infantry Division

607th Coast Artillery Battalion disbanded 31 July 1944 at Camp Rucker, Alabama

Reconstituted 28 June 1950 in the Regular Army; concurrently consolidated with the 44th Field Artillery Battalion (active) (see ANNEX 3) and consolidated unit designated as the 44th Field Artillery Battalion, an element of the 4th Infantry Division

Inactivated 1 April 1957 at Fort Lewis, Washington, and relieved from assignment to the 4th Infantry Division

Headquarters and Headquarters Battery, 54th Artillery Group; 54th Armored Field Artillery Battalion; and the 49th and 44th Field Artillery Battalions consolidated, reorganized and redesignated 7 November 1969 as the 44th Artillery, a parent regiment under the Combat Arms Regimental System

Redesignated 1 September 1971 as the 44th Air Defense Artillery

* * *

ANNEX 1

Constituted 1 October 1933 in the Regular Army as the 54th Field Artillery

Redesignated 13 January 1941 as the 54th Field Artillery Battalion and assigned to the 3d Armored Division

Activated 15 April 1941 at Camp Beauregard, Louisiana

Redesignated 1 January 1942 as the 54th Armored Field Artillery Battalion

Inactivated 10 November 1945 in Germany

Activated 15 July 1947 at Fort Knox, Kentucky

44th AIR DEFENSE ARTILLERY

ANNEX 2

Constituted 1 October 1933 in the Regular Army as the 49th Field Artillery

Redesignated 1 June 1941 as the 49th Field Artillery Battalion, assigned to the 7th Division (later the 7th Infantry Division), and activated at Fort Ord, California

Inactivated 20 July 1947 at Seoul, Korea

Activated 20 March 1949 at Jimmachi, Honshu, Japan

ANNEX 3

Constituted 1 October 1933 in the Regular Army as the 2d Battalion, 47th Field Artillery

Activated 1 June 1941 at Fort Bragg, North Carolina

Reorganized and redesignated 17 December 1941 as the 44th Field Artillery Battalion and assigned to the 4th Motorized Division (later the 4th Infantry Division)

Inactivated 18 February 1946 at Camp Butner, North Carolina

Activated 15 July 1947 at Fort Ord, California

* * *

CAMPAIGN PARTICIPATION CREDIT

World War I
Champagne-Marne
St. Mihiel
Lorraine 1918
Alsace 1918
Champagne 1918

World War II
Normandy (with arrowhead)
Northern France
Rhineland
Ardennes-Alsace
Central Europe
Aleutian Islands (with arrowhead)
Northern Solomons
Eastern Mandates
Leyte
Ryukyus

Korean War
UN defensive
UN offensive
CCF intervention
First UN counteroffensive
CCF spring offensive
UN summer-fall offensive
Second Korean winter
Korea, summer-fall 1952
Third Korean winter
Korea, summer 1953

Vietnam
Counteroffensive, Phase II
Counteroffensive, Phase III
Tet Counteroffensive
Counteroffensive, Phase IV
Counteroffensive, Phase V
Counteroffensive, Phase VI
Tet 69/Counteroffensive
Summer-fall 1969
Winter-spring 1970
Sanctuary Counteroffensive
Counteroffensive, Phase VII
Consolidation I
Consolidation II

44th AIR DEFENSE ARTILLERY

DECORATIONS

Presidential Unit Citation (Army), Streamer embroidered BEACHES OF NORMANDY

Presidential Unit Citation (Army), Streamer embroidered ST. LO

Presidential Unit Citation (Navy), Streamer embroidered VIETNAM 1966-1967

Valorous Unit Award, Streamer embroidered QUANG TRI-THUA THIEN

Meritorious Unit Commendation, Streamer embroidered VIETNAM 1966-1967

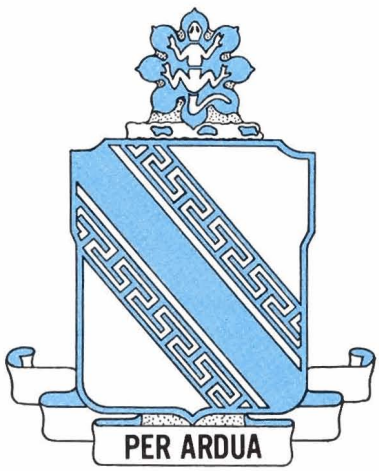
Meritorious Unit Commendation, Streamer embroidered VIETNAM 1968-1969

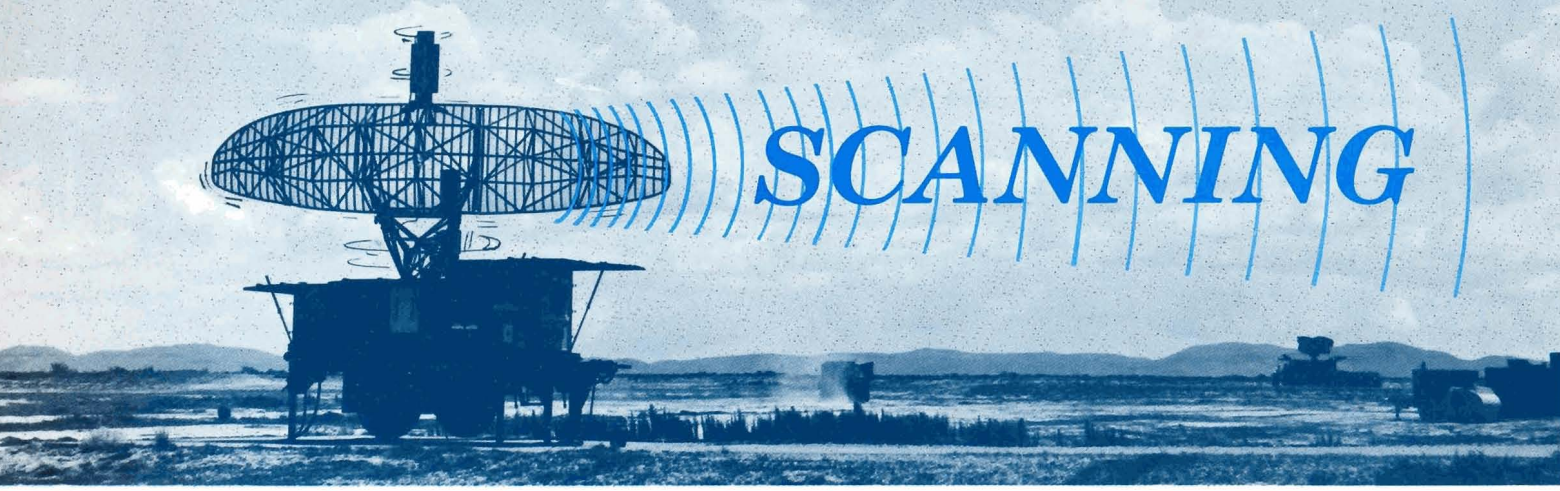
Republic of Vietnam Civil Action Honor Medal, First Class, Streamer embroidered VIETNAM 1966-1969

BY ORDER OF THE SECRETARY OF THE ARMY:

J. C. Pennington

J. C. PENNINGTON
Brigadier General, USA
The Adjutant General





ARMY CONTRACTS SECOND VIPER BUY

The US Army Missile Command (MICOM) has awarded a contract of approximately $89.3 million for the second production buy of the Army's Viper antitank system to include 60,000 tactical rounds, training hardware, and additional production facilities.

The Viper hardware will be delivered to the Army beginning early next year.

Weighing approximately 9 pounds, Viper is a small, unguided antitank rocket that will be issued to soldiers as rounds of ammunition. The shoulder-fired Viper will be more powerful and accurate than the M72 LAW it replaces and will have a much longer effective range.

From propellant formulation to a complete weapon prototype, the new tank killer was developed by MICOM's Army Missile Laboratory. The first production contract of $14.4 million was awarded in December 1981.

IDAHO PREPARES FOR PERSHING II FIRINGS

Two contracts have been awarded to Boise, Idaho, construction firms for preparing sites in southwest Idaho for the upcoming Pershing II missile firings. The missiles will be fired from launch areas in Idaho and travel 800 miles to impact on the 2-million-acre White Sands Missile Range in southern New Mexico.

The first contract for $2 million is for the construction of a launch site and outlying instrumentation sites. The launch site, which will have two launch pads, a personnel bunker, and several instrumentation sites, will be located 12 miles southwest of Grandview, Idaho.

The second contract for $575,000, awarded in May, covers refurbishment of the Job Corps Center located just outside of Mountain Home, Idaho. The center will be used to house project personnel during the firings.

US ROLAND AWARDED PRODUCTION FUNDING

Funding of more than $125 million has been approved by the Army Missile Command to complete US Roland production for the Rapid Deployment Force.

Missile Systems Group (MSG) has been awarded approximately $80 million of the supplemental funds for its share of the US Roland program. The Group's associate prime contractor on the program, Boeing Aerospace Company, will receive the balance.

The $125 million is in addition to funds already received for production of 27 US Roland fire units and 595 of the mobile, short-range air defense system's antiaircraft missiles.

Under present Army plans, the US Roland system will be deployed as three batteries of nine fire units each to comprise a single Rapid Deployment Force battalion.

Completion of current production orders is scheduled for mid-1983 for the missiles and mid-1984 for the fire units, according to Pete Norris, assistant manager of MSG's Roland Division.

Three production fire units were delivered to the Army as of mid-March.

The MSG manages the US Roland program. Its Tucson manufacturing facility builds the system's electro-optical sight and missile guidance section and assembles the missile. Other Hughes groups participating in the program are Radar Systems which builds the track radar and Ground Systems which builds the system's surveillance radar.

JAPAN ACQUIRES STINGER

Japan has become the first foreign country to buy the Stinger weapon system and is expected to make additional purchases at annual intervals.

Contract terms between the US Army Missile Command and Japan call for the Japanese to

initially buy 20 Stinger weapon systems that include 20 missiles, gripstocks, and battery coolant units; an additional 4 missile rounds and battery coolant units; 5 tracking head trainers; and miscellaneous equipment.

The first Stingers were delivered to the US Army in December 1979.

STINGER ON LINE IN EUROPE

Recent firings by US forces in Europe of the Stinger weapon system resulted in 37 successful intercepts out of 40 firings.

The firings of the shoulder-launched version of the Stinger took place in Crete against simulated aircraft targets.

In late 1980 the Army began supplying soldiers in Europe with Stinger, the latest in a series of heat-seeking antiaircraft weapons. The US Marine Corps received Stinger last year.

Replacing the Redeye missile system, Stinger offers distinct improvements in fighting capability. It can engage faster targets at greater range including those flying directly towards the gunner. Stinger has built-in electronics compatible with all NATO aircraft that aid the gunner with aircraft identification.

DIVAD GUN RENAMED

The 40-mm Division Air Defense Gun, formerly called the DIVAD Gun, is now officially the SGT York Air Defense Gun, in honor of Alvin Cullum York, a Tennessee mountain farm boy who won fame in the trenches of World War I.

Alvin Cullum York, born in Tennessee in 1887, was in France in October 1918 as part of an Army patrol in the Argonne section of the western front.

As the patrol members advanced against German positions, they were caught in a deadly crossfire of enemy machine guns. York ordered the men of the patrol to stay undercover while he crawled forward through the snow.

Armed with a bolt-action Enfield rifle, York killed more than 25 enemy soldiers in a short, deadly accurate rain of fire. He was so accurate that the enemy troops soon became demoralized. When he ran out of ammunition for his rifle, he used his pistol with equal accuracy and effect. By the time the engagement was over, York had singlehandedly captured more than 130 German soldiers. When asked later how he did it, York modestly replied that he had simply surrounded the enemy.

For his actions, York was promoted to sergeant and was awarded the Medal of Honor, the French Croix de Guerre, and numerous other medals. Marshal Ferdinand Foch called his action, "the greatest thing accomplished by any private soldier of all the armies of Europe."

The SGT York Gun is a mobile, radar-controlled, all-weather gun system scheduled to replace the Vulcan 20-mm Air Defense Gun for close-range, low-altitude defense of armored and mechanized units. The Vulcan system will be retained in airborne and airmobile units.

The SGT York Gun's primary mission is to provide the Army's forward combat forces with a highly lethal, fire-on-the-move gun system for defense against tactical helicopters, high-performance, fixed-wing aircraft, and ground targets.

Colonel (P) Charles C. Adsit, SGT York Gun program manager, explained, "Sergeant York was well known for his accuracy at far ranges, and the system now named for him accomplishes the same high degree of accuracy and target kill. The SGT York Gun was designed for the soldier and is now named for a soldier."

Evaluation of the system was recently completed at the Defense Systems Acquisition Review Council, and the Secretary of Defense approved the Army's request to begin production. A 3-year contract was awarded for an initial 276 systems. An additional 342 systems will go to contract competitors starting in FY 85.

1ST BATTALION, 55TH AIR DEFENSE ARTILLERY, RELOCATES

The 1st Battalion, 55th Air Defense Artillery (ADA), will relocate from Fort Bliss, Texas, to join its parent organization, the 5th Infantry Division (Mechanized), at Fort Polk, Louisiana. This is the result of a detailed study which reviewed the benefits of such a move and the effect it would have on the US Army Air Defense School's ability to provide air defense training at Fort Bliss.

The study determined that moving the battalion would increase the combat effectiveness of the division, decrease fragmentation of combined arms training, and increase the division's ability to conduct realistic Army training. The study also determined that the 4th Battalion, 1st ADA, located at Fort Bliss and currently sharing the air defense artillery support mission, could provide support to the Air Defense Center and School if given additional personnel and equipment.

The realignment creates a requirement for 349 additional military and civilian spaces. Fort Polk will receive 16 more support spaces and 333 spaces will go to Fort Bliss to support the SGT York Gun system scheduled for fielding in FY 85.

Relocation is scheduled to begin this summer and be completed by early September 1982.

ENLISTED CAREER NEWS

DA SETS NEW REENLISTMENT POLICIES

Soldiers in all grades and MOSs now face new reenlistment rules.

One new policy — the Dual Component Option — deals with in-service recruitments and makes it easier for departing Regular Army soldiers to fill Reserve slots. Also included are new reenlistment and reclassification rules that should help the Army maintain strength goals in certain critical specialties.

With the Dual Component Option, soldiers can now enlist in the US Army Reserve 10 days before they begin their terminal leaves, or within 10 days before they are eligible to return from overseas. Service members who have finished their 6-year military obligations no longer have to enlist within 24 hours of their ETS.

The new option helps soldiers who want to reenlist but who are not at the separation or transfer point or at another military agency at the time of their ETS. It also aids those who are not at the separation or transfer point for as long as 24 hours, such as oversea returnees. The option prevents a break in military service by letting these soldiers continue in their Reserve status.

The new reenlistment and reclassification rules are also expected to improve the imbalance in certain specialties. Soldiers of all grades are barred from reenlisting or reclassifying from a shortage MOS to a balanced or overstrength one. But the policy does permit soldiers to reenlist in their own MOS vacancies, whether they are short, balanced, or overstrength.

One restriction specifically prevents staff sergeants and above from reclassifying from one shortage MOS to another, but sergeants and specialist fives are now allowed to move from one shortage specialty to another on reenlistment. The only soldiers who are permitted to reclassify to a balanced or surplus MOS are those who become medically unqualified for duty in their present skills.

The rules may be tightened even further — sergeants and specialist fives who reenlist for a second or succeeding term may be placed under the same restrictions that now govern staff sergeants and above.

COED TRAINING CHANGING

The US Army will end a 4-year practice of having men and women go through basic training in coed companies because the men are not "adequately challenged" when matched with women.

Effective 30 August, male and female recruits will be separated at the company level and below, although the training will remain the same for both sexes. Since 1978, men and women have been integrated into companies, about 200 to 300 soldiers. Platoons, about 50 soldiers each, have remained segregated.

The coed companies have caused problems, an Army spokesman said, because men generally outperform women in physical tasks such as long-distance running, road marching, and obstacle and confidence courses.

A decision by Headquarters TRADOC is forthcoming to allow one station unit training posts such as Fort Sill, Oklahoma, and Fort Bliss, Texas, to continue integrated training.

PROMOTION IN OVERSTRENGTH MOS CAN STILL HAPPEN

In the past, soldiers on promotion standing lists were promoted without regard to worldwide vacancies in their MOS if they achieved cutoff scores of 801 or 886 for promotion to E5 or E6.

In 1981, 7 percent of the promotions to E5 and E6 went to soldiers in overstrength MOSs. As a result, bringing shortage MOSs up to authorized E5 and

E6 strength levels was hampered, especially in the combat arms skills.

Promotion cutoff scores for 1 January 1982 were established as 999 in those MOSs projected to be at or over 100 percent strength. This action has resulted in widespread concern that there will be no opportunity for promotion now or in the future for many MOSs, but this is not the case.

Those promotion cutoff scores for 1 February 1982 were established by reviewing each overstrength MOS and, where necessary, adjusting the cutoff scores to compensate for MOS structure discrepancies and to ensure promotion opportunities for all MOSs.

A new reporting system was implemented during April-June that will provide individual promotion point scores instead of groupings of scores. This permits identification of the top score in each MOS and continuation of the policy of promoting the most outstanding soldiers, regardless of MOS vacancies. This is done by adjusting the cutoff score to coincide with the desired number of promotions in each overage MOS.

The US Army Military Personnel Center will identify selected soldiers in overage skills and advise them of opportunities (promotion, training, selective reenlistment bonus) available to those who desire to seek reclassification into a shortage skill.

SPECIALIST RANK CONVERSION

Several years ago, the Army eliminated the specialist-7 rank and now is looking into the possible elimination of specialist designations at other grades.

Specialist ranks were established in 1955 to distinguish soldier specialists from hard-stripe NCOs who performed leadership jobs. In time, the distinction between technician and leader became blurred.

Recently, the Deputy Chief of Staff of Personnel has asked four combat arms service school commandants for their opinion on eliminating specialist ranks in the combat arms. If all proponents agree with the proposal, conversion of specialists 5 and 6 in Career Management Fields 11, 12, 16, and 19 will be effective 1 October 1982.

There's also a possibility that the specialist-6 rank in noncombat functions could be removed by October 1983.

The commandants have also been asked to evaluate the possible future elimination of specialist-4 rank in the combat arms and specialists 4 and 5 in noncombat fields. No conversion dates have been set for these.

OMPFs MAILED TO NEWLY PROMOTED E6s

The Enlisted Records and Evaluation Center at Fort Benjamin Harrison, Indiana, has begun mailing microfiche copies of the Official Military Personnel File (OMPF) to each newly promoted E6 about 90 days after promotion.

The mailout is designed to introduce newly promoted staff sergeants and specialists sixth class to the centralized promotion concept. It will give soldiers time to review and update their files well in advance of becoming eligible for promotion to E7 or selection to attend NCOES.

Soldiers will also be told that their next promotion or school selection will be under the centralized promotion system. They will be instructed to review their OMPFs and take them to the servicing MILPO for updating.

Mailing OMPFs to newly promoted E6s is an effort to bring soldiers and their MILPOs together, make both aware of the centralized selection process, and lead to more accurate and up-to-date OMPFs.

SQTs REDESIGNED

Changes designed to increase flexibility and reduce administration of the skill qualification test (SQT) program have been approved by the Army Chief of Staff following separate full-scaled reviews of the program by both the US Army and the US General Accounting Office (GAO).

Changes were needed in the program to reduce the workload of administering the performance-based tests which have increased from just a handful in 1977 to SQTs for 600 of the Army's more than 1,000 skill levels.

The approved changes are:

- Hands-on testing will gradually be decentralized and used primarily as a training diagnostic tool for commanders. As soldier's manuals are updated, they will contain guidelines for conducting the evaluations.
- Performance-based written tests will be given annually to soldiers in skill levels 1 through 4. These tests will be used as objective indicators for promotion and other personnel management decisions. They will be given in a 3-month test period. Test notices will list only a range of tasks to be tested.
- Common tasks will be evaluated by a separate test instrument given to a soldier.

The Army Training Support Center and Army schools will begin incorporating the changes in some of the tests developed for 1983. It is not expected, however, that the changes will be fully implemented in all SQTs until 1984.

USAADTSCH LIBRARY

BARS to STARS

OPMD UPDATE

BRANCH PERSONNEL CHANGE AT MILPERCEN

The Air Defense Artillery Branch at the US Army Military Personnel Center is undergoing several personnel changes this summer. Branch Chief LTC Lowell G. La Rue will be replaced by LTC Newton F. McCurdey, Jr. LTC La Rue is scheduled to attend the Industrial College of the Armed Forces.

Other additions are MAJ Jimmie Jones, Majors Assignments, and CPT Kenneth H. Schultz, Captains Assignments. The outgoing Assignment Officers, MAJ Terry L. Scott and MAJ Silas C. Smalls, will attend Command and General Staff College.

Other members of ADA Branch, MAJ Joe B. Carden (Lieutenant Colonels), MAJ Henry A. Sabine (Public Affairs Officers) and CPT Gregg Mortensen (Lieutenants), have not changed.

The phone numbers for ADA Branch are AUTOVON: 221-0025/0026.

NEW AR UPDATES PROMOTION POLICIES

The Department of the Army has issued a new regulation, AR 624-100, covering promotion of officers on active duty. The new AR supersedes the previous edition of AR 624-100, dated 1 May 1979.

The regulation implements provisions of the Defense Officer Personnel Management Act (DOPMA) which took effect 1 September 1981. The DOPMA changed a number of policies and procedures that govern the way officers' careers are managed.

AR 624-100 establishes separate promotion systems for commissioned and warrant officers. Commissioned officers are now promoted in the component they are serving: Regular Army, US Army Reserve, or National Guard. Warrant officers will continue to be promoted as Regular Army and Army of the United States.

The regulation also establishes an Active Duty List (ADL). With some exceptions, the list consists of all commissioned officers in the US Army. It will be used to determine which officers are eligible to be considered for promotion. Officers whose names do not appear on the ADL will not be considered for promotion.

Advance copies of AR 624-100 were distributed to MILPOs in March, and printed copies were distributed by the end of April.

SCREENING BOARDS FOR PROMOTIONS, SCHOOLS ELIMINATED

In February, the Secretary of the Army approved a DCSPER recommendation to eliminate screening boards for promotion of officers to chief warrant officer 3, chief warrant officer 4, major, lieutenant colonel, and colonel, and for selection of officers to attend senior service colleges.

The 1982 screening boards and all future boards have been cancelled for those ranks and for selection to attend senior service colleges.

The only exception is that the Command and General Staff College screening board will continue to be held, due to the large number of officers considered by that board.

For promotions and senior service colleges, a single board will select officers from in and above (previously considered) the zone and below the zone of consideration.

Two factors led to the elimination of screening boards. First, the Army is much smaller now than it was during the Vietnam era. Consequently, the officer population is much smaller and more manageable by one board.

Second, there has been a change in the policy of giving officers repeated chances for promotion to field grades from below the zone. Majors now have only one opportunity for selection from below the zone; colonels have two opportunities.

Elimination of screening boards is designed to enhance the credibility of boards since one board now sees all records and makes all selections.

BULLETIN BOARD

General Information

WHEN TO REVIEW OMPF

Annual review of the Official Military Personnel File (OMPF) is not necessary. Although virtually thousands of OMPF transactions are made each year, little change may actually take place in the average file.

Review of the OMPF is not needed each time a soldier gets an EER, OER, or letter of appreciation. Soldiers should review their OMPFs when they become aware that their records are to appear before a Department of the Army Selection Board. This should be done at least 120 days before the board is scheduled to convene.

Soldiers should also review their files whenever there has been a material change to their records which may have been directed by the Army Board for Correction of Military Records or the Department of the Army Suitability Evaluation Board.

Enlisted personnel desiring to review their OMPFs should write to Commander, US Army Enlisted Records and Evaluation Center, ATTN: PCRE-RF-I, Fort Benjamin Harrison, Indiana 46249.

The address for officers is Commander, US Army Military Personnel Center, ATTN: DAPC-POR-RS, 200 Stovall Street, Alexandria, Virginia 22332.

Only written requests, complete with name, social security number, and address to which the fiche is to be mailed, will be honored. There is no charge for this service.

IS YOUR HAAP MISSING?

Military Personnel Center (MILPERCEN) officials are concerned over the number of enlisted soldiers arriving at oversea locations without home-base and advance assignment program (HAAP) assignments.

Enlisted soldiers in grades E5 through E8 and officers through the rank of 05 assigned to 12-month, dependent-restricted, short-tour areas are eligible for HAAP coverage. Participants know what their new assignment will be upon their return to the states. Their families have the option of staying home or moving to the new assignment area at government expense.

MILPERCEN notes that as many as 45 percent of soldiers at one oversea location eligible for HAAP assignments arrived without them during a recent 3-month period.

Although responsibility for issuing HAAP assignments rests with MILPERCEN, local military personnel offices (MILPO) must make sure eligible soldiers receive their notifications. If the HAAP assignment is omitted from the orders, or if special instructions are missing or unclear, the MILPO must check with the appropriate MILPERCEN career branch, officials say.

The problem often arises when soldiers assigned as E4s are promoted before they actually depart. In this case, officials stress that the MILPO must request HAAP assignments for the promoted soldiers before they leave for overseas.

UNEMPLOYMENT COMPENSATION RESTORATION PENDING

Last year, during the scramble to find budget cuts, members of Congress eliminated unemployment compensation to most service members who successfully complete an initial term of duty. (See AIR DEFENSE Magazine Jan-Mar 82.)

Since then, some lawmakers, stating that the action may have been a mistake, have sponsored legislation which would restore those benefits.

Recently, the Senate Finance Committee passed a new unemployment provision in its budget reconciliation for 1983. This is part of the budget process which calls for specific government-spending items to be reconciled with mandated ceilings set previously for each agency.

The Finance Committee, however, is also expected to vote tax increases, some of which could provide the revenue for funding the restoration of unemployment compensation for ex-service members in FY 83.

The action by the Finance Committee is only a

first step; it will have to be matched by the House Committee on Ways and Means. Otherwise, the proposal could become a bargaining issue during a joint conference.

ARMY SETS UP SCIENCE AND TECHNOLOGY BOARD

The National Research Council (NRC) has established the Army Science and Technology Board to provide assistance to the Army in engineering, science, research, and technology. The NRC is the working arm of the National Academy of Science, National Academy of Engineering, and the Institute of Medicine.

The board will have about 12 members with experience and expertise in the industrial, governmental, and academic areas addressed under the board's charter. Officials say board members will be selected in the near future and membership will "reflect the knowledge and experience necessary to provide an effective response to a broad range of Army missions and responsibilities."

During its first meetings, the board will receive briefings on the Army's needs for science and technology, plans, existing methods and approaches for managing the research and development program and other operation requirements. Based on these briefings and other available information, the board will identify research gaps and major issues and suggest high priority topics for the Army's research and development program.

The National Academy of Science was established by Congress during the presidency of Abraham Lincoln to investigate, examine, experiment, and report on any subject of science or art when called on by any government department. This responsibility is carried out by the NRC through hundreds of short-term committees, as well as ongoing boards such as the Air Force and Naval Study Boards.

MAC FLIGHTS

Military Airlift Command (MAC) has added flights to the Orient and Europe to its St. Louis contract flight service.

Passengers can now leave from St. Louis and fly to Kadena AB, Japan; Clark AB, the Philippines; or Rhein-Main AB, West Germany, without changing flights.

Previously, individuals were required to fly to East or West coast ports of embarkation and transfer to commercial carriers.

The St. Louis contract flight facility joins MAC charter flights offered from McGuire AFB, New Jersey, and from Oakland and Los Angeles, California, civilian airports.

MAC plans to inaugurate flights from the Charleston, South Carolina, civilian airport in 1983.

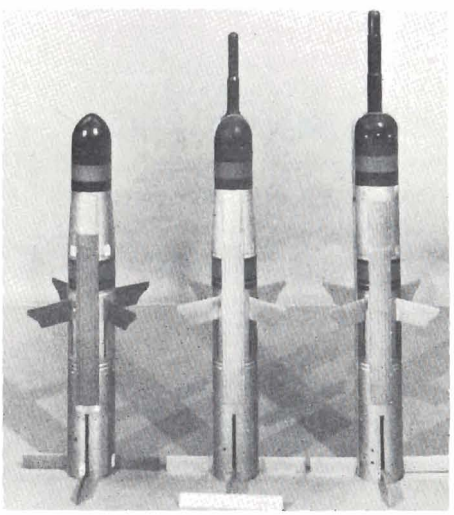
9TH INFANTRY TESTS UNIMOG

The UNIMOG is one candidate being tested as a small emplacement excavator. The UNIMOG has a German chassis with attachments added.

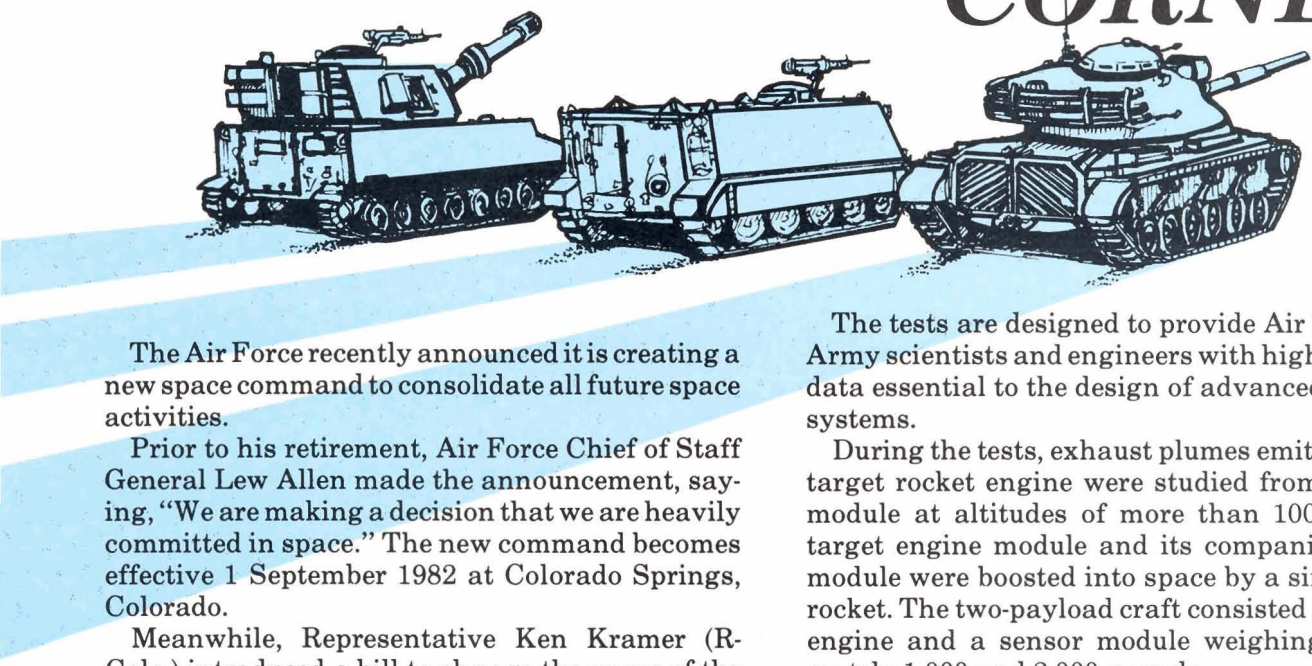
As part of the 9th Infantry Division's High Technology Test Bed, the UNIMOG is being rated on its ability to meet operational requirements. Its performance is being evaluated by the Army's Mobility Equipment Research and Development Command (MERADCOM), Fort Belvoir, Virginia. According to MERADCOM, initial test reports have validated the concept of using a UNIMOG-type piece of equipment to dig small forward area emplacements.

TOW TRIO

This "family" portrait compares the two latest versions of the US Army's tube-launched, optically tracked, wire-guided (TOW) antitank missile with the basic model (left) which is 45.7 inches (1.2m) in length. The center missile is the improved TOW that features a 5-inch diameter warhead and an extendible probe (shown extended) to provide stand-off detonation and greater armor-piercing capacity. The missile to the right is the more advanced TOW 2. It has a heavier 6-inch diameter warhead, an extendible probe, and a higher impulse flight motor. TOW 2 also will have improvements in the guidance system to cope with the "dirty" battlefield environment, including smoke and countermeasures. The Army Missile Command at Redstone Arsenal, Alabama, has overall management responsibility for the TOW system.



COMBINED ARMS CORNER



The Air Force recently announced it is creating a new space command to consolidate all future space activities.

Prior to his retirement, Air Force Chief of Staff General Lew Allen made the announcement, saying, "We are making a decision that we are heavily committed in space." The new command becomes effective 1 September 1982 at Colorado Springs, Colorado.

Meanwhile, Representative Ken Kramer (R-Colo.) introduced a bill to change the name of the US Air Force to US Aerospace Force.

In a separate action, General Allen also announced the creation of a Space Technology Center at Kirtland Air Force Base, New Mexico, during the first half of FY 83. The Center will supervise three key laboratories involved in developing space systems.

Testing of the first portion of North America's new air defense system has begun at Tyndall Air Force Base in Florida. The system, called the Joint Surveillance System (JSS), spans the continent from Alaska and Canada to the southern border of the US. It will operate from seven regional control centers, each keeping command over an area of about 2,000 nautical square miles. In the event of an air attack, each center will use data from civilian and military radars to provide surveillance, identification, and interceptor control functions. The JSS also can relay data to E-3A Airborne Warning and Control System aircraft. The JSS is due to be fully operational in 1983.

The last in a series of three Air Force rocket-borne tests was recently launched from the Naval Ordnance Missile Test Facility complex at White Sands Missile Range, New Mexico.

The tests are designed to provide Air Force and Army scientists and engineers with highly precise data essential to the design of advanced warning systems.

During the tests, exhaust plumes emitted from a target rocket engine were studied from a sensor module at altitudes of more than 100 miles. A target engine module and its companion sensor module were boosted into space by a single Aries rocket. The two-payload craft consisted of a target engine and a sensor module weighing approximately 1,000 and 2,000 pounds.

Both packages were equipped with a control system to point them in the desired direction throughout the many complex maneuvers involved in the test.

The Aries uses an obsolete Minuteman I second-stage motor for its propulsion system. In a December 1976 demonstration flight, an Aries set a high-altitude record for single-stage sounding rockets when it reached 318.77 miles above the national range.

The sensor module carried eight optical sensors. A high-intensity beacon light mounted on the target enabled it to be viewed in the darkness of space by the cameras.

After the mission payload was separated from the booster, it was pitched over to a 45-degree angle and the two modules were separated by hydraulic pistons.

Both modules then coasted until the target engine separated a safe distance from the sensor module. As the 7-foot-long doors on the sensor module were opening, the target engine fired at an angle of 110 degrees in a "get-away" maneuver.

The test scenario then called for the sensor module to maneuver into a position to acquire and track the target. Subsequently, the target engine restarted and turned off three different times while optical measurement data were transmitted to ground stations at the national range. Upon con-

clusion of the tests, both modules were lowered to earth by parachute for reuse in planned future tests.

The program is managed by the Air Force Space Division, Los Angeles, California, and executed by the Air Force Geophysics Laboratory, Bedford, Massachusetts.

NAVY TESTS TARGET THREAT SYSTEM

The MQM-8G Vandal, the Navy's interim antiship missile target threat system, was recently tested at White Sands Missile Range, New Mexico.

The Vandal target system uses a modified Talos surface-to-air missile. According to project officials, the Vandal is an inexpensive solution to the Navy's need for realistic targets to simulate supersonic antiship missile threats.

The Vandal flown was the high-speed (2,400 feet per second), low-altitude (300 feet above ground) version. The 33-foot target missile consisted of a booster and missile combination weighing 8,000 pounds.

MARINES GET NEW WEAPON

The 2d Battalion, 10th Marines, recently received six M198 155-mm towed howitzers, making them the first Marine unit to receive this weapon. The M198 can fire an improved family of ammunition at greater range than its towed or self-propelled predecessors. This makes it a more satisfactory weapon for direct and general support artillery missions on the modern battlefield.

Although the M198 is heavier than its predecessors, it is not considered overly bulky or unwieldy by the cannoneers. A technological advance called the "speed shift" allows two men to pivot the howitzer 360 degrees in a matter of seconds.

Other features include a tube that requires less frequent replacement, an illuminated digital firing control panel, and a warning device that tells the crew when the gun is overheating.

The M198 155-mm howitzer is the newest in long-range weaponry to be added to the 10th Marines' inventory at Camp Lejeune, North Carolina. (Official USMC photo by MSG Frank Segreto.)

NEW MISSILE SYSTEM PROPOSED FOR HELICOPTERS

The proposed Multipurpose Lightweight Missile System (MLMS) consists of an air-to-air missile, launcher, and associated avionics/fire control designed for helicopter mounting. The system is conceived as a self-defense weapon that would provide "fire and forget" protection against hostile air weapon systems.

The MLMS will improve the capabilities of scout and attack helicopter teams to counter enemy air while pursuing their primary missions, thus enhancing survivability and contributing to overall mission accomplishment.

ARMY GIVES GO-AHEAD TO NEW SCOUT HELICOPTER

The Army System Acquisition Review Council recently approved the Army Helicopter Improvement Program (AHIP) and forwarded it to a Department of Defense Program Go-Ahead Review Board. Full-scale engineering development will continue. Acquisition strategy, which requires the procurement of long load items starting in FY 83 to protect early production schedules, will be pursued. This is the first major step in fielding a new scout helicopter. The AHIP managers are attempting to speed the acquisition process by seeking permission from the Office of the Secretary of Defense for the Army to make the final production decision.

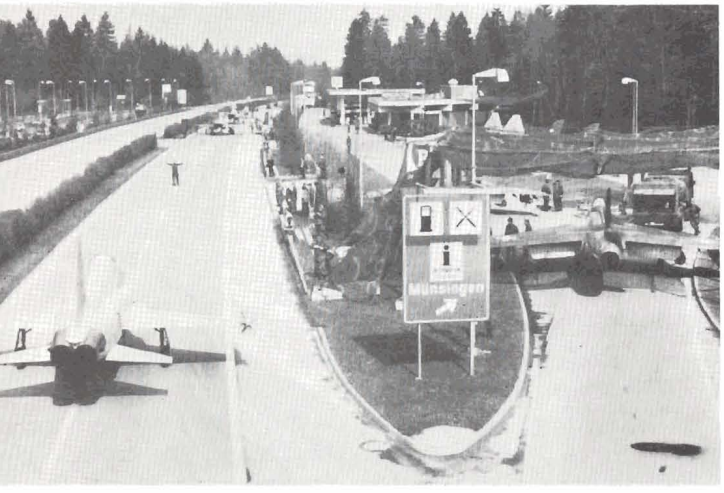
CALCULATOR

Six combat planning tasks are being programed into a new hand-held calculator for engineers. Classroom and field testing will be done during FY 83. The six programs are: minefield and wire obstacles logistics, demolitions and cratering calculations, bridge classifications, and the critical path method.

INTELLIGENCEWATCH

SWISS AUTOBAHN BECOMES RUNWAY

The Berne-Thun Autobahn in Switzerland recently became an aircraft runway when the Swiss Air Force practiced operational take-offs and landings on the highway. A rest area with restaurant became a temporary maintenance

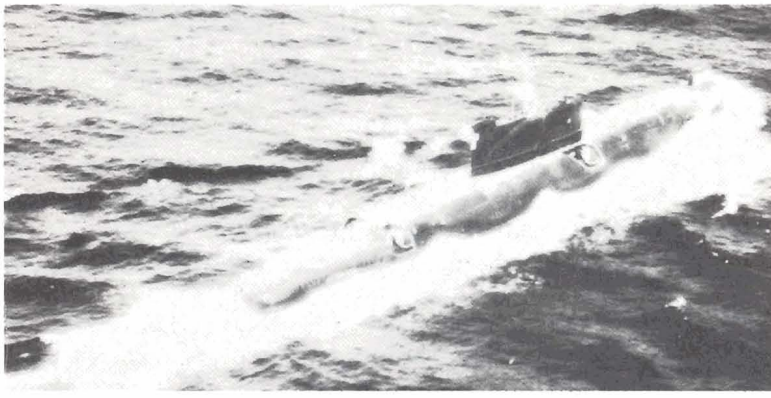


area. The photo shows F-5 fighters ready for take-off and other F-5 and Hawker Hunter aircraft under camouflage netting in the rest area.

— Soldat und Technik

SWEDEN WORRIED

Sweden is concerned about the recent build-up of nuclear-capable submarines in the Soviet Baltic Fleet. For more than 5 years six Golf-II-class submarines, equipped with three SS-N-5 missiles each, with an 850-KT nuclear warhead and a range of 700 nautical miles, have been operating in the Baltic Sea. According to Swedish information, "more than three" Juliett-class submarines have been added to the Baltic Fleet. Each Juliett sub is equipped with four SS-N-3 (Shaddock) surface-to-surface missiles which can carry a nuclear warhead. The Soviet Union, contrary to its efforts to create a central Europe free of nuclear arms, indicates through this action that it has no intentions



to include the Baltic Sea. Instead, by replacing some land-based batteries with submarines, it is only shifting the location of nuclear weapons. The photograph shows a Juliett-class submarine.

— Soldat und Technik

MAVERICK SUCCESSFUL IN SWISS TEST

Swiss air force pilots have successfully demonstrated target acquisition and simulated missile launches of the US Air Force television (TV) Maverick missile system, despite the rugged Alpine terrain and the poor visibility typical of European winters.

The TV Mavericks are precision-guided, air-to-surface missiles designed for tactical strikes against hard point targets such as armored vehicles, bunkers, parked aircraft, and radar or missile control vans. Of the more than 1,000 missiles fired during tests and evaluations, the TV Mavericks have scored 85 percent direct hits.

Tests of the TV Maverick were conducted for

more than a year while the Swiss air force studied the possibility of increasing its attack capability by equipping Swiss "Hawker Hunter" ground support aircraft with air-to-surface missiles. The evaluation program included extensive missile seeker evaluation on a helicopter and 500 hours of flight-test on the Hunter aircraft.

CHINA REPORTS ON STYX

The aeronautics and aviation magazine of the People's Republic of China, the "Hangkong Zhishe," recently published a report about their surface-to-surface guided missile SS-N-2 Styx. Orginally developed by the Soviets in the 1960s and now built in China, the missile has been utilized by the Chinese Navy for coastal defense for some time. The maximum range of the Styx is 46 km (28.6 miles), depending on the radar horizon of the carrier patrol boat.

— Soldat und Technik

GERMANY DISPLAYS NEW GUN

A number of new weapons and equipment for naval use were revealed at the International Naval Technology Expo in Maastrich, Netherlands. Among the weapons displayed was the German gun S20 (shown in photo) intended primarily for use in small naval craft and as additional armament on larger ships and land-based installations.

The lightweight and one-person operation facilitates an effective engagement of air or land targets in the shortest possible time. The gun is the Rheinmetall 20-mm MK 20 Rh 202 which has proved to be a good weapon for land or air targets because of its low-recoil, trouble-free operation under extreme conditions, and the ease of disassembly without tools.

— Soldat und Technik

FRANCE TO FIELD NEW MIRAGE

The five prototypes of the French fighter aircraft Mirage 2000 (4 single-seaters and 1 double-seater) flew a total of 1,376 missions in 1981.

Prototype 01 tested the SNECMA M53 engine while prototype 02 conducted tests on the external stores release. Gunnery trials at speeds from 300 to 700 knots are presently ongoing with the latter prototype.

Prototypes 03 and 04 are testing the airborne radar and missile weapon systems. Prototype 05 is testing the air-to-surface, medium-range missile planned as the nuclear ordnance load for the double-seater Mirage 2000. In 1981, prototypes 03 and 04 were successfully refueled in flight. These aircraft are expected to be fielded in November 1982.

— Soldat und Technik

ITALY JOINS NATO's MLRS PROGRAM

Italy is the fifth country to join NATO's Multiple Launch Rocket System (MLRS) program. Other countries are the United States, Germany, France, and Great Britain. The MLRS is the first NATO Army program whose development and financing are supported by five countries. The US Army plans to procure 276 rocket launchers and 360,000 rockets. The decision to start full production is expected by March 1983 after evaluation of field trials is completed.

— Soldat und Technik

NATO DEMONSTRATES COMMUNICATIONS LINKS

State-of-the-art electronics for improving NATO's air defense posture have been demonstrated at Hughes. During fly-bys of an Airborne Warning and Control System (AWACS) aircraft, sophisticated digital communications links were made with the NATO Airborne Early/Warning Ground Environment Integrated Segment (AEGIS). It is designed to enhance the NATO Air Defense Ground Environment (NADGE) used for air defense in Europe. The AEGIS allows operators on the ground to view radar data received and seen by operators in the AWACS aircraft. This AWACS information, merged with the extensive track data base of the NADGE network, permits ground control of interceptor aircraft. An important component of the system is the Joint Tactical Information Distribution System Class I terminal, which provides encrypted, jam-resistant, high-capacity digital and voice communications.

EGYPT RECEIVES F-16

Egypt has received the first of 40 F-16 Fighting Falcons. The last F-16s are to be delivered by January 1984. An F-16 photographed during a recent test flight bears Egyptian markings and shows Sidewinder air-to-air missiles at the wing tips.

ISRAEL DEVELOPS NEW MISSILE

Israel has developed a new air-to-air missile. Identified as the Python 3, it will replace the currently used Shafrir missile. Its performance and reliability are considered more effective than the US Air Force AIM-9L Sidewinder. The Python 3 is

longer and has larger fins than the Shafrir and is equipped with an infrared homing guidance system. Full production is expected to start in 2-3 years.

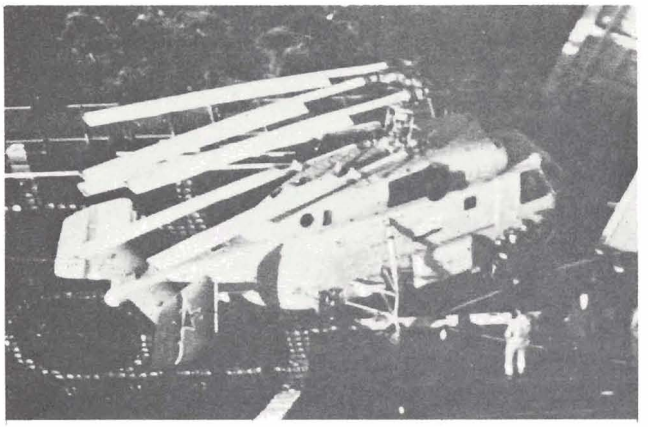
— Soldat und Technik

SAM SITES NEUTRALIZED

The stunning success of Israeli forces in destroying Soviet-designed, surface-to-air missile (SAM) installations during the recent Israeli incursion into Lebanon proves once again that countermeasures quickly produce counter-countermeasures. The Israelis, stung by Egyptian and Syrian-operated SAMs during the Yom Kippur War of 1973, sent unarmed drones to scout the Syrian SAM sites in Lebanon and detect the radio frequencies used to guide antiaircraft missiles to their targets. Drones armed with high-explosive warheads followed and homed in on the SAM radio frequencies detected by the unarmed drones. When the Syrian SAM operators switched off their radars to avoid detection by the unarmed drones, the Israelis sent manned aircraft which forced them to switch their radars back on.

SOVIETS TEST NEW HELICOPTER

According to recent photographs, a new version of the Soviet helicopter Ka-25/Hormone, the Helix, was tested in the Baltic as an on-board helicopter on the Udaloy, a missile destroyer designed to accomodate two Helix on its stern. The Helix, distinguished by its two three-blade, coaxial, contra-rotating rotors, differs from the Hormone in that it has a larger cockpit and a reinforced horizontal stabilizer. This modification leads to the conclusion that the Helix, aside from its primary mission of antisubmarine warfare, can also be used as a



personnel and materiel carrier. The photograph depicts the Helix with its rotor blades in the offset position on the Udaloy stern landing site.

— Soldat und Technik

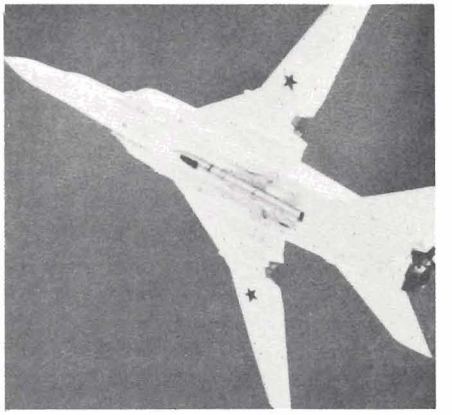
SOVIET MLRS GETS NEW MOUNT

The modified Multiple Launch Rocket System BM-21, first published in the Soviet press last year,

has been mounted on a ZIL-131 truck replacing the URAL-375. The photo shows part of a BM-21 battery in launch position after firing. Clearly visible are the working platforms attached on each side of the system's azimuth ring and the support jacks mounted to the rear crossbeam.

— Soldat und Technik

SOVIET BOMBERS ADD AS-4 MISSILE

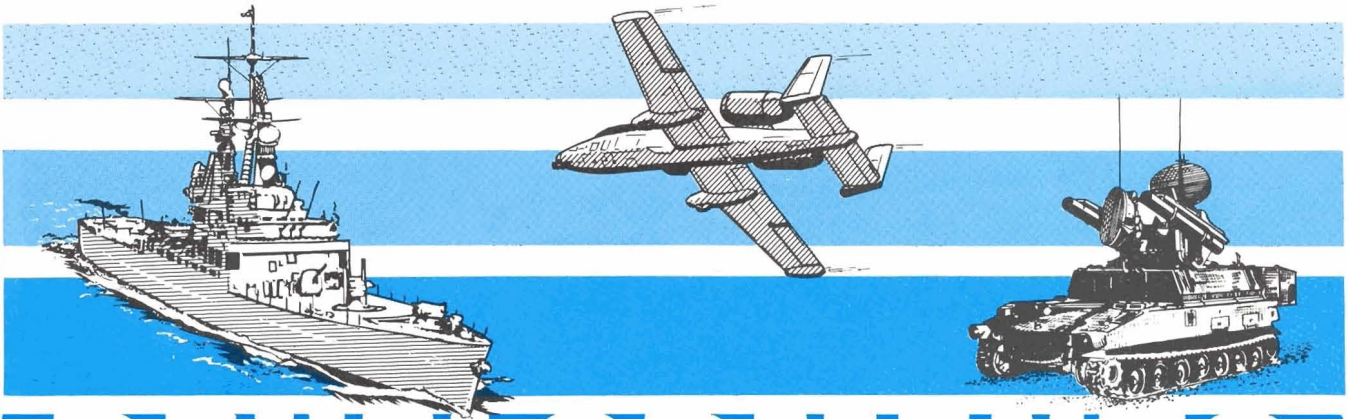


The Soviet medium bomber Tu26/Tu22M (NATO: Backfire B) is now equipped with an AS-4/Kitchen air-to-surface missile in addition to the AS-6/Kingfish missiles. While two AS-6 missiles can be carried at the underwing attachments, the AS-4 missile is carried under the fuselage (see photo). The Kitchen has a range of 720 km (447 miles) at high-altitude flight and 300 km (186 miles) at low-altitude flight. The photograph was taken by the Swedish Air Force during the "ZAPAD 81" maneuvers.

— Soldat und Technik

SOVIETS TEST SUB MISSILE

The new Soviet strategic submarine missile SS-N-20 has recently undergone testing in the Pacific. The Soviet Typhoon-class submarines will be armed with 20 of these solid-propellant, multiple-warhead, ballistic missiles which are believed to have a range of 4,200 nautical miles.



DEVELOPMENTS

BLACK HAWK SUCCESSFULLY TEST-FIRES HELLFIRE

The Hellfire laser-guided antitank missile, main armament for the new AH-64 (Apache) attack helicopter, has been fired successfully from a UH-60A Black Hawk utility helicopter during feasibility tests at Redstone Arsenal, Alabama.

Hellfire is a third-generation airborne anti-armor weapon. The missile homes on a spot that can be projected from a variety of sources, including ground troops, supporting aircraft, and the launching aircraft itself. The weapon weighs about 100 pounds and has greater accuracy, range, lethality, and velocity than the TOW missile.

During the three test firings conducted at Redstone Arsenal by the Army Missile Command, missiles were launched from a Black Hawk equipped with an external stores support system. Instruments used to monitor the test firings indicated there were no adverse effects on the aircraft or missiles from debris or overpressure.

The feasibility tests involved the launch of one Hellfire from a helicopter on the ground, another from a helicopter that was hovering 50 feet above the ground, and a third from a helicopter that was in forward flight at about 90 knots. Information gathered during the tests indicates that the Black Hawk could be armed with 16 Hellfires (the same number carried by the Apache) to perform a close combat role. The major role of Black Hawk is to support air assault, air cavalry, and aeromedical evacuation missions.

Recently, MICOM awarded an approximately $13.6 million contract for the first production buy of Hellfire launchers and missiles.

NON-VOICE DATA LINK LEADS BOMB TO TARGET

GBU-15 glide bombs, equipped with data link weapon control capability and designed for use with several US military aircraft, are rolling off the production line in Georgia.

Three bombs, representing the first production lot, were accepted by Air Force officials during a "roll out" ceremony.

Hughes, which was selected last year by the Air Force as the exclusive producer of the data link weapon control subsystem, serves as associate contractor with Rockwell on the GBU-15 program.

The subsystem for the precision-guided glide bomb consists of a data link mounted in the rear of the weapon, a data link pod mounted on the aircraft, and a data link control panel used with a display in the cockpit to allow the weapon system operator to control the bomb on a mission.

The GBU-15 is an air-to-surface, precision-guided weapon that provides high single-shot accuracy at a safe standoff distance from the target area. Weapon delivery can be made in two modes — direct or indirect attack.

In direct attack, the weapon is locked on the target before it is launched and flies automatically to the point of impact.

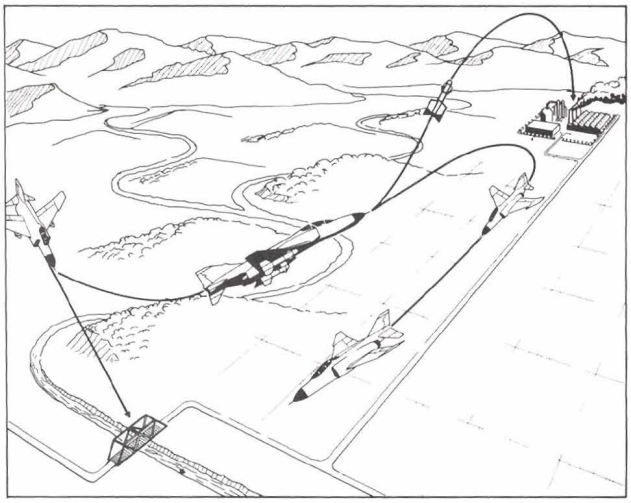
In indirect attack, the weapon flies a programed course toward the target, while giving the aircraft an opportunity to veer away to a safe, standoff position. During this mode, the operator can see the target and control the weapon via the video and aircraft command data links.

As the weapon glides along the course loop, the operator decides if he will lock on and let the electronic tracker automatically guide the wea-

pon to the target, or if he will manually control the bomb to impact.

The data link, officially designated as AN/AXQ-14, is a two-way, non-voice communications link. A video picture of the bomb's objective is transmitted from the weapon data link to the pod under the aircraft and then to the cockpit display. The operator sends commands and data updates in digital form on the return link from the pod to the weapon. This data link capability is important because it not only gives the operator a choice of control modes but also allows a safer standoff range for the aircraft and enhances overall weapon system performance.

The data link can operate over a wide range of speeds and altitudes, a capability which makes it well suited for high-performance aircraft. The subsystem has demonstrated compatibility with F-4, A-7, F-15, F-111, and B-52 aircraft.



An aircraft armed with a GBU-15 glide bomb makes a low-level attack against a target, at right. The pilot uses a bridge to check his position before launching the weapon on a loop course toward the target. As the aircraft veers away, the pilot, using the data link weapon subsystem, can control the bomb manually or lock-on and let the electronic tracker automatically guide it to the designated point of impact.

SELF-AIMING SEEKER PROVES SUCCESSFUL

A breakthrough in missile guidance technology was achieved during tests of a millimeter wave seeker for the Air Force Wasp antiarmor missile.

Captive flight tests over Eglin Air Force Base, Florida, various military bases in Southern California, and upstate New York have demonstrated for the first time that a seeker for an air-to-ground missile can detect, lock-on, and track military targets autonomously.

The seeker performed superbly, repeatedly finding the targets while flying over strong ground clutter environments — terrain similar to that which can be found in the Middle East, Western Europe, and the tropics.

The results are significant because Wasp is intended to be the first air-to-ground missile ever developed with its own built-in ability to identify and aim itself at tactical targets. This would enable a pilot of a launching aircraft to release the missiles in the general direction of a known enemy force without actually seeing it. For example, the pilot could launch the missiles from behind protective terrain and be assured the missiles would find their targets.

This independent target selection capability is referred to as "lock-on-after launch" and will greatly enhance the attacking aircraft's chances of survival. The missile is called the Wasp because it will be launched in swarm-like attacks on masses of enemy tanks.

Captive flight testing of the Wasp seeker has been ongoing since July 1981. During the highly successful tests, the seeker was mounted under the fuselage of a Rockwell Sabreliner-40 aircraft. The aircraft was outfitted with more than 2,000 pounds of data analysis equipment. The crew consisted of the pilot, co-pilot, and two flight test engineers.

In another series of flight tests over Eglin Air Force Base, the seeker was successfully tested against armored vehicles which were taking part in a joint Army/Air Force military exercise called "Bold Eagle." The seeker found the targets despite the fact that the crew was told only that there were targets out there somewhere.

RAIL GUN FIRES 10,000 MPH SHOT

A new launching system being developed by Westinghouse under contract to the Department of Defense is expected to fire projectiles at more than 10 times the speed of sound. The launcher uses electromagnetic force to propel the projectile between parallel rails.

In its first full-power test, the launcher propelled a 10-ounce projectile made of copper and plastic almost 10,000 miles per hour, penetrating a ¼-inch-thick steel plate.

Defense applications in the 1990s could include electromagnetic aircraft launch systems and guns able to fire shells that pierce armor which currently can withstand present munitions.

Other applications of pulsed electromagnetic technology include firing pellets with enough mass and velocity to create nuclear fusion energy and new metal-forming processes.

— AFPS

25