

Focus:
Special
Operations
Aircraft

SPECIAL FOCUS: SPECIAL OPERATIONS AIRCRAFT

ARMY AVIATION

ENDORSED PUBLICATION OF THE ARMY AVIATION ASSOCIATION OF AMERICA • JUNE 30, 1991



WINGS OF THE NIGHT STALKER
MH60K:
SPECIAL OPERATIONS AIRCRAFT

U.S. ARMY



BOEING SIKORSKY
LIGHT HELICOPTER FIRST TEAM

LHTEC



Comanche RAH-66

THE TRIUMPH OF TEAMWORK.

LHTEC

Allison & Garrett

TOGETHER **E**VERYONE **A**CHIEVES **M**ORE

PUBLISHER

Lynn Coakley

ASSOCIATE PUBLISHER

Terrence M. Coakley

EDITOR

William R. Harris, Jr.

PRODUCTION MANAGER

Barbara Ross

ADVERTISING MANAGER

Deirdre Frost

EDITORIAL/PRODUCTION ASSISTANT

Stephen Moore

CIRCULATION MANAGER

Jill Thomas

CIRCULATION ASSISTANTSMary Ann Stirling, Debbie Coley,
Nancy Jo Harris, Deb Simons

Army Aviation Magazine is a professional journal endorsed by the Army Aviation Association of America (AAAA). Title reg. ® in U.S. Patent Office. Registration Number 1533.053.

ADVERTISING

Display and classified advertising rates are listed in SRDS Business Publications, Classification 90. For advertising information, call (203) 226-8184.

SUBSCRIPTION DATA

ARMY AVIATION (ISSN 0094-2480) is published monthly, except April and September by Army Aviation Publications, 49 Richmondville Avenue, Westport, CT 06880-2000. Phone: (203) 226-8184. Subscription rates for non-AAAA members: \$25, one year; \$48, two years; add \$1000 per year for foreign addresses other than military APO's. Single copy price: \$300.

ADDRESS CHANGES

The receipt of change of addresses is verified by the publication of the residence or business change in the "Arrivals & Departures" or PCS columns of the magazine. AAAA members (O-6's and above) are asked to provide their new duty assignment for publication in the "Aviation Command Changes" column.

POSTAL

Second class postage paid at Westport, CT and other offices.

POSTMASTER

Send address changes to Army Aviation Publications, Inc., 49 Richmondville Ave., Westport, CT 06880-2000.

FORTHCOMING ISSUES

July 1991 — Special Focus: Kiowa Warrior and the AAAA Aviator Officer Directory
August-September 1991 — The 1991 "Blue Book", a directory of Army Aviation units, offices, and agencies worldwide.

FRONT COVER

Paid advertisement: Sikorsky Aircraft Division, UTC

ARMY AVIATION

VOLUME 40

NUMBER 6

GUEST EDITORIAL

- The Future of Army Aviation**
by GEN John W. Foss.....6

AVIATION BRANCH UPDATE

- Army Aviation's Continuing Story in DESERT STORM**
by MG Rudolph Ostovich, III.....8

AAAA NEWS

- President's Message: Stay the Course—Meet the Challenge**.....4

SPECIAL FOCUS: SPECIAL OPERATIONS AIRCRAFT

- Special Operations Aircraft Update**

- LTC(P) Jack J. Magrosky, Jr.....33

- Special Operations Aircraft Flight Test Program**

- by Forrest L. Baker.....38

- Army Special Operations Logistics Support Strategy**

- by John Moody.....40

- A New Way of Doing Business**

- by Robert E. North.....42

- Special Operations Aviation Combat Mission Simulators Update**

- by LTC Paul Hino.....45

NIGHT VISION UPDATE

- There is a HUD in Your Future**
by John R. Gresham.....67

FEATURE ARTICLES

- Comanche: Ready for the Warpath**
by MG Ronald K. Andreson and LTC Fred E. Brown.....12

- 24th Aviation Brigade in DESERT STORM**
by COL Burt S. Tackaberry.....28

- The Aviation Combined Arms Battalion (ACAB) for the Light ID**
by LTC Lawrence E. Casper.....48

- Guardian Soldiers Cover the Peninsula of Korea**
by LTC Paul R. Wills and MAJ Greg Kaufmann.....52

- A New Kid on the Block in Army Aviation Testing**
by COL Troy E. Burrow and James McCrory.....56

- Air-To-Air Stinger Update**
by LTC(P) James O. Emerson.....62

- AGES II: Concurrent Development and Unit Training**
by LTC Mark Russell.....65

FIELD REPORTS

- The Different Brigade**
by COL John Bradley.....70

- Full Circle**
by COL William F. Dismukes.....72

- USAR Aviation Reorganization**
by LTC Andrew Philip Karas.....74

- DESERT STORM Follow Up**
by COL Melvin J. McLemore and SFC Raymond C. Towns.....75

- AWO Evaluation Report Concerns**
by COL Michael S. Moseley.....77

- Desert Challenge**
by LTC John R. Penman.....78

OTHER DEPARTMENTS

- Awards and Honors**.....79 **CareerTrack**.....66
Briefings.....69 **Marketplace**.....86

STAY THE COURSE—MEET THE CHALLENGE

As your new AAAA President, I want to communicate with you from time to time, and what better way than a short column in ARMY AVIATION MAGAZINE. I promise to be brief and to the point.

First, I'd like to thank all AAAA members and the National Executive Board (NEB) for the privilege to serve. My predecessor, BG Jim Hesson, did a superb job for the Association. I will do my best to continue his momentum.

It should be no surprise to you when I say that the AAAA may be facing a serious challenge over the next few years. The lifeblood to any association is its membership base and for the AAAA, as well as the other Army-related associations, we are explicitly dependent on the fortunes of the Army, our retired members, and the industry that supports the Army. With the end to the cold war and the resulting reduction in U.S. military force levels and procurements over the next several years, there are those that are concluding serious impacts to military associations. Although I would agree that a significant challenge lies ahead, I prefer to take the positive view, particularly for Army Aviation, for the following three reasons:

- ★ Army Aviation proved itself to be extremely important and successful in Operation DESERT STORM. It is a high-mobility force multiplier that will gain in importance in a downsizing force environment.

- ★ The Army Aviation program is of the highest priority to the Army and fully supported by its leadership as evidenced by their support of the RAH-66 Comanche as a core Army program.

- ★ Our Aviation soldiers are more qualified and professional than at any time in the history of Army Aviation. High technology systems have been easily mastered by these highly competent volunteer soldiers and aviators.

I'm sure there are many other reasons to support a positive view. The important point is that we cannot rest our case on the past nor fail to improve as we go forward. The future will be challenging, and one of our most important challenges will be retaining and recruiting AAAA members. This, as most of us agree, is directly related to individual AAAA Chapter activities and programs supported by the programs and efforts of the National Executive Board (NEB) and the National Office.

My commitment to you is twofold. First, to stay the course and build on the successes of the past. And while change is inevitable, but it need not be change for the sake of change alone. When there is a need for change, it must be balanced and meaningful for all AAAA members and the association. Second, to meet the challenge described earlier which is of concern to all military-related associations.

In both these commitments, your ideas and support will be needed.

MG Charles F. Drenz, Ret.
President
Army Aviation Association of America

MEETING THE CHALLENGE



HEAD-ON

Rugged, dependable systems are the prerequisites of mission success. Canadian Marconi systems meet this challenge head-on, time and time again.

That's why CMC avionics have been chosen for every U.S. Army helicopter program throughout the past 30 years. CMC is extremely proud of this accomplishment. And we're committed to maintaining our reputation for product dependability in advanced avionics technology — into the 21st century and beyond.

- **Navigation Systems • Cockpit Management Systems**
- **Airborne Monitoring & Data Interface Systems**



CANADIAN MARCONI COMPANY
AVIONICS DIVISION

415 Legget Drive, P.O. Box 13330, Kanata, Ontario, Canada K2K 2B2
Tel: (613) 592-6500 Telex: 053-4805 Fax: (613) 592-7427

The Future of Army Aviation

By General John W. Foss

The following is excerpted from GEN Foss' Opening Remarks at the 1991 AAAA Annual Convention Professional Sessions.

Today's Army is a proud Army—proud of the victory our troops won in DESERT STORM in the Persian Gulf. We share that pride with the great American people who support each and every soldier and unit coming back from the Gulf. The support from the

American public is what sustained the troops during the long hot periods of deployment and deterrence and on through the conflict itself. The moral strength drawn from the people gave our troops the dominant edge over the enemy.

You have heard many stories and anecdotes from DESERT STORM, including gun camera film and first-, second-, and third-hand incidents. TRADOC is charged with the Lessons Learned Report for the Army. We will try hard not to have instant lessons learned, but will gather information and take several months to sort through it before we define them. Suffice it to say that at the broadest levels, Army Aviation was one of the superstars of DESERT



GEN Foss is CG, U.S. Army Training and Doctrine Command, Ft. Monroe, VA.

STORM. The Air Assault Division was a significant force in the operation—to the extent that it will be clearly embedded in the Army of the future.

Operation DESERT STORM culminates a year and a half of unprecedented change that stretched from the breakdown of Communist governments in Eastern Europe, to the fall of the Berlin Wall, Operation JUST CAUSE in Panama, the free elections in Nicaragua, the signing of the CFE Agreement, the dissolution of the Warsaw Pact, the invasion of Kuwait, and the defeat of Iraq by coalition forces and the internal disintegration of the Soviet Union.

What emerges from such a period of dynamic change is that the world of 1991 is far different from the world of 1989 and that the dangers and threats are far different. The President's budget projects a major reduction in our armed forces by 1995, with that reduction getting underway soon. The

budget compromise agreement last year puts a cap on defense spending, which makes breaking the cap nearly impossible and forces tradeoffs within the DoD. Under that budget, the Army can have no more than 530,000 people by 1995.

Our national military strategy has also evolved from 1989, when the focus was on forward defense in Europe with a clear orientation against the Soviets. Now, in 1991, our military focus is on power projection and our orientation is global. A revised international security situation, a revised budget situation, and a revised mission with a requirement for force projection (for highly mobile and deployable forces, not just light) will have significant and fundamental impact on the U.S. Army. Of course, the impact on Army Aviation for the next decade will be equally significant.

The Army of 1995

As the troops return from DESERT STORM, it will not be back to the good old days of before the war. The Army of July 1990 is gone forever. We will not return to it. We will begin the shaping of a new Army to be in place by 1995.

What does this really mean? The 1995 Army will have 12 active divisions, down from 18 last year, and six National Guard divisions, down from 10 last year. Forward-deployed forces will be greatly reduced and their mission will be forward presence—that is, deterrence, stability, and commitment to alliances. The major task of our Army will be the projection of land combat power to regional contingencies, and secondarily, reinforcement to major wars with much greater warning time. Since the Army will be smaller, Army Aviation will be smaller, and now comes the tough part—how do we organize the Aviation part of a smaller Army?

How you organize Army or any part of the Army depends on how you want to fight—your doctrine and your technical capability—how good your weapons systems are. First, we must accept that we will see less and less linear combat in the future and more opportunity for nonlinear combat. Aviation has always come to the

forefront on nonlinear battlefields. That is the heart of the great Aviation dilemma—primarily distributed forward on a full-time basis or primarily organized at corps for employment in mass and passed down to division commanders when so needed. There will not be enough structure to have it both ways. If we use the majority of the Apache attack helicopters at division level, then it becomes difficult to pull them back to corps level to be employed in mass. But will a corps commander have enough intelligence to use such precious assets wisely? Our recent experience shows that he will.

During Operation DESERT STORM, we deployed the (test) J-STARS—Joint Surveillance Target Attack Radar System—to the theater. Its remarkable capability was available to corps commanders as well as the Tactical Air Control Center and senior headquarters. It gave the corps commander a real-time view of the battlefield he has never had before, to depths and widths that were remarkable. We also deployed a test version of the remotely piloted vehicle (a TRADOC test unit) with a ground station at corps. The corps commander could look at any place within his area with great precision, day or night—real time!

So the corps commander can now operate with more up-to-date information and can task and employ attack helicopters for a major role on the battlefield, and do it with mass. But, if he does this, many commanders fear they will never see attack helicopters in division or brigades. As a former corps and division commander, I would have to point out that most corps commanders would be very serious about training regularly with attack helicopters in division and corps, on exercises, deployments, and the Combat Training Centers.

If our technology were not so developed and if we faced a serious close battle with an enemy force which outnumbered us considerably—such as the Soviets did in Central Europe a few years ago—I would lean toward leaving large numbers of attack helicopters in divisions. But I really believe

(Future — continued on page 80)

Army Aviation's Continuing Story in DESERT STORM

By Major General Rudolph Ostovich, III

I can't say enough about the performance of the Apache helicopters and the outstanding crews that fly them. In the May issue I told the story of how our Army Apaches fired the first shots that kicked off Operation DESERT STORM. The story doesn't end there

—it was only the beginning of Army Aviation's contribution to the great allied victory. Where have all the naysayers gone? They've been silenced by the "explosions from nowhere" from our night-cloaked Apache forces. Now, I say let those success stories be told.

One of those success stories occurred when Apache crews from the 2-229th "Flying Tigers" made unique and unexpected national news. On 17 February 1991, aviators from the 2-229th captured 52 Iraqi Prisoners of War (POWs) and again on 20 February they rounded up 476 POWs.

Both times these captures occurred behind enemy lines and without the

MG Ostovich is Chief, Aviation Branch, Commanding General, U.S. Army Aviation Center and Ft. Rucker, AL and Commandant, U.S. Army Aviation Logistics School.

assistance from any ground forces. Many have jokingly stated that not since the Indian Wars have Apaches taken prisoners—a first for Army Aviation.

Apaches excelled in a variety of missions and clearly demonstrated their flexibility and to an even greater extent—their lethality. A good example of lethality took place on 26 February at 0200 hours when Flying Tigers from the 4-229th, VII Corps launched a devastating attack on a Republican Guard stronghold deep in Iraq. Under the cover of darkness, Flying Tigers flew approximately 40 kilometers north of rapidly advancing Allied forces to a point designated as "Objective Raleigh." Conducting deep operations, Apache helicopters unleashed their devastating combat power upon the Iraq military.

There was nowhere to run, nowhere to hide. Apaches attacked and destroyed Iraqi vehicles and equipment that stretched for





SECOND TO NONE.

When the mission calls for the cover of darkness, the military calls for ITT leadership in NIGHT VISION.

When it comes to Night Vision devices, what you get—in terms of equipment—makes a critical difference in what you see.

That's why, when you need the clearest vision at low light levels, going with the leader in Generation III technology is essential.

Our leadership was proven in Panama. During Operation Just Cause, U.S. Army helicopter pilots made extensive use of ITT's Aviator's Night Vision Imaging System (ANVIS).

With proper training and successful use of the world's most advanced night vision systems, U.S. Armed Forces proved that they "own the night."

ITT was the first to mass produce Gen III. And since then, we've delivered more devices than all other night vision manufacturers combined—25,000 in 1989 alone.

Besides providing improved performance at low light levels, our Gen III image intensifiers also last four times longer than Gen II.

No one is more dedicated to Night Vision Technology than we are. As clearly demonstrated in the success of Operation Just Cause, you can Trust the Night to ITT.

ITT Electro-Optical Products
7635 Plantation Road
Roanoke, VA 24019, USA • 703-563-0371

ITT
DEFENSE

"One report stated that tanks could be seen burning in an area ten kilometers wide, for as far as you could see."

miles. One report stated that tanks could be seen burning in an area 10 kilometers wide, for as far as you could see. The Battle Damage Assessment (BDA) report was very impressive; the report indicated that 28 tanks, 19 Armored Personnel Carriers (APCs), 10 Multirole Vehicles (MTLBs), 18 trucks, 7 soft skinned vehicles, 1 ammo carrier, 1 observation post, 1 Air Traffic Control (ATC) tower, 1 bunker, and 46 enemy were killed in action (KIA). Friendly aircraft damaged or lost—zero.

The following day, Army Aviation brought even greater destruction to Iraqi's military force. Working in front of the advancing 3rd Armored Division, the 2nd Squadron, 6th Cavalry Regiment, VII Corps demonstrated Army Aviation's deep operation capability. Once again, the Apaches achieved an impressive battle damage record. Listed on the BDA were 145 T54/55 tanks, 12 T 62/72 tanks, 23 bunkers, 4 engineer vehicles, 4 towed artillery pieces, 1 MTLB, 43 trucks, 6 37-mm AA guns, 2 ZSU 23-4s, 1 jeep, 1 fuel truck, 1 S-60 AA gun, 14 APCs, 1 artillery bunker, 26 BMPs/BRDMs, 2 SP artillery pieces, 1 communication vehicle and 1 fuel site. Again, friendly losses were zero.

The 27th of February continued to be a bad day for Saddam and his "mother of all battles." At 1130 hours, the 2-4 Cavalry and the 1-24th Attack Helicopter Battalion reaped their share of havoc on Iraq's Army with a BDA consisting of a 130-mm howitzer, 4 APCs, 2 half ton trucks, 4 Air Defense Artillery (ADA) weapons, 1 jeep, and 16 enemy KIA. Between 1430 and

1830 hours the 12th Aviation Brigade attacked and destroyed 37 trucks, 4 APCs, 2 BMPs, 6 BRDMs, 2 MI-8 Hip helicopters, 2 ZSU 23-4s, 1 ASC with radar and 2 ZSU-2s. Then, at 2125 hours, the 3-227th Attack Helicopter Battalion, XVIII Airborne Corps, conducted deep operations with a BDA of 2 155mm howitzers, 2 MI-8 helicopters, 1 ammunition dump, 20 trucks, and 1 MTLB.

Combined arms lethality was demonstrated on 2 March when Apaches, Cobras, and artillery teamed up to destroy 187 Iraqi armored vehicles that included 23 T-72 tanks. Also destroyed were 350 trucks. During those three days, VII Corps captured over 5,000 enemy POWs while sustaining very little enemy related casualties. Army Aviation was a key player in the success of capturing those POWs and to the low casualty rates of our forces.

I could go on about the excellent success the Apache achieved in Operation DESERT STORM, but success didn't result from the airframe alone. The second half to the equation is quality soldiers. Without a doubt, Army Aviation demonstrated that the best equipment operated by well-trained, quality soldiers, combined with strong leadership and sound doctrine, will produce victory under any conditions. Army Aviation's men and women demonstrated that magnificence in DESERT STORM. I am proud of each and every one of them and will continue to tell the "good news" story. Over the next several issues, I will expand on the role that all of Army Aviation played—not only that of the Apache.

IIII

Night missions demand an extra margin of safety.



SRL's NV/HUD gives you that edge.

SRL's Night Vision/Head Up Display improves your ability to carry out low-level search and rescue missions safely and effectively at night. In fact, that's why the *Operation Desert Storm* proven SRL NV/HUD is the system of choice for the SOA, Panther 800, and Special Operations Forces.

In use on a variety of aircraft, the SRL NV/HUD enhances pilot and co-pilot effectiveness and improves mission safety by superimposing high-resolution flight and navigation data within the field-of-view of night vision goggles.



The SRL NV/HUD features:

- ▼ Custom symbology tailored to your requirements.
- ▼ User selectable modes.
- ▼ Video mixing for head down display
- ▼ Fixed and rotary wing applications
- ▼ Growth capability for additional sensor inputs and symbol functions



**SYSTEMS RESEARCH
LABORATORIES, INC.**
CALSPAN



2800 Indian Ripple Road, Dayton, OH 45440-3696
TEL 513-426-6000 • FAX 513-427-0205

For more information, including detailed specifications,
contact the SRL Defense Electronic Systems Center.

Comanche: Ready for the Warpath

by

MG Ronald K. Andreson and LTC Fred E. Brown

On 5 April 1991, the Secretary of the Army selected the Boeing Sikorsky First Team to complete development and production of the Army's highest priority acquisition. The Chief of Staff of the Army, in support of that decision, made the announcement at the

Army Aviation Association of America's Annual Convention on 13 April 1991, that the Light Helicopter (LH) would be named the Comanche and designated the RAH-66. This announcement culminated eight months of intensive source selection activities.

The competition was between two of the world's most capable helicopter teams. The Boeing Sikorsky First Team is composed of Boeing Helicopters, Philadelphia, PA and Sikorsky Aircraft Division of United Technologies Corporation, Stratford, CT. The



McDonnell/Bell SuperTeam included Bell Helicopter Textron, Fort Worth, TX and McDonnell Douglas Helicopter Company, Mesa, AZ, and McDonnell

MG Andreson was the RAH-66 PM, St. Louis, MO, at the time this article was written.

Aircraft Company, St. Louis, MO. The competition was tough with both teams submitting technically acceptable proposals. However, in the final analysis, the Boeing Sikorsky team provided the best overall value to the Army.

The following paragraphs describe the design in terms of performance, cost, and schedule. The performance area is subdivided into deployability, flight performance, target acquisition, survivability, crew station including pilotage, weaponization, maintenance, and Manpower and Personnel Integration (MANPRINT)/Training. A snapshot of the aircraft's features and capabilities is contained in Figure 1.

LTC Brown is RAH-66 Assistant Program Manager, Requirements, St. Louis, MO.



THE ARMY WINS



The Boeing Sikorsky Team is honored to have been chosen by the Army to develop the RAH-66 Comanche. We are hard at work on the next phase of the program—the development, building and flying of Comanche prototypes. We salute the Army's decision and steadfast commitment to the RAH-66 Comanche program.



BOEING SIKORSKY
RAH-66 COMANCHE TEAM

RAH - 66 CAPABILITIES

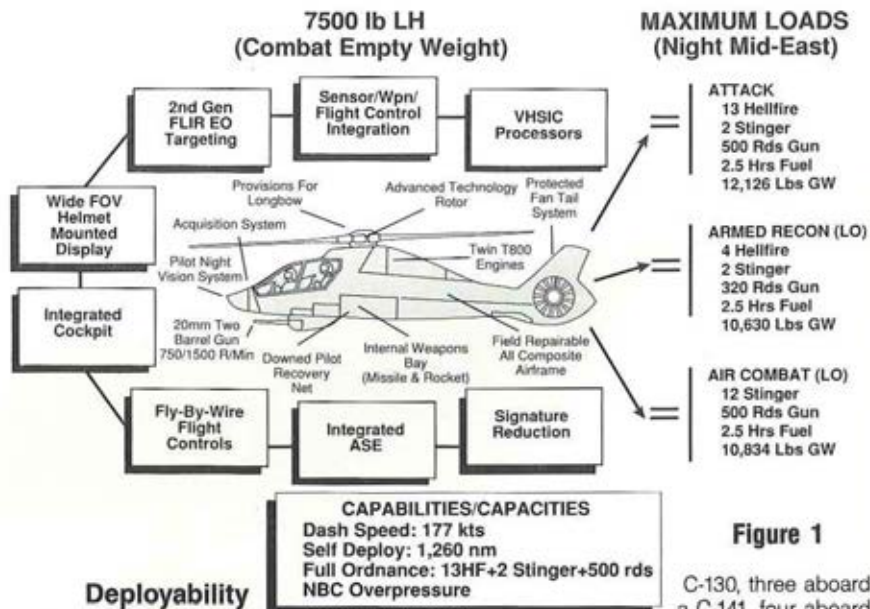


Figure 1

C-130, three aboard
a C-141, four aboard

The deployability of tomorrow's force will be revolutionized by the Comanche. It is faster, easier, and requires less manpower to deploy to a theater of operation than the AH-64, OH-58 or AH-1. It allows the commander to project combat power early in any conflict. The deployability objective of the Comanche Required Operational Capability (ROC) provides benefits to survivability. The requirement to easily fit into the C-130/C-141 transport aircraft keeps the visual silhouette of the Comanche small.

The Comanche's transportability features have exceeded all objectives. The demonstrated 20 minute debark time in a C-130 exceeded our expectations. The transportability kit includes a blade rack that straddles the tail and a caster tail wheel that allows maneuvering of the Comanche once loaded in the C-130 or C-141. The debark time from a C-17 or C-5A are even less at 15 minutes. One Comanche can be transported aboard a

a C-17, and eight by a C-5A. This means that an entire air cavalry troop or attack company can be deployed in one C-5A or two C-17s.

The self-deployment range of the Comanche is an impressive 1,260 nautical miles, with a 157 nautical mile fuel reserve. This allows the use of both the northern and southern routes to Europe and provides the flexibility to deploy year round. This is achieved by adding the External Fuel and Armament Management System (EFAMS) with 460 gallon tanks attached (see Figure 2). The air combat missile system, internal to the Comanche, remains operational. If necessary the external tanks are jettisonable.

Flight Performance

The flight performance of the Comanche is unmatched. Its 177 knot dash speed exceeds the objective and provides the necessary speed to move to the battlefield



OUR INTEGRATED AVIONICS ARE FLYING WITH A PRETTY FAST CROWD.

TRW has been selected to provide integrated communications, navigation and identification (CNI) avionics for the U.S. Air Force's F-22 Advanced Tactical Fighter and the CNI and electronic warfare systems for the U.S. Army's RAH-66 Comanche Light Helicopter.

These advanced avionics are half the size and weight of old systems. Save up to 50 percent in life cycle costs. And provide increased reliability. They even have the

ability to reconfigure themselves in flight.

All of which makes it easier for pilots to successfully complete their missions.

TRW's integrated avionics can also help existing aircraft to extend their capabilities. And their effective life.

For more information, contact TRW's Military Electronics & Avionics Division at (619)592-3118. And start flying with a faster crowd.

TRW

Figure 2



and escort combat assaults. This is a significant enhancement to survivability. The vertical rate of climb is much better than the Government objective. With over 1,182 feet/minute rate of climb at 95% maximum rated power, the Comanche has a power margin that translates into more payload, agility and maneuverability for future growth. The load factors on the aircraft cover a full range of maneuvers. The g loading of +3.5 g to -1.0 g provides significantly improved air combat agility and maneuverability.

The flight performance and gross weight range provided by the Boeing Sikorsky Comanche give the warfighters a versatile system that meets projected battlefield needs. Figure 3 shows five different loading configurations that are well within the capabilities of the Comanche. The combat empty weight is less than 7500 pounds (3400 kg) and the primary mission gross weight is 10,113 pounds (4587 kg).

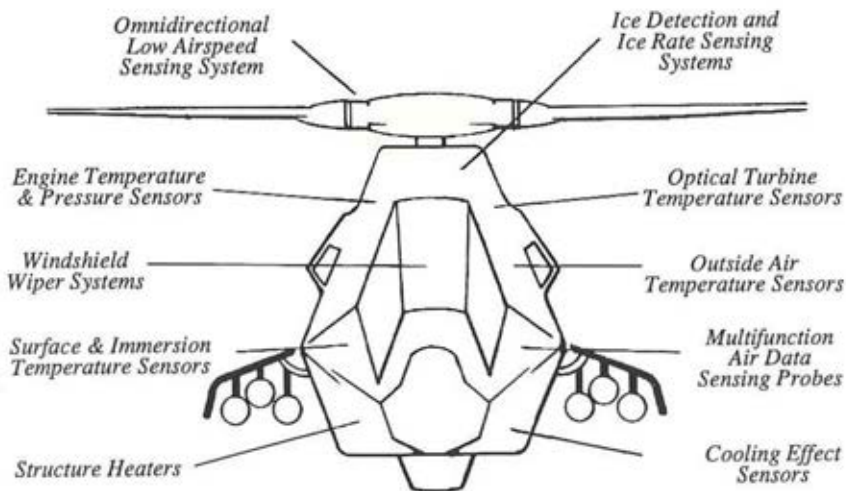
A key objective of the Comanche Pro-

gram is to provide the warfighter with better aircraft maneuverability. The Boeing Sikorsky Comanche meets or exceeds all of the ROC objectives. The hover turn-to-target (180°) maneuver can be performed in 4.6 seconds enhancing the "first to fire" capability. The masking maneuver can return the aircraft to cover in 1.6 seconds. This significantly reduces exposure time and vulnerability to threat weapons. The constant altitude 90° turn, which can be performed in 5.5 seconds, enhances survivability with a rapid turn-to-target capability.

A unique feature of the Boeing Sikorsky Comanche is the tail chase maneuver. With a forward airspeed of 80 knots, the pilot can perform a 180° pedal turn to bring weapons to bear on target while maintaining the original flight path and speed. This provides outstanding air combat maneuverability.

These capabilities have all been demonstrated by surrogate aircraft and verified by wind tunnel testing.

Products And Capabilities For The New Generation Of Rotorcraft



At Rosemount, we design our products to survive years of service in the harsh environment of today's rotorcraft. We build and test every design to the industry's highest standards. This is your guarantee that they're the most accurate and reliable that you can put on your rotorcraft.

For more information on how you can put our experience to work on your next program, call us at (612) 892-4461

ROSEMOUNT

Measurement
Control
Analytical
Valves

Rosemount Inc.
Aerospace Division
14300 Judicial Road
Burnsville, MN 55337

COMANCHE MISSION LOADS

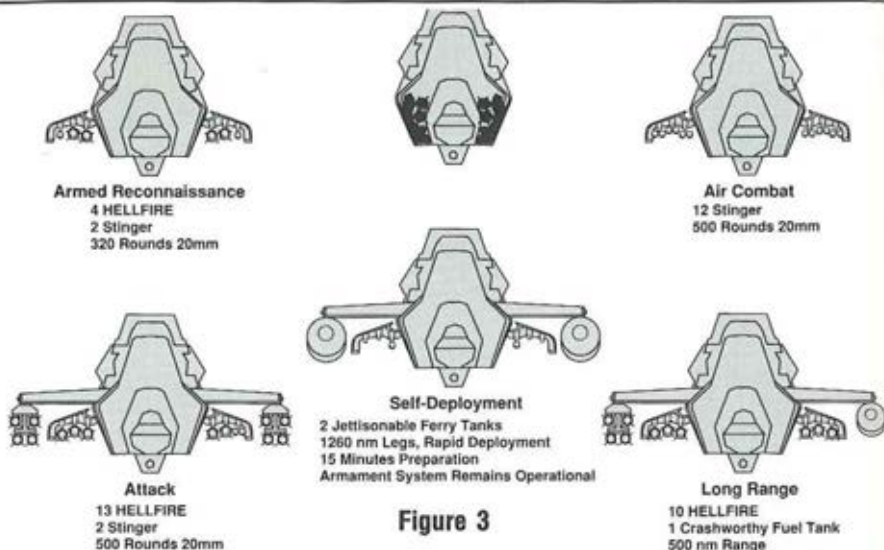


Figure 3

Target Acquisition System

The Target Acquisition System (TAS) combines a TV and a 2nd generation Forward Looking Infrared (FLIR) to provide the aircrew with the ability to acquire, classify, and recognize targets at ranges 40% farther than current fielded systems. The FLIR cuts through battlefield obscurity and darkness to find targets which previously could not be detected. The location accuracy achieved by integrating the Global Positioning System (GPS), accurate laser ranging, and precise sensor stabilization enables the aircrew to accurately guide precision munitions, including the Longbow missile, to the desired target. The Aided Target Detections and Classification (ATD/C) enhances survivability by scanning a 5° vertical by 45° horizontal sector in less than 10 seconds. The aircrew is then free to remask or reposition as the situation dictates. The aircrew can review the targets from the masked position. The demonstrated ATD/C algorithm reduces the

false target rate significantly better than the requirement. This improves the aircrew's confidence in the ATD/C system capabilities and significantly reduces crew workload and enhances survivability.

Survivability

Optimum survivability is achieved through a balance of long range target acquisition and passive signature reduction techniques. Fuselage shaping, coupled with the appropriate signature reduction materials applied to the aircraft, retractable weapons pylons, and retractable landing gear, shortens the range at which the enemy can detect the Comanche to a point well inside the target acquisition range of the day TV or FLIR.

The low infrared (IR) signature of the Comanche is composed of two parts: exhaust plume and body signatures. Boeing Sikorsky's diffused exhaust plume signature, coupled with the low body signature, make up the total IR signature which is better than the Government objectives. Through the innovative Fantail design and

Laser Detection . . .

New Sensors for Threat Warning.



U.S. helicopter crews will now be protected from laser threats, thanks to a new laser warning system developed by Hughes Danbury Systems, a subsidiary of Hughes Aircraft Company.

The AN/AVR-2 Laser Detecting Set (LDS) is the first laser detecting system available. It will become a vital component for the U.S. Army, Navy and Marine Corps.

The AN/AVR-2 LDS interfaces with existing radar warning systems, and is part of Hughes'

ongoing effort to make combat helicopters, other aircraft and tanks safer through advanced sensor technology.

For more information, contact our Business Development office at (203) 797-5261.

AN/AVR-2. In production now and ready for tomorrow.

HUGHES

Danbury Optical Systems,
a subsidiary

the low noise, variable speed, 5-bladed main rotor, the Comanche acoustic signature, both aural and electronic, has been reduced to well within the target acquisition ranges. The visual detection of the Comanche is reduced through its small size, low-glint flat plate canopy, and low-flicker main rotor system. The overall low signature of the Comanche allows it to close with the enemy without being detected.

Crew Station

The Comanche's warfighting crew station is designed for the crew member; easy to use, automated, redundant; and enhances crew survival. Both crew stations are identical which will reduce the training burden on commanders (see Figure 4).

The Comanche is single pilot operable from either crew station. This supports both the Rear Area Combat Operations (RACO) mission and the Aerial Fire Support Officer (AFSO) mission. The RAH-66 has a fly-by-wire flight control system which is triply redundant. The right sidearm controller controls pitch, roll and yaw. The left sidearm controller controls thrust. The pilot and copilot have FLIR and Image Intensification (I²) night vision pilotage. Both have I² tubes which are mounted directly to the helmet. Both crew members also have access to FLIR imagery, either through the Night Vision Pilotage System (NVPS) for the flying crew member or through selecting the unity field of view of the TAS FLIR. This feature allows both pilots to perform a full range of crew duties both day and night. The Helmet Mounted Displays (HMDs) provide the crew members with relevant data, including target information for head-up, eyes-out flying and fighting. The lightweight and low center of gravity of the HMD reduces crew fatigue. The HMD provides a 35° x 52° clear image display. The 2nd generation FLIR, in 480 x 4 detector format, provides 40% improvement in resolution for the night pilotage or TAS scene over current fielded systems.

Cockpit automation for Comanche reduces the crew workload to an all time low, allowing aircrews to fly and fight longer. Selectable flight control modes provide for

an automatic hover hold and an automated approach to a hover. Integration of the fire control and flight control systems allows for automatic weapons delivery when desired. All the pilot has to do is to select the target in his HMD and pull the trigger. The flight control system also provides altitude and heading hold and automated route flying for precision, low workload point-to-point flight.

Communication functions are integrated and easy to use. The Comanche can simultaneously receive on six nets (three FM, one VHF, one UHF, and one HF) and can transmit on three nets simultaneously (two voice and one data). All radio transmissions can be secured via an integrated encryption device. The Communication Electronics Operating Instruction (CEOI) is automated to the point that the aircrew simply selects the supported unit. Frequency and call sign data are displayed and radios are tuned automatically. Housekeeping information is displayed by exception, which reduces display clutter and aircrew workload.

The digital map display is one of the best features of the integrated crewstation. It eliminates the requirement for the aircrew to continually follow their position on a paper map. The digital map not only displays the aircraft's own ship position and orientation but also displays operational graphics including battle positions, suspected threat locations, intervisibility plots and threat engagement ranges, to name a few. The map database covers a 300 x 300 Km area and can be scaled to any of five map scales to assist the crew in maximizing the fighting effectiveness of the Comanche.

Aircraft survivability is built into the Comanche cockpit. The armored crew seats withstand automatic weapons fire and the seat itself has 12" of stroke to enhance the system's air combat capability and is greater than any rotary wing system fielded aircraft today. The cockpit, as well as the mission equipment package (MEP) bays, has overpressure and filtered air to protect the cockpit environment from becoming contaminated in an NBC environment. Incoming air is filtered by self-cleaning filters. The M44 aviator protective mask provides

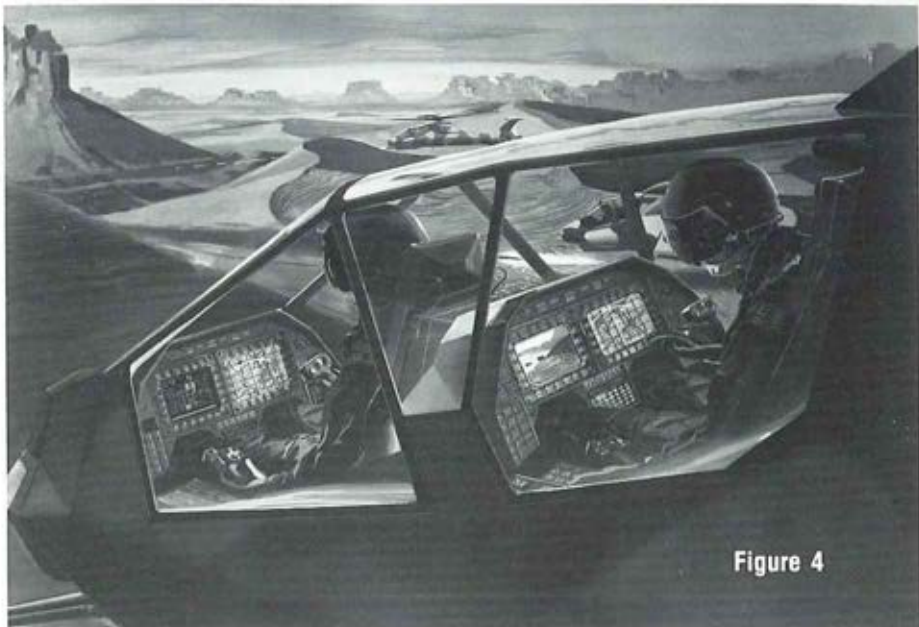


Figure 4

cooled, clean air and provides excellent visibility for fighting in a contaminated environment.

Weaponization

The Comanche will provide the commander unprecedented flexibility in weapons loading. The aircraft will have six internal weapons stations and external stores stations that can carry eight additional missiles. Each internal station is capable of carrying one Hellfire or two Stingers or four 2.75 inch Folding Fin Aerial Rockets (FFAR). The internal weapons are mounted on retractable doors on each side of the aircraft. The External Fuel Armament Management System (EFAMS) is simply horizontal pylons which can be mounted to each side of the aircraft in 15 minutes. Each pylon can carry a weapons launch station with four missiles each or a fuel tank.

As depicted in Figure 3 these loading options can be all anti-tank, a mixture of antitank and antiair, or even a longer range

option which includes extra fuel on one side of the aircraft and a mixture of antitank and antiair weapons on the other side.

The turreted 20 millimeter cannon is the next generation gatling gun and provides the Comanche with a most responsive and lethal cannon designed to meet the stringent air combat requirement. It is based on a twin barrel derivative of the M-197 cannon used on today's AH-1F model Cobra. The redesigned feed system is shorter and simpler to avoid the jamming problems of present gun feed systems. The advanced gun target solution algorithms and high velocity rounds will allow the Comanche to engage first and kill first. The gun has a selectable dual rate of fire, 750 rounds per minute for ground targets and 1500 rounds per minute for air combat.

The Comanche boresight solves the problems associated with past systems. The TAS internal boresight is accomplished automatically through a simple set of optics. These optics are used to boresight the TV, laser, and FLIR precisely to a single point

on start-up, and automatically perform updates as temperature impacts the optical path. The TAS to weapons boresight is accomplished using inertial sensors on the weapons stations and the gun, as well as the TAS. Helmet boresight is also accomplished automatically when the pilot initiates the start-up procedure.

Maintainer Friendly

The outstanding deployment and employment capability of the Comanche would be wasted if it were difficult to maintain. The Boeing Sikorsky Comanche design provides the maintainers an air vehicle that is easily supportable in combat. This team is committed to continue an aggressive design philosophy of "If you want to fight you have to reach the battlefield." To help illustrate this, a few of its design ideas and new technologies are presented at right (see Figure 5).

Accessibility—The unique central box beam design, with modular sections, provides design freedom in locating components. The obvious benefit is single layering of line replaceable units thereby eliminating the need to remove good components to get to the bad ones.

Ground Support Equipment—A tremendous effort was undertaken by the Boeing Sikorsky team to not only limit peculiar ground support equipment but to eliminate it all together. To date there have been nine pieces of Peculiar Ground Support Equipment (PGSE) identified; however, the Boeing Sikorsky engineers are committed to the challenge of eventually eliminating all Comanche PGSE. They have been successful in eliminating the need for ladders or work stands.

Forward Area Refueling Point (FARP) Operations—Specific areas of concern for rapid refuel and rearm were investigated closely, and as a result, the time to completely refuel and rearm a Comanche is less than 15 minutes using only three personnel. In order to accomplish this, the single point refueling port is compatible with the D-1 nozzle for high pressure fueling. Rearming of the 20MM gun is assisted by a power loader which can

completely load an empty ammo drum in 6.5 minutes. The missile launchers are designed "waist high" to speed the rearming process by eliminating awkward stooping or crawling by FARP personnel to load the wing stores.

Troubleshooting/Diagnostics—One of the features of this design is the Portable Intelligent Maintenance Aid (PIMA) or the Contact Test Set (CTS). This is not a piece of test equipment. It is a highly intelligent piece of maintenance troubleshooting equipment that has a resident memory containing all the information found in the more traditional troubleshooting manuals. One is located on board each Comanche. In addition to fault isolation, the PIMA/CTS will also be used to transfer data to all of the existing and developing ground support systems, i.e., Computer-aided Acquisition and Logistic System (CALS), Unit Level Logistic System-Aviation (ULLS-A) and automated parts requisitioning. By providing this piece of equipment, the elimination of "paper manuals" on the flight line will become a reality. Another piece of associated equipment is the "Built-In-Test Verifier." Again, this is not a piece of test equipment, but it does provide a closed loop check on those LRU/LRM's identified as being bad by "verifying" they are bad before being replaced.

The extent of onboard diagnostics and prognostics is extensive thereby eliminating the need for additional automatic test equipment. The newest feature in this area is the onboard automatic boresighting that provides a constant boresight correction to the gun.

Field Maintenance—In spite of all the items that have been presented so far, the most impressive is the limited "hands-on maintenance" required of the Comanche crewchief/maintenance personnel. Soldier performance parameters and MANPRINT techniques were all embedded in the design process, and the design is obviously a result of those considerations. This air vehicle has a damage tolerant composite airframe and rotor system; when damage does exceed these tolerances the repair process is quickly completed.



Figure 5

MAINTAINER FRIENDLY

Damage Tolerant
Composite
Airframe and
Rotor System

Easy Access to
Non-Layered
LRU/LRM

No Ladders and
Work Stands
Required

Minimum
Hand Tools



Minimum
Peculiar Ground
Support
Equipment

No Cotter Pins,
Safety Wire, or
Torque Wrench

Rearm & Refuel
3 Crew, 15 Min.

Automatic
Boresighting

No Separate
ATE Required

1% False
Removal Rate
with BIT Verifier

Portable
Intelligent
Maintenance
Aid

Figure 6

Another result of supportability design influence is the elimination of numerous hand tools and torque wrenches. This means the crew chief can manage his tools with ease and transporting a tool box does not become a logistics burden by itself (see Figure 6).

Finally, the key to completing any maintenance task successfully is the Foreign Object Damage (FOD) check. The results of FOD create unnecessary costs and delays to which every maintenance officer, NCO and commander can attest. The Boeing Sikorsky design eliminates the need for cotter pins and safety wire. It utilizes "captive fasteners" everywhere possible, reducing the possibility of FOD.

MANPRINT/Training

Boeing Sikorsky's integration of program elements including MANPRINT/Training, RAM/ILS, concurrent engineering and sub-contractor activities resulted in a design which optimizes supportability and man-machine interface features while maximizing the air vehicle's inherent technical and warfighting capabilities.

MANPRINT Design Influence—The design reduces maintenance and support workload over that of the current fleet, and the use of a cognitive requirements model (in conjunction with the Task Analysis/Workload model) to evaluate and establish personnel requirements will reduce the risk of requiring either advanced education or training to maintain the aircraft. Some of their innovative design features include:

- A Fantail anti-torque system reduces the hazards inherent with a conventional tail rotor system by decreasing the potential for obstacle strikes and personnel injury.
- The Helmet Integrated Display Sighting System incorporates a very low Center of Gravity (considered a technological breakthrough) to reduce neck fatigue during normal operations, and neck bending and stress during crashes.
- Seat location, with adjustment, accommodates the 1st through 99th percentile Army male soldiers.

Boeing Sikorsky conducted a complete workload analysis during Demonstration/

Validation (DEM/VAL) phase which had a positive impact on crew station design, and their early development and use of a Pilot-Vehicle Interface Mechanization Specification detailed operator tasks, workload predictions, control/display requirements, software capabilities, and mission requirement parameters to optimize crew workload.

Their exceptionally well-planned and organized Health Hazards Program is thoroughly integrated with the System Safety Program. System safety and health hazards engineers interface with all development program activities and disciplines to identify and assess potential problems in the emerging system design.

Training—Boeing Sikorsky's training device suite meets all of the Government objectives and offers significant improvements over currently fielded systems.

The operator devices consist of a Combat Mission Simulator (CMS) for individual and crew training, and a Team/Combined Arms Trainer (T/CAT) for collective training. Both are enhanced by force level simulation to include interactive threats.

Both the CMS and T/CAT utilize the Fiber Optic Helmet Mounted Display (FOHMD) which allows each crew position to have an independent display (either pilot or gunner). By comparison the Apache CMS requires a separate device for each crew position and the pilot and gunner stations are not interchangeable.

The FOHMD has other advantages. It reduces the requirement for fixed facilities and its compactness enhances mobility. Additionally, its brightness and resolution levels exceed those of currently fielded systems. The FOHMD instantaneous field of view offers an unlimited field of regard (360°).

Four 40 x 80 km databases will enable the CMS and T/CAT to train in desert, jungle, mountain, and arctic environments utilizing Defense Mapping Agency data for accuracy (the Apache CMS has a single 32 x 40 generic database). Generic corridors provide smooth flight transitions from one environment to another.

The Multiple Integrated Laser Engage-



WE'RE COMMITTED TO YOU.

Robertson Aviation Range Extension Fuel Systems are built for the toughest customer of all. You!

We don't just build auxiliary fuel systems for your aircraft. We build them for you. Our commitment to total quality means you won't have to think twice about the reliability or survivability of your system. Just concentrate on your mission.

DOUBLE THE RANGE/FARE CAPABILITY.

Combat-proven Robertson internal aux systems can double your range or endurance. Our **GUARDIAN®** systems can also provide Forward Area Refueling capability.

READY WHEN YOU ARE.

Mission-ready Robertson tanks are available in sizes from 28.5 to 800 gal. They fit compactly into your aircraft and take up minimum passenger/cargo space.

After initial installation, tanks can be removed or reinstalled in 5 minutes or less *without tools*.

SELF-SEALING BLADDERS.

Robertson systems exceed the most stringent government requirements. Tanks with self-sealing bladders have passed .50 cal., 14.5mm, 20mm gunfire tests, and survived the 65-ft. drop test — *without leakage*.

WE GO THE EXTRA DISTANCE FOR YOU.

Robertson systems go the extra distance everyday for U.S. military forces around the world. They'll go the extra distance for you. For

more information, call (602) 967-5185. FAX (602) 968-3019 anytime. Or write P.O. Box 968, Tempe, AZ 85280.



ROBERTSON

AVIATION

Range Extension Fuel Systems

RAH - 66 PROGRAM SCHEDULE

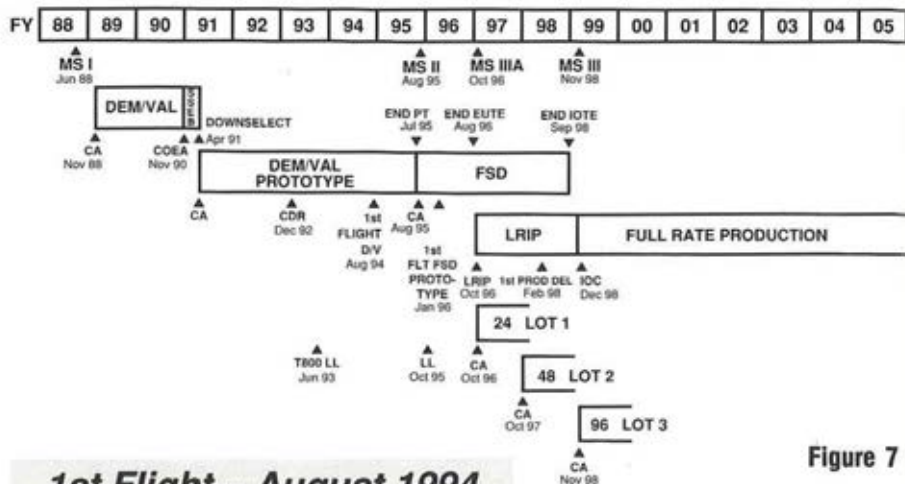


Figure 7

1st Flight – August 1994

ment Simulation/Air-to-Ground Engagement System (MILES/AGES) consists of embedded and add-on kit components allowing installation/removal by three soldiers in 15 minutes. The complex cabling and extensive hardware of predecessor MILES/AGES systems and their lengthy installation procedures, are replaced by a simplified multi-plexed configuration.

Cost

Design-to-cost (DTC) average unit flyaway cost has always been an important part of the Comanche Program. The original DTC goal was a \$7.5M (Fiscal Year [FY] 1988 constant dollars) for 2096 aircraft produced at a peak rate of 216 aircraft per year. In 1990 the Secretary of Defense down-sized the Army and in August reduced the Comanche buy consistent with the Army force reduction. The new procurement quantity of Comanche is between 1292 and 1681 aircraft produced at a peak rate of 120 aircraft per year. The unit design-to-cost for the Comanche under these conditions is higher than \$7.5 million dollars but the

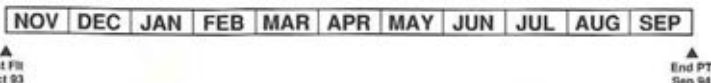
total program cost is lower.

Boeing Sikorsky committed to an \$8.5M constant FY 1988 dollars DTC for 1292 aircraft at a peak rate of 120 aircraft. Their commitment covers all production lots and provides the Government flexibility in annual production quantities and first production delivery dates.

The Government Design to Operating and Support Cost (DTOSC) goal was \$702 per flying hour (constant FY 1988 dollars), excluding the T800 engine. The Boeing Sikorsky team committed to less than \$500 per flying hour. These figures include material and labor costs both in the field and at depot. As a result of the Army's confidence in the system, the Army will pay less than our goal for the aircraft.

The Boeing Sikorsky developmental program will cost \$2.8 billion dollars over the next seven years in a cost plus incentive fee contract with award fee provisions. The award fee provision of the contract provides the Government outstanding flexibility and the ability to place emphasis where needed during development. The Government

DEM/VAL PROTOTYPE PHASE COORDINATED TEST PROGRAM



AVO1 AIR VEHICLE TESTING (180 HOURS)

- SHAKEDOWN
- ENVELOPE EXPANSION
- VIBRATION TESTING
- MANEUVERABILITY
- HANDLING QUALITIES

PROTOTYPE TEST

AVO2 MEP & SURVIVABILITY TESTING (140 HOURS)

- HYBRID NAVIGATION
- SIGNATURE TESTING (RCS)
- TURRET CONTROL & ARMAMENT
- CONTROLS/DISPLAYS/COMM
- HWFS OPNS & PERFORMANCE

PROTOTYPE TEST

AVO3 MEP TESTING (100 HOURS)

- AIMED TARGET DETECTION CLASSIFICATION
- PILOTAGE & MEP PERFORMANCE
- TARGET ACQUISITION SYS
- HIGH SPEED SEARCH & RECALL
- MANUAL STORED FRAMES

PROTOTYPE TEST

Figure 8

unilaterally decides what goals to set for each award fee evaluation. The Boeing Sikorsky proposal truly provides the Army with the best value Comanche.

The development schedule is as shown in Figure 7. It is divided into two phases: the DEM/VAL prototype phase and the Full Scale Development (FSD) phase. In the DEM/VAL prototype phase Boeing Sikorsky will build four prototype aircraft and one Propulsion System Test Bed (PSTB) (see Figure 8). The PSTB will be used to conduct the Preliminary Flight Acceptance Test, Military Qualifications Test and endurance testing. All testing during the DEM/VAL prototype phase will be conducted at the contractor facilities from December 1993 to July 1995. The first prototype aircraft is primarily a structural and dynamic test vehicle with the first flight scheduled for August 1994. This aircraft will be used to conduct dynamic stability surveys, preliminary flight loads surveys and flight vibration surveys. The second prototype aircraft will fly in October 1994 and will be primarily oriented to flight controls development. Testing on this aircraft will include flight performance and handling qualities surveys; acoustic, IR and Radar Cross Section (RCS) surveys; and C-130 transportability demonstrations. Aircraft #3 will be a MEP development aircraft. It will begin flight testing in January 1995. Aircraft #4 will be used for weapons system development and propulsion system/flight control systems interface and will begin flight testing in March 1995.

The FSD Phase will see continued development of the four DEM/VAL prototype

aircraft and Boeing Sikorsky will build an additional two prototypes to complete the development effort. The four DEM/VAL prototypes, upgraded with MEP and flight control updates, will continue development and testing throughout FSD. The two new prototypes will be full MEP aircraft which will begin flight testing in January and March of 1996. Aircraft #3 and #4 and #6 are scheduled to enter Force Development Test and Evaluation in March of 1998.

The total test schedule includes 3980 flight hours and 255 aircraft test months. This schedule meets all Government test requirements and represents a good balance between cost and adequate testing. It represents a low risk approach to reach Initial Operational Capability (IOC) by December 1998.

The Boeing Sikorsky Comanche provides the Army with everything needed to conduct armed reconnaissance, attack missions for light forces, and air combat missions on tomorrow's battlefield. It will do this within the cost constraints of the current budget and with a schedule that targets IOC in 1998. The taxpayer and the Army are the true winners in this competition. The United States will have the most capable helicopter in the world as we move into the 21st Century.

||||

24th Aviation Brigade in DESERT STORM

By Colonel Burt S. Tackaberry

The following is the first half of an edited transcript of COL Tackaberry's 12 April 1991 presentation at the AAAA Annual Convention Professional Sessions. The July issue will contain the remainder of the presentation and focus on the 'Battle of the Causeway.'

About two days after the cease fire BG Robert Frix came out to visit and said, "I'd like you to talk at the AAAA Convention" and I said, "Yes sir, I will." He flew off and the anxiety attacks started. I would tell you I have more anxiety now standing up in front of

you—my friends and peers who have taught me and trained me—than when I took the brigade across the Iraqi border. When I got back a couple of weeks ago, Ft. Rucker called and said, "We want you to talk at AAAA, talk about your brigade and the division," and I said I would. Again the anxiety started. So, that's what I'll do this afternoon.

But first I'd like to pay tribute to one individual and his unit—I don't mean to embarrass a General Officer, I didn't make it this far by embarrassing General Officers, but I have to tell you what a superb job MG

Donald R. Williamson and AVSCOM did. We in the aviation community in Saudi Arabia could never have done it without AVSCOM.



COL Tackaberry is Commander, 24th Aviation Brigade, 24th ID(M), Ft. Stewart, GA.

I want to start by showing you a 10 minute video. At the conclusion of that video is MG Barry R. McCaffrey, CG, 24th ID. He is a staunch infantry man, very proud of his infantry heritage. Listen to what he said during an After Action Review (AAR) three weeks ago in Saudi Arabia.

[At the conclusion of the video, MG McCaffrey is seen talking to the camera] "The single biggest maneuver factor on the battlefield was the Apache. If there was one leverage device that we used it was the Army general support aviation battalion. In my judgement, for the number of soldiers involved, and the price involved, the biggest leverage we got was out of the very few number of helicopters, the tiny number of helicopters, that we devoted to support logistics, and command and control in general: the Signal battalion commander, the Maneuver Brigade commanders, the DISCOM commander, and the division G3.

Had COL James King (DISCOM Commander) not had Army Aviation UH-60s, UH-1s, and Chinooks, there would have been a far different outcome. Many of us will never know the full story on that one. It made the difference of getting POL to the right spot because we could move the key logistics around the battlefield.

Who won the battle? Certainly, the artillery and the Apache. It will be hard to remember that eleven years from now, when you are in charge of force development working 20 hours a day. The artillery and the Apache are the hammers that make the end game work."

[COL Tackaberry] The aviation brigade attacked across the Iraqi border on 24 Feb 1991. We had a mission, basically stated: "Support the division and offensive operations in the division zone to help cut off and block the major line of communications up in the Euphrates River Valley." We had some specified tasks. Basically combat, combat support, and combat service support. The Attack battalion was supposed to find and kill tanks and vehicles and the general support battalion, my love, did it all. They don't get the hero's welcomes, they don't get all the glory the Apaches do, but that unit did it all—electronic warfare, command and control and logistics. They did a tremendous job in logistics. As we just heard, MG McCaffrey said that COL King, the DISCOM commander, depended on Army Aviation to get the job done.

The success of the aviation brigade started back in August and September of last year. I looked on the map and found a little town called Thadj way out in nowhere land in the middle of the Saudi desert, approximately 45 minutes flying time in the UH-60 north-northwest of Dharhan. As far as the eye could see there was nothing but sand, desert, scorpions, and vipers.

I was told by my peers and some subordinates, who are strong aviators, that it could not be done. "You can not take the aviation brigade out to that desert. We can't survive," I was told. "The helicopters will fall apart, the sand will eat them, the heat will eat them. We have to have a hard stand to

do maintenance on, we have to be back at Dharhan or King Fahd International Airport."

But my heart and my gut said that we had to be where the division was. We had to be responsive to the division that we supported and that was the 24th ID, not an hour to an hour and a half back in the rear at some hard stand at some big airport. If we were going to be the fourth maneuver brigade, we had to be out with the other three maneuver brigades.

I bet my career that we could survive and I felt like I bet the future of Army Aviation.

The Equipment

I was told the OH-58D could not survive. The sand would eat up the sophisticated equipment in the backseat and the heat would destroy it.

I was told the Apache couldn't fly in the dust. The dirt and sand would eat it alive. I was told the heat, and that austere environment, would eat up the Forward Avionics Bays (FABs), which would heat up and cause the black boxes to fall apart.

The UH-1, I was told, was too old and couldn't make it in the desert. In fact, it almost didn't make it. All our Hueys went down with engine problems, but AVSCOM got us the Improved Particle Separators (IPS), and never again did we have a problem. That old standby flew more than any other aircraft in the Saudi desert.

They told me the UH-60 couldn't survive. We had some problems with the Auxiliary Power Units (APUs) and the blades. But AVSCOM again got us tape for the blades and got us filters for the APUs. I don't know how and where they got them, but they always kept getting us APUs. It worked. People told me the EH-60 wouldn't survive, that the filter on the bottom would suck up the dust and that the sophisticated computers in the back would fall apart. The EH-60 had the best Operational Readiness (OR) rate of all categories of aircraft, helicopterwise, at least in our brigade and, I think, in the entire theater.

Again, I bet my career, and I thought I bet the future of Army Aviation, but in my heart, I knew that where we belonged was out there in the center sector with the divi-

sion. I believed in Army Aviation, I believed in Army aviators, Army non-commissioned officers and aviation enlisted personnel. I believed in our helicopters. I believed that we didn't make helicopters that couldn't survive in austere, harsh environments.

Granted, within three weeks our OR rate declined, but we went down for two reasons. We went down for parts, and mental attitude.

We came over heavy to Saudi Arabia with tanks and killing power because we were going to fight the minute we came off the ship. I've learned from the 101st that you've got to come in with logistics. The last ships to come in carried our technical supply and our repair parts.

I told MG McCaffrey, had I been in command when they manifested the ships, I would have bled all over his carpet because that was the wrong way to manifest aviation. We went heavy with helicopters, had a foot locker to fix them, and very quickly ran out of parts. The theater wasn't mature and we suffered. But the parts did come in and quickly the OR rate came back up.

Learning to Live

We licked the mental problem. Our leaders and our soldiers realized we could do it in the desert. We didn't fight the desert, we learned to live in the desert. We trained hard and we maintained hard. The first week in the desert our AVIM Company pulled a phase on a Black Hawk and had it done in about 10 days.

What a morale lifter that was. They realized that they could do it in the desert sands. We reversed cycles. We were pulling maintenance from 1600 to 0400 in the morning because it was the only cool time. We put the soldiers to bed because by 1000 it was hot, 120° out there.

We learned to live in the desert. We learned to train in the desert. We flew day and night. We took off in the desert and we landed in the desert. When you landed in the desert the entire aircraft was engulfed by blowing sand. It was an IFR takeoff and an IFR landing. By IFR, I mean you never broke out until you hit the ground. The

pilots learned to do it day and night.

The harshest and the most difficult and most challenging flying that I have ever done was in the desert at night under night vision goggles. It was a real credit to our aviators and to our training base that taught them how to do it. We quickly matured and we were ready to go into the reconnaissance and surveillance mission when the air war started on the 16th of January.

Simply stated, the Apaches were used at night. We did more thorough daylight reconnaissance with the Cav Squadron—the OH-58Cs and the AH-1s. We started slowly. Our concept was not to let the enemy know where we were, so we stayed back off the border. We used the great optics of the Apache to look out deep. Later on, when the ground war started, the enemy still had us 100 miles to the east up in the Tri-Border area.

When we got into Saudi Arabia, the Cav Squadron was chopped away from the aviation brigade and made a separate battalion and put up north of us. Two days after the air war started, MG McCaffrey said, "The aviation assets of the Cav are all yours, Tackaberry." So I had the luxury of taking the Air Cav into combat. Two days after the air war started, we jumped out an attack helicopter company with the Apache battalion's ground TAC CP, the battalion commander, and a Forward Area Refueling Point (FARP). It was one of the first elements up there with BG James T. Scott, ADC(M), 24th ID, on the border.

The CG realized very quickly that he had to get assets up in the area and he gave the aviation brigade an infantry company and the entire aviation brigade was told to move up to the border. The aviation brigade was later augmented with the entire infantry battalion and was the first major maneuver force from the division up on the Iraqi border.

On 26 January, BG Scott said, "The entire Cav Squadron now belongs to you, Tackaberry. Get the screen going and screen the entire front from the French sector over to the 3rd ACR." We did that for three or four days until the new Cav Squadron commander came in and took

just the Cav's ground assets. The aviation brigade kept the air assets—the two air troops.

On 30 January our first major operation took place. It started around 2100 hours and ran all night. We put six OH-58Ds in pairs at different times up on the border looking at specific targets, Iraqi border posts. They stayed up there until about 0300. Each of them came back, briefed the Assistant Division Commander (ADCM) and myself. Getting the pilots into combat operations early was a significant start for Army Aviation and for the brigade.

During the operation, we took fire up on the northwest section—where there was a border post. We figured out very quickly that it was an enemy division's left flank. All during this time the Apache battalion was working, looking with its long range optics and staying back behind the border.

We found an EW Site up on Phase Line Opus Center Sector. On 17 February, early morning, we took an Apache company (A Company) across and attacked that EW Site. It was a great start for the Apaches and a successful raid.

From 19 February until the ground war started, every day and every night, aviation crossed the border and went deep into the rear of the enemy. All the way up into Phase Line Lion and farther, doing reconnaissance and deep operations.

The Apaches would go across at night, looking at the routes that the UH-60s would take to insert the Long Range Surveillance Detachments (LRSDs) in future operations. They looked at the proposed Main Supply Routes (MSRs) that the lead brigades would move north on. One brigade would move up the eastern sector with another brigade up the western sector. They went all the way up into what we call Objective Gray and Objective Brown. It was also a major intermediate objective for the 197th on the west and the 2nd Brigade on the east.

They looked at what the aviation brigade called an Assembly Area, Marilyn. The division called it Forward Operating Base 1 (FOB 1). It was the big logistical base that had to go in, and it needed to be operational after the war started because it

More range. More endurance.



ERA'S ADVANCED EXTERNAL AUXILIARY FUEL SYSTEM

**Designed to fit BELL 412, 212,
205 and UH-1H/N Helicopters...**

FEATURES:

- 153 gallons additional fuel extends endurance by 1.5 hours (minimum)
- Improved flight characteristics
- Full utilization cargo/cabin areas
- Extensive flight hours - proven worldwide
- Utilizes existing hardpoints for attachment
- Auxiliary fuel located safely away from passengers
- Meets or exceeds FAR 29 Airworthiness standards
- Kevlar® composite construction

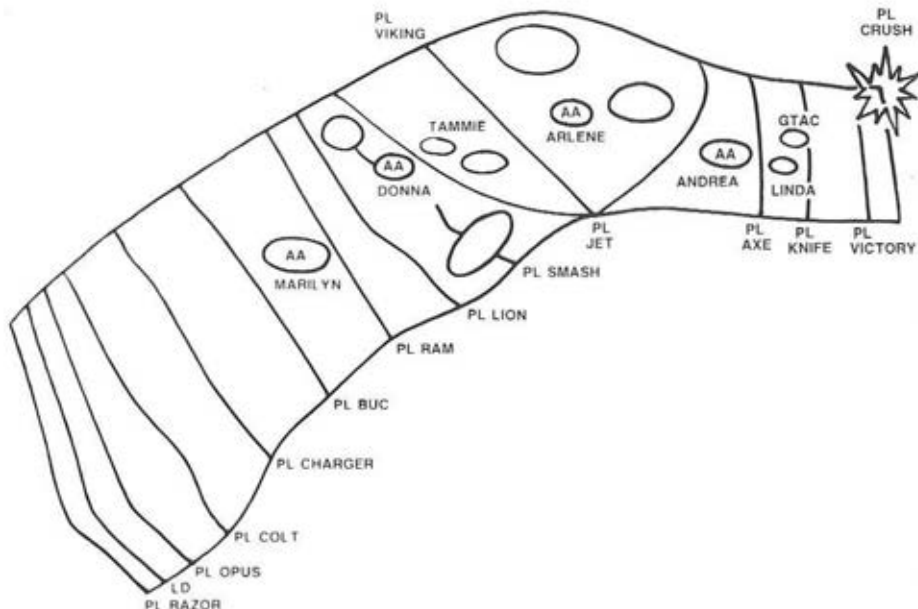
Manufactured by:



Era Aviation, Inc.

Era Aviation Services
P.O. Box 6550 / Lake Charles, LA 70606
318-478-6131 / Telex 502-459 / FAX 318-474-3918
Kevlar® Registered Trademark of DUPONT

- FAA Approved
- U.S. Patent No. 4,860,972
- AVSCOM Airworthiness Release



had all the fuel and all the ammunition the division needed to go on up into the Euphrates River Valley. On 23 February (twenty-four hours before G-Day started) we inserted three LRSD teams. We put one each up into Objective Gray, into Brown, and into FOB 1 (Marilyn). The day before, we ran a daylight false insertion to double check. We were concerned about what was up there. On this occasion, the first female went across the border and went deep. She was a radio operator in the back of an EH-60 and did a super job.

Each of these operations going across the Forward Line of Troops (FLOT) was a combined arms operation, and a joint operation. Every time we executed a cross border raid or armed reconnaissance mission or pure reconnaissance mission, we sent up the EH-60. It always went up. It would tell us well in advance if any communication systems were lighting up. Did they see us cross? Were they starting to talk? We used the THMT, a G2 asset, the Tactical High Mobility Terminal and we used the

Air Force. We always ran the Air Force above us in A-10s.

As soon as we crossed the FLOT 25ks out, we lost communications with the Apaches because they were low. But the Apaches could call out their key phase lines and the Air Force A-10s would call it back down through the Air Force Liaison Officer (ALO) so we knew exactly where our helicopters were at all times.

We would also hand off targets to them. In one case, at 0300, we gave them the opportunity to kill and they used their Mavericks and we backed out of it. It was as simple as saying "Yes, you have it — the Apaches are pulling out of the objective area." It was a great operational force.

It became very evident, and MG McCaffrey said many, many times, that the best and most reliable and the most timely source of intelligence was the Army aviator. Not the G2 with all the GeeWhiz pieces of equipment. Not all the radars. It was the Army aviator out there in his helicopter. . .

To Be Continued Next Issue

Special Operations Aircraft Update

by Lieutenant Colonel (P) Jack J. Magrosky, Jr.

Our report in the July 1989 issue of ARMY AVIATION MAGAZINE provided a detailed description of all the modifications slated for the CH-47D and the UH-60L in order to produce a quantum improvement in the Special Operations Airlift Capability. Now, I am pleased

to report that the modified MH-47E and MH-60K prototypes have both completed extensive contractor technical testing (with user participation), initial Army pilot training and Army Preliminary Airworthiness Evaluation. At the heart of this modification is the incorporation of the Integrated Avionics System (IAS—see Figure at right) to computerize aircraft performance monitoring and thus reduce pilot workload. Because of the importance of the IAS, an elaborate hardware and software test requirement was established. To date, this has included over 150,000 hours of component and system level testing.

During the last week in April 1991, the complete IAS was demonstrated on the integrated bench test

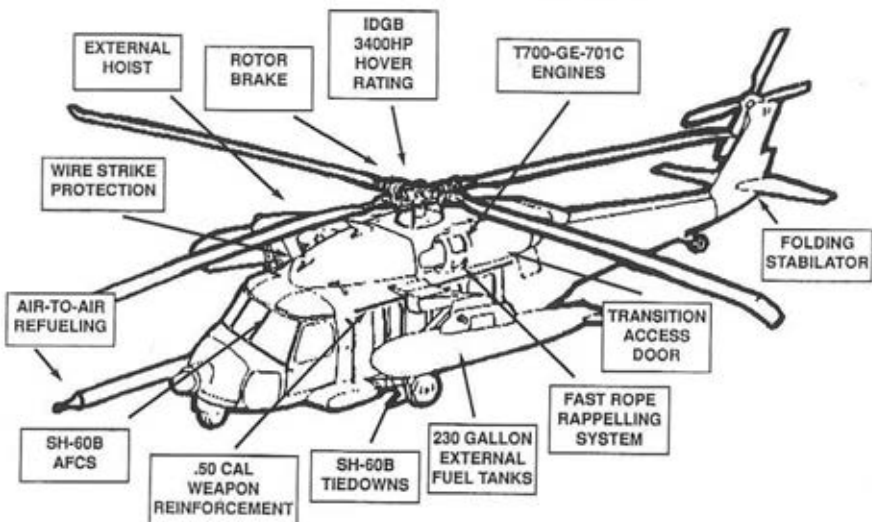
facility. In this test, all the latest configuration hardware and software resulting from the R&D Phase are exercised continuously, 24 hours a day, for six days, to run through over 500 separate worst case mission scenarios and demonstrate that all functions are within specified limits. The demonstration was successfully completed under the watchful eyes of rotating teams representing the contractors, the three Services, the Government Development/Test/Evaluation community, and U.S. Special Operations Command (USSOCOM). This represented a major technical and program milestone on the way to full production. (Mr. Baker's article will provide further information on the overall challenges of SOA testing.)

With regard to production, the first 11 MH-47Es and MH-60Ks are now in fabrication, with first delivery scheduled for June 1992. As we transition from R&D to

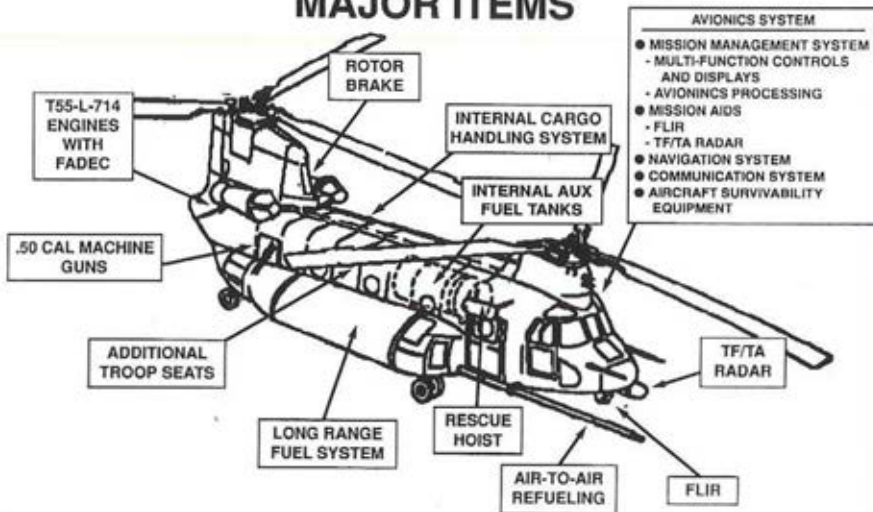


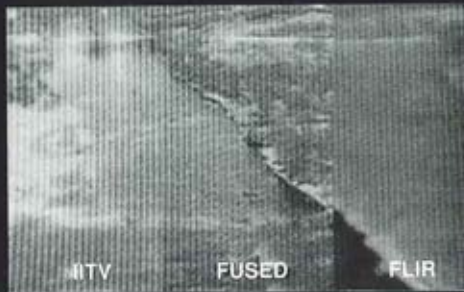
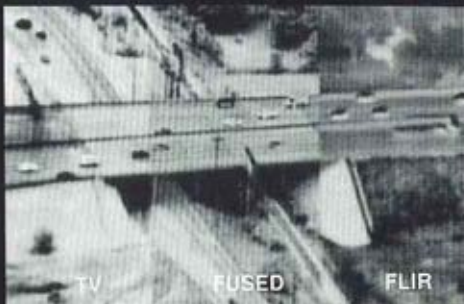
LTC(P) Magrosky is Product Manager, Special Operations Aircraft, St. Louis, MO.

MH-60K SPECIAL OPERATIONS AIRCRAFT AIRFRAME CHANGES



MH-47E SPECIAL OPERATIONS AIRCRAFT MAJOR ITEMS





TI image fusion: you can see clearer now!

Your eyes, by themselves, can see only so much. Night operations, a "dirty" battlefield, smoke, haze and adverse weather only make it tougher to see, requiring optical sensors like FLIR and Image Intensified TV (IITV).

Now TI has taken optical sensors one step farther – Image Fusion.

Image Fusion combines the best attributes of FLIR and either day TV or IITV into one single composite display. This final fused imagery contains more useful operator information than individual

sensors can provide.

Image Fusion offers the user real benefits:

- Reduced operator workload
- Faster target acquisition
- Improved situation awareness
- Enhanced flight safety

Seeing is believing. Ask your TI representative to show you the video.

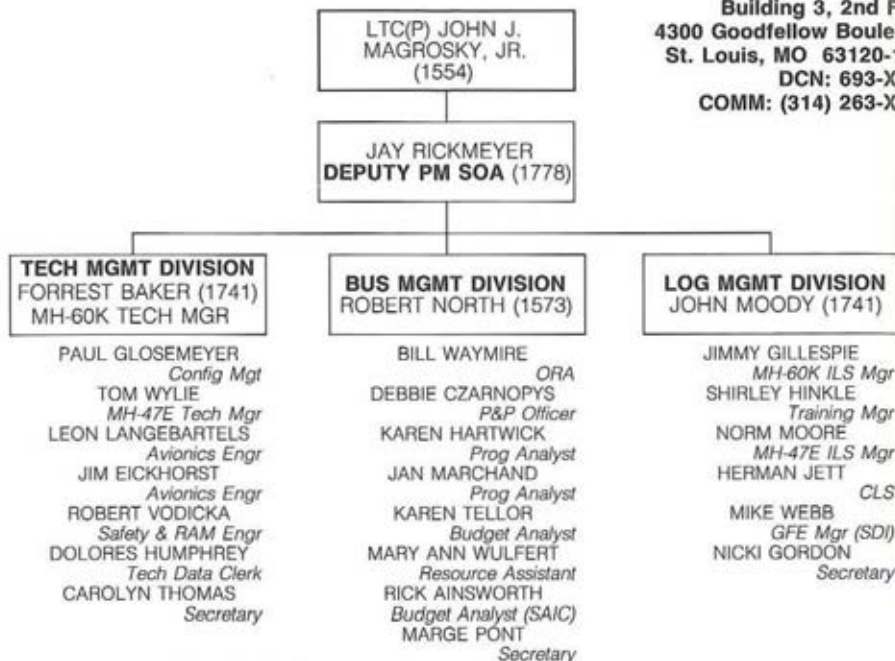

**TEXAS
INSTRUMENTS**

Texas Instruments Incorporated
Defense Systems & Electronics Group
Dallas, Texas 75266
Telephone: 214/480-2200

01-IF-91A

OFFICE OF THE PRODUCT MANAGER, SPECIAL OPERATIONS AIRCRAFT

Building 3, 2nd Floor
4300 Goodfellow Boulevard
St. Louis, MO 63120-1799
DCN: 693-XXX
COMM: (314) 263-XXX



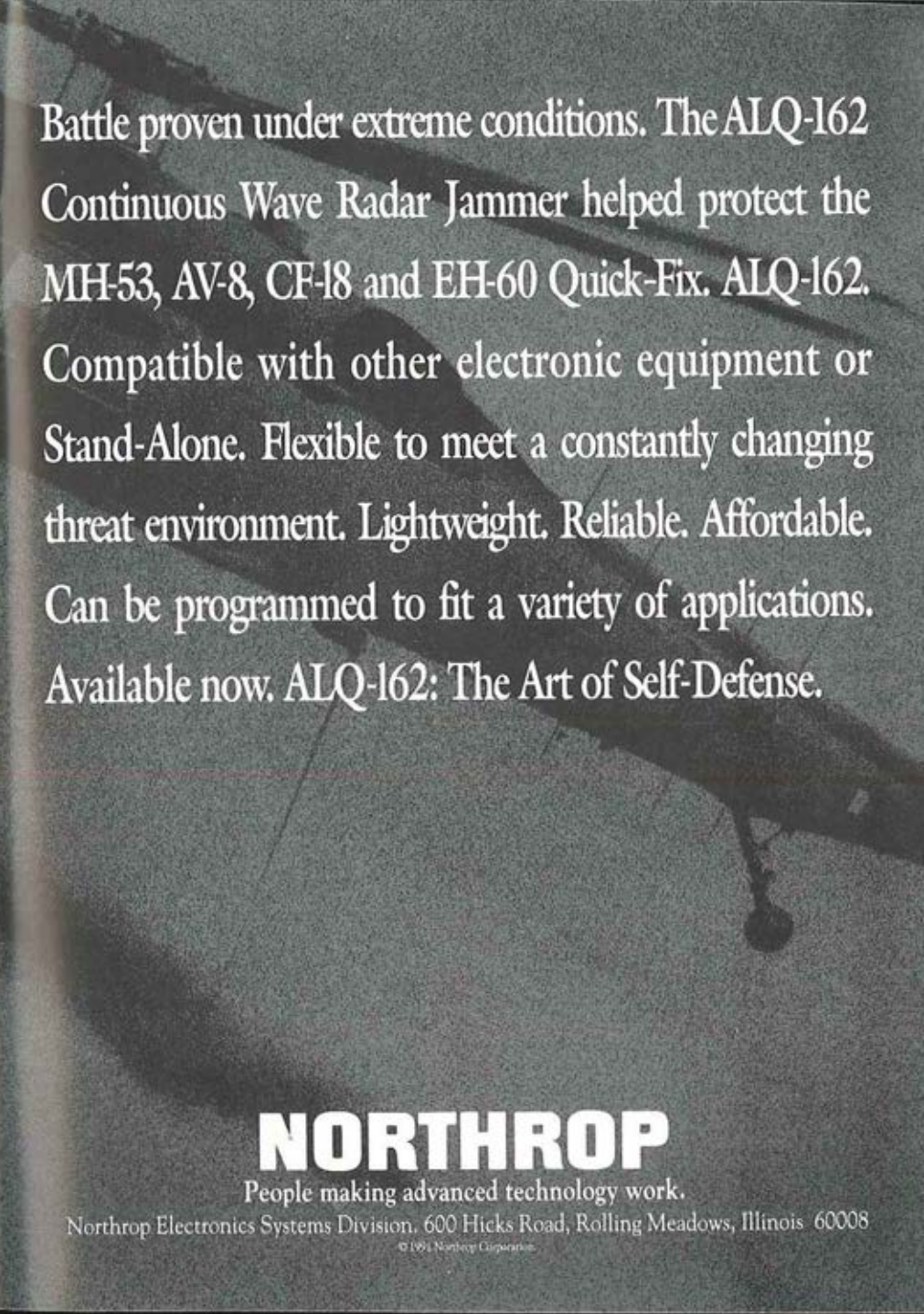
Production, we face a whole new set of challenges. The prototype off-site testing will now give an opportunity to check out the logistics support concept described in Mr. Moody's article. In the meantime, efforts including manuals, spares, training, as well as brick and mortar are underway at the manufacturers and operational sites.

From a programmatic standpoint, we are forging new institutional ground with a change in reporting and budget processes as described in Mr. North's article. However, change requires an initial expenditure of extra energy and accompanying lessons learned in order to reap the potential future benefits of a more responsive acquisition system. This program was originally approved as an accelerated Non-Development Item (NDI) Category III activity. True to the definition of NDI, we are tied to the status of preexisting manufacturers,

hardware, and other military programs.

As a result of this external influence outside our control, our greatest challenge continues to be the minimization of their adverse impacts on the SOA Program. In the industrial base we find standard parts going out of production requiring unexpected qualification of new sources and the growing trend of "just in time production", which eliminates otherwise available shelf stock. From the interfacing military programs we find changes in their schedule, changes significantly impacting our overhead rates, their design changes causing our requalification costs to increase, and their higher priority preempting our scheduled deliveries. However, that's what the PM business is all about, overcoming obstacles to provide the soldier a quality product in a timely manner.

III



Battle proven under extreme conditions. The ALQ-162 Continuous Wave Radar Jammer helped protect the MH-53, AV-8, CF-18 and EH-60 Quick-Fix. ALQ-162. Compatible with other electronic equipment or Stand-Alone. Flexible to meet a constantly changing threat environment. Lightweight. Reliable. Affordable. Can be programmed to fit a variety of applications. Available now. ALQ-162: The Art of Self-Defense.

NORTHROP

People making advanced technology work.

Northrop Electronics Systems Division, 600 Hicks Road, Rolling Meadows, Illinois 60008

© 1994 Northrop Corporation

Special Operations Aircraft Flight Test Program

By Forrest L. Baker

The Special Operations Aircraft (SOA) program was initiated in response to the Department of Defense Special Operations Forces Aircraft Report and the Special Operations Expedited Required Operational Capability. The mission of the SOA Product

Manager's Office is to develop and qualify modifications to the CH-47D and UH-60L aircraft in order to provide the capability for successfully accomplishing special operations missions. These modified aircraft (MH-47E and MH-60K) include an Integrated Avionics System (IAS) and associated systems which must be subjected to a sufficient level of testing to insure the user receives the best product we can provide within the constraints of the program.

The flight test program for each aircraft is designed to qualify each aircraft, verify



aircraft and system performance, and to identify any shortfalls. Identified shortfalls will be corrected and retested to

Mr. Baker is MH-60K Technical Manager, SOA PM Office, St. Louis, MO.

insure appropriate corrective actions are incorporated in the production aircraft. The technical flight test program includes contractor testing, government Preliminary Airworthiness Evaluations (PAE), and government technical testing. These test programs are summarized below.

MH-47E Flight Testing

• **Contractor Flight Testing**—The MH-47E contractor flight test program began with first flight on 30 May 1990 and was completed in April 1991. Completed sub-tests include the IAS/Airframe Interface, Engine Airframe Compatibility, Fuel System Qualification, Airspeed Calibration, Envelope Expansion, Rescue Hoist Demonstration, Flight Director, Communications and Navigation Systems Evaluations, Mission Aids, Avionics Cooling and Vibration Surveys, and Aerial Refueling. Additionally, the range and performance

requirements defined in the user's Required Operational Capabilities (ROC) document were verified. Testing remaining as this article was prepared include testing to verify flight director fixes, secure communications, navigation fixes, digital map, and avionics cooling.

● **Preliminary Airworthiness Evaluation (PAE)**—The PAE for the MH-47E was designed to determine the airworthiness of the MH-47E and to provide data to substantiate an airworthiness release for further testing. During November and December of 1990, a total of 30.5 evaluation hours were flown, of which 21.7 were considered productive for the purpose of collecting test data. Findings of the PAE related to handling qualities found two maintenance-related deficiencies which were easily fixed. In addition, the PAE was able to provide the Army with an early look at the Integrated Avionics System. This early look at the MH-47E allowed us to concentrate our efforts in the MH-60K PAE Program to verify fixes to identified problems. Those problems identified in the PAE also provided us the opportunity to identify shortfalls which need to be corrected in the production aircraft.

● **Government Flight Testing**—In addition, the U.S. Army Airworthiness Qualification Test Directorate (AQTD) conducted an aerial refueling evaluation in November 1990. Specific sub-tests included Tanker Proximity Wake Turbulence Evaluation, Day Refueling Operations, Night Refueling Operations, Single Automatic Flight Control System (AFCS) Refueling Operations, and Simulated Single-Engine Refueling Operations. These tests were conducted at gross weights up to 53,684 pounds and included 69 different refueling probe hook-ups and the transfer of over 14,000 gallons of fuel.

MH-60K Flight Testing

● **Contractor Flight Training**—Contractor flight testing began with first flight of the MH-60K on 10 August 1990 and continued until 18 January 1991 at which time the test program was interrupted to allow software upgrades to the IAS in preparation for the PAE. This portion of the contractor's test

program accumulated over 127 flight test hours and completed the air vehicle portion of the test. Included in this portion of the flight test program were various sub-tests to accomplish initial shakedown, airspeed calibration, performance data collection, handling qualities evaluation, AFCS optimization, aircraft vibration survey, and human factors evaluation. Also included were functional evaluations of navigation and communication systems and the flight director. The range and performance requirements defined in the user's ROC document were also verified. A partial evaluation was also made of the mission aids and the mission management system. These evaluations will be completed May through July 1991 after the IAS demonstration, which was scheduled to be completed during the last half of April.

● **Preliminary Airworthiness Evaluation (PAE)**—As with the MH-47E, the purpose of the MH-60K PAE was to determine the airworthiness of the MH-60K and to provide data to substantiate an airworthiness release for further testing. The PAE began 8 April 1991 and will be completed in June 1991. The testing was conducted by Army test pilots from AQTD and included approximately 41 flight test hours. Results of the PAE are not be available at this time.

MH-47E and MH-60K

● **Government Flight Testing**—Extensive government confirmatory testing begins in 4Q91 and continues through 4Q93. These test programs will evaluate both the MH-47E and the MH-60K in the following sub-tests: Electromagnetic Environment (EME), Aircraft Survivability Equipment (ASE), Radar Cross Section (RCS), Shipboard Capability (SBC), and Terrain Following/Terrain Avoidance (TF/TA) radar certification. These tests will be conducted at government instrumented facilities and ranges by government personnel. Facilities at the Naval Air Test Center, Patuxent River, MD include an anechoic chamber, an EMC test facility, an intersystem EMC, EMV, HERO test facility, outside test facilities, and flight test facilities. Production aircraft will be

(Flight Test — continued on page 44)

Army Special Operations Logistics Support Strategy

By John Moody

Logistical support for the Special Operations Aircraft (SOA) modified version of the Chinook and Black Hawk, the MH-47E and MH-60K respectively, has been tailored and streamlined consistent with the nature of this Non-Developmental Item program. The

equipment being integrated into these aircraft to be operated by the Special Operations Regiment reflects the state-of-the-art configuration. Tailoring and refining the logistics supportability and sustainment posture to meet mission requirements have consistently challenged the SOA Logistics Management Division to its very limits. As the changing needs of Special Forces continue to increase in a time of dwindling funds and scarcity of resources it is paramount that we develop a logistics program that is responsive to a special customer, and at the same time, minimize

supportability risk and reduce life-cycle cost.

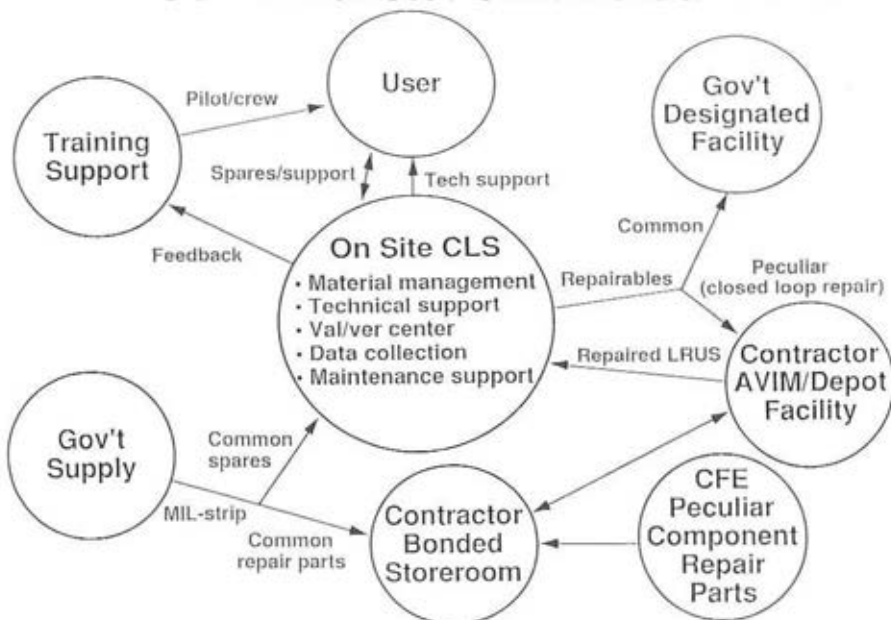
The demanding challenges of the 1990s dictate that we meet all

spectrums of contingencies and world conflicts with aircraft that are maintenance reliable, logistically deployable and sustainable. To accomplish these vital needs, we will employ a small but responsive logistical support posture which entails the implementation of a combined Army and Contract Logistics Support (CLS) maintenance program. Army maintenance personnel will perform all Aviation Unit Maintenance (AVUM) tasks common to the currently fielded Special Forces Black Hawk/Chinook aircraft and the newly modified SOA MH-60K/MH-47E aircraft. Under the CLS program, Sikorsky Aircraft and Boeing Helicopters, as the prime contractors, will be responsible for all AVUM and Depot maintenance peculiar to the MH-60K/MH-47E. They will provide technical expertise to assist Army personnel in accomplishing organic maintenance to maintain mission readiness, develop tech-



Mr. Moody is Manager, Logistics Management Division, SOA PM Office, St. Louis, MO.

CONTRACTOR LOGISTIC SUPPORT



nical expertise to assist Army personnel in accomplishing organic maintenance to maintain mission readiness, develop technical manuals, develop deployment kits, manage peculiar spares and train operators and maintainers.

Boeing and Sikorsky will maximize the use of Government established depot programs and facilities for overhaul of components. We will provide them MILSTRIP authority to requisition common components to repair end items, which is an effort to decrease life-cycle cost and decrease turnaround time.

Another CLS initiative to expedite repair and turnaround time of failed components is the closed-loop program. This will consist of a contractor managed program which consists of certain common and peculiar parts identified through fatigue analysis as life limited items, some condition items that could cause mission aborts earmarked for schedule replacement and those avionics components which are mission essential.

Flight profiles, gross weights and subsystem complexity were key drivers in designing the closed-loop program.

Materiel Fielding

The MH-60K/MH-47E will be fielded under the Total Package/Unit Materiel Fielding concept which consists of developing support packages and kits for initial sustainment. We plan to field MH-60K and MH-47E to Fort Campbell, KY and MH-60Ks to Hunter Army Airfield, GA. Facilities are being constructed at each location for CLS stockage and management of spares. An Integrated Bench Test Facility will be at Fort Campbell to verify if Line Replacement Units removed have actually failed.

Our success will depend on the quality of early planning and execution of logistics support strategy. The SOA support and maintenance approach will be consistently challenged during the 1990s.

A New Way of Doing Business

By Robert E. North

The transitioning of fiscal responsibility for the Special Operations Aircraft (SOA) PM from U.S. Army to the U.S. Special Operations Command (SOCOM) has brought with it quite a few new challenges. The transition has brought a whole new cast of players

and, in many instances, a completely new way of doing business. No longer does the SOA budgeting or reporting go through traditional Army channels. Beginning with FY 91, all SOA funding is managed by SOCOM.

A Short History: FY 87 legislation created the Major Forces Program (MFP) 11 funds category to fund all Special Operations programs. Also, it created the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict (ASD SO/LIC) which acts as the SOF voice at OSD for resourcing needs.

Then the FY 89 legislation clarified the Congressional intent by directing the U.S. Commander-in-Chief

Mr. North is Business Management Division Manager, SOA PM Office, St. Louis, MO.

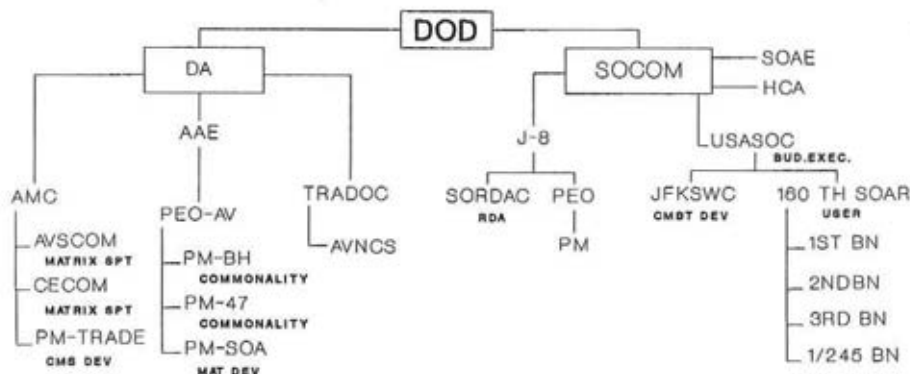


Special Operations Command (USCINCSOC) have sole responsibility for MFP 11 budget preparation and full execution authority beginning no later than 1 Oct 91 (FY 92). This was later accelerated to FY 91 by Program Budget Decision (PBD) 731C.

Two other agencies that have been created by this legislation are: the Special Operations Research Development and Acquisition Center (SORDAC) and U.S. Army Special Operations Command (USASOC). The SORDAC has complete control in the execution year for all Research and Development and procurement funds for SOF-peculiar programs. USASOC prepares the Operations and Maintenance budget and monitors its execution.

What does all this mean to the SOA PM, and its management of the MH-47E and MH-60K programs? While we are still a part

SOA PM ORGANIZATIONAL INTERFACES



of the PEO Aviation, our funding is provided by SOCOM. We do not report through or look for funding from Army Materiel Command (AMC) or Department of the Army (DA). Effective with the beginning of this fiscal year, we are fully funded for all SOF-specific effort and report through SOCOM.

To emphasize how complete this separation has become, for the last two years we have prepared two separate budget submittals. One goes to the Army that displays all the SOA funds appropriated through the Army up to FY 90. Then for SOCOM the budget exhibits pick up with FY 91 and continue through to completion.

This shift now means we are in a whole new arena when it comes to competing for funds. At SOCOM it is not just Army programs, but also Air Force and Navy that are all competing on an equal footing for the ever-shrinking Defense Appropriations.

Within SOCOM they stress a "Purple Suit" attitude, whereby all personnel are not

to operate from purely parochial viewpoints, but to look across all service programs in terms of what is best for SOCOM. As one can appreciate, this has been a learning process.

The establishment of the MFP 11 appropriation has changed both the size and composition of the field in which SOA must compete. While a part of the DA budget, we had our Special Operations priority and were a relatively small program compared to Apache's and LH's. Now, in MFP 11, we are all Special Operations and the MH-47E and MH-60K are some of the larger programs in the budget.

When the SOA program transitioned to MFP 11 this year, all references to us in DA budgets for FY 91 and out disappeared. The MH-47E and MH-60K budget lines were dropped. This has left no provisions for any future Army funding, which will be required for any Army common materiel change required in the future. To alleviate this problem, the PEO Aviation is investigating various alternatives to maintain

an SOA presence in the Army budget. This is necessary, as there remains an Army requirement to maintain commonality with the rest of the CH and UH fleet as they continue to incorporate materiel changes.

Budgeting for future materiel change requirements will require a determination of what is Army common and what is SOCOM peculiar. The public law which established MFP 11 states that the USCINCSOC has authority for developing and acquiring Special Operations peculiar equipment. The Memorandum of Agreement (MOA) between the Army and SOCOM states that the Army will continue to fund Army-common programs. These separate requirements then must be submitted in their respective budgets. But that still doesn't answer the whole question. If then, within these future "Army common" CH and UH materiel changes there requires any additional engineering or kit cost to make it compatible with the MH model, that then becomes a SOCOM charge which will require SOCOM funding.

Another wrinkle in the materiel change process is the combat developer. All Army MCs must be approved by Ft. Rucker, AL. In addition to this, for the MH models a proposed materiel change needs to be approved by the John F. Kennedy Special Warfare Center (JFKSWC), the SOCOM Combat Developer. Here they need to assure that interoperability with Air Force and Navy Special Operations Forces is maintained.

As with any change there are typically going to be problems and unplanned-for occurrences. But it is also certain that the transition will be accomplished. There is widespread agreement on the high priority of these aircraft and a general feeling that we can all work together to make this system work.

Flight Test (continued from page 39)

subjected to additional EME testing to verify the production aircraft meet requirements.

The extensive flight test program for SOA aircraft is designed to insure the Special Operations Command (SOCOM) is provided with aircraft that can successfully execute their unique mission. To meet that objective, the aircraft must be able to operate worldwide in a variety of threat environments, day and night, in adverse weather, and from a shipboard environment. The test programs summarized above are designed to test the aircraft as completely as possible to ensure it meets the user requirements and the system specifications. In addition to the technical flight testing, operational user testing is scheduled for 4Q93 through 2Q94. This operational test will use Army aircrews and maintenance personnel and will test the aircraft in a realistic operational environment.

In summary, the test programs are designed to assure us the aircraft will do what the user wants them to do and to give the Special Operations community confidence in the abilities of the aircraft. But more importantly, we must provide the SOA aircrews with aircraft that they will be confident to fly and will provide them the highest assurances of mission success. That is our mission and commitment to the Special Operations aircrews.

||||

||||



Special Operations Aviation Combat Mission Simulators Update

By Lieutenant Colonel Paul Hinote

The Special Operations Aviation Combat Mission Simulator (SOACMS) effort has during the past year been concentrated on enhancing the training capability of the MH-47E and MH-60K devices. The most notable changes are the addition of "Quarter

Displays" to provide greater out-the-window (OTW) coverage plus an extra image generator channel.

Visual Systems Enhancements

Based on user feedback, particularly for the new (to Army Aviators) tasks of aerial refueling and shipboard operations, 50.25-inch radius, wide angle collimated (WAC) Window Quarter Displays will be inserted between the front and side WAC windows on both the pilot and copilot sides of the simulator cockpits. This will therefore equip each cockpit with eight "viewing heads"—pilot's forward, quarter, side and chin windows plus a corresponding set for the co-pilot. To accommodate

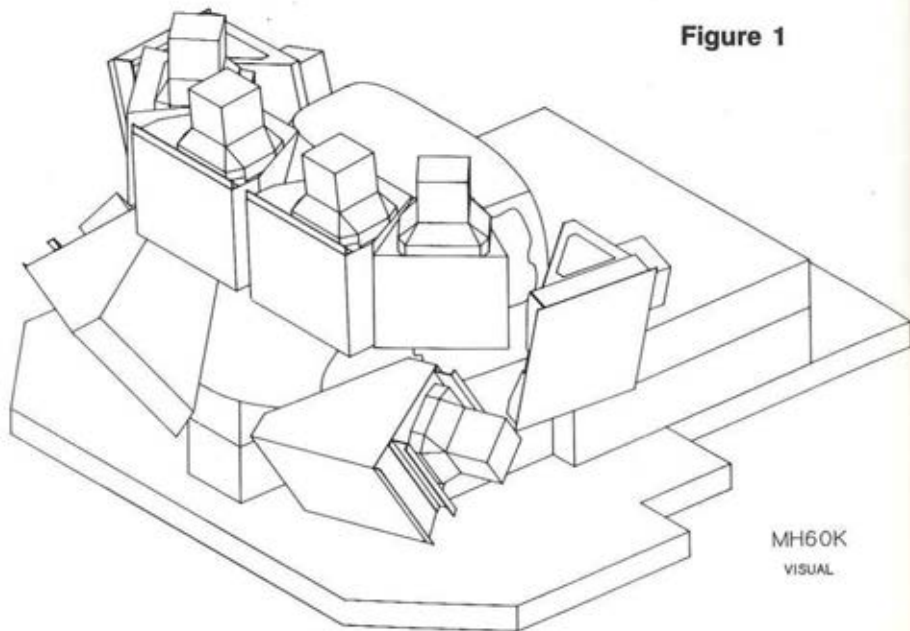


LTC Hinote is Project Director, SOA Combat Mission Simulators, PM-TRADE, Orlando, FL.

the Quarter Displays, some rearrangement of the existing displays will be required, particularly rotation of the side displays 90 degrees.

The Quarter Display enhancement broadens the forward field of view (FOV) from about 50 degrees per pilot to about 75 degrees; rotating the side displays more appropriately aligns with that window's vertical shape (see Figure 1, MH-60K pilot eyepoint FOV). Instead of the two 2-channel ATACDIG (Army Tactical Digital Image Generator) originally planned, there will now be two 3-channel image generators for both simulators. These can supply OTW scenes to any six of the eight window displays at one time, or one channel may be selected for FLIR imagery on the Multi-Function Display, leaving five channels for OTW display. An instructor may now select from 13 different display modes, depending on the type of training being conducted.

Figure 1



MH60K
VISUAL

Air-to-air refueling training will feature a visual data base model of the Air Force KC-130 tanker with hose-and-drogue. The procedure will include observation, preconnect, refueling and disconnect positions. Also simulated will be IR procedures for nighttime hookups.

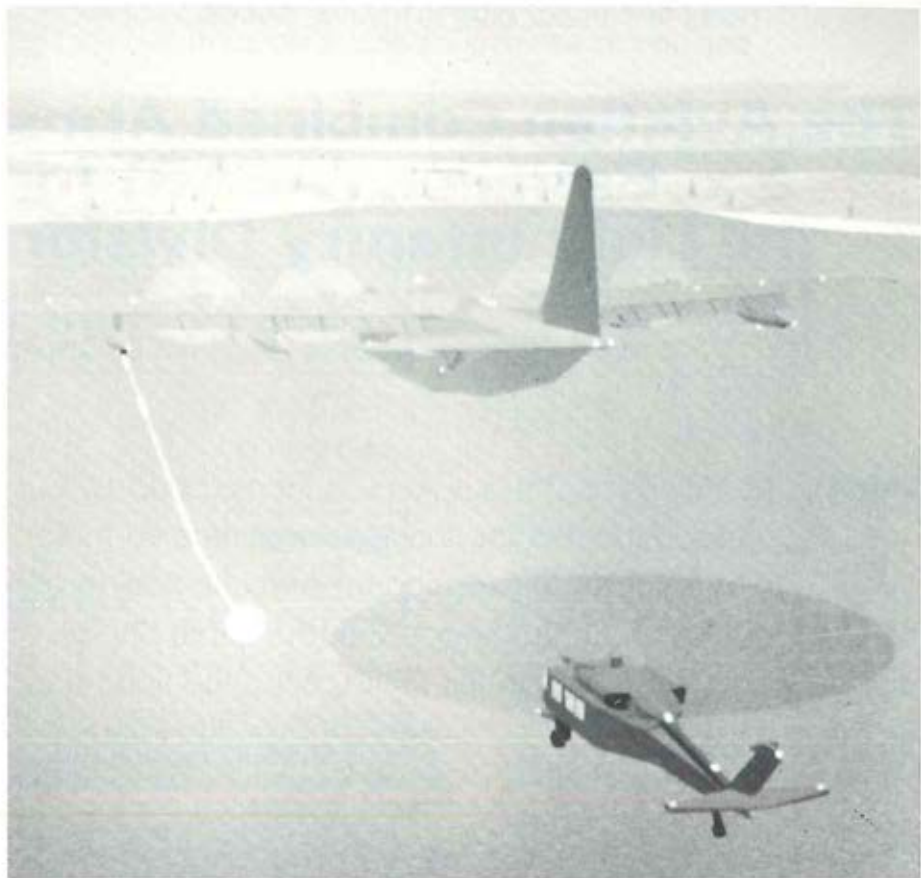
Shipboard landings and takeoffs, an operation unfamiliar to almost all Army pilots, will feature the superstructures and markings for an LHA-Tarawa assault carrier and an FRG-54 frigate. Navigation and running lights, beacons and ship's wake will be simulated. The SOACMS ATACDIG is an enhanced version of the visual systems on the AH-1S, AH-64, CH-47 and UH-60 simulators. In the Army inventory. CAE-Link engineers applied their technical expertise from those previous programs, while pilots from the 160th Special Operations Aviation Regiment provided mission and training experience. The 80 km by 100 km tactical data base, a hybrid of the Apache and Black Hawk data bases, will be populated with a variety of targets and vehicles: tanks,

trucks, antiaircraft weapons, and aircraft. The "smart" enemy threats will have the ability to track and fire upon the on-ship crew.

Two-Way Technology Transfer

The enhanced visual gaming area and interactive threats are not the only technology borrowed from other systems. FLIR simulation is derived from the AH-64 CMS; the navigation environment, radar altimeter and external cargo system come from the UH-60 program. The hardware approach to the Advanced/Automatic Flight Control Systems (AFCS) is courtesy of the Navy's SH-60B LAMPS MK III, and the Inertial Navigation Unit (INU) is from CAE-Link's Air Force F-111 experience.

Several of the new features from the SOA combat mission simulators can, in turn, be later transferred to other Army training devices. These include: simulation of aerial refueling, shipboard operation, chin windows, AAQ-16 FLIR, GE-701C engine, aircraft survivability equipment navigation/



communications equipment—and especially the "glass cockpit" Integrated Avionics Subsystem and AN/APQ-174 Multi-Mode Radar.

Sophisticated Simulators

When they are fielded to Fort Campbell, KY, in 1993, the MH-47E and MH-60K combat mission simulators will be the world's most sophisticated rotary wing training devices. They have to be. The Special Operations pilots face one of the most demanding missions in the world—using aircraft which represent the leading edge of flight and electronics technology, they must

self-deploy at night or during adverse weather to sensitive or hostile areas for a variety of objectives. This high-stress full task loading can only be realistically trained in a CMS.

Eventually, the SOACMS devices will have actual mission rehearsal capability, enabling crews to reportedly practice and refine their plan and tactics for a specific mission in a specific theater using up-to-date geo-specific data bases and intelligence information. They will also have the ability to train in a combined forces environment with Air Force, Navy and Marine Corps special operations units. ■■■■

The Aviation Combined Arms Battalion (ACAB) for the Light Infantry Division

By Lieutenant Colonel Lawrence E. Casper

The downsizing of our Army, accomplished by our reassessment of the threat, has generated much discussion on developing an Army consisting of contingency forces. Organizations with the capability to quickly deploy anywhere in the world, enter the fight, and

win. Traditional forces like the 82nd Airborne Division, along with the light divisions such as the 7th Infantry Division (Light) during Operation JUST CAUSE, have satisfied that requirement. Follow-on forces such as those exercised during Operation DESERT SHIELD may well remain the same. Now is the time to reevaluate these existing contingency force organizations. We must ensure they reflect the right force structure, organization, and equipment to do the job.

Army Aviation plays a major role in any contingency mission. Recent successes

enjoyed by our forces in Panama during Operation JUST CAUSE can be attributed in large part to Army Aviation. Aviation

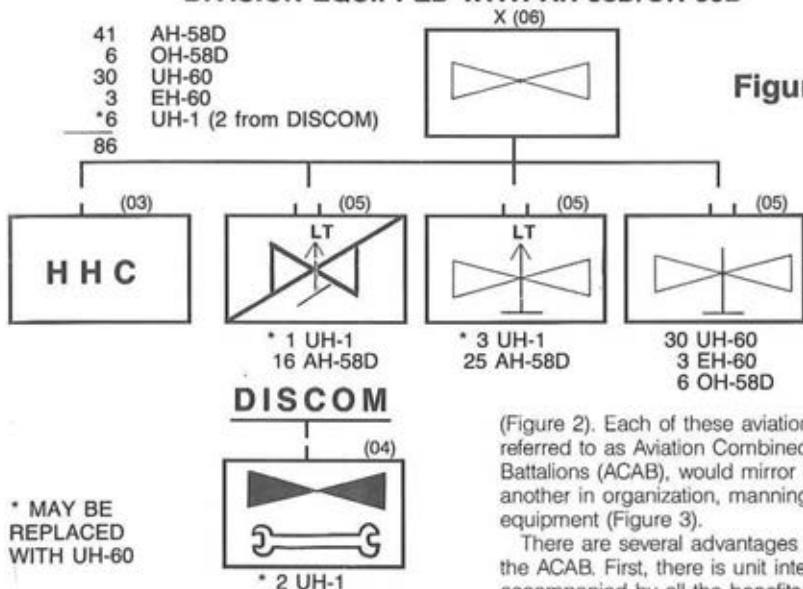
provides the mobility and direct fire support to the ground force commander that is essential during the early stages following a strategic deployment.

In the light divisions, it is common practice to designate one of the aviation brigade's three battalion headquarters (Assault, Attack, or Cavalry) to act as the aviation task force (TF) headquarters in support of the Division's Ready Infantry Brigade (DRB). The DRB represents the division's first maneuver force to deploy. Establishing an aviation TF in this manner works, and was effectively employed during JUST CAUSE by the 7th ID using their Assault battalion's headquarters as the nucleus. But there is a problem with this approach. We have created an ad hoc organization, and despite the 7th ID's success, history has taught us that piecemeal force is risky business. The command and control function is further complicated each time



LTC Casper is Commander, 1st Battalion (ATK), 25th Avn Regiment, Schofield Barracks, HI.

CURRENT AVIATION BRIGADE IN THE LIGHT DIVISION EQUIPPED WITH AH-58D/OH-58D



the task force responsibilities are passed between battalion headquarters. Each battalion is unique in structure and mission. With the exception of having helicopters authorized on their Modified Table of Organization & Equipment (MTO&E), the battalions' similarities end; assault battalions move soldiers, attack battalions kill, and cavalry squads reconnoiter. So the TF headquarters becomes a composite organization consisting of units with different missions and training requirements; special equipment needs; soldiers whose loyalties are split between the TF chain of command and the chain of command established by the MTO&E; and the challenge of compliance with SOPs and policies which may differ significantly between the TF headquarters and the parent unit.

A better approach for the light division is to restructure the aviation brigade using existing personnel and equipment authorizations, with minor adjustments (Figure 1), into three contingency battalions

(Figure 2). Each of these aviation battalions, referred to as Aviation Combined Arms Battalions (ACAB), would mirror one another in organization, manning, and equipment (Figure 3).

There are several advantages offered by the ACAB. First, there is unit integrity accompanied by all the benefits which characterize a single organization. Secondly, each ACAB could be directly aligned with the infantry brigade it is expected to fight with, much the same way as the infantry brigade's dedicated artillery battalion. Using this approach, the ACAB could synchronize its activities with the infantry brigade's training and support cycles. This would aid in managing training time and resources, and support requirements, not to mention understanding SOPs, and developing that all important rapport between aviation and ground forces; a critical ingredient for mission accomplishment. Third, although the proposal reduces the density of airframes per battalion, it standardizes aircraft and ground support maintenance requirements across the aviation brigade. This would involve everything from unit Provisioning Parts List/Mandatory Parts List (PPL/MPL) to special tools.

The aviation brigade would retain its support slices similar to the current brigade headquarter MTO&E in a light division.

LIGHT INFANTRY DIVISION — AVIATION BRIGADE

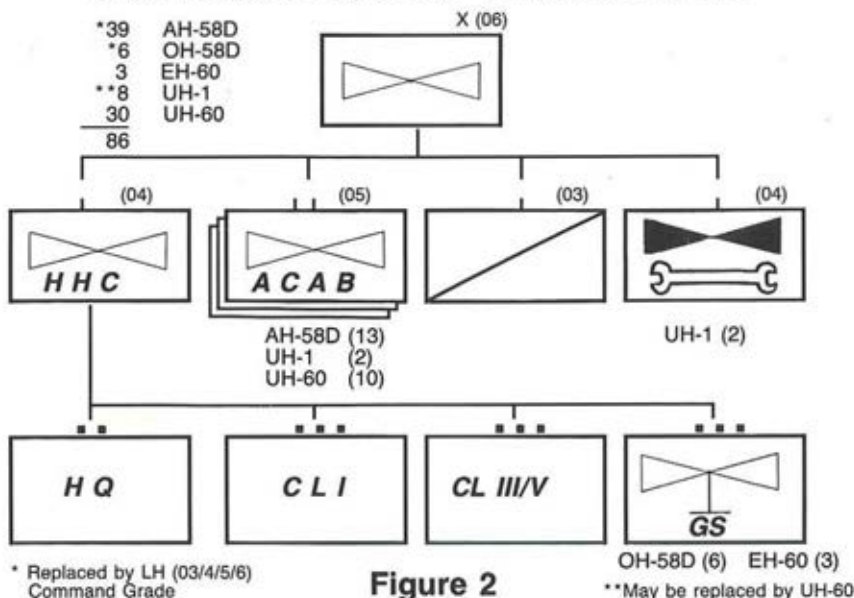


Figure 2

Centralizing the classes of supply, I, II, III, and V, and selected administrative functions provides the brigade commander the flexibility to tailor his support based upon each of the battalion's training cycles, or of equal importance, Mission, Enemy, Terrain, Troops, and Time Available (METT+T) for contingency mission planning.

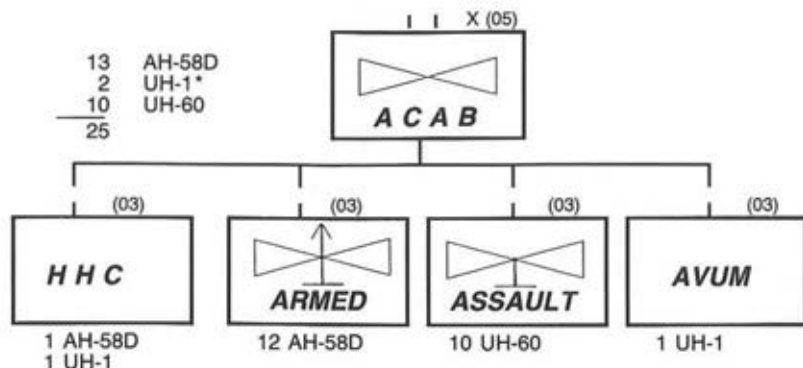
There is a force modernization and structure price which must be paid. Special tools and low density MOSs must be increased to ensure the ACAB is self-sustaining. This is a problem that exists today each time a portion of a battalion deploys as part of a larger aviation TF. The issue invariably surfaces as to which "one of a kind" tools or test sets go with the deploying force, and which remain behind in support of the garrison fleet. More frequent than not, co-located National Guard and Reserve units, or host nation support come to the rescue by providing necessary tools or expertise.

Additionally, it is vital that the ACAB is

fielded with the latest equipment. It makes no sense to create an organization then not equip it with the weapons and support systems which were envisioned to make it work. The Chief of Staff USA White Paper 1984, LIGHT INFANTRY DIVISIONS, states "Equipping the Light Infantry Divisions. Light infantry forces will receive high priority on distribution of the newest, most effective weapons and equipment available. This priority will provide them immediate combat capability." Despite the paper's intent, our light divisions are plagued with antiquated systems. The focus must be on units with contingencies that may take them to battle tomorrow, not at D+30.

The result of this restructuring is a compact deployable aviation unit possessing the mobility and fire power necessary to compliment the ground commander's scheme of maneuver. Nevertheless, the light division must remain prepared to fight in its entirety, as experienced during exercises such as REFORGER and TEAM SPIRIT. The aviation

AVIATION COMBINED ARMS BATTALION



* May be replaced
by UH-60

Figure 3

brigade must retain the flexibility to muster a major reconnaissance effort, to mass armed helicopters or assault assets, and then employ them as prescribed in our current field manuals. Although it is less likely to occur in the early deployment stages of a contingency mission, it becomes appropriate as the conflict matures. Designating any one of the ACAB headquarters to command a consolidated collection of armed, assault, or reconnaissance forces would replicate existing aviation battalions. But unlike the current ad hoc arrangement, the battalion selected as the task force headquarters comes with mission experience. An armed helicopter-pure TF might consist of two or three armed helicopter companies, all trained to the same standard and to similar, if not identical, SOPs. This would reduce operability problems associated with dissimilar units. The same is true with air assault assets.

The reconnaissance TF could work for the aviation brigade, or respond directly to division headquarters, providing the traditional light cavalry missions. Although the ease of operation with the reconnaissance mission is dependent upon the frequency with which the ACAB works with the brigade's ground reconnaissance company, the operational conflict would be reduced if it were an ACAB ARTEP task. There is only

one ground reconnaissance company, therefore one command and control headquarters for coordination.

The strength of the ACAB headquarters is in a commander and staff experienced in the aviation brigade's three primary missions (assault, attack, and reconnaissance), a luxury not all of today's aviation battalion commanders and staff share. Ask an assault battalion commander about attack operations, and you are likely to get a blank stare. The same may well occur if an attack commander was asked about assault operations. This is a trait not unique to aviation. Many "Light Fighters" are unfamiliar with mechanized forces, as are "Tankers" with ground cavalry operations. Therefore, the proposal may have professional development implications.

A simplistic approach to a complex issue, the proposed organization would provide the basis for a responsive aviation unit for the light infantry brigade, and yet retain the potency of the existing aviation brigade, including its ability to function as the division's fourth maneuver brigade headquarters. It would be a step toward providing our soldiers the absolute best the Army can offer in aviation command and control, mobility, and firepower, thereby ensuring the "Light Fighter" can deploy anywhere in the world, enter the fight, and win. ■■■■

Guardian Soldiers Cover the Peninsula of Korea

by

Lieutenant Colonel Paul R. Wills and Major Greg Kaufmann

As events in Southwest Asia (SWA) recently illustrated today's Army is a formidable organization—versatile, lethal, deployable. Perhaps no other branch embodies these characteristics better than Army Aviation. In exploiting its ability to maneuver in the airspace over

the battlefield, Army Aviation added yet another dimension to the battle. Airspace is a medium which all elements of the joint force share, and in which all elements operate. Army air traffic control plays a critical role in the effective, unconstrained, safe, and flexible use of airspace. In Korea, the Guardians of 4th Battalion, 58th Aviation Regiment perform the critical A²C² functions so necessary to synchronize the airspace users to produce maximum combat power at the decisive point.

4-58th Aviation is the EUSA/Theater Air Traffic Services (ATS) battalion assigned to the 17th Aviation Brigade (EAC). Consequently, the Battalion provides not just tactical ATS, but also



LTC Wills is Commander, 4th Battalion, 58th Aviation Regiment, Korea.

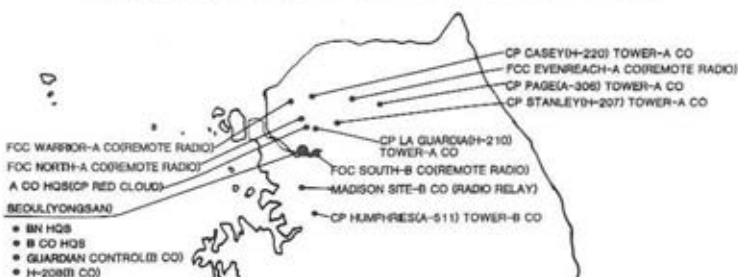
operates and manages thirteen fixed sites across the peninsula. Included in these sites are Desiderio AAF at Camp Humphreys, the largest instrumented AAF in the Pacific, and Flight Operations Center-Korea (GUARDIAN CONTROL), the crown jewel of Army ATC. GUARDIAN CONTROL is the most modern flight operations center in the Army. It is responsible for flight following, airspace deconfliction, and real-time flight coordination with Republic of Korea (ROK) army and air force aircraft control centers. GUARDIAN is the culmination of many years of planning and project development to bring the soldiers down off the mountaintops. The Battalion also operates five

MAJ Kaufmann is Executive Officer, 4th Battalion, 58th Aviation Regiment, Korea.



4TH BN, 58TH AVIATION

AIR TRAFFIC SERVICE FACILITY AND UNIT LOCATIONS



heliports and the Camp Page Airfield serving the 17th and 2nd Aviation Brigades as well as the entire Korean aviation community. Yet, the Battalion's most critical contribution comes in the area of tactical air traffic services.

Aviation soldiers in Korea deploy to the field often. Whenever they go, there is usually an element from 4-58th Aviation there in the field with them, as well as the ever-present GUARDIAN CONTROL—providing a flight following network which enhances safety of flight and synchronizes aviation operations.

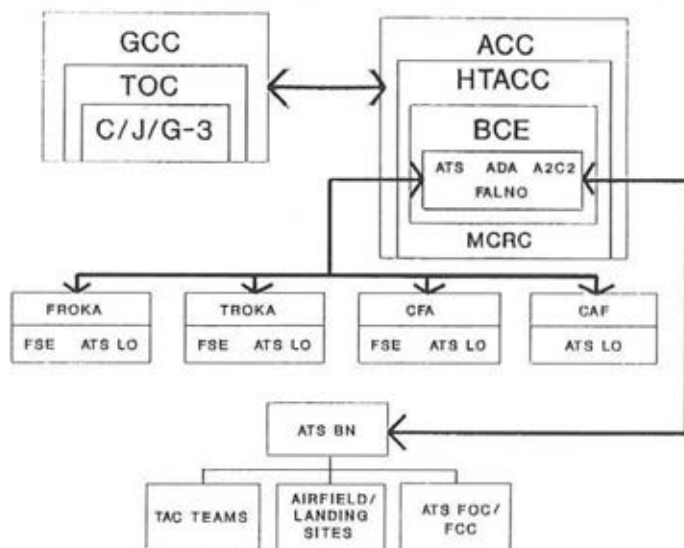
During the last six months, 4-58th soldiers have participated in many minor and two major combined field exercises in support of the Combined Aviation Force (ROK and US) and the 17th Aviation Brigade. (The Combined Aviation Force is the only existing, formal integration of Army Aviation assets for operations with those of a host country, under the overall command of a ROK major general and the operational command of a U.S. aviation brigade commander.) These exercises covered the peninsula of Korea, requiring the deployment of the entire spectrum of the 4-58th Aviation's tactical ATC services. These exercises vividly illustrate the capabilities of the ATC battalion, as well as challenges which must be overcome in the future.

FOAL EAGLE '90 and TEAM SPIRIT '91 stretched the Battalion to its limits, and provided an accurate picture of the critical nature of the mission which a tactical ATS battalion fulfills in the combined/joint operations arena.

FOAL EAGLE and TEAM SPIRIT were excellent examples of the multilayered air traffic services any ATC battalion can provide: from the three-man tactical team with its TSQ-97 at the FARP, to the TSW-7A tower and TSQ-71B GCA at the division and corps airfields, to the flight following conducted by the network of TSC-61B FCCs, to the many Liaison Officers/NCOs positioned throughout the multileveled combined/joint force. This coverage of the theater makes the ATC battalion an indispensable player on the aviation team. During November 1990, the combined exercise FOAL EAGLE required many things of the battalion. In support of the Combined (ROK/U.S.) Aviation Force, 4-58th established a chain of flight coordination center down the length

A²C² SYSTEM

KOREAN THEATER



of the peninsula. With only four FCC assemblages, a TSQ-97 tactical team was inserted on one mountaintop to fill the gap. They also placed tactical beacons into operation for selected missions to provide guidance and orientation, a capability which a commander planning cross-FLOT and deep operations could easily use to assist his operation. This provided all participants a flight following network contributing to the safe conduct of missions across mountainous, treacherous terrain during both aided and unaided night flight. Additionally, the subordinate companies each established seven tactical, controlled heliports, to include three instrumented airfields. 4-58th also provided Liaison Officers/NCOs (LNO) to the various levels of exercise participants. TEAM SPIRIT likewise required the deployment of all tactical assets in support of the Combined Aviation Force, which includes the 17th Aviation Brigade. The LNO system went from the field army level down to the battalion task force level. This LNO system is one of the more valuable services which any ATC

battalion provides Army Aviation.

4-58th establishes an LNO network for every deployment during the course of the year. This network is the optimum tool for sorting the complexities of the combined/joint airspace arena. The LNO network is the primary means of preventing fratricide in air operations in the low level structure. Airspace deconfliction is, and remains, one of the most important services the Battalion provides during exercises. Deconfliction assures synchronization. By placing LNOs in the airspace elements, deconfliction is assured. The LNOs deconflict airspace for Army users, including the specialized military intelligence platforms. In the 4-58th system, an LNO provides projected missions to GUARDIAN CONTROL, the master FOC, which in turn distributes air advisories (AIRADS) to other LNOs and all facilities. In this fashion, Army airspace users get the information they need to minimize the risk of inflight conflicts. The responsibilities of the LNO require well-trained, competent individuals, confident in their ability to operate within their system.

The air traffic control central, AN/TSW-7A, in its tactical configuration. This TSW-7A was operated by 1st PLT, B Co, 4-58th AVN during TEAM SPIRIT '91 at DRAGON FARP in support of the 1-501st AVN.



The majority of LNOs are NCOs. In most cases, these NCOs need instruction in airspace operations at the joint/combined level, as well as the peculiarities of the Korean theater. The 4-58th therefore conducts its own LNO class. Subjects include Army Airspace Command and Control matters, including all aspects of the Joint/Combined Air-Ground System. This class provides the airspace user an LNO capable of understanding his needs, and how those needs are integrated within the combined/joint theater.

The personnel of the tactical ATC battalions have proven that they are capable individuals, providing Army Aviation an important, necessary service. Their contributions to the force will be greatly enhanced by the introduction of improved equipment. Units in SWA validated the utility and need of automating the FCC function. Gathering, processing, and disseminating vast amounts of data quickly is the challenge to flight following operations. Likewise, the need for a reliable, high frequency capability was demonstrated in

SWA. We desperately need reliable high frequency/non line-of-sight communications in the rugged terrain of Korea. The TSQ-97 needs to be replaced with a system similar to the USAF GRC-206 assemblage which is used by their tactical air control parties. Major shortcomings of the -97 are its inability to operate from the CUCV or HUMMV, lack of secure gear, and the requirement for the controller to operate exposed to the harsh Korean environment! We do hope to take advantage of the recently fielded SINCGARS which contains promising potential for the passage of secure data and facsimile communications.

4th Battalion, 58th Aviation, as well as our sister ATC battalions around the world, provide a necessary service to Army Aviation by enhancing its ability to safely and effectively operate on the battlefield. By providing safe, orderly, and expeditious service at all levels of the theater force and to the combat effort itself, ATC contributes to Army Aviation's ability to fight, survive, and win on today's and tomorrow's battlefield.

IIII

A New Kid on the Block in Army Aviation Testing

by

Colonel Troy E. Burrow and James McCrory

On October 1, 1990, the Army Aviation Technical Test Center was born. Conception took place during the week of January 27, 1990 in an Army Materiel Command and Operational Test and Evaluation Command co-sponsored test and evaluation reorganization planning

meeting at Pocono Manor, PA. The new test center was formed from the union of two test organizations with a long and proud tradition in Army aviation testing—the U.S. Army Aviation Development Test Activity (ADTA) at Fort Rucker, AL, and the U.S. Army Aviation Engineering Flight Activity (AEFA) at Edwards AFB, CA. Truly the best in "aviation testing genes" was brought to this union under the auspices of Defense Management Review Decision (DMRD) 936, which was directed at streamlining and consolidating Army testing.

After almost nine months of gestation (consisting of detailed planning and organizational development), the Army Aviation Technical Test Center



COL Burrow is Commander, U.S. Army Technical Test Center, Fort Rucker, AL.

(ATTC) emerged as the U.S. Army Test and Evaluation Command's (TECOM's) premier aviation tester. ATTC Headquarters and flight systems testing are located at Fort Rucker, AL, the center for Army Aviation, while airworthiness testing remains at Edwards AFB, CA. The Aviation Technical Test Center is one of nine test centers/proving grounds assigned to TECOM whose headquarters is in Aberdeen Proving Ground, MD.

The Fort Rucker segment of ATTC was originally formed in 1963 from three test organizations then in existence at Fort Rucker—the Aviation Board under the Continental Army Command, the Transportation Aircraft Test and Support

Mr. McCrory is Technical Director, U.S. Army Technical Test Center, Fort Rucker, AL.



Activity under the Transportation, Supply, and Maintenance Command, and the Signal Aviation Test Support Activity under the Department of the Army Signal Officer. The resulting organization, placed under the newly activated Test and Evaluation Command, has been known by a number of different names over the years—the U.S. Army Aviation Board, Aviation Test Board, Aircraft Development Test Activity, and, most recently, the U.S. Army Aviation Development Test Activity. Under one name or another and any one of many organizational structures, the flight systems testing function has been at Fort Rucker since 1954 as a vital part of the Army Aviation Center team. The mission of the Fort Rucker part of ATTC has remained primarily the same over the years. Originally that mission also included "service testing," the forerunner of today's user testing. With the advent of the Army operational test community, the mission focused in on the assessment of technical design and system performance aspects of aviation materiel.

The roots of the Airworthiness Qualification Test Directorate (AQTD) at Edwards AFB can be traced to 1960. Prior to that time, the Army relied on its sister services to perform airworthiness testing. Establishment of the U.S. Army Aviation Test Office at Edwards AFB marked the end of that dependence. In 1963, the Test Office was redesignated the "Aviation Test Activity," and in 1966, the name was changed to "Aviation Systems Test Activity." Later it was redesignated the "Aviation Engineering Flight Activity." Through all of these organizational evolutions and name changes, to include changes in the major subordinate command, the mission has remained the same—the conduct of airworthiness testing.

Organization

The Management, Plans, & Operations Division provides advance planning and resource management services to the entire Test Center to include AQTD and flight operations support to the Flight Systems Test Division at Fort Rucker. Staff supervision of the above functions is also provided

to related functional elements in AQTD.

The Flight Systems Test Division provides detailed planning and executes and reports on aircraft tests in such diverse areas as systems performance, integration, compatibility, MANPRINT (human factors design), maintainability, logistics supportability, reliability, and safety. Also involved is testing of aviation-related materiel such as ground support, aircraft survivability (countermeasures), and aircrew life support equipment and their compatibility with the various aircraft systems.

The Airworthiness Qualification Test Directorate provides detailed planning and executes and reports on airworthiness and flight characteristics tests. This testing primarily encompasses the development and validation of flight performance data in such areas as range, endurance, rate-of-climb, hover, rate-of-descent, and the air vehicle's controllability and control response.

The Technical Test Support and Logistics Division provides support (principally) to the Fort Rucker test division in the areas of data services (instrumentation/test data processing), aircraft and system maintenance, and logistics support. Staff supervision of the above functions is also provided to related functional elements at AQTD.

Mission

The mission of ATTC is to plan, conduct, analyze, and report on technical tests of Army aviation systems and related aviation support equipment to include airworthiness testing and to provide aviation test and test support to: other government and non-government organizations; research, exploratory, and advanced development programs of aviation research and technology activities; and foreign materiel exploitation programs. An Army Test Pilot Orientation Course is also conducted to attend the Naval Test Pilot School.

In a nutshell, if either the Army or a private contractor has a requirement to test aviation systems, equipment, or materiel, ATTC is the place to go.

ATTC and her parent test organizations have tested virtually every aircraft and item

U.S. ARMY AVIATION



COL Troy E. Burrow
Commander
X8000

COMMAND GROUP



MAJ Daniel Adee
Chief
X8148

FLIGHT SYSTEMS TEST DIV



Mr. James Stokes
Chief, Engineering
Test Branch
X8149



MAJ Wade Brinson
Chief
X8092

MANAGEMENT, PLANS, & OPERATIONS DIV



Mr. Roy Miller
Chief Plans Branch
X8087

TO REQUEST TESTING:

POINT OF CONTACT

AREA

DSN (AV) 558-XXXX
COML (205) 255-XXXX

Kenneth Blackwell

UH-1, OH-58, Target
Development Testing

8079

Charles Block

RAH-66, ALSE, HFE, WEAPONS

8075

David Crew

AH-64, ASE, Elect Equipment,
Integrated Avionics

8080

MAJ Gail Riley

AH-1, Aviation Test SPT
Requirements

8081

Manuel Venegas

CH-47, UH-60, Foreign Material,
Air Traffic Control Systems

8076

John Blaha

Airworthiness Qualification

DSN (AV) 527-3901
COML (805) 877-3901

TECHNICAL TEST CENTER



Mr. Jim McCrory
Technical Director
X8001

CORRESPONDING ADDRESS:

U.S. Army Aviation Technical Test Center
Fort Rucker, AL 36362-5276

or

U.S. Army Aviation Technical Test Center
Airworthiness Qualification Test Directorate
Edwards Air Force Base, CA 93523-5000



LTC Marvin Hanks
Director
X2271

AIRWORTHINESS QUALIFICATION TEST DIRECTORATE

EDWARDS
AIR FORCE BASE
CALIFORNIA



Mr. John Blaha
Chief Engineer
X3901



MAJ Robert Waters
Chief
X8277

TECHNICAL TEST SUPPORT & LOGISTICS DIV

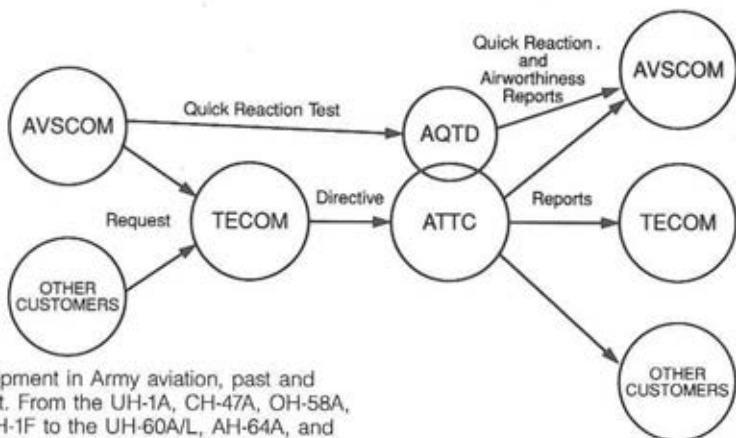


Mr. Larry Eagerton
Chief, Data Services
Branch
X8223

TELEPHONE:

Fort Rucker, AL
DSN (AV) 558-XXXX
COMMERCIAL (205) 255-XXXX

Edwards Air Force Base, CA
DSN (AV) 527-XXXX
COMMERCIAL (805) 277-XXXX



of equipment in Army aviation, past and present. From the UH-1A, CH-47A, OH-58A, and AH-1F to the UH-60A/L, AH-64A, and OH-58D, ATTC's testing has supported development of Army aviation through its most dramatic and eventful years.

The outstanding test aircraft/system maintenance and test design, fabrication, and modification capabilities available to ATTC are a direct result of collocation with the Aviation Center and its omnibus aviation maintenance contract which provides up through limited depot maintenance. The superb test instrumentation/data processing capabilities at the Fort Rucker test site have well-served the mission of flight systems testing. The synergism with other key elements of Army aviation at Fort Rucker has been a significant success factor in testing because of the ability to draw upon other team members for expertise and aviator support in meeting the demanding flight test schedules. The excellent instrumentation/data reduction capabilities at Edwards AFB have well-supported airworthiness and flight characteristics testing over the years.

As good as these capabilities may be, they are not the key factor in the equation of success which ATTC brings to the aviation testing arena. The key success factor is the capability of our people—the professional testers, both military and civilian. Among those professionals are experimental test pilots, graduates of the Naval Test Pilot School; other military and civilian test pilots with a wealth of test and field experience; and engineers, scientists,

and technicians with many years of technical and airworthiness testing expertise. Augmenting these are contractor test support personnel second to none.

The above illustrates how testing is directed to ATTC and how reporting is accomplished. Most of the testing is performed for AVSCOM or the various project managers whom it supports and is directed to ATTC through TECOM by the AVSCOM Test and Evaluation Management Officer. Testing is also conducted for, and test support is rendered to, other customers within and outside the Army aviation community. It should be noted that all tests regardless of originator, are directed to ATTC by TECOM Headquarters. As the illustration shows, however, the Airworthiness Qualification Test Directorate responds directly to requests from AVSCOM for safety-related, quick-response tests involving issues of airworthiness. This is provided for by a special Memorandum of Understanding between AVSCOM and TECOM.

It would be impossible to cite, within these confines, the many tests accomplished over the years by ATTC and her parent test organizations. Black Hawk testing has ranged from the competitive flyoff through production validation, airworthiness and flight characteristics, icing qualification, Hellfire missile integration, extended range fuel system, 701C engine integration, materiel change (product

improvement), and Lead-the-Fleet tests, to name only a few. Apache testing has included the competitive flyoff, airworthiness and flight characteristics, icing qualification, first article, materiel change, and Lead-the-Fleet tests. Also included are tests of various items of support equipment such as Aircrew Life Support Equipment (ALSE), Aircraft Survivability Equipment (ASE), and various aircraft/system materiel changes to include the Longbow and the Airborne Target Handover System. This represents a handful of the tests on only two types of aircraft on which testing is and has been conducted by ATTC and her parent test organizations.

"Piggyback"

In addition to Lead-the-Fleet testing on the UH-60A and AH-64A such testing is also conducted on the CH-47D, UH-1H, AH-1S, and in FY91 will be initiated on the OH-58D. This testing facilitates continuing evaluation of fielded aircraft/systems under specific flight maneuvers and profiles simulating field usage in an accelerated flight test program that, on the average, exceeds field flight rates by a factor of over three. One purpose of this testing is to discover and document problems as rapidly as possible so that corrective action can be initiated as early as possible. In addition, the aircraft are used for quick-reaction tests to investigate problems reported from the field which adversely affect fleet availability. Various materiel changes, fixes to documented problems, and second-source components are also tested on the Lead-the-Fleet aircraft under what is known as "piggyback testing."

This is termed "piggyback testing" because the required flight hours are already funded by the Lead-the-Fleet program so the add-on test program merely "hitches a ride." Historically, this "piggyback testing" has resulted in a 4-to-1 return on the flying-hours invested in the Lead-the-Fleet test programs. That is, for every \$1 spent on Lead-the-Fleet flying hours, \$4 in flight test time have been leveraged by "piggyback testing." This reflects well on the efficiency of our test

operations and the application of total quality management to flight testing.

Comanche Testing Challenges

In addition to tests to support currently fielded aircraft, ATTC has begun addressing the testing challenges of the RAH-66 Comanche program. During the Demonstration Validation Phase, a test team from ATTC served as a primary member of the then LH Program Manager's Simulation Assessment Team to address flight-handling qualities, systems integration, MANPRINT (human factors), and safety design using the two competitors' simulators. Reports were provided to the Army Materiel Systems Analysis Activity, and reports and briefings were provided to the LH Source Selection Evaluation Board.

During follow-on phases of the Comanche program, ATTC test personnel will witness contractor testing, participate with the contractor in flight tests with mixed crews of contractor and Army personnel, and participate in a concentrated 60-day combined technical/user test. Clearly, the testing challenges of the RAH-66 program will be significant, but ATTC will meet those challenges, as we have in the past on other test programs, by focusing our most important asset for success—the expertise of our highly motivated and professional testers who will serve as part of the Comanche Program Manager's Combined Test Team.

Testing Above The Best

The new Aviation Technical Test Center not only spans the nation from Fort Rucker to Edwards AFB in testing, but its mission also spans the spectrum of aviation technical testing from the early technical feasibility and preliminary airworthiness tests to the maturity phase first article, production verification, and Lead-the-Fleet tests. ATTC is heir to a long and proud history of testing for Army aviation. As we enter the decade of the 90's and approach the turn of the century, ATTC is firmly committed, in the words of our motto, to continuing to be the TECOM test center that will "TEST ABOVE THE BEST."

||||

Air-To-Air Stinger Update

By Lieutenant Colonel (P) James O. Emerson

Since my last Air-To-Air Stinger (ATAS) update of DESERT SHIELD support last October, the ATAS program continues to remain on the fast track. OH-58C ATAS fielding and support is still a priority. ATAS development programs for the AH-64 and AH-1 aircraft

have progressed substantially since last fall.

As expedited fieldings of ATAS on OH-58Cs became the norm, the Air-To-Air capability of AH-64 Attack Helicopter Battalions deploying to Southwest Asia (SWA) were enhanced to meet the fast and slow mover threats of Operation DESERT STORM. These accelerated fieldings have not been without cost, though. Stocked assets in the depots and those provided by the hardware contractors direct to units were depleted substantially. Since 1 October 1990, 4 USAREUR and 3 CONUS units were fielded with ATAS. Five of these units were then deployed to Southwest Asia and supported Operation DESERT STORM. Additional operators and



LTC(P) Emerson is Product Manager, Air-To-Air Stinger, St. Louis, MO.

maintainers were trained on the ATAS system at Ft. Hood, TX for immediate deployment to SWA just prior to commencement of the ground campaign. The reliability of the system has proven to be exceptional with no known Not Mission Capable Supply (NMCS) impacts experienced. All remaining OH-58C ATAS issues and fielding responsibilities will be transitioned to LTC Edwin P. Goosen, Product Manager, Light Observation Helicopter (LOH) by 15 May 1991. His primary point of contact for OH-58C ATAS matters is Mr. Michael Haragan, DSN 693-2045 or (314) 263-2045.

On 5 April 1991, MG Granrud, ADCSOPS, approved the expenditure of one Basic Stinger missile per three ATAS-equipped OH-58s per year for fielded units. The 1st Battalion, 4th Aviation Regiment, commanded by LTC Dave Reger, will conduct live ATAS firing at the National



Training Center, Ft. Irwin, CA during July 1991.

Pre-production OH-58D aircraft are currently conducting Government Technical Testing (TT) at Yuma Proving Ground (YPG), AZ. The fully-armed OH-58D fired three Basic Stinger missiles between December 1990 and March 1991. All three firings resulted in hits against stationary targets. Two of the acquisitions/firings were made using the Mast Mounted Sight (MMS) at ranges up to 4 kilometers. Deliveries of the initial production aircraft are scheduled for the training community early 1992. All production AHIPs delivered from that point on will include ATAS equipment. TT was completed on the AH-1F and C-NITE aircraft during November and December 1990. During the TT, a total of four ATAS firings were conducted resulting in four hits. On 2 April 1991, MAJ Larry J. Ciancio and CW4 Raymond W. Anderson fired an ATAS-equipped Colorado National Guard AH-1F and scored a hit against a stationary target using the Heads Up Display (HUD) as the

sighting system. On 3 April, ATAS/AVR-2 Laser Warning Device compatibility was demonstrated. Validation of the technical manuals and Modification Work Order (MWO) installation has been completed by the contractor. Government verification of the MWO installation should be completed by August 1991. The AH-1F ATAS program is nearing completion with the final delivery being a Technical Data Package (TDP). The TDP will be "shelved" until a requirement from the user is identified and production dollars are provided.

The AH-64A ATAS program is proceeding on schedule. Contractor qualification was completed February 1991. CW4 John Davis, Technical Test Director, and his three test pilots (CPT George Dimitrov, CW4 Dan Shaver, and CW3 Joe Snodgrass) from the Ft. Rucker Aviation Technical Test Center fired eight RMP Stinger missiles during the TT, 21 February-29 March 1991. Six out of eight shots were hits. A QUH-1 drone helicopter employing countermeasures was hit at two kilometers, a QUH-1 was hit at

TABLE 1

1=BEST CONDITION
2=SLIGHTLY DEGRADED CONDITION
3=LEAST DESIRABLE

A=BEST CONDITION
B=SLIGHTLY DEGRADED CONDITION
C=LEAST DESIRABLE

NO. COUNTERMEASURES			
TARGET TYPE	HIT PROBABILITY	TARGET ASPECT	TARGET BACKGROUND
ROTARY WING (CENTERLINE EXHAUST)	1	OUTGOING	A=BLUE SKY B=HORIZON/CLOUDS C=TERRAIN/RAIN
	2	INCOMING	
	3	CROSSING	
ROTARY WING (SIDE EXHAUST)	1	CROSSING	
	2	OUTGOING	
	3	INCOMING	
FIXED WING	1	CROSSING	
	2	OUTGOING	
	3	INCOMING	

WITH COUNTERMEASURES			
TARGET TYPE	HIT PROBABILITY	TARGET ASPECT	TARGET BACKGROUND
ROTARY WING (CENTERLINE EXHAUST)	1	CROSSING	A=BLUE SKY B=HORIZON/CLOUDS C=TERRAIN/RAIN
	2	QUARTERING	
	3	INCOMING/OUTGOING	
ROTARY WING (SIDE EXHAUST)	1	CROSSING	
	2	QUARTERING	
	3	INCOMING/OUTGOING	
FIXED WING	1	CROSSING	
	2	QUARTERING	
	3	INCOMING/OUTGOING	

TABLE 2

three kilometers, and a QUH-1 flying Nap-Of-Earth was hit in excess of three kilometers. In addition, pole targets were hit at ranges from 1.5-4.1 kilometers. The test included day and night testing, NBC (MOPP 4), over 500 engagements, logistics supportability, reliability, compatibility, integration, human factors, and handling qualities evaluation.

The Initial Operation Test and Evaluation (IOT&E) started 1 April 1991 and should be completed by 13 May 1991. Pilots and maintenance personnel from the Utah National Guard have been trained to support the IOTE. The IOTE should prove-out the AH-64 ATAS modification and provide a foundation for an Engineering Change Proposal (ECP)/Production contract.

Firing Considerations

My office, in close coordination with

Project Manager, Stinger, Redstone Arsenal, AL, provided New Training Highlights early this year for ATAS firing considerations.

Listed at left is a summary of those considerations. Table 1 shows engagements against different targets not using countermeasures. When countermeasures are employed, a higher probability of hit will occur using Table 2 employment methods.

Note: During engagements, target aspect angle and background are two separate and distinct critical considerations. Best results will be achieved when hit probability for given target aspect equals "1" and target background equals "A". Combinations of target aspect and target background other than "1-A" will still provide varying degrees of success

but will be less than optimum (i.e., 1-A is more desirable than 3-C).

Example: An argument which yields a "1-A" (rotary wing centerline exhaust, no countermeasures, flying an outgoing aspect with a blue sky background) will be optimum. While an engagement against a "3-C" (rotary wing centerline exhaust, no countermeasures, flying a crossing aspect with terrain/rain background) will be least desirable.

Conclusion

Improvements are planned for the Stinger missile which will enhance ATAS, the Army Aviation near-term ATA solution. But the search must continue. Army Aviation must strive for better solutions to the ever-increasing and more sophisticated ATA threats. An ATA missile with enhanced countermeasures, 360 degrees aspect angle capability, and increased performance in clutter is needed to provide aviation crews the decisive edge. ■■■

AGES II: Concurrent Development and Unit Training

By Lieutenant Colonel Mark Russell

The Air Ground Engagement System (AGES II) has travelled down an interesting if not unique road in its development. The twenty-six AH-64, four UH-60, four OH-58D, and four CH-47D kits, built in August 1987, were intended to be developmental prototypes leading to

a production contract. Our path to production was briefly interrupted by technology problems and the need for more realistic force-on-force training. We found ourselves at a juncture. The AGES II system was on the road to development, and at the same time, detouring to fulfill Army Aviation's urgent need for unit training. Our challenge was to satisfy both requirements without jeopardizing or compromising either.

The AGES II program was now advancing on two separate paths. The target-only training systems (OH-58D, UH-60, and CH-47D) were following a relatively normal developmental path leading to production; however, the shooting



LTC Russell is PM, Air Combat Training Systems, PM TRADE, Orlando, FL.

AH-64A AGES II systems were in continuous demand by aviation units deploying for force-on-force training exercises to the National Training Center (NTC). These aviation units did not care if they joined the battle with only prototype training devices—they only wanted to "show their worth" as combat units fighting against the OPFOR. Though it wasn't planned that way, they were de facto independent evaluators of the AGES II system.

The 1-227 AVN BN from Ft. Hood was the first Apache unit to help us in our development of the shooting systems. Their NTC rotation in June 1990 resulted in a low 26% probability of kill (single shot) against the OPFOR and was considerably lower than expected. We concluded that an engineering test was needed to determine the causes of the low performance. The 1-1 AVN BN at Ft. Riley came to our rescue. With their assistance we conducted an

evaluation at the NTC in September 1990 and concluded the AGES II laser was too low in power output and the beam divergence was too broad. Our fix was to correct these deficiencies on the poor performing lasers and then conduct a mini-verification of the system performance.

The 1-4 AVN BN at Ft. Carson came to our aid this time. Two new AH-64 aircraft with Backup Control Systems (BUCs) were used to test six of the fixed lasers. We also tested a laser from the September NTC test to baseline the performance. The results were outstanding—the laser, and the AGES II system performed significantly better. The laser could now engage targets at realistic Hellfire ranges and maintain its eyesafe characteristics. Our goal to simulate Hellfire performance in the AGES II system was achieved.

Design Goals

Even though we may have closure on the AGES II laser design, our dual path journey down the road to production is still continuing. Our focus is now on decreasing the installation and boresighting times, increasing the boresight accuracy, and making the AGES II system reliable and maintainable.

Several enhancements to the AGES II system are now just getting underway to achieve those design goals. We have just recently begun a joint effort with Aircraft Survivability Equipment (ASE) PM to modify the AN/AVR-2 Laser Detecting Set for the AH-64 and OH-58 Kiowa Warrior Aircraft.

The modification will permit the AN/AVR-2 to accept and recognize the AGES II eyesafe laser frequency and codes. This will allow crew training with the AN/AVR-2 in the aircraft without having to use their tactical lasers or a dedicated training device. But equally important, we can eliminate the AGES II belts on the aircraft—significantly decreasing total installation time by approximately four hours per aircraft.

Another enhancement we are pursuing will allow units to accurately boresight the AGES II system in the hangar or on the ramp, without using a boresight panel or needing two kilometers line of sight and a clear day. Loral ElectroOptical Systems in Pomona, CA is investigating using retro-reflective mirrors to align the AGES II weapon systems with the aircraft's targeting systems. If everything goes as planned, we will have a prototype boresighting device this summer.

There is one last crossroad we have to pass in the AGES II development—a real training exercise against the OPFOR at the NTC. The 1-4 AVN BN has agreed to assist us again. They are scheduled for this July for NTC rotation 91-10 and are eagerly anticipating putting the AGES II system through a tough, challenging exercise against maneuvering forces. I am confident that BLUEFOR will prevail, signifying Army Aviation's arrival at the NTC as a dominant maneuver force, and the AGES II arrival at the end of its development.

To the soldiers of the 1-4 Aviation Battalion—good luck and good hunting! IIII

CAREER TRACK

If you'd like to take advantage of the Career Track employment referral service, but you're not yet a member of AAAA, the solution is simple: Fill out a membership form and send it in along with your request for a Career Track application. Your ad will run in the next available issue.

Active AAAA members may have a 30-word classified employment ad published in two consecutive issues of ARMY AVIATION MAGAZINE free of charge. Write to the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000, or call (203) 226-8184 for Career Track applications. Inquiring organizations contact the National Office.

CONSULTANT/HELICOPTER PRODUCT SUPPORT POSITION

Master Aeronautical Science ERAU. Fifteen years aviation experience. Over ten years training, operations and standardization. Currently on DA Staff as UH-60 SIP/IFE. Available in May of 1991.

91-05-01

There is a HUD in Your Future

By John R. Gresham

The Army aviation community has never been content to sit still and wait for the next avionics advancement to come along if there is something that can provide immediate benefit to the Army aviator. That next piece of equipment that is in the wings, so to speak,

is the Heads Up Display, or HUD, which will be acquired and integrated into the AN/AVS-6, Aviator's Night Vision Imaging System or "ANVIS" as it is popularly known.

Aviation requirements personnel have long known intuitively that the more time an aviator spends looking through his or her ANVIS during flight and less time peering down under the system at the instrument panel the better. This was reinforced during the early stages of the DESERT SHIELD build up in August 1990. That aviation environment was particularly tough to fly in at night with its bleak featureless desert and airborne particulate matter, which often obscured the horizon.

Without wasting any time, the ANVIS Required Operational Capabilities (ROC), document was modified on 27 August

Mr. Gresham is Deputy Project Manager, Night Vision Electro Optics, Ft. Belvoir, VA.

1990 calling for a Heads Up Display for ANVIS, through which aviators could view their critical instrumentation, while keeping their eyes on their flying. Not only was this new requirement validated, but ODSCOPS chartered an Aviation Council of Colonels to address Night Vision Aviation issues. Among other issues, the council addressed the fastest possible means of acquiring and fielding the HUD. They declared the new requirement urgent on 31 October 1990, and obtained DA support for a rapid system test, acquisition, and fielding of the HUD.

That background is fine, but exactly what does a HUD do? The HUD, as mentioned earlier, is linked through the pilot and copilot's existing ANVIS Gen III Night Vision goggles. It enables critical aircraft data to be overlaid on the goggle imagery to provide an integrated night scene. In short, HUD equipped pilots spend more time

"It has already seen limited application within DoD, primarily in the Special Operations community. . ."

looking through their goggles during night flight. The data presented is constantly visible to the pilot unless he selects a declutter mode more to his liking. The bottom line is that the HUD will provide pilots with a significant operational enhancement and resultant safety advantage when performing night missions.

The HUD acquisition is underway as you read this article. It is being procured by the Project Manager for Night Vision and Electro-Optics located at Ft. Belvoir, VA with full support and the participation of the Project Manager for Avionics at St. Louis, MO. Much of the information surrounding the acquisition is necessarily competition sensitive and must remain so until after contract award in September 1991. Even so, some basic information is available now.

A & B Kits

The ANVIS/HUD has been around for some time as a commercial system. It has also already seen limited application within DoD, primarily in the Special Operations community. The basic system consists of an A kit and B kit. The A kit is aircraft unique and consists of mounting brackets, wiring, connectors and transducers. The B kit consists of five items, they are: the data accumulator/symbology, generator box, control panel, cable link and two optical displays which are linked into the pilot's and copilot's ANVIS. HUD uses standard aircraft power and requires no batteries.

Symbology

HUD symbology requirements fall into two areas. There are basic requirements which include aircraft attitude, airspeed, ground speed, altitude (MSL & AGL), vertical speed, torque(s), trim, compass heading and master caution and/or warning. The current specification also requires the system display a low altitude

warning AGL which is crew adjustable, bearing to navigational waypoint and distance, and cargo hook engagement data when applicable. As desired but not required data, offerors are encouraged to have symbology that display hover (pitch and roll), Estimated Time Enroute (ETE), quadrant threat warning, and an acceleration cursor.

It's also important to note that the HUD, when integrated into the ANVIS, shall only minimally degrade the ANVIS performance when used in designated aircraft.

Which Aircraft?

That leads us to the question. Which aircraft? At the present time, the HUD B kit must be compatible with Army UH-60 A/L, OH-58 A+/C, UH-1V/H, AH-1F and the CH-47D. The Marine Corps is looking for similar compatibility on their UH-1N and CH-46E. Clearly, this is a complicated acquisition with lofty goals.

The acquisition process which is now well underway, will rely on a number of potentially well qualified offerors to propose on this important program. The stakes are high, because over the next five years, basic contractual quantities range from a minimum of 112 to 150 HUDs each year up to a total of 600 systems each year depending on a variety of factors (funding, etc.)

It should also be noted that the support concept calls for the three level maintenance concept that includes AVUM, AVIM and Depot support. This is in addition to spare parts being purchased and a minimum 24 month warranty requirements that will be imposed on the winning offeror.

In summary, there is a HUD in the future for aviators and, with the continued support of Congress and DA, that future is on the near horizon.

||||

BRIEFINGS

Army Chief of Staff designee, GEN Gordon Sullivan, has selected **CSM Richard Kidd**, 47, to be Sergeant Major of the Army. Kidd, currently assigned to I Corps, will replace SMA Julius "Bill" Gates, who is retiring 30 June 1991 after a career spanning more than 33 years. CSM Kidd is a graduate of the Sergeants Major Academy, Special Forces Operations and Intelligence Course, Special Forces Light Weapons Infantry Course, and Airborne School. His awards include the Legion of Merit, Bronze Star, Meritorious Service Medal, Army Commendation Medal, Air Medal, Combat Infantryman Badge, and Senior Parachutist Badge.

In the crash of a U.S. Army UH-1 on a medevac mission Monday, 15 May 1991, in the mountains southwest of Comayagua, Honduras, the following people are known to have died: 1LT Vicki L. Boyd, 30, from Salinas, CA; and SSG Linda S. Simonds, 34, from Sacramento, CA. Both were assigned to the 126th Medical Company, California ARNG, headquartered at Sacramento. Boyd was a pilot, while Simonds was a flight medic. Positive identification of a third body removed from the wreckage has not been made. Surviving the crash was SPC William Jarrell, 24, of WV. Jarrell is assigned to the 571st Medical Detachment, Ft. Carson, CO. He served as crew chief aboard the helicopter. Investigators continue to examine the scene of the crash in order to determine the cause of the accident.

BG Dewitt T. Irby, AVSCOM Deputy Commanding General since November 1989, has been named the new Program Executive Officer, Aviation. Irby, a 29-year Army veteran, has had three assignments at AVSCOM. He has served in a variety of command and staff positions, and flew both rotary and fixed wing aircraft in Vietnam. Irby replaced Gary L. Smith. Smith had served as Acting Program Executive Officer since the departure of MG William A. Forster in early 1990. Mr. Smith will remain with the PEO as the Deputy Program Executive Officer.

Bell Helicopter's AH-1F Cobra, a major component of the U.S. Army's gunship fleet during Operations DESERT SHIELD/STORM, is receiving a significant upgrade giving the helicopter complete day/night fighting capability. Effective immediately, the Army is equipping over 50 AH-1F gunships with Cobra-Nite (C-NITE) targeting systems manufactured by **Hughes Aircraft Company, Electro-Optical & Data Systems Group, El Segundo, CA**. The installations are taking place at Camp Humphries, Korea, on AH-1F Cobras assigned to the U.S. 8th Army.

The U.S. Army has renewed its contract with **McDonnell Douglas Helicopter Company** to modify two of its MH-6/AH-6 helicopters to incorporate the company's NOTAR™ (No Tail Rotor) system. The Army program was put on hold in October to allow the company to improve the handling qualities of the aircraft, which required higher-than-desirable pilot workload to counter a slight yaw motion under certain flight conditions. The company decided to add a simple, one-axis yaw Stability Augmentation System (SAS) to its MD 520N/530N helicopters, which are commercial versions of the AH-6/MH-6 currently in use by Army Special Forces Aviation.

General Electric Armament Systems and GIAT Industries of France are jointly developing the new gun system for the Army's new reconnaissance/attack helicopter, the Boeing Sikorsky RAH-66 Comanche. The new Turreted Gun System (TGS) is designed to defeat threats while providing high reliability, minimum weight, quick reloading, and easy maintenance. It is comprised of three major components: the Vulcan II 20mm gun, a two-barrel variant of the venerable Vulcan cannon; a new composite turret which contributes to the aircraft's low observability; and a 500-round ammunition storage and feed system that combines the light weight and simplicity of the system in the Cobra attack helicopter with the positive round control proven in GE systems in the F-14, F-15, F-16, and F-18 supersonic fighters.

OPERATIONS:

THE DIFFERENT BRIGADE

BY COLONEL JOHN BRADLEY

FORT BELVOIR, VA — Davison Aviation Command is a brigade-level TDA unit with a mission and organization unique from most large Army Aviation units. The structure and capabilities support three primary missions:

- the accomplishment of contingency plans;
- the providing of operational airlift support;
- the management of base operations and air traffic control.

The staff is similar to a TOE brigade with the traditional S1, S2, S3, S4, information management, and comptroller functions. The S3 also has management control of the airfield facility and the air traffic control.

Davison Army Airfield is home to most of Davison Aviation Command, but is also a very busy hub located in the Washington D.C. National Capitol Region (NCR). Aircraft throughout CONUS transit Davison on a daily basis. Air traffic control facilities include towers at Davison Army Airfield and the Pentagon Heliport, plus precision and surveillance radar at Davison. Air traffic movements approximate 100,000 annually.

The operational units of the command consist of Headquarters and Headquarters Company, Rotary Wing Priority Air Transport (RWPAT), Fixed Wing

Priority Air Transport (FWPAT), U.S. Army Priority Air Transport (USPAT, the Army's only jet detachment), and the Centralized Army Aviation Support Office (CAASO). The annual Flying Hour Program of 16,000 hours for the 51 aircraft is met primarily through actual OSA requirements for the units. The OSA requirements are generated by more than 100 major organizations in the NCR; to include HQDA, JCS, the Congress, AMC, INSCOM, etc. The jet aircraft provide the command with a worldwide capability.

RWPAT

The RWPAT provides helicopter support and is commanded by MAJ Mike Borland. The unit has 37 UH-60 Black Hawk and UH-1 Huey helicopters. RWPAT has numerous on-order contingency missions in support of the highest levels of the national government. OSA support is provided to all major organizations within the NCR, and tactical support is pro-



COL Bradley is Commander, U.S. Army Davison Aviation Command, Ft. Belvoir, VA.

vided to the 3d Infantry Regiment (The Old Guard) as well as other units within the Military District of Washington. Because of mission requirements many of the helicopters are modified with additional avionics, weather radar, internal auxiliary fuel capability, and rotor brakes. All maintenance (AVUM, AVIM, and limited depot) is internal to RWPAT and performed by Army personnel.

FWPAT

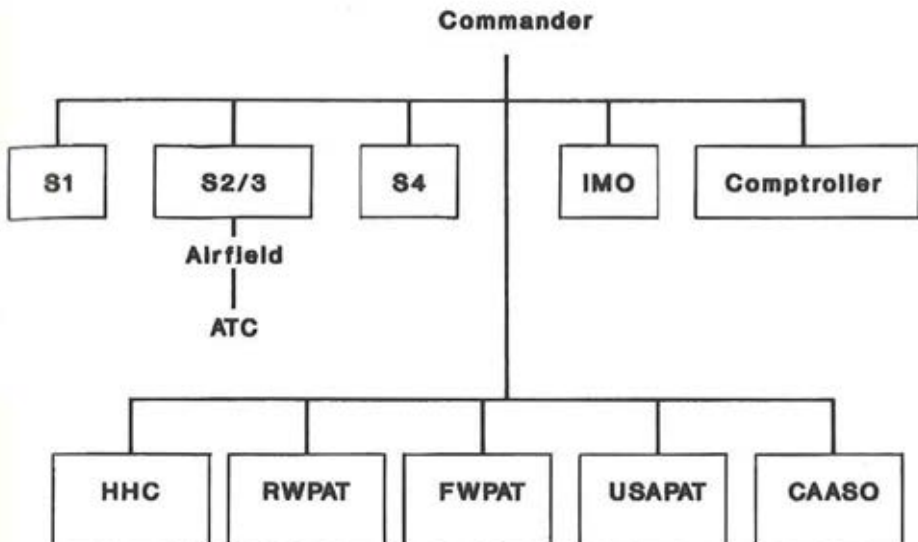
The FWPAT provides turboprop fixed wing support and is commanded by CPT Mike Delaney. The unit has seven C-12s (models C, D, and L) and two U-21Fs. FWPAT provides OSA support to all major organizations within the NCR. Destinations include locations throughout CONUS, Canada, and Central America. All maintenance is provided by the on-site contractor.

USPAT

The USPAT Detachment is the Army's only jet unit and is commanded by LTC Bob Ozbolt. Aircraft include three Gulfstream IIIs (C-20E), one Gulfstream II (VC-11), and one Lear 35 (C-21). The jet assets have provided the Army with an organic instant worldwide transportation capability. Recent missions have included destinations in Kuwait, Saudi Arabia, Korea, Germany, Spain, Australia, Hawaii, Japan, Kwajalein, and many other locations.

The value of this capability in a national emergency was proven in Operations JUST CAUSE, DESERT SHIELD, and DESERT STORM. All maintenance is pro-

DAVISON AVIATION COMMAND



vided by the on-site contractor. There are two commissioned officer positions (commander and operations officer) in the U.S. Army Priority Air Transport unit; all other aviators are warrant officers.

The Gulfstream aircraft also require a flight engineer. Since the Army no longer has fixed wing mechanics (MOS 67G), we have taken highly qualified NCO helicopter mechanics (MOS 67N) and sent them to the factory for flight engineer training. USAPAT is based at Andrews Air Force Base, MD because of runway restrictions at Davison Army Airfield.

CAASO

The remaining unit, Centralized

Army Aviation Support Office, is another unique, one-of-a-kind organization. CAASO schedules not only the 14 fixed wing aircraft of Davison Aviation Command, but also the other 157 OSA Army fixed wing aircraft based in the Continental United States (CONUS). CAASO is commanded by LTC Tom Brink and enables the Army to conserve resources through the efficient scheduling of aircraft. Every installation in CONUS is connected via automation to the CAASO center at Davison Army Airfield.

The Data General mainframe computer is a tool that brings the many variables involved in scheduling together to result in the most effective use of Army

assets. All airlift requests are personally screened by skilled military and civilian personnel prior to scheduling decisions.

CAASO scheduling has included all of CONUS since 1989 and has resulted in an annual cost avoidance of \$24 million (commercial cost) and annual savings of \$6 million. The CAASO data from every mission forms a computer database which assists in determining the wartime requirement for OSA aircraft, as well as future stationing plans and fleet modernization for OSA aircraft.

Davison Aviation Command has a rich tradition and the military and civilian personnel are dedicated to the aviation motto, "Above the Best." ■■■■

AIR TRAFFIC CONTROL:

FULL CIRCLE

BY COLONEL WILLIAM F. DISMUKES

CAMERON STATION, VA — The United States Army Aeronautical Services Office (USAASO) has recently undergone a realignment and has been designated the United States Army Aeronautical Services Agency (USAASA). Searching back through the history of the organization brought me to an article written in the 11 October 1967 edition of ARMY AVIATION MAGAZINE. The creation of the USAASO was announced in that edition.

The organization was established in 1967 as a Class II Activity of the Assistant Chief of Staff for Force Development (ACSFOR). With the dissolving of the ACSFOR in 1973, it was transferred to USAIC and eventually to Ft. Rucker, AL, as a subelement of TRADOC.

History seems to repeat itself. In the case of our organization, we have have been designated a Field Operating Agency (FOA) under the DA Staff once again, and assigned to DCSOPS.

Throughout the years, our Agency has been at Cameron Station, VA. Our primary mission is to represent the DCSOPS as the executive agent and representative regarding airspace, air traffic control procedures, and aeronautical information. We also represent the Army on interdepartmental groups

dealing with national and international aviation matters. Furthermore, we act as the Army interface with the Federal Aviation Administration (FAA), and provide the Department of Army Regional Representatives (DARR) at each FAA Regional Headquarters. The Agency executes its overseas responsibility with one detachment in Heidelberg, Germany. The U.S. Army Aeronautical Services Detachment Europe (USAASDE) serves the European/Middle East and African regions.

The Agency has Office of Primary Responsibility (OPR) for the following areas:

- Executive agent for airspace matters
- Executive agent for Aeronautical Information/Notices to Airmen (NOTAMS)
- DA staff/action officer for FAA matters
- Army working group member to the Policy Board for Federal Aviation
- Army Secretariat for Interagency Group on International Aviation



COL Dismukes is Director, U.S. Army Aeronautical Services Office, Cameron Station, Alexandria, VA.

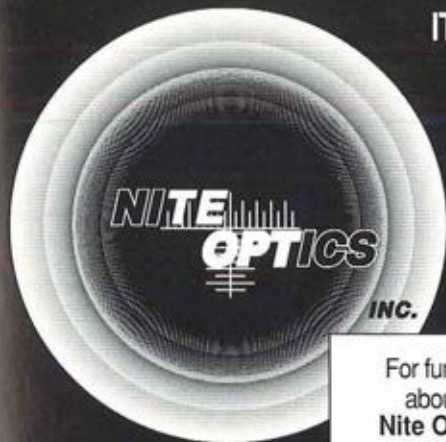
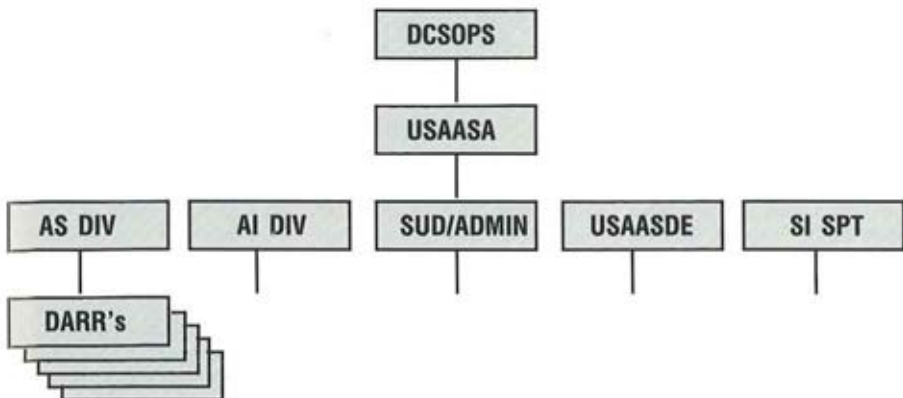
- Representation of DCSOPS on groups and committees
- DA action agency for joint use of Army airfields
- DA point of contact on noise abatement/Fly Neighborly programs
- Executive agent on violations of flying regulations
- Executive agent on Terminal Instrument Procedures (TERPS)
- DA point of contact on aviation weather support
- Army representative to the National Air Space Program Office (NASPRO) located in the FAA Headquarters in Washington D.C.

In addition to the above areas, the agency has the responsibility to ensure proper distribution of Flight Instrument Publications (FLIP). This mission is handled by the office in Heidelberg for Europe/North Africa and the Middle East, while the AI Division, here at Cameron Station, handles the rest of the world locations using FLIP products.

We are actively involved in groups and committees serving the aviation community at large. The daily operations of Restricted Airspace in support of the Army training mission remains under the close scrutiny of the General Accounting Office (GAO). The DARR office in your area can provide assistance in obtaining suitable areas for the firing of weapons, lasers, and other devices as well as aviation-related matters.

Our goal is to continue to provide the best possible representation. The Agency has enjoyed the continued outstanding reputation of support to the Army aviation over its long history and we will strive to ensure continuity in the years of uncertainty that lie ahead.

USAASA ORGANIZATIONAL CHART



ITT Night Vision Systems
subassemblies,
spare parts,
infrared aiming lights,
range finders and
I.R. Cyalume lightsticks.

For further information or to inquire
about GSA availability contact:
Nite Optics Inc., P.O. Box 2426
Wilkes-Barre, PA 18703-2426
(717) 868-5813
FAX (717) 868-3259

RESERVE COMPONENTS:

USAR AVIATION REORGANIZATION

BY LIEUTENANT COLONEL ANDREW PHILIP KARAS

FORT McPHERSON, GA —

The past twelve months have witnessed the onset of dynamic changes in USAR aviation. The most significant, certainly, are in Chain of Command relationships. In response to Congressional mandate, the Army has established the United States Army Reserve Command (USARC) as a Major Subordinate Command (MSC) of Forces Command (FORSCOM). Its charter is to command and control all Reserve units in the Continental United States (CONUS), with the exception of those belonging to Special Operations Command (SOCOM). The USARC is now in transition status. It will assume the Fourth U.S. Army command and control mission in October '91, with assumption of the other four Continental United States Army (CONUSA) command and control missions in the ensuing twelve month period.

Within the USARC, the Aviation Division will provide staff supervision for all USAR aviation units, a job now performed by the five CONUSA Aviation Divisions. The Aviation Division will deal directly with those Army Reserve Commands (ARCOM) having aviation assets in matters of operations, training, and standardization. In addition, aviation cells have been placed in the USARC Logistic and Safety Division to coordinate

those concerns with the Aviation Division and the ARCOMs. The concentrated staff focus gained through centralization should result in improvements in deficient USAR Aviation Program systems.

Consolidation

Concurrent with the establishment of the USARC Aviation Division, the Commanding General, FORSCOM, has decided to eliminate the CONUSA Aviation Divisions and consolidate the Aviation Resource Management (ARMS) function at FORSCOM headquarters in the Aviation Division for all three components—Active, Reserve, and National Guard. Assumption of that mission will be phased as well, paralleling the phasing planned for the USARC Aviation Division. Consolidated ARMS should result in greater standardization in operations, training, safety, and logistics across all component and geographic boundaries.

Remaining at the CONUSAs and continuing to perform their current functions will be the Avia-

tion Readiness Groups (ARG), formerly known as Centralized Aviation Readiness and Training (CART) Teams.

Echo Company

The Echo Company initiative represents another significant development for the USAR and FORSCOM. For over ten years, going back to the Battle Rostering and Army Aviation Personnel Required for Sustained Operations (AAPRSO) concepts, the Army has sought a means to provide a Continuous Operations (CONOPS) capability for its warfighting units within the constraints of current Active Component (AC) personnel strength limits. The Army of Excellence (AOE) Tables of Organization and Equipment (TOE) do not provide the staffing necessary to fight on the twenty-four hour battlefield. Echo Company may provide the answer.

The Echo Company initiative proposes USAR enhancement of AC AH-64 Attack Helicopter Battalions with an augmentation company, E Company, comprised of drilling reservist and AGR personnel, to fill all AH-64 battalion Manpower Requirements Criteria (MARC) maintenance personnel shortages and to provide additional pilots and operations personnel required for continuous operations. This enhancement is in addition to the 35 AC soldier plus up approved as part of the Apache Battalion robustness and redesign issue.

Under this initiative, each Echo Company would be stationed at an AC battalion location and placed under the AC (USAR — cont. on page 76)



LTC Karas is
U.S. Army
Reserve
Aviation
Officer,
FORSCOM,
Ft. McPherson,
GA.

AIR TRAFFIC CONTROL:

DESERT STORM FOLLOW UP

BY COLONEL MELVIN J. McLEMORE
and SERGEANT FIRST CLASS RAYMOND C. TOWNS

FORT RUCKER, AL — In the last article dealing with ATC concerns (February 1991), the topic was Air Traffic Control Operations involvement in DESERT STORM. As aircraft operations increased, it became evident there was a requirement for greater coordination of Air Traffic Control Operations in support of the aviation mission. In response to a Deputy Chief of Staff of Operations (DCSOP) operational need for improved interconnectivity among air traffic control (ATC) units in Southwest Asia (SWA), a Department of the Army (DA) study team was formed which included participation from the U.S. Army Air Traffic Control Activity (USAATCA), Forces Command (Aviation Office), and the National Guard Bureau (29th ATC Group) to conduct an in-country assessment of ATC operations in November 1990.

The assessment team in coordination with the Central Command (CENTCOM) staff, Army Central Command (ARCENT) G-3 and the deployed corps con-

cluded that there was inadequate staffing and interconnectivity of Army airspace management elements. This was particularly evident at echelon above corps. An action plan was developed by the team in coordination with the field commander and subsequently approved by DA DCSOPS in December 90 for immediate implementation.

The 29th ATC Group Headquarters, Army National Guard (ARNG) was activated and deployed in December to provide the nucleus for Army Airspace Command and Control (A²C²) staffing and management at theater and corps level as necessary. Personnel from the group augmented joint and host nation airspace management cells including the Battlefield Coordination Element (BCE). Concurrently they provided centralized management and coordination for deployed corps tactical air traffic service battalions for ARCENT, G-3. It is reported all participating units did a magnificent job fulfilling their mission and functions.

As noted previously, interconnectivity, dated equipment, and radios without secure capability required immediate attention. Tactical Aviation Control Teams (TACTs) required secure multi-band radios as well as the capability to provide manpack

communications during jumps and for intra-unit C² and coordination. The acquisition of AN/PRC-104 HF radios, AN/PRC-127 UHF radios, and AN/GRC-206 communication systems mounted in HMMWVs proved invaluable. The capability of removing the AN/PRC-113 UHF/VHF radios from the AN/GRC-206 in a manpack configuration allowed the TACTs increased flexibility in performing their mission. This facilitated TACTs at Forward Area Refuel Points (FARPs) and Landing Zone (LZ) locations, to provide air-drop capability and interservice communications compatibility. This action was completed and installed by the start of Operation DESERT STORM.

The AN/TSQ-71B Airport Surveillance Radar (ASR), Precision Approach Radar (PAR) Ground Controlled Approach (GCA) radar, which is 1950's technology, was equipped with an antiquated environmental control unit (ECU). Because of the harsh desert environment, an expeditious upgrade to the ECU was required in order to provide a critical GCA approach radar system that was the sole U.S. Army navigational aid in SWA capable of providing precision approach recovery of Army and joint service aircraft.

Improvements were required for the connectivity of Flight Operations Centers (FOC) and Flight Coordination Centers (FCC) due to aging technology of AN/ARC-102 HF radios and time limitation of Radio and Teletype (RATT) teams to pass time

SFC Towns is an Air Traffic Control Specialist, U.S. Army Air Traffic Control Activity, Ft. Rucker, AL.



COL Melmore was Commander, U.S. Army Air Traffic Control Activity, Ft. Rucker, AL, at the time this article was written.

sensitive information such as Air Tasking Orders (ATOs) and Airspace Control Orders (ACOs). Accelerated delivery and installation of AN/VRC-86 HF radio sets were installed to provide reliable long-range voice capability.

Automation equipment was acquired by the Project Manager-ATC (PM-ATC), Aviation Systems Command (AVSCOM) to facilitate passing real-time information to Army ATC elements. The system was tested at Fort Hood, TX and subsequently installed in the Army's FOC/FCC elements. Although DESERT STORM ended before the system could be fully implemented, it was proven that vital information could be passed via a secure link in a near real-time mode, thus making Army Aviation even more effective and safe.

Redistribution Plan

Now that DESERT STORM is over, DA is reallocating the recently acquired ATC equipment and systems. The redistribution plan is being developed to distribute these proven systems throughout the Army for Air Traffic Control Operations mission support. Priority of course will go to units with high priority contingency missions. The remainder will be divided throughout the Major Commands (MACOMs). This action will serve two requirements. First, units that are involved in vital contingency operations will obtain highly mobile and reliable communications systems and improve their capability. Second, further testing and evaluation of these systems will provide essential information for input to

requirements documents currently in development.

We at the U.S. Army Air Traffic Control Activity are extremely proud of what the deployed Air Traffic Control Operations units accomplished in support of Operation DESERT SHIELD/STORM. The high degree of professionalism displayed during these last months have proven that Air Traffic Control Operations is a necessity for the aviation commander to provide effective mission and A2C2 support in a highly technological and fluid battlefield environment. In coordination with the field and the program manager we will continue to strive for the development of state-of-the-art equipment necessary to keep pace with the Army's airborne platforms, as well as concepts and doctrine for AirLand Battle-Operations in the future. Air Assault. IIIII

USAR

(continued from page 74)

battalion's day-to-day command and control. Echo Company is not designed to stand alone and function separately from the rest of the battalion. Its existence as a separate company is an administrative convenience needed due to its USAR personnel makeup. The majority of its members would be trained by, drill with, and fill ALO 1 personnel shortfalls in HHC and D Companies of the Apache battalion. Only the attack and aeroscout platoons would be treated separately, integrated into A, B, and C companies or functioning as a fourth line unit. Its full time operations and administrative personnel would be

supervised by the Echo Company Commander to ensure that training, operational, finance, personnel, and administrative coordination for Echo Company unit members was accomplished with the battalion's other companies and supporting AR COM. Its full-time aviation maintenance personnel would be supervised by the Delta Company Commander to ensure accomplishing aircraft maintenance in support of additional flight hours required by Echo Company flight personnel.

Testing

The Echo Company concept will be tested in two AC AH-64 battalions for two years, starting in June of 1991. If successful, Echo Companies would be assigned to all Apache Battalions. Given that, great potential exists that the concept would be expanded to all aviation organizations.

As this goes to press, the debate over force structure cuts continues. As the Army prepares to reduce in size, reductions in the USAR aviation program are being actively discussed. Hopefully, the USAR Aviation Program will continue to prosper and grow stronger as a member of the Total Army team.

In closing, it's fitting to congratulate the many members of USAR aviation who served or are still serving on active duty in support of DESERT STORM. They have proven the time, effort, and resources committed over the years to the USAR Aviation Program have been invested wisely, providing capabilities critical to our nation's successful prosecution of the war effort. IIIII

PERSONNEL:

AWO EVALUATION REPORT CONCERNS

BY COLONEL MICHAEL S. MOSELEY

ALEXANDRIA, VA — Many Senior Raters unknowingly damage the careers of their Warrant Officers because they don't understand the Officer Evaluation Report system. As the Army's force structure is reshaped, officer evaluation reports will become a critical factor in our efforts to maintain a quality Warrant Officer Corps.

Often, an unintentional below center of mass evaluation is submitted by a senior rater that prevents an excellent officer from selection for continued service. How can this happen? Two reasons primarily. One is the all too frequent tendency of some senior raters to "grow" a newly appointed Warrant Officer. The second occurs when senior raters decide to change their rating philosophy, by changing the block they intend for their center of mass, but do not wait until their profile is officially restarted. The result of these pitfalls can be avoided if senior raters understand the evaluation system and work within the established guidelines set forth in the *Officer Evaluation Guide* published by PERSCOM.

To illustrate the problems of unintentional ratings and educate senior raters on how the evaluation system should work, the following is provided. For several years now, separate senior rater

profiles have been used for each grade of Warrant Officer, WO1 through CW4. This is a significant improvement over the previous system, which grouped WO1s with CW2s, and CW3s with CW4s. The improved system allows senior raters to compare officers of equal rank, and alleviates the perceived need to leave room for a young warrant officer to grow. The term "grow" translates to rating an officer in a lower block on the initial evaluation and then rating in a higher block on subsequent evaluations. While this appears to show improvement, it could in fact result in a below center of mass rating depending on the senior rater's profile. Senior raters who use the suggested second box center of mass profile contained in the *Officer Evaluation Guide* allow for discrimination between warrant officers with varying potential within a specific grade.

The second problematic area occurs when senior raters change their rating philosophy before personally contacting

PERSCOM by telephone to restart their senior rater profile. All OER's that arrive at PERSCOM prior to the agreed-upon restart date will be processed using the old profile. In some cases, this could result in a "death blow" for the rated officer. Once senior raters know their profiles have been restarted they may begin to put their new rating philosophy into motion. Additionally, when restarting their profile senior raters are encouraged in at least the first five reports they write to state in their comments where they intend their center of mass to be and how the rated officer will rank in the new profile. By doing so, senior raters make their intentions known to the rated officers and to selection boards.

The bottom line is to wait until notified to use a new profile. There is little that can be done to correct a profile error once an OER is processed and placed in the officer's file.

The best method to preclude officers from becoming a victim of unintentional below center of mass rating is by using the guidelines published by PERSCOM. Senior raters must be honest in their evaluation of their officers' potential and remember each grade of Warrant Officer is considered separately in their profile. Do not use a new senior rater philosophy until agreement is reached with PERSCOM that the old profile has been removed from the system.

Using these principals will ensure that the message senior raters want to send to both the rated officer and selection boards will be received correctly and their intent clearly understood. ■■■■



COL Moseley
is Chief,
Warrant
Officer
Division,
U.S. Army
PERSCOM,
Alexandria, VA.

OPERATIONS:

DESERT CHALLENGE

BY LIEUTENANT COLONEL JOHN R. PENMAN

SAUDI ARABIA — The 8th Battalion, 158th Aviation Regiment, deployed the battalion headquarters and Company A from Germany to Saudi Arabia in September to support Operation DESERT SHIELD. Company B remained in Hanau to provide AVIM for nondeploying V Corps aircraft, and after deployment of VII Corps' AVIM battalion, for the remaining Apache battalion in USAREUR.

Upon arrival in Saudi Arabia, the battalion was attached to the 507th Corps Support Group, 1st COSCOM, to provide doctrinal corps-level AVIM support to XVIII Airborne Corps. The Corps had over 1,000 aircraft of all types, to include fixed wing, located over a 10,000 square mile area. Included were divisional aircraft from the 1st Cav, 24th, 82d, and 101st, as well as four non-divisional aircraft from the 3d ACR, 12th and 18th Avn Bdes, 44th Med, and 15th Military Intelligence Battalion.

We were initially organized with: A/B-158th AVN RGT, Wiesbaden, Germany; K/158th AVN RGT, Ft. Hood, TX; H/159th AVN RGT, Ft. Campbell, KY; I/159th AVN RGT, Ft. Bragg, NC; K/159th AVN RGT, Ft. Stewart, GA.

Additionally, the 256th Signal Support Company, Ft. Rucker, AL, was attached to provide maintenance and supply support for all tactical air traffic control (ATC) systems in the Corps. Our assign-

ed strength swelled to over 1,300, with units located at four dispersed locations, two of them in the desert over 150 miles from battalion headquarters.

Initial efforts focused on overcoming numerous aircraft maintenance and supply challenges created by the environment, the extensive geographic dispersion of organic and customer units, and limited organic transportation and communication capabilities. We worked hard developing support structures, systems, and SOPs tailored to our new internal and external command and support relationships, and our greatly expanded mission. Cross-leveling personnel, tools, parts, and equipment between our units was key to our responsive, continuous, and tailored AVIM support throughout Corps.

We established our DESERT STORM support operation ("Challenge City") forward at the XVIII Abn Corps logistics base (Logbase Charlie), located over 450 miles northwest of Dhahran, and about 25 miles south of the

Iraqi border, along the infamous TAPLine road. Inside our common defensive perimeter, with A Company and K/159, was the CMMC's class IX (air) operation, AIMI, and AOAP lab, consolidated Electronic Equipment Test Facility (EETF) and LRU exchange, ORF, RX, LARs, and a forward maintenance support element from I/159, staged for rapid movement into Iraq in support of advancing Corps aviation units. Challenge City became a focal point for the Corps aviation maintenance, offering virtually "one-stop support".

K/158 initially moved north to King Khalid Military City to support Corps and arriving EAC aviation units. H/159 was attached back to the 101st prior to DESERT STORM, and K/158 was later chopped to VII Corps, along with the 1st Cav, prior to the ground offensive.

By April, the battalion had:

- processed over 14,000 work orders and 33,000 spare parts requests;
- performed 57 aircraft recoveries, 11 in hostile territory, including the first enemy aircraft, an Mi-8 Hip and an Mi-24 Hind;
- driven over one million miles without a serious accident;
- Flown over 1,900 hours without incident;
- Worked 215,250 mandays without serious personal injury.

Aviation readiness rates of 90%, experienced by XVIII Abn Corps during DESERT STORM, attest to the effectiveness of Corps aviation maintenance and supply support operations. The professional, dedicated, and innovative soldiers and technicians of 8th Battalion, 158th Aviation Regiment, provided much of that support. They met the "DESERT CHALLENGE"!!!!



LTC Penman is Commander, 8th Battalion, 158th Aviation Regiment, APO New York.

AWARDS AND HONORS

The following information is provided by the U.S. Army Aviation Center at Ft. Rucker, AL:

Initial Courses:

Class 90-9 AH-1 Track (30/11/90): 2LT John Y. Komman, Dist. Grad.

Class 90-9 AH-1 Track (30/11/90): WO Glen R. Woodard, Dist. Grad.; WO James T. Gosselin, Honor Grad.

Class 90-12 UH-1 Track (14/12/90): 2LT Mark D. McCann, Dist. Grad.; 2LT Bruce A. Bain and 1LT Stephen T. Eto, Honor Grads.

Class 90-12 UH-1 Track (14/12/90): WO Mark W. Alumbaugh, Dist. Grad.

Class 90-12 OH-58 Track (14/12/90): 2LT Paul A. Voisin, Dist. Grad.

Class 90-12 OH-58 Track (14/12/90): WO Richard H. Tanner, Dist. Grad.; WOs Parish H. Clinton and David N. Allen, Honor Grads.

Class 90-11 UH-60 (14/12/90): 2LT Richard G. Watson, Dist. Grad.

Class 90-11 UH-60 Track (14/12/90): WO Kirck K. Meuli, Dist. Grad.

Class 90-10 AH-1 Track (14/12/90): 2LT Terry L. Truett, Dist. Grad.

Class 90-10 AH-1 Track (14/12/90): WO Scott P. Firari, Dist. Grad.; WO Scott W. McIntosh, Honor Grad.

Class 90-13 UH-1 Track (20/12/90): WO Michael L. Wright, Dist. Grad.; WOs William M. Alderman, Edmund L. Hahn, & Peter P. Letson, Jr., Honor Grads.

Class 90-13 OH-58 Track (20/12/90): 2LT Eric J. Stierma, Dist. Grad.; 2LTs Thomas E. Wiesner and Martin J. Messersmith, Honor Grads.

Class 90-13 OH-58 Track (20/12/90): WO Matthew K. Rogie, Dist. Grad.; WO David S. Craig, Dist. Grads.

Class 90-12 UH-60 Track (20/12/90): 2LT Kelly J. Peitz, Dist. Grad.

Class 90-12 UH-60 Track (20/12/90): WO David L. Stumph, Dist. Grad.

Class 90-11 AH-1 Track (20/12/90): 2LT Daniel J. Tangeman, Dist. Grad.

Class 90-11 AH-1 Track (12/20/90): WO Richard J. Sylak, Jr., Dist. Grad.; WO Gregory A. Lewis, Honor Grad.

Class 90-15 UH-1 Track (30/01/91): 1LT Charles D. Zuber, Dist. Grad.; 1LT Jeffrey J. Reed, Honor Grad.

Class 90-15 UH-1 Track (30/01/91): WO Jeffrey A. Ackman, Dist. Grad.

Class 90-15 OH-58 Track (30/01/91): 1LT Paul T. Horry, Jr., Dist. Grad.; 2LT David R. Neel, Honor Grad.

Class 90-15 OH-58 (30/01/91): WO Edgar Manangon, Dist. Grad.; WO Gregory S. Shelley, Honor Grad.

Class 90-14 UH-60 Track (30/01/91): 2LT Robert M. Hammond, III, Dist. Grad.

Class 90-14 UH-60 Track (30/01/91): WO Frank L. VanBuren, Leadership Award

Class 90-13 AH-1 Track (30/01/91): 2LT George F. D'Antonio, Dist. Grad.

Class 90-13 AH-1 Track (30/01/91): WO Jerred L. Nelson, Dist. Grad.

Class 90-16 UH-1 Track (13/02/91): 2LT Tommy R. Higgins, Dist. Grad.; 1LT Bradley S. Rustan, Honor Grad.

Class 90-16 UH-1 Track (13/02/91): WO Thomas L. Mravak, Dist. Grad.; WO Dan J. Olson, Honor Grad.; WO Richard A. Larson, Leadership Award.

Class 90-16 OH-58 Track (13/02/91): 1LT Robert T. Jarrett, Jr., Dist. Grad.; 2LT Todd C. Kros, Honor Grad.

Class 90-16 OH-58 Track (13/02/91): WO Mark R. Haven, Dist. Grad.; WO David N. Bradshaw, Honor Grad.

Class 90-15 UH-60 Track (13/02/91): 2LT Suzanne M. Blotsky, Dist. Grad.; 2LT John T. Helms, Dist. Grad.

Class 90-15 UH-60 Track (13/02/91): WO Scott D. Rollston, Dist. Grad.

Class 90-14 AH-1 Track (13/02/91): 1LT Robert J. Reed., Dist. Grad.

Class 90-14 AH-1 Track (13/02/91): WO James L. Dwyer, Dist. Grad.

Class 90-18 UH-1 Track (15/03/91): 2LT Kristina A. Emmons, Dist. Grad.; 2LT Alphonso Gentry, Honor Grad.

Class 90-18 UH-1 Track (15/03/91): WO Andrew S. Clements, Dist. Grad.; WOs Samuel C. Worley, Jr. and Robert H. Delagrange, Honor Graduates

Class 90-18 OH-58 Track (15/03/91): 2LT Russell V. Lindley, Dist. Grad.

Class 90-18 OH-58 Track (15/03/91): WO Robert A. Shober, Dist. Grad.; WO Morgan C. Busse, Honor Grad.

Class 90-17 UH-60 Track (15/03/91): 2LT Paul D. Howard, Dist. Grad.

Class 90-17 UH-60 Track (15/03/91): WO Larry B. Bullington, Dist. Grad.; WO Michael E. Kadar, Leadership Award

Class 90-16 AH-1 Track (15/03/91): Timothy A. Basham, Dist. Grad.

Class 90-16 AH-1 Track (15/03/91): WO Michael S. Kellogg, Dist. Grad.

Class 90-19 UH-1 Track (29/03/91): 2LT James G. Erbach, Dist. Grad.; 2LTs Gregory T. O'Connor and Thomas J. Barthel, Honor Graduates.

Future (continued from page 7)

we are entering an era of more open warfare and an era of greater intelligence in real time available at divisions and corps. Therefore, I think we should move from the past and look for major Aviation forces organized at corps which can also support divisions when needed. The issue will be debated for months to come. You must be a part of that debate.

I believe we have put the loud critics of the air assault division off to the side for some time based upon DESERT STORM. These critics, both within the Army and out, said it was too expensive and out of date. The performance of the 101st during DESERT STORM demonstrated that we are the only Army which has made air assault work on the division level. This unique division has great utility across the spectrum of conflict. As Corps Commander of XVIII Corps, I found that like everything else in the Army, it must evolve, but the question of its survival is over for the next few years.

There are other challenges for Aviation, and the RAH-66 Comanche leads the list. We have a serious need for the Comanche—a superb attack/reconnaissance helicopter. But all the battle for this need is not over. Some in Congress and industry view the RAH-66 as a possible bill-payer for the V-22 (especially former Marines!). Others lack the vision to comprehend the military need or to see its utility in a contingency Army. Others just have a problem with the cost. But this helicopter is important to the Army and to the U.S. helicopter industry. All of us in the Army, in industry, and just supporters, need to provide strong backing for it. Our Army needs the Comanche; our nation needs the Comanche.

We have other issues to face, such as the Longbow—superbly effective in all weather, but very expensive. Fratricide reared its ugly head again in the Gulf. We need to address that issue head on. Gen. Mike Loh, the new Commander of Tactical Air Command and my counterpart in the Air Force with whom we develop joint Ar-

my and Air Force doctrine, told me that the Air Force must restudy its Persian Gulf experience and fratricide. The Air Force knows it can deliver ordnance on target at night with its relatively new night capability, but is not sure that it can sort out friendlies, enemy, et al, at its speeds at night. Gen. Loh will be flying some of these missions soon, and I've asked him to fly in an Apache and an OH-58D as well, to get a comparison of our night capability. We own the night but, like the Air Force, we need to address the fratricide issue to our satisfaction.

Another most serious issue is the modernization of our large yet aging fleet of observation and utility helicopters, far beyond the Comanche buy. We have more structure than we have dollars for modernization. Do we shrink the structure? Where do we generate the cash for modernization? Do we hold on to an old fleet and hope for the best—hope that some guardian angel will visit some night and fix the problem? We have a serious problem with the Apache battalion structure—we have it so lean that it needs fixing quickly. These and other issues are being addressed by MG Rudolph Ostovich, III, the Aviation Center, TRADOC, AMC, and the Army Staff in the ARCSA V Study.

I see a great future for Army Aviation. It has been a Branch that can blend courage, technology, flexibility, and initiative on the battlefield. I am sure it will, as a Branch, be innovative and reach out for the future and not try to live in the past. I am firmly committed to a strong Aviation Branch—not just because of the role it plays on the battlefield in combat and else where and not just because it has given me great support throughout my many years of service—but I have a son who is an aviator, a Black Hawk pilot with the 617th Company in Panama. He wants to be part of the best, and I want him to be part of the best! He tells me things that others don't, but he tells me that Aviation is the best. Our challenge is to keep it there.

We face this year with the best Army in the world. We have the talent to keep it the best Army, and we have the talent to keep U.S. Army Aviation the best in the world. ■■■■

Litton Selected For Army's Next-Generation Inertial Equipment



LN-100



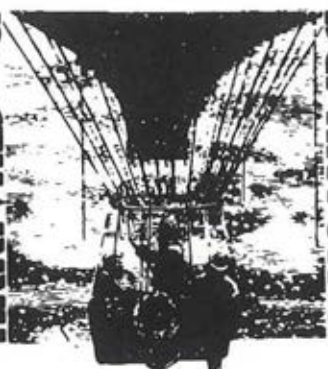
LN-200

Litton's state-of-the-art systems have been selected for the AH-64 Longbow Apache and RAH-66 Comanche helicopters. The LN-100 and LN-200 are setting new standards for Army inertial navigation and flight control reference systems.

For additional information call 818-715-4160 or write:
Director of Reference Navigation, 5500 Canoga Ave,
Woodland Hills, CA 91367-6698

Litton

Guidance & Control Systems



Colonels

Cross, Dennis D.
489 Cooke Drive
Redstone Arsenal, AL 35808

Erkins, Moses
7513 Mossy Oak Drive
Montgomery, AL 36117

McCloud, Harry E.
102 McCloud Road
Leesville, LA 71446

Williamson, James A.
HQ Sixth U.S. Army
Presidio of S.F., CA 94129

Lt. Colonels

Buthorne, Neil R.
HHC 4501st Aviation Bn
APO San Francisco 96208

Carder, Ronald D.
Leavenworth, Student Atrs
1223 Cheatham Court
Warrensburg, MO 64093

Carmichael, Paul D.
505 South Oulda Street
Enterprise, AL 36330

Clark, Douglas M.
3529 Trevino Drive
Sierra Vista, AZ 85635

Conaway, Donald G.
166th Aviation Regiment
Box 1023
APO New York 09140

Gee, William D.
Bonn Chapter VP Memb.
111th Postal AG Company
APO New York 09069

Lockhart, Henry D.III
USAE, Company E
Student Detachment
Presidio of Monterey, CA 93940

Long, Clyde L.
3278 Pennsylvania Ave.
Kirtland AFB, NM 87116

Ricketts, Allan
127 Eustis Avenue
Newport, RI 02840

Simpson, Bruce E.
558 Southview Circle
Fayetteville, NC 28311

Williamson, Bruce C. Jr.
291 Hilline Drive
Bulverde, TX 78163

Wrinkle, John R.
PSC Box 2448
APO Miami 34004

Majors

Atkins, Frank G.
Cdr, E Co, 25th Avn Regt
10th Mountain Division(L)
Fort Drum, NY 13802

Bishop, Gary M.
8533 Kentford Drive
Springfield, VA 22152

Busbey, Charles R.B.
CDRP PSC Box 23
APO New York 09614

Dawson, Lawrence E.
B Company, Box 258
70th Trans Bn (AVIM)
APO New York 09028

Dudenbostel, Warren T.
8410 Westpointe Drive
Fairfax Station, VA 22039

Durso, Joseph A.
32 River Road
Great River, NY 11739

Falck, Steven
HHC 21st TAACOM (LOG)
APO New York 09325

Felderman, Robert J.
1280 MI. Loretta
Dubuque, IA 52001

Hinkel, Thomas N.
108 Harvest Hill Circle
Enterprise, AL 36330

Mays, Brian K.
P.O. Box 10438
Fort Irwin, CA 92310

Miller, Michael J.
AGTD, USAATC
ATTN:STEAT-AQTB
Edwards AFB, CA 93523

Osborn, Douglas G.
2563 Carrie Lynn Drive
North Pole, AK 99705

Schoenover, John C.
TEXCOM Aviation Director
Fort Hood, TX 76544

Tannich, Richard L.
Commander, A Company
4-58 Aviation Battalion
APO San Francisco 96358

Captains

Beal, Steven F.
COMFLEACT Chinbac
Box 62
FPO Seattle 98789

Bishop, Kevin R.
5427B Seay Court
Fort Polk, LA 71459

Cancienna, Phillip J.
1713 Himalaya Avenue
Thibodaux, LA 70301

Cummins, Michael D.
402 Helton Drive
Clarksville, TN 37042

Davis, Stephen P.
405 Norwood Road
Staunton, VA 24401

Dunaway, Joe D.
8936 St. Julian Way
Fayetteville, NC 28304

Dupree, Ron D.
232 Spano Road
Madison, AL 35758

Edwards, Anthony J.
5275 North Scott Plaza
Apt. 224
Fort Dix, NJ 08640

Grant, Mark E.
609 Cherokee
DeRidder, LA 70534

Hedad, Mitchell E.
3351 East Rhett Butler Rd
Clarksville, TN 37042

Jackson, Randy K.
B Troop, 1st Bn. (ATK)
2nd Aviation Regiment
APO San Francisco 96524

Keppelman, Jeffrey T.
N Troop, 411 ACR
P.O. Box 559
APO New York 09146

Keogh, Michael H.
168 Kirby Drive
Clarksville, TN 37042

Klatt, Kenneth W.
PSC Box 1395
APO Miami 34001

Larsen, Jon A.
3570 Whimbrel Lane
Colorado Springs, CO 80906

Lazzarini, Edward M.
PSC Box 5138
APO Miami 34001

Macchiarella, Nicholas
14701 Coffee Bluff Road
Savannah, GA 31419

McClung, Joseph J.
D Co, 4-501st Aviation
Camp Page, Korea
APO San Francisco 96208

Nelson, Michael S.
128 Brownell Circle
Monterey, CA 93940

Packard, Charles J.
P.O. Box 1094
Copperas Cove, TX 76522

Reichell, Richard H.
1 Kellie Street
Edwards AFB, CA 93523

Roth, Barry A.
Quarters 2912A
Monroe Drive
Fort Lewis, WA 98433

Story, William S.
HST 556 Cavalry
APO New York 09457

Traylor, John M.
Route 3
114 Valley View Drive
Enterprise, AL 36330

White, Michell
1347B Werner Park
Fort Campbell, KY 42223

Whitney, Randy W.
HHC 4-1 Aviation
1st ID (M)
APO New York 09784

1st Lieutenants

Amlano, Timothy A.
3720 S.E. 15th Place
Cape Coral, FL 33904

Alkins, Charles L.
1201 Bacon Ranch Road
Apt. 1123
Killeen, TX 76542

Boyce, Dryden K.
14 Willow Bridge
Amarillo, TX 79106

Climer, Charles T.
102 Brookview Court
Enterprise, AL 36330

English, William T.
108 Carriage Place
Clarksville, TN 37042

Flops, William R.
North Country VP Corp Atr
P.O. Box 70
Waterson, NY 13601

Huck, Richard S.
1600 Rucker Boulevard
Apt. 5
Enterprise, AL 36330

Knauf, William K.
946 Tamarack Drive
Apt. 13102
Fayetteville, NC 28311

Koeltzow, Sharyl M.
83nd Med Det (AA)
Fort Riley, KS 66442

Maxey, William J.
144 Holland Park Court
Savannah, GA 31419

Nerove, Darrel B.
5654-2 Bixby Street
Fort Hood, TX 76544

Relley, Robert W.
2400 Dinwiddie Street
Arlington, VA 22208

Ruxton, Bradley S.
4072 West Meadow Drive
Apt. 206
Colorado Springs, CO 80906

Selmer, John D.
P.O. Box 222216
Anchorage, AK 99522

Stoner, James A.III
6 Hunters Lane
Camp Hill, PA 17011

Yacona, James F.
111 Candlebrook Drive
Enterprise, AL 36330

Zocher, Skyler M.
124 Hudson Street
Pineville, LA 71360

2d Lieutenants

Aitler, Jayson A.
3015 Hickory Woods Drive
Apt. 38
Roanoke, VA 24012

Backus, Michael J.
111 Villa Drive
Apt. 88
Enterprise, AL 36330

Benney, Andrew M.
2108 Honeysuckle Road
Fox Run Apts. 188
Dothan, AL 36301

Camp, Jeffery M.
P.O. Box 205
Fort Edward, NY 12828

Davis, Susan K.
Greater Atlanta VP Memb
231 Cricket Walk
Lilburn, GA 30247

Dziubek, Christopher
3412 Mallard Drive
Clarksville, TN 37042

Grothaus, Mark A.
209 Glenwood
Apt. 4
Enterprise, AL 36330

Hennessey, Roberto V.
HHC Brigade
3rd AROV
APO New York 09165

Hernandez, Jose D.
P.O. Box 387
Fort Ord, CA 93941

Lindemeyer, Victor C.
314 Kings Way
Camden, SC 29631

Mueller, Robert C.
203 Mill Creek Road
Clarksville, TN 37042

Notch, Robert M.
734 Moss Hills Drive
Apt. 164
El Paso, TX 79912



THE MAN,



THE MACHINE,



THE THREATS.

Who understands your new mission inside and out?

AEL Aero

From threat detection to tactical countermeasures, we recognize that enhancement of EW capabilities and reconfiguration of cockpit management systems is a never-ending challenge.

AEL Aero designs, integrates, tests and installs navigation, communication

and armament subsystems on fixed-wing and rotary-wing aircraft. Our dependable systems improve performance without compromising the primary mission.

For more information about how AEL Aero can upgrade your mission capabilities, call us at 215-822-2929.



AEL Defense Corp.

Corporate Headquarters

305 Richardson Road

Lansdale, PA 19446-1429

215-822-2929 • Telex: 4761188

The AEL Companies: AEL Industries, Inc., AEL Defense Corp., American Electronic Laboratories Inc., AEL Systems International Corp., Cross Systems, Inc., Advanced Radar Systems Corporation
AEL has immediate, long-term employment opportunities in many challenging advanced technology areas. For more information, contact: Manager of Staffing.
©1989 AEL Industries, Inc.

Pilgrim, Allen M.
3438-A McCormack Road
Wahiawa, HI 96786

Rabideau, Thomas C.
7431 212th SW
Apt. 16
Edmonds, WA 98026

Serota, Brian K.
201 Holman Bridge Road
Daleville, AL 36322

Smith, Gilberto A.
290 Empire Boulevard
Apt. 4k
Brooklyn, NY 11225

Sollie, Timothy A.
HHC 5501 Aviation Regt.
APO San Francisco 96397

Tully, Charles T.
HST 5th Sqn, 6th Cavalry
APO New York 09457

Vacula, Paul B.
33 Mustang Street
DeRidder, LA 70534

Wells, Charles S.
112 Starwix Street
Rome, NY 13440

Weaver, Lawrence A.
SA Terry Court
Albany, NY 12205

Wilcox, Margaret M.
203C Rotunda Circle
Newport News, VA 23602

Workman, Jeffrey T.
5599-2 Large Street
Pershing Park
Fort Hood, TX 76544

Wright, Patrick T.O.
S Troop, 4/11 ACR
P.O. Box 577
APO New York 09146

MW4s

Baumgartner, John H.
9063 Manchester Road
Apt. 107
Silver Spring, MD 20901

Hutson, Michael J.
51028-A Drennan Park
Fort Campbell, KY 42223

CW4s

Lusk, Bernard R.
9930 B Saratoga Road
Fort Drum, NY 13603

Malin, LaRoy W.
303 Hamrick Avenue
Ozark, AL 36360

Moss, Stephen C.
2016A Werner Park
Fort Campbell, KY 42223

Rountree, Ed
6304 West Mountain View
Glendale, AZ 85302

Ruestow, Gregory P.
B Company, 6-158 Avn Regt
Box 182
APO New York 09185

Sanetel, Scott R.
8302 SE Strawberry Lane
Milwaukee, WI 53227

Schaller, William J.
78 Aviation Battalion
Box 85
APO San Francisco 96343

Tolbert, Ralph V.
805 Craddock
Coopers Cove, TX 76522

Warden, John S.
7 Burnt Tree Road
Savannah, GA 31419

Wheeler, Michael E.
HHC 11th Aviation Brigade
Box 1223
APO New York 09140

CW3s

Alexander, Darrel
PSC 995
APO Miami 34001

Aycock, Edward B.
301 Calloway Street
Newton, AL 36352

Dobrowolski, Alan D.
56th Aviation Company
Box 151
APO New York 09028

Irwin, Joseph L.
84-1452 Lanikuhana Avenue
Apt. 389
Milliani, HI 96789

Oburn, Robert P.
1448 Karen Drive
Harrisburg, PA 17109

Pape, William N.
Old Tucson Chapter Treas.
1909 West Omar Drive
Tucson, AZ 85704

Pickett, Jack
5430 Ashwind Trace
Alpharetta, GA 30201

CW2s

Alexander, Paul J.
10014 White Bluff Road
Savannah, GA 31406

Crothers, Sean C.
22 Ferguson Lane
Fort Rucker, AL 36362

Harris, Rodney N.
1020 6th Avenue South
St. Cloud, MN 56301

Lloyd, Mary J.
901 West Barbados Drive
Gilbert, AZ 85234

Peterson, Arthur F.
112 King Cole Drive
Clarksville, TN 37042

Poole, David W.
516 Jewel Drive
Clarksville, TN 37042

Sandberg, Jim M.
San Jacinto Chap VP Memb
2727 Nasa Road 1, Apt 1401
Seabrook, TX 77586

Short, Gary D.
2310 Lazy Ridge Road
Killeen, TX 76541

Umfleet, Terry L.
403 Woodland Acres Loop
Leesville, LA 71446

WO1s

Alberghini, Marcus J.
433 Casa Verde Way
Apt. 234
Monterey, CA 93940

Basso, Timothy
4312 Creekside Drive
Killeen, TX 76543

Belanger, Keith L.
4306-2 Wofford Drive
Fort Riley, KS 66442

Bergerson, Charles W.M.
Route 2, Box 177
St. Croix Falls, WI 54024

Bernett, David S.
21 Buckingham Place
St. Charles, MO 63301

Berry, Dennis W.
1468 North 5th Street
Fresno, CA 93703

Bronson, Casey K.
386 Reservation Road
Apt. A-7
Marina, CA 93933

Bullington, Larry B.
45th Medical Company
Box 28
APO New York 09061

Byrd, Charles T.
4175 Westmeadow Drive
Apt. 2289
Colorado Springs, CO 80906

Coy, Bradley A.
CMR PO Box 51
APO New York 09140

Elkins, Glenn C.
P.O. Box 774
Killeen, TX 76540

Freeman, Tyrion J.
917 Alexandria Street
Carthage, NY 13619

Hughes, Gordon A.
B Co., 1/501 Avn. Regt.
Box 20
APO San Francisco 96271

Jacobs, Paul M.
55-84-2 Farster Street
Fort Hood, TX 76544

Kuenzli, Michael J.
B Company
1-501 Aviation Regiment
APO San Francisco 96271

Lepper, John O.
1st Ag Regt Det
Reg 40
APO San Francisco 96301

McManus, William J.
569 Cynthia Drive
Clarksville, TN 37042

Mohon, Gary S.
305 North 2nd Street
Central City, KY 42330

Nation, Lance E.
5122-2 Pelham Avenue
Fort Riley, KS 66442

Powell, Scott M.
1103 South Jackson Street
Apt. C
Junction City, KS 66441

Reader, Norman C.
D Co., 502nd Avn. Regt.
(DUAGAA)
APO New York 09028

Reese, Michael L.
B Troop, 6-6 Cavalry
11th Avn. Bde., Box 522
APO New York 09140

Rogie, Matthew K.
B Co., 2-501st Aviation
Box B-12
APO San Francisco 96271

Sapp, Kent T.
PSC Box 5047
APO Miami 34001

Sheahan, Thomas M.
S Troop, 4/11 ACR
Box 555
APO New York 09146

Spence, Wayne
E Company
502 Aviation Regiment
APO New York 09293

Stevens, Craig R. Jr.
HHC 1st Battalion
2nd Aviation Regiment
APO San Francisco 96524

Sylak, Richard Jr.
1117 SW 8 Avenue
Rochester, MN 55902

Tanner, Richard H.
P.O. Box 4213
Savannah, GA 31409

Thorne, James E.
P.O. Box 2395
Los Lunas, NM 87031

White, Michael D.
Camp Mobile
BT F Troop, 8/17 Cavalry
APO San Francisco 96224

Woodard, Glen R.
4104 Westcliff
Killeen, TX 76543

Wright, Michael L.
2807 Persimmon Drive
Killeen, TX 76542

Wrinkle, Robert S.
158-3 London Court
Fayetteville, NC 28311

Zimmerman, Terry A.
P.O. Box 70868
Fort Bragg, NC 28307

WOCs

Black, Walter B.
600 Sunnyfield Drive
Kernersville, NC 27284

Castagna, Thomas A.
30 Crane Street
Fort Rucker, AL 36362

Davies, Scott S.
706 Summit Road
Benton, AR 72015

Enlisted

Belcher, Thomas M. SPC
HHC USAG Aviation
Fort Hood, TX 76544

Halley, Gilles A. SGT
C Company
9/227 Aviation Support Bn
APO New York 09165

Hunt, Stacy L. CSM
2826 Lawdoodle Street
Killeen, TX 76542

Luben, Brian P. SSG
31790 US 19 N
Apt. 261
Palm Harbor, FL 34684

Minkiv, Robert M. Jr. SGT
1070 Chatham Park Drive
Apt. A
Pittsburgh, PA 15216

Newby, Michael SGT
2855 Union Hall Road
Paddock Place Apts. L-8
Clarksville, TN 37040

Olazewski, Walter G. SPC
12050 Baumgartner
St. Charles, MI 48655

Stearnes, Michael G. SGT
9300 Montana
Apt. 2154
El Paso, TX 79925

DACs

Cooper, Jeanette L. Ms.
11891 Union Grove Road
Union Grove, AL 35175

Fairfield, Lewis W., Jr. Mr.
P.O. Box 833
Schroon Lake, NY 12870

Okagi, Robert M. Mr.
LAO FE (AWSCOM)
APO San Francisco 96301

Civilian

Alley, David W.
Route 2, Box 695
Morganton, NC 28655

Beatty, Charles J.
907 South Chestnut Street
Mesa, AZ 85204

Del Grosso, Anthony J.
2517 Bileini Lane
Fort Lauderdale, FL 33312

Finkenberg, Robert A.
1311 Sunrise Circle, N.
Upland, CA 91786

Fleming, Thomas K.
7016 Deville Drive
Fort Worth, TX 76180

Glance, Charlotte
P.O. Box 0661
Cedar Rapids, IA 52406

Grimes, David A.
4810 Gorniak Drive
Parlin, NJ 08859

Jackson, Jon S.
1180 Matchez Point
Apt. 26
Memphis, TN 38103

Kaempfe, George L.
Kain Associates
582 E. Dayton-Yellow Springs
Fairborn, OH 45324

Mushtsky, Jerry
1242 Rockrose NE
Albuquerque, NM 87122

Nichols, James L.
6425 South Clark Drive
Tempe, AZ 85283

Robbins, Stephen D.
1345 South Lafayette St.
Florisant, MO 63031

Runkle, John D.
3035 South Buchanan
Apt. A-2
Arlington, VA 22206



Built to carry the Army into the 21st century

The light utility Panther 800

The new Panther 800 will be a low-risk, cost-effective light utility helicopter with exceptional multirole capabilities.

An enhanced off-the-shelf helicopter, the Panther 800 is being built to respond to the U.S. Army's rapidly changing requirements for versatility, self-deployability and affordability.

It's a team effort, with LTV combining the proven capabilities of the



The Panther team is currently integrating the T800 engine into a U.S. Coast Guard HH65, a derivative of the Dauphin helicopter.

Panther Helicopter with the U.S. Army's next-generation power plant—the T800 from LHTEC—along with IBM's integration of existing avionics systems.

By adding the latest engine technology to a proven airframe, the Panther 800 will provide a low-risk, cost-effective answer for the Army's many light lift needs well into the 21st century.

LTV Aerospace and Defense

aerospatiale

IBM

LHTEC

L T V : L O O K I N G A H E A D

Skapik, Stephen J.
16803 Carl Avenue
Apt. 46
Houston, TX 77060

Slinkard, John
McDonnell Douglas Acft.
POB 516, MC 2703102
St. Louis, MO 63168

Stevens, Kelly S.
DynCorp Aerospace
European Avrad Box 9
APO New York 09667

Uzelac, Steven M.
2214 South Harwood Avenue
Upper Darby, PA 19082
Zellers, Robert H.
P.O. Box 562
York Harbor, ME 03911

Retired/Other

Chambers, Stanley L. MAJ
1847 Willow Avenue
Lake Havasu City, AZ 86403

Cole, David A. CW4
9 Spring Creek Road
Tearfankia, TX 75503

Eichenberger, William G. CW3
C/O W.W. Eichenberger
2615 West 10th Street
Eire, PA 16505

Greenspan, Seymour Mr.
21 Cedar Avenue
Long Branch, NJ 07740

Hafers, Ernest R. LTC
P.O. Box 7449
Laguna Beach, FL 32413

Henry, Edwin H. COL
2919 Longwood Circle
Panama City, FL 32405

Hill, Roger D. LTC
P.O. Box 915
Adamsville, TN 38310

Lewis, David V. CW2
701 Branch Drive
Port Orange, FL 32127

Matthews, Ralph A. COL
The Legal Center
8120 Richmond Highway
Alexandria, VA 22309

McGaugh, Michael LTC
14137 Westernmill Drive
Chesterfield, MO 63017

McGee, Robert D. CW3
5825 Pettigrew Drive
Fayetteville, NC 28314

McGregor, Thomas LTC
5540 Roswell Road
Suite C-201
Atlanta, GA 30342

Mertel, Kenneth D. COL
18501 Morgan's Beach Rd.
Smithfield, VA 23430

Moore, Peter W. LTC
2635 Highway 73
Marianna, FL 32446

Morris, Dennis L. MAJ
P.O. Box 865
Ormond Beach, FL 32174

Priddy, Bennie CPT
Route 1, Box 50 D
Bumpus Mills, TN 37028

Rackley, Robert L. LTC
P.O. Box 3383
Tampa, FL 33669

Schneider, Ronald D. LTC
17181 Mighty Redwood Dr.
Houston, TX 77059

Shively, Jowarren B. MAJ
1720 Ala Moana Blvd., Apt. 605A
Honolulu, HI 96815

Shoopman, Denny K. CSM
3598 Wimbledon Drive
Pensacola, FL 32504

Slye, Wm. T., Jr. LTC
4319 York Street
Wichita Falls, TX 76309

Sullivan, Eugene LTC
Route 2, Box 50H
Stanardsville, VA 22973

Tugger, Howard J. COL
165 Fairway Village
Trophy Club, TX 76262

MARKETPLACE DIRECTORY

The **MARKETPLACE DIRECTORY** is a reference guide that offers **ARMY AVIATION** readers easy access to the products and services they need most. Listings are sold on a semi-annual or annual basis at the rates outlined below.

RATES: Marketplace: First, Second, Third & Fourth Line (Company Name, Address, Telephone Number & Message): \$250/semi-annual. Additional lines: \$50/semi-annual. Box Listing: \$500/semi-annual per column inch. Inclusion of artwork is subject to approval and may involve additional charges. Classified: First Three Lines: \$60; Additional Lines: \$20 per insertion. For further information, contact **ARMY AVIATION**, 49 Richmondville Avenue, Westport, CT 06880 (Telephone: 203-226-8184; FAX: 203-222-9863).

ELBIT

1111 Jefferson Davis Hwy. #803, Arlington, VA
State-of-the-art avionics for helicopters.

**INTERNATIONAL LIAISON PILOT
AND AIRCRAFT ASSN (ILPA)**
16518 Ledgestone
San Antonio, TX 78232



"LIAISON SPOKEN HERE"
Bill Stratton - Editor 512-490-ILPA
Send For A Free Copy
Of The Newsletter



ARMY AVIATION ASSOCIATION OF AMERICA (AAAA)

49 RICHMONDVILLE AVE., WESTPORT, CT 06880 • PHONE: (203) 226-8184 • FAX: (203) 222-9863

Please check one: ☐ Change of Address; ☐ New Membership Application

I wish to join the Army Aviation Association of America (AAAA). My past or current duties affiliate me with U.S. Army Aviation and I wish to further the aims and purposes of the AAAA. I understand that my membership includes a subscription to the AAAA-endorsed magazine "Army Aviator", and that my membership will start on the subsequent first of the month. Contributions or gifts to AAAA are not deductible as charitable contributions for federal income tax purposes. Dues payments are deductible by members as ordinary and necessary business expenses.

Rank/OS Grade First Name MI Last Name Sex

Mailing Address

Mailing Address

City State Zip + 4 Code

Active Duty or Civilian Job Title and Unit or Firm Name

Area Code Office Phone Area Code Residence Phone

Nickname Spouse's Name

Date of Birth (Mo/Yr) Social Security No.

Consent: ☐ I do ☐ I do not consent to the publication or release of the above information to third parties.

Signature Date

AAAA ANNUAL DUES

Applicants other than those listed below:

() 1 yr, \$21; () 2 yrs, \$39; () 3 yrs, \$57

Full-Time Students; Enlisted; WOCs; GS-8 DACs & Below;

Wage Board 12 DACs & Below:

() 1 yr, \$14; () 2 yrs, \$25; () 3 yrs, \$36

Add \$5 per year if you have a foreign, non-APO address.

Add \$15 if your check is drawn on a foreign bank.

☐ Check enclosed payable to "AAAA" or charge to:

☐ AMEX ☐ Diners Club ☐ Mastercard ☐ Visa

Card No.

Am't \$ Exp. Date

Signature:

Date:

Check () Your Professional Qualification:

() Army Active Duty () US Defense Industry

() DA/OSD Civilian () Consultant

() Army Ret'd Guard () Publishing/Other Assn.

() Army Reserve () Foreign Military Service

() Army Retired () Foreign Defense Industry

() Other US Military Service () Other

Are you a former AAAA member? ☐ Yes ☐ No

If yes, what year did you join?

Chapter Affiliation Preferred

Print Name of Recipient

NEW NEW NEW NEW NEW AAAA AAAA AAAA AAAA NEW NEW NEW NEW AAAA AA AAAA NEW NEW NEW NEW AAAA AAAA AAAA AAAA NEW NEW NEW NEW NEW MEMBERS



AIR ASSAULT CHAPTER FORT CAMPBELL, KY

SGT John C. Cathoun
CW4 Jim Crisafulli
LTC John T. Moore
SGM Drew B. Williams, Ret.

ALOHA CHAPTER HONOLULU, HI

CPT Victor S. Lanuevo
CPT Stephen F. Logan

AMERICA'S FIRST COAST CHAPTER JACKSONVILLE, FL

CPT Aaron T. Barrier
SPC John E. Davis
SFC Joseph S. Hicks
SFC Paul J. Chneck

ARIZONA CHAPTER MESA, AZ

Mr. Terrence M. Horvath
Mr. Thomas J. Lyman
Mr. David L. Murray
Mr. Stephen P. Sullivan

ARMADILLO CHAPTER CONROE, TX

WO1 Billy C. Dove, Jr.

ARMY AVN CENTER CHAPTER FORT RUCKER, AL

Ms. Janet T. Adkins
1LT Gordon B.P. Ah Nee
CW4 Mark W. Ammon
WOC Kathryn T. Anderson
2LT Mike L. Anderson
WOC Danny W. Andrews
WOC Parrish D. Andrews
2LT Tom D. Augustin
WOC Thomas W. Bamford
2LT Anthony Barber
MAJ John E. Barron
WOC Gordon D. Behunin
CW3 Robert E. Bennett
Mr. James E. Bias
WOC Tony L. Blackburn
2LT Shannon B. Blake
2LT James M. Bledsoe
2LT Kyle L. Bodily
WOC Charles J. Bowie, Jr.
WOC Shaun M. Bowling
Dr. J. Russell Bowman
WOC James R. Bowman
2LT Patrick M. Boyer
2LT John A. Boyle, Jr.
1LT Glendon R. Brickley

CW3 Robert B. Bruce II
Ms. Victoria L. Bruce
CPT Matthew M. Buretz
Mr. Jerry W. Byrd
WOC Salvatore M. Carrabba
WOC Brenton J. Carter
PV2 Anthony J. Cassino
2LT Scott B. Caves
WOC Jody E. Charland
MAJ Patricia J. Chessher
WOC Darren F. Christman
2LT Darin L. Clark
PV2 Edward H. Clark IV
2LT Nancy J. Clarke
PVT David R. Cleary
WOC Ronald L. Corbin, Jr.
CW2 Paul S. Corcoran
WOC James N. Crawford
2LT Joseph F. Crocitto
CW2 Richard L. Culp
CW2 Randy E. Cupit
WOC Paul C. Daniel
1LT William J. Dawson
2LT Patrick B. Day
CW3 Paul K. Delo, Jr.
MAJ Darcelle M. Delrie
WOC Bruce A. Derksen
2LT Wilfredo Diaz-Freytes
LT Brian E. Dillon
WOC Dane J. Dougherty
2LT Richard R. Dowd
WOC Jeffrey P. Dumond
2LT Samuel O. East
2LT Douglas R. Echols
CW3 James H. Edgington
WOC Chris E. Elkins
2LT Bruce A. Elliott
WOC Frank A. Elliott
CW4 Kenneth E. Elliott
2LT Scott T. Ellison
2LT Ryan W. Emerson
2LT David R. Enriet
2LT Kristina A. Emmons
2LT Andrie M. Escoffery
Mr. Don Fabiani
1LT Derwood L. Fairley
CW3 Ronald V. Farrington
CW2 Philip D. Farris
2LT William W. Ferguson
WOC Mark R. Fischer
2LT John M. Fisher
2LT Randall T. Fisher
WOC David E. Fivecoat
Mr. David M. Fonda, Jr.
Mr. Bryant L. Fontenot
CW3 William P. Frame
WOC Greg J. Gardner
CPT Douglas A. Garner
WOC Michael D. Garrett
CPT Alan D. Gattin

2LT Alphonso Gentry
LTC Christopher P. Gershel
2LT Anthony A. Gilliam
SGT Jeffrey J. Girouard
LTC Paul P. Gleason
Ms. Cindy L. Godwin
1LT Kenneth H. Goode, Jr.
WOC Darrin P. Goodwin
CW4 Alton D. Gorum
CW4 Brent H. Gourley
CW3 Winslow S. Graham
2LT Thomas J. Greene
WOC Jeff J. Groke
CW2 Brian T. Grubelic
WOC Brian S. Gunderson
SGT Jimmy R. Guir
WOC Luke C. Habein
SFC Richard C. Hall
2LT Scott J. Halverson
2LT Mark R. Handren
WOC Hugh H. Hardcastle
CW2 Patrick A. Hardy
2LT Marc R. Harrelson
SFC William B. Harrelson
2LT Paul B. Hartigan
2LT Gregory B. Hartvigsen
CPT Curtis H. Hathcock
WOC Scott L. Hauge
WOC Dana J. Heimdahl
WOC Gary S. Heyne
1LT Philip A. Hogue
PFC Jerry D. Hollars
2LT Paul D. Howard
Mr. J. Dale Hubbard
WOC Raymond E. Huot
2LT Timothy J. Ingie
WOC Dane L. Irvin
MAJ Joseph S. Jablonski
WOC David W. Jahn
WOC Matthew A. Jamison
CPT Luke S. Janowski
WOC William C. Jennings
WOC Frank J. Jink, IV
MAJ Gerald L. Johnson, Ret.
WOC Matthew S. Johnson
WOC Stephen D. Johnson
WOC Lee M. Johnston
2LT Monroe C. Jones
PVT Daniel J. Kanwischer
WOC Edward M. Kaulman
WOC Floyd J. Keller
2LT Michael S. Kelly
2LT John R. Kenelick
WOC Samuel R. Kephart
WOC David C. Kern
2LT William T. Knight
WOC Stewart E. Kraft
Mr. Allan E. Krausz, Jr.
2LT Aleksander E. Kupcis
CW2 Kerry L. Lambert
CW2 Roy E. Lawson
2LT Jong-Hyuk Lee
2LT Darin C. Lewis
2LT Russell V. Lindley
2LT William E. Lindsey, Jr.
2LT Scott R. Linde
WOC Cosme F. Lopez
2LT Shawn R. Love
2LT Brad P. Luebbert
CPT Edward H. Lusk
2LT Robert E. Mann II
CPT William J. Marchbank
WOC Daniel S. Martin
MAJ Jason H. Martin
2LT Randy G. Masten
CPT Mark A. Maxim
WOC James T. McCormick
CPT Thomas J. McDaniel
2LT Timothy D. McDonald
2LT Timothy M. McGlone
WOC Geoffrey A. McLaughlin
PV2 Peter McLaughlin IV
WOC Paul F. McKey
PV2 Sean P. Merrell

2LT Robert E. Merrill
WOC David P. Merriman
CW4 David M. Meyer
WOC Lynda M. Mickelson
PV2 Shawn P. Miller
WOC Ian Frederick Mills
PVT James R. Minahan
WOC Frank A. Minella
CW2 Dan J. Mione
Mr. James B. Mitchell
WOC Herbert J. Mooney
PV2 Adam C. Moore
Mr. Michael L. Moran
CPT Peter Morrissey
WOC David R. Napier
WOC Scott E. Nicholson
1LT Michael P. Nolan
WOC William J. Northrup
WOC Michael J. Northup
WOC Cleve G. Paget
WOC Andrew M. Palmer
WOC James M. Papp
CW3 Richard J. Pappa
WOC Kenneth E. Patton
1LT Morgan W. Paul
CPT Ralph Perez
1LT Kyle D. Phillips
PVT Richard M. Poppie
PFC Ronald F. Powers
CW2(P) Michael G. Prata
Mr. Stephen M. Prielozny
2LT Alex F. Puclofowski
1LT Roger T. Pukali
SSG Willie Ramsey
2LT Matthew F. Rasmussen
MAJ Joseph M. Reames, Ret.
CW4 Ernest C. Record
2LT David B. Reinke
2LT Gregory L. Rhoden
CW3 Alfred L. Rice
WOC Darrell E. Richards
WOC Scott R. Rings
WOC Donald G. Rives
CPT Richard D. Rominger
Mr. Charles G. Rudolf
WOC Daniel J. Ryan
2LT Ryan B. Rydzalch
COL Geoffrey C. Ryder
WOC Donald E. Sarmon
CPT Robert A. Santo
WOC Giulio A.E. Santorio
2LT Michael W. Schenking
PV2 Brian D. Schober
2LT Bradley C. Shealy
Mr. Richard I. Shepard
CPT Richard E. Simpkins
SFC Robert D. Slagle, Ret.
CW3 Jonathan L. Slane
CW2 William H. Smith
CPT John A. Smyrski III
CW3 Joseph J. Stoggrass
2LT Greg A. Snyder
2LT Timothy A. Solie
1LT (P) Timothy B. Soles
WOC Christopher D. Sorensen
1LT Robert A. Sparno
MAJ Patrick E. Stewart, Ret.
CW3 Eddie L. Sullivan
2LT Bryan P. Svihla
WOC Donald M. Taylor
WOC Michael J. Terry, Jr.
WOC James S. Thomas
WOC Todd A. Thorpe
PV2 Kirk P. Tower
WOC William J. Traub
2LT Jennifer W. Trawinski
2LT Nathan C. Tripp
WOC Harriet G. Tyrrell
2LT Jeff C. Vogt
WOC Howard D. Walker
2LT Jack E. Wallace
CPT Genesis M. Walsh
CW4 Larry D. Walters
WOC Derwin E. Ward

WOC Daryl K. Waters
WOC Gary L. Wells
WOC Billy J. Weaver
WOC Fred K. Weigel
2LT Michael A. Whelan
CW4 Leon C. Whitehurst
WOC Dennis R. Wiebe
WOC Troy I. Williams
2LT Charles D. Wilson, Jr.
2LT Daniel H. Wilson
Mr. Robert M. Winovitch
1LT Donald M. Wix, Jr.
WOC Daniel D. Wolman
Mr. Burton Wright III
WOC Charles W. Wright
WOC Nathan C. Wriston
1LT Marc G. Yates

BLACK KNIGHTS CHAPTER WEST POINT, NY

CDT Joseph G. Ayers
CDT James C. Bourque
CDT Steven L. Bowman
CDT Tracy R. Cook
CDT Gregory N. Duvall
CDT Lewis E. Henry
2LT Jennifer L. Jenkins
CDT Jeffrey A. Jones
2LT Hugo F. Lentz
CDT James Nugent
CDT Shawn T. Prickett
2LT James Malcolm Robinson
CDT Daniel F. Soucek
CDT Courtney A. Wright
CDT Steven E. Yost

CEDAR RAPIDS CHAPTER CEDAR RAPIDS, IOWA

Mr. Mark M. Schmalz

CENTRAL FLORIDA ORLANDO, FL

Mr. Theodore L. Connolly
Mr. Kenneth R. McGinty
Mr. Glenn L. McNutt
Mr. Jerry W. Smith
CPT Thomas Stafford

CHECKPOINT CHARLIE CHAPTER BERLIN, GERMANY

PFC Brett A. Rhen

CHESAPEAKE BAY CHAPTER EDGEWOOD, MD

CPT John J. Baufista
Mr. John Bilas
Mr. John Blomquist
Mr. Tracy Ann Cullum
Mr. Thomas E. Dykes
Mr. Gordon McGregor
Mr. Randy F. Puzi
Mr. Bob Sassa
Mr. Jerry Scarborough
Ms. Rose O. Spurway
Ms. Mary J. Walsh
Ms. Cheryl Yablon

CITADEL CHAPTER CHARLESTON, SC

CDT Richard L. Knight, Jr.

COLONIAL VIRGINIA CHAPTER FORT EUSTIS, VA

Mr. Randy L. Buckner
Mr. Raymond T. Higgins
MSG Clinton E. Hughes
CW4 Wayne A. Melesky, Ret.

CONNECTICUT CHAPTER STRATFORD, CT

Mr. Keith M. Bentley
Mr. Ronald J. Bonito
Ms. Marie J. Caprinis
Mr. Paul J. Emiro
Mr. Peter J. Forelli
Mr. Matthew S. Forelli
Mr. Robert J. Gardner
Mr. Anthony J. Gentile
Mr. Paul T. Glover
Mr. William A. Healy
Mr. Richard J. Kent
Mr. Ronald B. Kwaiek
Mr. Donald Munroe
Mr. Joaquin Mut, III
Mr. Kurt P. Pahl
Mr. Lawrence R. Russo
Mr. Stephen D. Rutter
Mr. Vito W. Salvatore
Mr. Steven A. Schmidt
Mr. Roland D. Scott
Mr. Robert M. Snow
Mr. William G. Yarbrough, Jr.

CORPUS CHRISTI CHAPTER CORPUS CHRISTI, TX

Ms. Werner J. Eichelberger
Mr. Israel Garza
Ms. Christina M. Gutierrez
Ms. Theresa G. Parish
Mr. Isidoro Pineda

EDWIN A LINK MEMORIAL CHAPTER BINGHAMTON NY AREA

Mr. Charles E. Bertrand
Mr. Harry Dracon
Ms. Susan E. Irons
Mr. Vince Montalto
Mr. Charles F. Tubbert

FORT BRAGG CHAPTER FORT BRAGG, NC

SGT John E. Farroll

GREATER CHICAGO AREA CHAPTER CHICAGO, IL

MSG Michael J. Boyle
MAJ James C. Hassinger
SPC Shawn T. O'Neill
COL Hugh Reed

GREATER-ATLANTA CHAPTER ATLANTA, GA

Mr. Allen S. Becker
CDT Jimmy F. Blackmon
LTC Howard T. Comer
Ms. Diana Holt
CW4 Fred Kirkland
COL Ronald F. LeRoy

HANAU CHAPTER HANAU, GERMANY

CW2 Michael D. Armstead
2LT Curtis H. Chung
CPT Eugene F. Coyne
PFC Ronald Alex Dudick
WO1 Brent S. Fox
PFC David L. Lebbin
WO1 Steven M. Lee
PFC Mark H. Lynn
CW2 Ronald T. Newton
CPT Richard B. Pennycook
CW2 Stephen W. Rice
SGT Randall R. Robinson
SGT Henry L. Rodgers
CPT Bartlett F. Sauter
CPT Don P. Spencer
PFC Charles L. VerDuin

WO1 Sean M. Walker
WO1 David W. Wood

HIGH DESERT CHAPTER FORT IRWIN, CA

Mr. Don Goodrich
Mr. Ron Von Heeringan

JACK H. DIBRELL (ALAMO) FORT SAM HOUSTON, TX

CW4 Theodore Longobardi, Ret.

LEAVENWORTH CHAPTER FORT LEAVENWORTH, KS

Mr. Michael A. Norris

LINDENBACH CHAPTER ST. LOUIS, MO

Mr. Richard Adamick
MAJ Todd A. Bailey
Mr. Miles T. Barnett, Jr.
Mr. Paul L. Bartell
CW2 Cyprian C. Barthie
Mr. John A. Bartin
LTC James L. Bashon
Mr. Darrell R. Beare
Mr. George R. Bruch
Mr. Joseph T. Buckel
Mr. John A. Buncher
Ms. Diana G. Burke
Mr. C. Glen Buttery Jr.
Mr. Jerry L. Calentine
Mr. David W. Caney
Mr. James E. Collier
Mr. Gerald R. Coonan
Ms. Annette G. Cupan
Mr. John M. Dennison
CW4 Dick J. Deroush
Mr. Joseph H. DeWitt
Ms. Judy A. Eisinger
MAJ Bruce E. Gage
Mr. Charles Green
Mr. Vernon J. Greenwood
Ms. Rita M. Hassinger
Mr. James G. Hearne, Jr.
Mr. Gregory G. Hecht
Ms. Janet L. Hoffman
Mr. Gary N. Hoover
COL Leroy L. Horvath, Ret.
Mr. John G. Indelicate
Ms. Kathryn C. Johnson
Mr. Gary L. Johnston
Mr. Anthony D. Jones
MAJ Paul G. Jones
Ms. Joyce M. Kaslin
Ms. Lynn M. Kachline
Ms. Eileen C. Kurtz
Ms. Pamela C. Laughlin
MAJ Robert H. Lee
Ms. Rozanna L. Lentz
Mr. Gary E. Lunsford
Mr. Thomas M. Lynch
LTC Sidney E. Lyons, Jr., Ret.
Mr. Donald C. MacVittie
Dr. Gene R. Marner
Mr. Max C. McClellan
Mr. John A. McLaughlin
Mr. Dennis K. McLean
Mr. Kevin A. Mendell
Mr. Donen K. Miller
Mr. Michael S. Minicky
Mr. Norman T. Mueller
Mr. Thomas P. Murphy
Ms. Cathy E. Noel
Mr. Robert A. Packard
Ms. Sheila Pargo
Mr. Bruce S. Park
Mr. Wayne F. Peterlein, Sr.
Mr. Michael E. Port
LTC Norman D. Roppel
Ms. Nancy R. Robinson
Ms. Kathleen R. Rockway
Mr. David R. Rotolon

Mr. Daniel L. Sabo
Ms. Denise R. Sandoval
Mr. David G. Schwilke
Mr. Richard A. Skelton
2LT Michael P. Soracco
Ms. Julie B. Tesi
Ms. Sandra A. Tricamo
Mr. Mark L. Verstraten
Ms. Colleen M. Walsh
Mr. Daniel A. Warner
LTC William C. Weaver
Mr. Kenneth R. West
Mr. Virgil L. Wiley
Mr. Edward W. Wilmering
Mr. Edward P. Wilkowski
Ms. Louise L. Ystuseta

MAINZ CHAPTER MAINZ, GERMANY

WO1 Michael S. Harris
CW3 Lawrence C. Summers

MONMOUTH CHAPTER FORT MONMOUTH, NJ

Ms. Jimmie S. Acker
Mr. James A. Brooks
Mr. James S. Cooley
Mr. Frank S. Dean, Jr.
Mr. Joseph R. Doring
Mr. Robert J. Lecours
Mr. William M. Leonard
Mr. Charles Y. Nemoto
Mr. John J. Newton
Mr. Robert A. Peterson
Mr. Norman Rosenthal
Mr. Scott W. Snyder
Mr. Paul J. West

MORNING CALM CHAPTER SEOUL, KOREA

Prof. Sung Chul Chae
Mr. Su Hi Ha
Prof. Jum Hyou Hyun
Mr. Jung Kil Jung
Mr. So Young Jung
Mr. You Chan Jung
Prof. Bong Ho Paik
Prof. Jung Sook Shin
SSG Brian E. Slater
Mrs. Su Na Yoon
Prof. Sung Ha Yum

NORTH COUNTRY CHAPTER FORT DRUM, NY

CPT G. Bryan Cox

NORTH STAR CHAPTER ST. PAUL, MN

Ms. Sarah Black
Mr. Jerry L. Chapman
1SG Donald A. Dorrell
Mr. Barry A. Fisher
Mr. Tom Klein
Mr. Bill Kuehn
Mr. Daniel J. Murphy
Mr. Brian F. Sullivan

NORTH TEXAS CHAPTER DALLAS/FORT WORTH

Mr. Adrian Abbott
Mr. Nelson H. Anderson
LTC Robert L. Baird, Ret.
Mr. Christopher J. Bernish
Mr. A. Doyle Boydston, Ret.
Mr. Martin A. Boyle, Jr.
Mr. Ronald B. Branscome
Mr. Bill G. Buck
Mr. Kenneth W. Burgess
Mr. Connie L. Caffey
LTC Walton H. Capps, Ret.
Mr. James L. Cox, CPL
Mr. Thomas J. Daley
Mr. Carl W. Davis

**NVG
SIMULATION.**

**SEE ALL
THAT YOU
CAN SEE.**



EVANS & SUTHERLAND

Your mission: To fly a high-risk, multi-ship operation under cover of darkness and foul weather.

Your training objective: Improve mission success, safety and proficiency using night vision goggles (NVG).

Your solution: Evans & Sutherland's NVG simulation training that lets you see all that you can see.

With today's training constraints, simulation is more important than ever. And, with Evans & Sutherland's advanced visual systems, it's also more realistic than ever.

Unlike others, we design complete visual systems that optimize display, image generator and terrain database

capabilities for tactical NVG training. Our databases create real world images using satellite and photographic sources, while providing other sensor simulation such as FLIR, radar and LLTV.

Whether you fly utility, SOF, cargo or attack, our simulation products help prepare you for the mission and such hazards as power lines over unfamiliar terrain, deck operations, gunnery scenarios and the disorienting shadows of a low moon on a mountainous horizon.

For more information on how to see all that you can see, contact: Evans & Sutherland, Simulation Division, 600 Komas Drive, Salt Lake City, Utah 84108. Tel: 801-582-5847, Ext. 6521. Fax: 801-582-5848.

Mr. Levi P. De Friesse, Jr.
Mr. David L. Dentz
Mr. Loren E. Doughty
Mr. Andrew R. Duncan
Ms. P. R. George
Mr. Scott E. George, Jr.
Mr. Eric W. Gibson
Mr. Thomas G. Goss
Mr. Wayne Hanks
Mr. Phil Henesbury
Mr. Clifford G. Huleman
Mr. John P. Hyden
Mr. Ron L. Jensen
Mr. Leonard P. Koch
Ms. Betty L. Koerner
MAJ Charles E. Koonce, Ret.
Mr. Edward A. Krug
Mr. Keener B. Marsh, Jr.
LTC Wiley D. May
Mr. Jim Maya
Mr. Loyd D. McKnight, Jr.
Mr. Cary A. Moore
Mr. Don L. Morris
Mr. Chesley Pieroway
Mr. Paul R. Powers
Mr. Brian E. Purcell
Ms. Brenda Reuland
Mr. Lawrence A. Reynolds
Mr. Donald M. Rhodes
CPT Richard F. Sands, Ret.
Mr. Steven C. Schultz
Mr. Fred D. Scofield
Mr. John E. Shields
Mr. Don L. Taylor
Mr. Tom L. Taylor
CW4 Robert M. White
Mr. Gary B. Young

OLD IRONSIDES CHAPTER ANSBACH, GERMANY

SPC Scott E. Channon
WO1 Keith M. Hurley

PHANTOM CORPS CHAPTER FORT HOOD, TX

2LT Stuart M. Belton
CW4 Keith W. Brown
Mr. Richard W. Campbell
WO James T. Cooney
Mr. Richard K. Cornelius
2LT Royce E. Curtin
WO1 Kenneth J. Doherty
CPT Laura A. Elliott
SGT Alfred H. Gardner
CW3 John M. Gorman
Mr. John R. Outley
Mr. Jerry D. Hare
Mr. Gerald Iverson
WO1 Martin E. Märlin
CW2 Peter B. Montrono
Mr. James Mark Oliphant
Ms. Della Ray
Mr. Jerry Rigby
Mr. Terry B. Robinson
CW2 Mark B. Stewart
CPT Katherine R. Williams

PIKES PEAK CHAPTER FORT CARSON, CO

CPT Peter D. Holm
CW2 Brenda L. Hughes
CW2 Robert E. Hughes
SFC Mario A. Kroner
SFC Tom M. Miglozzi
CW2 Douglas D. Mohr
CW2 Dana G. Rosendal

RHINE VALLEY CHAPTER MANNHEIM, GERMANY

CPT Lawrence J. Bell
SPC Albert C.G. Bowman
SGT Gary M. Carnes
SPC Johnny E. Cope, Jr.

CPT Kenneth N. Golya
SGT Brian M. Hapner
SPC Rodney W. Harris
LT(CP) Thomas R. Hawks
2LT John E. Hofer
1LT Curtis W. Hoffman
Mr. Laurence G. Hoffman
SGT Glenn R. Miller
SSG Dan E. Mooney
PFC Peter F. Operacz
PFC Darin S. Palermo
SPC Charles L. Poeschel
SSG Renate Richters
PFC Christopher K. Schneider
CPT Scott T. Waggoner

SAN JACINTO CHAPTER HOUSTON, TX

MAJ(P) Kenneth J. Bray
COL Bert M. Cottrell
SGT John A. Easley
SPC Kevin P. Egan
SGT William S. Egan
2LT Walter G. McGough
1LT Guy C. Schultz
CW3 Neil E. Whigham

SOUTHERN CALIFORNIA CHAPTER LOS ANGELES, CA

Mr. Paul A. Agnew
CPT John G. Benkert
CW3 James A. Carlson
CW3 Swen P. Ekstrom, Jr.
Mr. William L. Godsey
Mr. Dale R. Hollis
Mr. John D. Mash
Mr. Richard T. McGrath
Mr. Fred E. Mollicone
Mr. Robert S. Nager
CW4 Robert L. Payne
Mr. John Pettersen
Mr. Bud Pope
Mr. Alvin A. Salge
Mr. Paul R. Siconolfi
Mr. Robert L. Silverstein
Mr. Calhoun W. Sumrall
Mr. Rick M. Westberg
Mr. Nick Willich
Mr. James P. Woolnough

TALON CHAPTER ILLESHEIM, GERMANY

CW4 James D. Crow
CW3 Nathaniel W. Williamson

TENNESSEE VALLEY CHAPTER HUNTSVILLE, AL

Mr. James P. Cooper
Mr. Harry F. Ennis
Ms. Kim Langlois
Mr. Thomas McLaughlin
Mr. Robert L. Moore

THUNDERHORSE CHAPTER FULDA, GERMANY

2LT Thomas E. Wiesner

WASHINGTON DC CHAPTER WASHINGTON, DC

Mr. Don Anderson
COL Salem Benabdallah
Mr. Joseph W. Brehaut
CW2 Lawrence A. Broyles
BG Roger C. Bulman
Mr. Brian G. Cooper
LTC Stephen S. Davidson
Mr. William Douglas
MSG Carl Ferabee, Jr.
Mr. Alvin Frager
Mr. Steve Gibertson
Mr. Grant S. Green

MG John R. Greenway, Ret.
LT Col. Sergey G. Gusev
1SG Robert N. Hall
Mr. John T. Hopkins
SPC Paul Jones
Ms. Terri L. Kelly
MAJ Deborah K. Knickerbocker
Mr. John L. Leget
Mr. William H. Loudon
SFC Sandra M. McMurray
Mr. George Ott
Mr. John B. Pratt II
COL Yamandu A. Sequeira
Mr. Brian T. Sheehan
Mr. Forrest Siburt
Mr. Robert Sue
Mr. James W. Thomason
Mr. John G. Wilcox
SPC John D. Workman

WINGS OF THE DEVIL CHAPTER FORT POLK, LA

2LT James J. Calleraime
CW2 John L. Eskridge
SPC Steven S. Iles
WO1 Kennedy E. Taylor
2LT Isaiah Wilson, III

WRIGHT BROTHERS CHAPTER COLUMBUS, OHIO

Mr. Orrie G. Hiett, Jr.

MEMBERS WITHOUT CHAPTER AFFILIATION

Mr. Robert Adams
Mr. Rick Armstrong
Mr. David M. Ashley
1LT Daniel J. Austin
2LT Timothy A. Basham
Mr. Sam Bello
Mr. David W. Brant
CDT Evan J. Brown
Mr. Lynn Brown
Mr. Cesare E. Carrara
Mr. Charles R. Chapman
SFC Robert P. Combs
Mr. Dick Daniels
Mr. Valentine L. Denninger
Mr. Joseph Deo
Mr. Aaron Doreen
Mr. Mike Dougal
Mr. Paul W. Eilers
WOC Jerome Enskin
Mr. Matthew B. Forelli
Mr. Armand L. Fortin
FLT LT Mark A. Gaspar
Mr. Stephen A. Gerard
Mr. Francis E. Gerber
CDT Marshall I. Geyer
Mr. William A. Gironecchi
PFC Terence N. Gordon
COL Tommy F. Grier, Jr.
Mr. Walter Gubler
Mr. Ron Haley
1LT Angie F. Hargrove
CPT Darrell M. Hargrove
Mr. Henry L. Harned
Mr. Clifton K. Hilton
Mr. Tom Holzel
LTC Harold S. Hughes, Ret.
SGT Allen D. Irwin
CW2 Don W. Jacobson
Mr. Hiroshi Kawamura
MAJ Timothy C. Kelly
CPT Gregory L. King
Mr. Don Lea
MAJ Randal H. Levins
LTC Thomas P. Luczynski
CW2 James L. Lutz
Mr. Christopher J. Matier
MAJ Allen L. Matthews, Jr.

Mr. James S. Maffmore
CDT Mark W. Maynard
Ms. Michelle McDermott
Mr. Steven T. McLarty
Mr. Walt C. Mellon
CW4 Gregory L. Meyer
Mr. Irving Monclova
1LT Stephen E. Mueller
Mr. Kit Mura-Smith
Mr. Anthony J. Nangi
Mr. Lawrence L. Norman
Mr. Walter Odermatt
Mr. Richard A. O'Neill
Mr. James E. Owen
SPC Darryl N. Parker, Jr.
CPT Brian C. Peris
CPT Ronald E. Pettit
1LT Andreas Pfeifer
Mr. Kenneth Plate
Mr. Christophe Poret
MAJ Kenneth Potshier
SPC Robert J. Pugliese
CSM Neil D. Quantock
Mr. Orval Keith Reader
Mr. John N. Reigle
Mr. Terry Ruler
Mr. Paul T. Scanlan
CW2 Barry R. Schafer
Mr. Thomas A. Shambau
Mr. Ernest R. Simon
Mr. Robert P. Skulsky
Mr. Rex Smith
Mr. Ashook Sood
Mr. Stephen J. Spaulding
Mr. David P. Spier
CW3 Randall C. Stephens
Mr. Rick Stevens
MAJ Paul M. Stites
CW3 Pete H. Stormer
CW2 Timmy L. Tompkins
Mr. Jeff Tonnesmacher
Mr. Stephen B. Towne
Mr. Kenneth J. Trelewicz
Ms. Kay Turner
Mr. Jesse Turon
1SG Raymond B. Van Epps
LTC Dolman W. Vineyard, Ret.
Mr. Greg E. Wainwright
COL Donald C. Waugh
CPT Brian P. West
Mr. Thomas Whisen
CPT F. Clayton Wilkins, Jr.
CW3 Richard G. Willis
Mr. Greg Wilson
CW2 Stephen C. Woodward
Mr. Michael J. Wraps
Mr. Arthur R. Ybarra
Mr. Werner Zbinden

2 for 1 Offer

AAAA now offers a two
year membership for
the price of one for all
first-time new members

Join the
Professionals!
Join AAAA

See membership
application on page 86



Take them by storm.

Now when you want to take something by storm, you can.

With the Boeing MH-47E.

Because it'll fly under almost any conditions.

In the driving rain. In the screaming wind. In the highest humidity. In the darkest night.

Designed specifically for deep penetration, clandestine

missions, the MH-47E can carry Special Forces A-Teams or SEAL Platoons anywhere. And bring them back safely.

The MH-47E flies nap-of-the-earth. In nearly zero-light. Up to 600 nautical miles without refueling.

It can be either land- or ship-based. And it features advanced communication and navigation

equipment, forward-looking infrared, multi-mode terrain avoidance/terrain following radar, and air-to-air refueling.

The Boeing MH-47E. It adds a whole new meaning to the concept of riding out a storm.

To learn more about the MH-47E, call Boeing Helicopters at (215) 591-2202.

BOEING

New AAAA Chapter Officers

Central Florida:

LTC Thomas S. Allen (VP, Public Affairs).

Lindbergh:

COL Garrett C. Starr (Sr VP); Susan E. Barnes (VP, Memb); CPT Charles F. Stroup, Jr. (VP, Mil. Aff); CSM Richard P. Mullen (VP, Enlist. Aff); Joyce M. Kaelin (VP, Civ. Aff); COL Larry D. Holcomb (VP, Schol); Robert C. Lorenz (VP, Res. Aff); Michael F. McClellan (Flyer Editor).

San Jacinto:

CPT Alan J. Bartos (Sr VP); CW2 James M. Sandberg (VP, Memb. Enroll); MAJ Robert E. Payne (VP, Prog).

Southern California:

CPT William J. Ward (VP, USAR Affairs).

Aviation Soldier of the Month

SSG Thomas R. Miller
Indiantown Gap Chapter
April 1991

Aces

The following members have been declared Aces in recognition of their signing up five new members each.

Ms. Nancy A. Alexander
CW4 J.D. Badgley
WOC Michael J. Bess
CPT Thomas R. Brew, Jr.
CW2 James R. Burhans
CPT Ricky L. Burrell
CPT Martin T. Carpenter
CPT Perry D. Collette
WOC James D. Fox
Ms. Janet J. Garmon
CW3 Roger K. Garner
CW3 Ramiro Guerrero, Jr.
Mr. R.A. Guzman
Ms. Deborah L. Horne



Above: COL R. Potter Campbell, Ret., former Commander of the 12th Aviation Group, keeps his skills sharp at the neighborhood video arcade. COL Campbell, an AAAA member since 1963, has his daughter Bea Kempster to thank for sending in this shot. Send in your favorite AAAA member's photo with complete identification of others in the shot and a caption to the AAAA National Office. They will be published on a space available basis.

COL Larry D. Holcomb (left), Assistant Program Executive for Integrated Logistics Support, accepts a Blue Box replica from Edwin A. Link Memorial Chapter President Peter F. Bauman (right) after speaking at the chapter's 20 March 1991 meeting in Binghamton, NY.



NOMINATIONS OPEN

Army Aviation Trainer of the Year

Background

Sponsored by the CAE-Link Corporation, Link Flight Simulation Division, this AAAA National Award will be presented "to the trainer who has made an outstanding individual contribution to Army Aviation during the awards period encompassing CY 91."

Eligibility

A candidate for this AAAA National Award may be a military or civilian nominee and must be actively involved in Army Aviation training. Membership in the AAAA is not a requirement for consideration. The individual contribution of the nominee should have been initiated and completed during the awards period consisting of calendar year 1991.

Documentation

The official nomination form should be used and is attainable from the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000; Telephone (203) 226-8184.

Suspense Date

The nomination(s) should be mailed so as to arrive at the AAAA National Office not later than **31 October 1991**.

Presentation

The AAAA's "Aviation Trainer of the Year Award" will be presented at an AAAA Awards Banquet sponsored by the Army Aviation Center Chapter at the Ft. Rucker Officers' Club on Thursday, 5 December 1991.

Army Aviation Air/Sea Rescue Award

Background

Sponsored by Lucas Aerospace, this AAAA National Award will be presented "to the crew or crew member who have performed a rescue using a personnel rescue hoist that saved the life or eased the suffering of an individual or individuals during the awards period encompassing October 1, 1990 through September 30, 1991."

Eligibility

A candidate must be in the U.S. Army, Active or Reserve Components and must have had an active role in an air rescue effort using a personnel rescue hoist. Membership in the AAAA is not a requirement for consideration. The contribution of the nominee should have been initiated and completed during the awards period encompassing October 1, 1990 through September 30, 1991.

Documentation

The official nomination form should be used and is attainable from the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000; Telephone (203) 226-8184.

Suspense Date

The nomination(s) should be mailed so as to arrive at the AAAA National Office not later than **31 October 1991**.

Presentation

The AAAA's "Army Aviation Air/Sea Rescue Award" will be presented at an AAAA Awards Banquet sponsored by the Army Aviation Center Chapter on 5 December 1991.

Aces

(cont.)

CPT David D. Krieger
WOC Jeffrey W. Lesh
COL(P) Thomas J. Konitzer
CPT Brian W. Magerkurth
CW2 Michael R. Meder
CW4 Windell R. Mock
WOC Glenn A. Moya
CDT Patrick C. O'Brien
MAJ Gregory L. Pitt
Mr. Billy F. Quintanilla
WOC Robert A. Schluster
SFC Richard P. Sims
CPT Dempsey D. Solomon
WOC Richard V. Taylor, III
WOC Keith A. Trepanier
2LT Thomas S. Turman
CW2 Berend J. Voute
Ms. Susan J. Werkmeister
CW2 Gregory A. Wood

New

Industry Members

ACME-URDC, Inc
West Jordan, UT
Airspace Management Grp
Salt Lake City, UT
Airtime Publishing, Inc.
Westport, CT
Aerosafe International, Inc.
Colorado Springs, CO
Alcoa Composites
Monrovia, CA
American Fuel Cell
& Coated Fabrics Co.
Magnolia, AR
Armed Forces Insurance
Fort Leavenworth, KS
AT&T Federal Systems
Greensboro, NC
Chandler Evans Control
Systems Div., Colt Indus.
West Hartford, CT
Chrysler Technologies
Airborne Systems
Waco, TX
Circon Acmi
Stamford, CT
Clamshell Buildings, Inc.
Santa Barbara, CA

A
A
A
A
N
E
W
S

New**Industry Members****Control Products Corp.**

Grand Prairie, TX

Dayton T. Brown, Inc.

Bohemia, NY

Deutsch Company-ECO

St. Charles, MO

Dorne & Margolin, Inc.

Bohemia, NY

Fairchild Defense

Germantown, MD

Fokker Aircraft USA, Inc.

Alexandria, VA

Gulfstream Aerospace Corp.

Savannah, GA

Hilton Systems, Inc.

Bridgeton, MO

Horizons Technology, Inc.

San Diego, CA

Kama-Tech Corporation

Chula Vista, CA

Lambda Novatronics, Inc.

Pompano Beach, CA

Lear Siegler Management

Services Corp.

Oklahoma City, OK

Loral Corporation

Newport Beach, CA

Modern Technologies Corp.

O'Fallon, IL

National Technical Systems

Englewood, CO

The Nordam Group

Tulsa, OK

Pilatus Aircraft, Ltd.

Arlington, VA

Precision Gear, Inc.

Corona, NY

Raytheon Company

Quincy, MA

Recovery Engineering

Minneapolis, MN

Spar Aerospace Ltd.

Toronto, Ontario, Canada

Trimble Navigation

Sunnyvale, CA

Vitronics, Inc.

Eatontown, NJ

W.L. Gore & Associates, Inc.

Elkton, MD

AAAA NEB MEETING MINUTES

The Spring AAAA National Executive Board meeting was held during the recent AAAA Annual Convention. Significant actions included:

MEMBERSHIP: AAAA SUPPORT FOR SOLDIERS IN OPERATION DESERT SHIELD/STORM. BG Hesson advised that 11,000 DESERT STORM hats were sent to the troops and expressed appreciation to Bell Helicopter Textron, Boeing Helicopters, McDonnell Douglas Helicopter Company, and Sikorsky Aircraft Division, UTC, for their contributions of \$2,000 each in support of this effort.

MEMBERSHIP: CHAMPUS SUPPLEMENT. BG Hesson referred the NEB to the Agenda and advised the NEB that Membership Services, Inc., administrator of the AAAA plan, agreed to increase publicity of the program to include quarterly direct mail to the AAAA membership and periodic advertising in ARMY AVIATION MAGAZINE.

POLICY & PLANS: COMMEMORATIVE STAMP FOR ARMY AVIATION. COL Berdoux advised the NEB that the U.S. Postal Service Advisory Committee reviewed the numerous letters and petitions recommending the Army Aviation 50th Anniversary Commemorative Stamp. The Advisory Committee "declined to approve it" as either a separate stamp or as part of the World War II Series of Commemorative Issues. COL Berdoux recommended that the AAAA pursue approval of a pictorial cancellation for 6 June 1992 to be used at either the U.S. Postal Office at Fort Rucker or Daleville, AL. COL Berdoux emphasized that it was incumbent upon the AAAA to develop, select, and approve the artwork that the AAAA planned to use. The motion was approved.

SCHOLARSHIP: STATUS REPORT. COL Descoteau expressed the appreciation of the Foundation to the AAAA for assuming the expenses of the Foundation so that all donations made to the AAAA Scholarship Foundation would be used for grants and loans. COL Descoteau informed the NEB that the assets of the AAAA Scholarship Foundation at December 31, 1990 totalled \$966,000 and that the Foundation expected to reach its goal of \$1,000,000 by the end of 1991. COL Descoteau advised the NEB that the Foundation intended to award \$100,000 in scholarship grants and loans in 1991.

POLICY & PLANS: RECOGNITION OF SECRETARY OF THE ARMY AND CHIEF OF STAFF. A motion was approved by the NEB to recognize the current Secretary of the Army and the Chief of Staff of the Army as National Honorary Members of the AAAA with such recognition extended for the life of the recipient or until such time that he chooses to resign such membership.

CONVENTION: STATUS REPORT. MG Drenz, new AAAA President, advised the NEB that he had appointed MG Carl H. McNair, Jr., Ret., to serve as Chairman of the Ad Hoc Committee to review AAAA Banquet Guest Invitation Policies in light of decreasing AAAA Banquet Industry Table Sales. MG McNair will report back at the October NEB meeting.

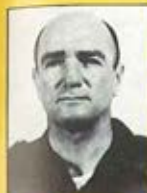
ADMINISTRATIVE ANNOUNCEMENTS

MG Putnam announced to the NEB that plans were underway for the Seventh World Helicopter Championships in England, 1992.

Mr. Cribbins called for a vote of appreciation and thanks to BG Hesson for his leadership as President of the AAAA for the past two years.

NEW SCHOLARSHIP BOARD

During the recent AAAA Annual Convention, a new AAAA Scholarship Foundation Inc. Board of Governors was installed. MG George W. Putnam, Jr., Ret. is now the President and replaces COL Rudolph D. Descoteau, Ret. Other officers include: Dorothy Kesten, Vice President; COL Robert L. Parnell, Jr., USMC, Ret., Secretary; COL John W. Marr, Ret., Treasurer; and Terrence M. Coalley, Executive Director.



COL Nelson A. Mahone, Jr., Ret.

AAAA Charter member and Hall of Fame Member COL Nelson "Mike" A. Mahone Jr., 69, of Panama City Beach, FL, died Saturday, 16 March at his home after an extended illness. He was born in Free Union, VA, on 6 August 1921, and retired in 1974. COL Mahone's distinguished military career began

with his graduation from VMI in 1943, as a second lieutenant of artillery. He attended the U.S. Army Aviation Flight Program, where he was rated to fly both fixed- and rotary-wing aircraft. He was one of the Army's first multi-engine, instrument-rated aviators (1964) and one of the earliest Master Army Aviators (1961). He was PM for the development of the Light Observation Helicopter (LOH) program, and commanded the 2nd Bn, 20th Aerial Artillery, the first unit of its kind. His decorations include the Silver Star, four Legions of Merit, two DFCs, the Bronze Star Medal for Valor, 19 Air Medals, two Army Commendation Medals, and various foreign decorations. Among his survivors are his wife, Maxine E. Mahone, of Panama City Beach, FL; daughter, Sharon M. Meyers, of Stuttgart, Germany; and son, Nelson A. Mahone, III, of Evansville, IN. Memorial contributions may be made to the Army Aviation Museum Foundation, Inc., Ft. Rucker, AL. COL Mahone's name will be added to a bronze memorial plaque and placed in the Foundation's Recognition Center.

AAAA Calendar

A listing of recent AAAA Chapter events and upcoming National dates.

June 1991

- ✓ **June 7.** Phantom Corps Chapter meeting, at the Ft. Hood Officer's Club Ballroom. Speaker: COL Sylvester C. Berdux, Ret., Senior Manager., Boeing Helicopters.
- ✓ **June 7.** Corpus Christi Chapter's 2nd Annual Army Birthday Ball. Speaker: MG Marc A. Cisneros. At the Bayfront Plaza & Convention Center.
- ✓ **June 8.** Chesapeake Bay AAAA Family Picnic at the National Guard Operating Activity Center.
- ✓ **June 11.** Washington D.C. Chapter meeting, U-21 Hangar, Bldg 1331, Davison AAF. Speaker: COL Robert N. Seigle.
- ✓ **June 12.** Armadillo Chapter meeting, Ft. Chaffee, AR. Speaker: LTC(P) Robert Poland.

- ✓ **June 13.** Rhine Valley Chapter meeting, Mannheim Officer's Club Ballroom. Speaker: Dr. Frank Vander Wert, MBB.

- ✓ **June 20.** Aloha Chapter meeting. Schofield Barracks O'Club Lava Room.

September, 1991

- ✓ **Sept. 17.** The North Texas Chapter of AAAA hosts the 4th Annual NTC-AAAA Defense Systems Management College (DSMC) Seminar at the Dallas/Ft. Worth Airport Hilton Hotel. Contact: LeRoy L. Worm, (214) 480-1875.

October, 1991

- ✓ **Oct. 14.** AAAA National Executive Board Meeting, Sheraton Washington Hotel, Washington D.C.

New Sustaining Members

- A&J Construction Inc.**
Corpus Christi, TX
- Daleville Inn & Colony Inn**
Daleville, AL
- Dothan Area Convention & Visitor's Bureau**
Dothan, AL
- Gentex Corporation**
Carbondale, PA
- Graphic Concepts**
Harker Heights, TX

Honorary Members

The following persons have been selected by their Chapters as Honorary Members. Each will receive a complimentary one year membership, citation in these pages, and a "Certificate of Honorary Membership."

- MG William F. Streeter**
Washington D.C. Chapter
- Herrn Brigadegeneral Istvan Csoboth**
Bonn Area Chapter
- Werner Noltemeyer**
Hubschrauberzentrum
Bonn Area Chapter

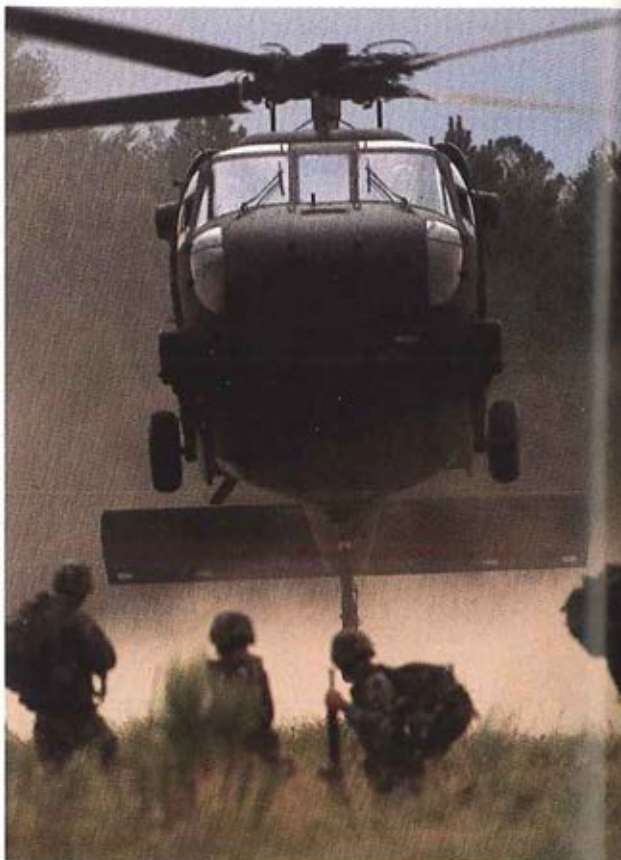
CHAMPUS Supplement

CommandCare is available to AAAA members. The CHAMPUS supplement offers 100% coverage to retired military personnel and their dependents, as well as to the dependents of active duty personnel. It is administered by Membership Services, Inc., 1304 Vincent Place, McLean, VA 22101. Call Membership Services toll free 1-800-234-1304 (or in the Washington D.C. metro area at 821-0555) and ask for CommandCare information.

Readiness. Reliability. Results.

At GE Aircraft Engines, we are proud to be allied with America's defense forces worldwide in programs such as the versatile Black Hawk helicopter:

Being there when it counts makes all the difference.



GE Aircraft Engines
Keeping the Promise