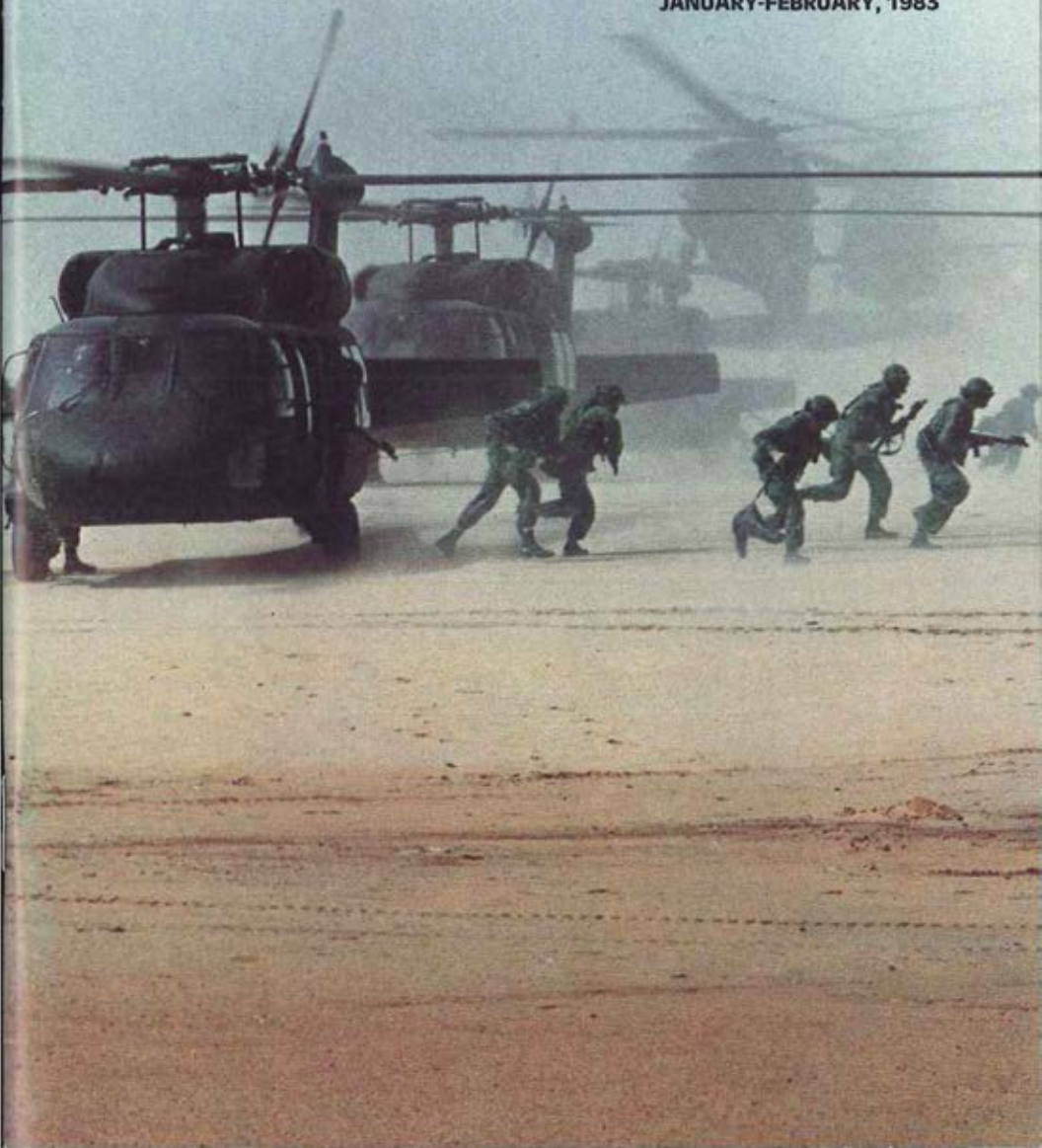
SPECIAL FEATURE — USA TSARCOM TODAY

1983 AAAA NATIONAL CONVENTION DETAILS

Army Aviation

JANUARY-FEBRUARY, 1983



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IE IN THE WORLD.

AND YOU GOT IT.

Key Operational Measures	Army Asked For	T700 Status
Fuel Consumption	30% Better	30% Better
Reduced Spare Parts/Engines	Less Than 50%	15%
Reduced Accessory Removal/ Replacement Times	4 To 25 Minutes	2 To 16 Minutes
Mean Time Between Maintenance	Over 220 Hours	340 Hours
Mean Time Between Removals, Engine-Caused	1220 Hours	4500 Hours
Combustor removals	–	None
Field Maintenance Man Hours Per Engine Flight Hour	–	<0.01
Delivery	On-time	3 Months Ahead of Contract Schedule

Based on 1/4-million engine flight hours to date

JUST THINK WHAT WE'LL DO NEXT.

GENERAL ELECTRIC

SPECIAL FEATURE—USA TSARCOM TODAY, PAGE 17
CY 1982 AAAA NAT'L AWARD WINNERS, PAGE 7

Army Aviation

JANUARY-FEBRUARY, 1983

VOL. 32 — NO. 1 & 2
ARMY AVIATION
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Second Class Postage paid at Westport, Conn.

The Chinook D... rolling into the future.

The new generation Chinook helicopter is ready to serve the Army for another generation. Initial production CH-47Ds have been delivered on time, on cost, and are exceeding all technical requirements. Army plans are to modernize 436 Chinooks to new D-model specifications.

To keep 'em coming, new production machinery, modernized facilities and a skilled production force are now ready to meet the Army's planned production of five of these workhorse CH-47D helicopters every month.

From the fuselage out, it's a new aircraft, with new engines and transmissions, fiberglass rotor blades, and new state-of-the-art electrical, hydraulic, and avionic systems. The new CH-47D will give field commanders increased capacity, increased performance, and increased reliability to handle fast-response needs better than ever.

The new Ds are rolling to help keep the Army ready... ready to meet the challenges of today, and of the future. And working in partnership with the Army, Boeing Vertol will help keep it that way.

BOEING HELICOPTERS

The Leading Edge

Philadelphia, PA 19142

Bell's Modernized AH-1S:
Suited for the best-suited.

■ When a man who wears one of these patches puts himself in a Bell AH-1S Cobra, he knows there's not a better combat-proven attack helicopter.

It's sleek: Easy to handle, agile enough for terrain flight. It's tough: Ballistic tolerance of components plus survivability features protect the aircraft and crew from numerous threat systems. It's versatile: TOW missile, 20mm cannon and 2.75 in. rockets plus sophisticated fire control increase the Cobra's fire power ability. It's the best-suited attack helicopter to engage targets on the modern, armor-intensive battlefield.

The Modernized AH-1S Cobra. Evolved to meet the changing nature of the threat. And Bell believes in providing the best for those who demand it.

For more information, write Ray Swindell, Director, U.S. Government Marketing, Bell Helicopter Textron Inc., Dept. 680, Box 482, Ft. Worth, Texas 76101.

AAAA National Award Winners for Calendar Year 1982

(Presentations to be made in Atlanta, Ga., April 9, 1983)

"Outstanding Aviation Unit Award"
(Sponsored by Hughes Helicopters, Inc.)
70th Transportation Battalion (AVIM), APO NY

"Army Aviator of the Year Award"
(Sponsored by the Sikorsky Aircraft Division of UTC)
Second Lieutenant Richard G. Hatch, Ft. Eustis, Va.

"Aviation Soldier of the Year Award"
(Sponsored by Bell Helicopter Textron)
SFC Ronald L. Boese, APO NY

"DAC of the Year Award"
(Sponsored by the Boeing Vertol Company)
Frank Soliz, Corpus Christi, Texas

"James H. McClellan Aviation Safety Award"
(Sponsored by the McClellan Foundation)
This Award will not be presented in 1983.

"Outstanding Reserve Component Aviation Unit Award"
(Sponsored by the Avco Lycoming Division)
138th Aviation Company (USAR), Orlando, Fla.

"The Robert M. Leich Special Award"
(Sponsored by the Army Aviation Association)
U.S. Army Aviation Engineering Flight Activity (USAAEFA), Edwards Air Force Base, Calif.

The simple virtues of today's most

Exceptional fuel efficiency. Superior resistance to foreign object damage. Low acquisition and ownership costs.

These are the virtues of simplicity. Qualities which make Garrett's new 5,000 shp Modern Technology Engine the leading candidate for the Department of Defense's MTDE program.

In place of multiple axial compressor stages, Garrett offers a single-stage mixed flow design. A unique concept that combines the high-efficiency of multi-stage axial compressors with the high resistance to FOD and distortion tolerance of centrifugal types. All without extensive variable geometry.

Already proven in three years of development testing, Garrett's mixed flow compressor results in a significantly shorter, simpler engine. For greater installation flexibility and improved maintainability in a variety of applications. With increased reliability from fewer parts.

Yet, for all its simplicity, our Model 1080 Modern Technology Engine will provide up to 30% better fuel efficiency than the

GARRETT

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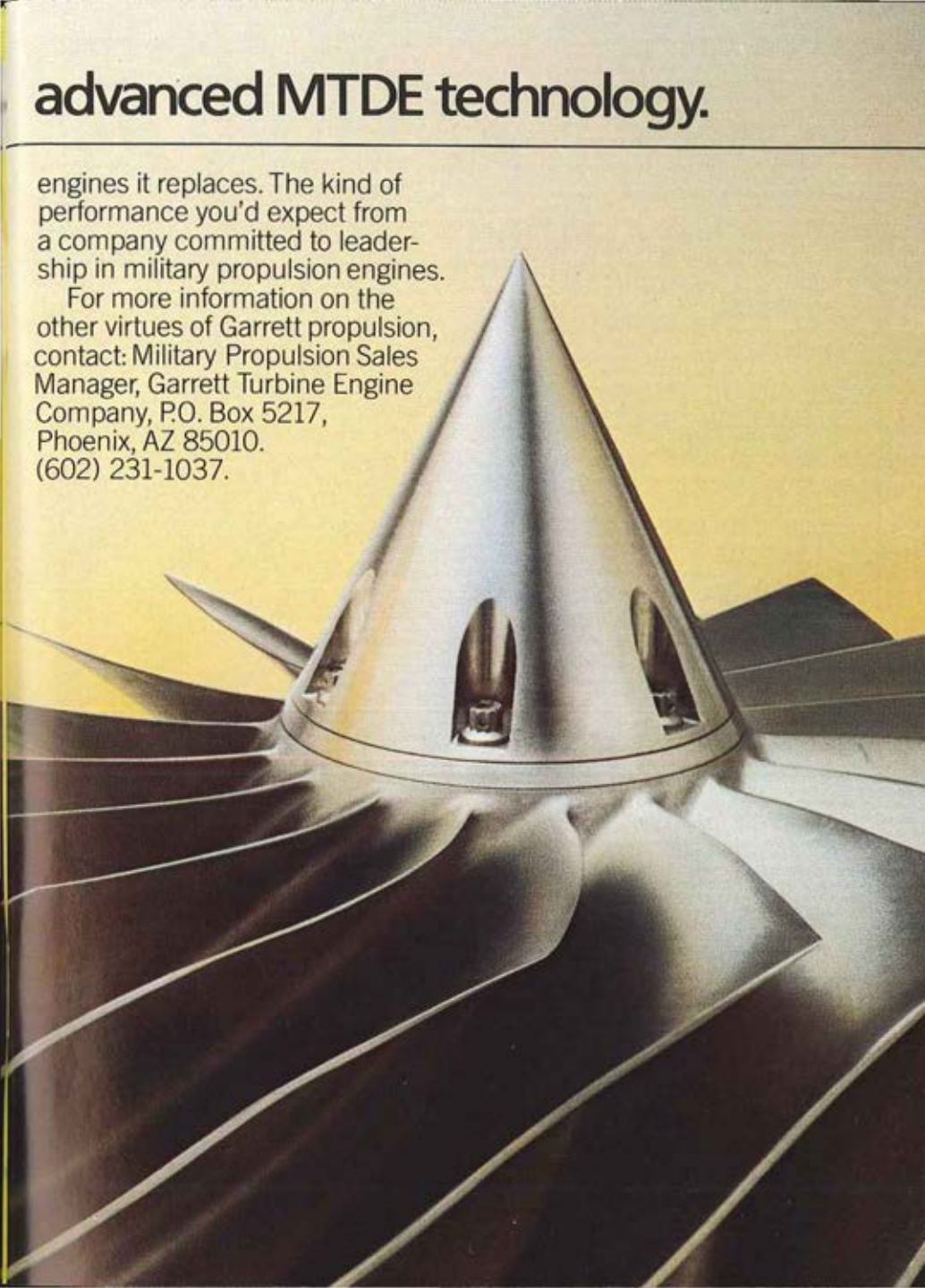
One of The Signal Companies

advanced MTDE technology.

engines it replaces. The kind of performance you'd expect from a company committed to leadership in military propulsion engines.

For more information on the other virtues of Garrett propulsion, contact: Military Propulsion Sales Manager, Garrett Turbine Engine Company, P.O. Box 5217, Phoenix, AZ 85010. (602) 231-1037.



ARMY AVIATION HALL OF FAME

CORRESPONDING ADDRESS:
ONE CRESTWOOD ROAD — WESTPORT, CONNECTICUT 06880

14 February 1983

The Board of Trustees of the Army Aviation Hall of Fame, in meeting at Arlington, Va., on 4 February, selected the following nominees for induction into the Army Aviation Hall of Fame.

CWO (LTC, Ret.) Jerome R. Daly, Virginia.
CWO Frederick E. Ferguson, Arizona.
Colonel E. Pearce Fleming, Jr., Ret., South Carolina.
Marion J. Fortner, Deceased.
Major General James F. Hamlet, Ret., New Jersey.
Colonel Robert F. Litle, Jr., Ret., Texas.
Colonel A.T. Pumphrey, Ret., Texas.
General Robert M. Shoemaker, Ret., Texas.
Colonel John J. Stanko, Jr. ARNG, Ret., Pennsylvania.
CWO Ronald J. Tusi, Deceased.

The 1983 Induction Ceremonies will take place at a Friday, 8 April 1983 luncheon held at the Omni Hotel in Atlanta, Ga., during the course of the 1983 AAAA National Convention. Photo-portraits of the individual Inductees will be hung at ceremonies held later in the year at the Army Aviation Museum at Fort Rucker, Ala.

HAMILTON H. HOWZE
General, USA (Ret.)
Chairman, Army Aviation
Hall of Fame Board of Trustees

AH-64A APACHE...

Combat Effective... Efficient

The AH-64A APACHE provides the field commander with an invaluable asset . . . efficiency.

The APACHE's efficiency comes from . . . its ability to engage the enemy when and where the commander wants . . .

From . . . its ability to carry a full combat load of HELLFIRE missiles and 30mm ammunition at high altitudes and in hot weather.

From . . . its ability, as a sophisticated weapons system to provide a substantial reduction in maintenance-man-hours per-flight-hour over any comparable anti-armor helicopter, thereby significantly reducing operating and support costs.

NOW In-Production for the U.S. Army

Hughes Helicopters, Inc.
Culver City, California 90230

Black Hawk Power

The highly successful T700: tough, reliable and proven

As the powerplant for the twin-engined Sikorsky UH-60A Black Hawk, the T700 has earned its reputation the only way an engine can. In the hands of Army pilots and mechanics. Flight after flight, it's proved its toughness and reliability in simulated combat environments. And in adverse environments including sand, plus demanding nap-of-the-earth operations.

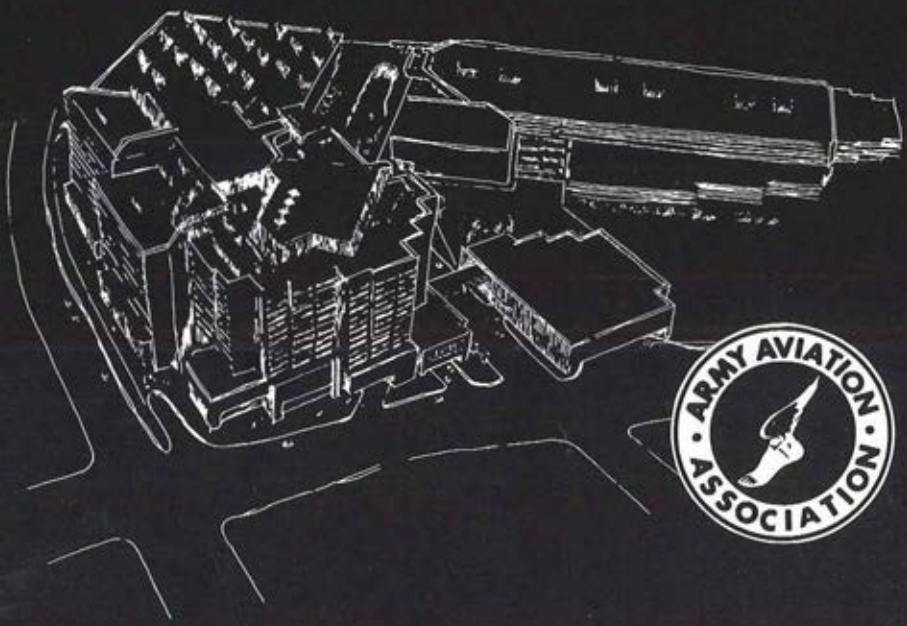
Field performance statistics prove the T700 is reaching maturity years earlier than other engines. And with 30% lower fuel consumption—plus quick, simple maintenance requiring only ten tools—it's also proving that low life-cycle cost and the highest levels of mission availability can go hand-in-hand.

The T700. Setting the new standard for helicopter engine performance in a stronger Army.

GENERAL ELECTRIC

205-320

Plan to attend the 1983 AAAA Nat'l Convention!



Omni International Hotel and the Georgia World Congress Center, Atlanta, Ga. — April 7-10, 1983

SOLD OUT!

AAAA's 450-room Omni Hotel block sold out Feb. 21. Cite "AAAA Convention" and secure rooms at the Peachtree Plaza Hotel ($45 mil twin; $60 civ) at 800-228-3000, or the Atlanta American ($40 mil/$50 civ) at (404) 688-8600. Both require credit card reservations; both are 5 blocks away.

Professional-Social Program 1983 AAAA National Convention Omni Hotel, Atlanta, Ga., 7-10 April

This is a preliminary program. All times, speakers, and topics are subject to change.

Thursday, 7 April 1983

0900-1000
Scholarship Foundation Board Meeting.

1000-1200
National Executive Board Business Meeting.

1200-1330
National Executive Board Luncheon.

1345-1445
General Membership Meeting. Annual Report. National Elections.

Professional Sessions

1500—1515
Welcome to Attendees by Colonel John W. Marr, Ret., President, AAAA, and Colonel Teddy G. Allen, FORSCOM Aviation Officer and Presentations Committee Chairman—AAAA

1515—1535
Keynote Address by Lieutenant General Marion C. Ross, Deputy Commanding General, U.S. Army Forces Command, Ft. McPherson, GA.

1535—1615
"People: The Real Power Component of our Army" by Lieutenant General Maxwell R. Thurman, Deputy Chief of Staff for Personnel.

1615—1645
"Aviation Center Update" by Major General Carl H. McNair, Jr., Commanding General, USA Aviation Center & Fort Rucker, AL.

1645—1715
"Aviation Maintenance Training for Enlisted Personnel" by Major General Harold L. Small; Commanding General USA Transportation Center & Ft. Eustis, VA.

1717—1745
"Physical Fitness, Stress in the Cockit, and Drug Abuse" by Brigadier General Lewis A. Mologne, Director, Professional Services, Office of the Surgeon General, Department of the Army.

1800-2100
Early Birds Reception—View Exhibits

2200-0100
Cloud 9 — Chapter Hospitality Suites.

Friday, 8 April 1983

0700-0800
Continental Breakfasts.

0700-0800
Chapter Presidents' Working Breakfast.

Profesional Sessions

0815—0900
"Simulators Today and Into the 1990's" by Lt. Colonel Bobby Adams, Project Manager TRADE (Simulators)

0900-0930
"Aviation's Role in the Air Land Battle", a presentation by a representative of the Commanding General, U.S. Army Training & Doctrine Command, Fort Monroe, VA.

0900-1100
Spouses' Breakfast.

0930-1000
"Countering the Threat with Our Current Force Structure" by Major General William E. Odom, Assistant Chief of Staff for Intelligence.

1015-1130
Pre-Luncheon Refreshment Break—Coffee and Cocktails — AAAA Exhibit Hall.

1145-1400
AAAA Hall of Fame Luncheon for the 1983-1985 inductees to the Army Aviation Hall of Fame. General Hamilton H. Howze, Ret., Master of Ceremonies.

Professional Sessions

1415-1435
"Aviation Force Structure" by a Representative from the Office, Deputy Chief of Staff for Operations & Plans, Department of the Army.

1435-1455
"Modernization in the Aviation Force Stucture" by Major General Vincent E. Falter, Chief, Army Force Modernization Coordination Office.

1455-1515
"Logistics: The Key to Aviation Force Readiness" by Lieutenant General Richard H. Thompson, Deputy Chief of Staff for Logistics, Department of the Army.

1515-1645
"Personnel Policy Affecting the the Aviation Force Structure" by Major General Robert Arter, Commanding General, Military Personnel Center.

1545-1600
"The Army Aviation Museum" by Colonel Howard E. Brown, Ret., Director of Development, U.S. Army Aviation Museum.

1615-1800
Refreshment Break — AAAA Exhibit Hall

1900-2030
The President's Reception. Receiving Line. Fingertip Buffet. Informal.

2200-0100
Cloud 9 — Chapter Hospitality Suites.

Saturday, 9 April 1983

0730-0900
First Light Breakfast (Industry Briefing). "Materiel Acquisitions for the Total Force", a 30-Minute Breakfast Presentation by Lieutenant General James H. Merryman, Deputy Chief of Staff for Research, Development and Acquisition, Dept. of the Army.

0800-0900
Career Discusssions with MILPERCEN Representatives.

0845-1300
Spouses' Tour of Cyclorama and Lenox Square Shops and Boutiques

0915-1015
Refreshment Break — AAAA Exhibit Hall

Professional Sessions

1030-1130
Industry Presentations: Individual presentations of 10 minutes' duration by six of the major industrial contributors to Army Aviation.

1030-1040
A presentation by a representative of the Beech Aircraft Corporation.

1040-1050
A presentation by a representative of Bell Helicopter Textron.

1050-1100
A presentation by a representative of the Boeing Vertol Company.

1100-1110
A presentation by a representative of the Grumman Aerospace Corp.

1110-1120
A presentation by a representative of Hughes Helicopters, Inc.

1120-1130
A presentation by a representative of the Sikorsky Aircraft Division.

1130-1150
"USAR Aviation Update" by Major General William R. Berkman, Chief of Army Reserve.

1150-1210
"An Army National Guard Aviation Update" by Lieutenant General Emmett H. Walker, Chief, National Guard Bureau.

1210-1225
"A View from the Back Bleachers" — An overview by General Hamilton H. Howze, USA (Ret.)

1225-1230
Summary and adjournment of the 1983 Professional Program by Colonel Teddy G. Allen, Presentations Committee Chairman.

1230-1430
Annual Membership Luncheon — "Top Chapter Awards" — Informal Sitdown Buffet — AAAA Exhibit Hall.

1430-1700
Last opportunity to view AAAA's more than 200 aerospace exhibits — Enjoy Dixieland music — Participate in a Chapter Group Photo.

1900-2230
1983 AAAA National Awards Banquet Reception and Awards Banquet. Presentation of "Aviator, Soldier, and DAC of the Year Awards"; "Outstanding Aviation Unit (Army and Reserve Component) Awards"; Presentation of the "Robert M. Leich Special Award."

1100-0130
Cloud 9 — Chapter Hospitality Suites.

Sunday, 10 April 1983

0900-1200
National Executive Board Meeting

0930-1200
1983 Champagne Brunch. (A very happy, end-of-convention egg- and bread-breaking.)

Advance Registration Form for AAAA's 1983 National Convention — April 7-10

OMNI INTERNATIONAL HOTEL, ONE OMNI INTERNATIONAL, ATLANTA, GA 30335 — APRIL 7-10, 1983

I plan to attend the 1983 AAAA NATIONAL CONVENTION functions indicated below and have enclosed a check made payable to "AAAA" to cover the costs of my attendance and the function tickets. I understand that Advance Registration closes on Monday, March 21, and that I may receive a full refund by phone call to AAAA made on or before that date, or by written notification to AAAA that's postmarked not later than Monday, March 21, 1983.

SPECIFIC FUNCTION HELD AT THE 1983 NAT'L CONVENTION OF THE AAAA	MIL/DAC MEMB. FEE	CIV. MEMB. FEE	MIL/DAC DELEGATE	CIV. DELEGATE	FEE FOR SPOUSE	NON-MEMB. FEE *	ITEM LINE TOTAL	OFFICE USE ONLY
REGISTRATION (NECESSARY FOR ADMITTANCE TO THE AAAA PROFESSIONAL SESSIONS)	☐ $12	☐ $35	☐ $ 8	☐ $31	N/A	☐ $27 ☐ $50	$ _____ $ _____	_____
FRIDAY, APRIL 8 SPOUSE'S BREAKFAST					☐ $ 9		$ _____	1 ___
FRIDAY, APRIL 8 HALL OF FAME LUNCHEON (UNRESERVED SEATING)►	☐ $12	☐ $16	☐ $ 8	☐ $12	☐ $12		$ _____	2 ___
FRIDAY, APRIL 8 PRESIDENT'S RECEPTION (FINGERTIP BUFFET)	☐ $10	☐ $16	☐ $ 7	☐ $13	☐ $10		$ _____	3 ___
SATURDAY, APRIL 9 SPOUSE'S ATLANTA SIGHT-SEEING TOUR					☐ $10		$ _____	4 ___
SATURDAY, APRIL 9 BUFFET LUNCHEON (COMPLIMENTARY BUD)►	☐ $ 9	☐ $12	☐ $ 7	☐ $10	☐ $ 9		$ _____	5 ___
SATURDAY, APRIL 9 AWARDS BANQUET RECEPTION AND AWARDS BANQUET●	☐ $25	☐ $40	☐ $20	☐ $35	☐ $25		$ _____	6 ___
SUNDAY, APRIL 10 CHAMPAGNE BRUNCH (OPEN BAR-CHAMPAGNE)►	☐ $ 9	☐ $12	☐ $ 7	☐ $10	☐ $ 9		$ _____	7 ___
TOTAL	$ _____	$ _____	$ _____	$ _____	$ _____	$ _____	$ _____	

— MILITARY OR CIVILIAN FEE AS APPROPRIATE —

RANK / NAME DESIRED ON BADGE _____ SPOUSE'S NAME _____

CITY _____ STATE _____ ZIP _____

UNIT OR FIRM NAME DESIRED ON BADGE _____

* Includes $15.00 First Year AAAA Membership Dues. ►Unreserved seating at 10-seat tables with table service. ● Formal/Black Tie, Dark Business Suit. ◄Served in Exhibit Hall. NOTE: "Military Member" Fees apply only to Active Army, Reserve Component, DAC Personnel, and those retired AAAA members who are not in the current employ of defense contractors or suppliers on a full-time, part-time, or consulting basis. Please make your check payable to "AAAA," and mail with this Advance Registration Form to AAAA, 1 Crestwood Road, Westport, Connecticut 06880.

FOR OFFICE USE ONLY:
AMOUNT OF CHECK.....$ ____ P ____ B ____
DATE _____

Special Insert:

The U.S. Army Troop Support and Aviation Materiel Command

St. Louis, Missouri

A 64-page, in depth look at the overall responsibilities assigned to this major Army Aviation support agency.

This top-ranking military jetprop is volunteering for more special missions.

Beechcraft's rugged C-12 jetprop has earned its military stripes as a hardworking military transport. Its turboprop economy has been saving money for the Army, Air Force and Navy and Marines all over the world. In addition, the C-12 has gained an enviable reputation for reliability.

Now it's ready for more special assignments.

With available installations for aerial surveillance, tactical field support, ECM, photography, Infra-Red, Side Looking Radar (SLAR), remote sensing, and many others, this versatile aircraft offers a broad range of mission capabilities.

And because many of these special equipment packages can be quickly removed or converted, one C-12 airframe can be used to fill the roles of several special missions aircraft.

In addition, the comprehensive Beech logistics support program now assumes total responsibility for all on-site maintenance, crew training, parts inventory, and worldwide technical service. As a result, the C-12 continues to deliver operational readiness rates well in excess of 90%.

If your command could use a special mission support system with this kind of multi-role capability, write Beech Aircraft Corporation, Aerospace Programs, Wichita, Kansas 67201.

Beechcraft

A Raytheon Company

by Brig. Gen. Ellis D. Parker

TSARCOM: A job well done!

"OF all the balls the commander must keep in the air at the same time, two are made of glass: training and maintenance." This basic statement of command philosophy by the Chief of Staff of the Army is a challenge not only to our aviation commander in the field, but to the entire support team that undergirds those commanders. The **Troop Support and Aviation Materiel Readiness Command (TSARCOM)** is a key player on that team. With the mission to maintain readiness in 23 major categories of equipment, TSARCOM supports the commander by keeping the "maintenance ball" in the air.

ABOUT THE AUTHOR
Brig. Gen. Ellis D. Parker serves as the Deputy Director of Requirements and Army Aviation Officer in ODCSOPS, Department of the Army.

While TSARCOM is primarily responsible for aviation systems, such items as generators, bridges, mine detectors, fuel storage and distribution equipment, and compasses are also managed as part of a wide range of combat support systems and commodities. Their team functions include projecting materiel needs, quantities, and quality standards; insuring timely availability; organizing repair and supply support; and budgeting, procuring, and distributing some 65,000 items through the user requisitioning system.

Aviators worldwide look to TSARCOM to keep their aviation systems ready and able to train and fight as an integral part of the combined arms team. In managing the resources and **(JOB WELL DONE)**

(Cont. on Page 21)

by Major General Emil L. Konopnicki

TSARSOM: A total System!

THE **U.S. Army Troop Support and Aviation Materiel Readiness Command,** known as **TSARCOM,** is an action command and a people command. With headquarters located in St. Louis, Mo., TSARCOM employs a workforce of some 5,000 civilians and 300 military.

ABOUT THE AUTHOR
Major General Emil L. Konopnicki serves as the Commanding General, US Army Troop Support and Aviation Materiel Readiness Command.

In this special edition of **Army Aviation Magazine,** we at TSARCOM would like to explain the story behind one of our most important missions — the support of worldwide Army Aviation.

TSARCOM is one of 14 major subordinate commands of the U.S. Army **Materiel Development & Readiness Command (DARCOM)** which, then, reports to the Department of the Army.

The responsibilities within TSARCOM are coordinated through the three level management concept: project and product managers, readiness project officers, and materiel managers.

Project managers are assigned to the AH-1S **COBRA** and the UH-60A **BLACK HAWK.** A product manager heads the **Special Electronic Mission Aircraft (SEMA).**

At the second level, 14 readiness project officers supervise a wide spectrum of combat support systems. Of these, eight are aviation-related. The success of these systems rests upon the project officers who provide support and confidence in TSARCOM's ability to take care of both routine and priority issues.

Operating much like the RPOs and the PMs are the materiel managers

Joseph J. Campanella (right), President of Sperry Flight Systems, signs an agreement with Bell Helicopter Textron in which Bell granted Sperry an exclusive, worldwide license to manufacture and sell its Micro-HUD. At left is James F. Atkins, BHT President. Micro-HUD is a display device that enables a pilot to see information superimposed over his field of view without obscuring his normal vision.

and item managers who constitute the third level of management. These 243 managers report to the Director for Materiel Management. They are responsible for a diverse assortment of commodities such as altimeters, rotor blades, and topographic equipment.

$3 billion in line items

Our Materiel Management Directorate handles over 65,000 line items valued at $3 billion. In addition, we are responsible for more than 9,000 aircraft in the Army inventory.

This, plus the fact that we manage over $290 million in foreign military sales, and fund programs worth $2.7 billion, requires TSARCOM to consistently be an action command.

TSARCOM is more than that. It is quality as well as quantity . . Quality in our products and in our people.

As the TSARCOM aviation story unfolds in the following pages, we hope that you will get to know us as a command geared for action and dedicated to supporting the soldier in the field. IIIII

WELL DONE!

(Continued from Page 19)

materiel that drive an intricate logistics system spanning the globe, TSARCOM allows our maintenance officers to provide mission ready aircraft to the commander. The enormity of the job is evident when you realize they manage the readiness of some 8,700 aircraft ranging in density from over 3,800 UH-1s to as few as two Platus-porters. This is accomplished through Project Managers (UH-60A BLACK HAWK, AH-1S COBRA), Product Managers (Special Electronic Mission Aircraft), and Readiness Project Officers, including CH-47, UH-1, OH-58, and fixed wing). TSARCOM also plays a key role in the aviation safety program, having the responsibility to originate safety of flight messages for all aircraft. In reacting to unusual, unforecast, and complex aviation requirements, TSARCOM continually strives to be responsive to the commander. Their role in aviation safety, mission readiness, and logistics management has been a major factor in the success of Army Aviation today. On behalf of the entire aviation community, I convey sincere thanks for a job well done! IIIII

The eagle

The new Aquila

On July 16, an amazing bird winged through the skies at an Army test site.

It was the tiny Aquila artillery RPV, first full-scale development article to be flown. A Lockheed test team successfully put Aquila through the first of a rigorous series of test flights and safe returns to its landing net.

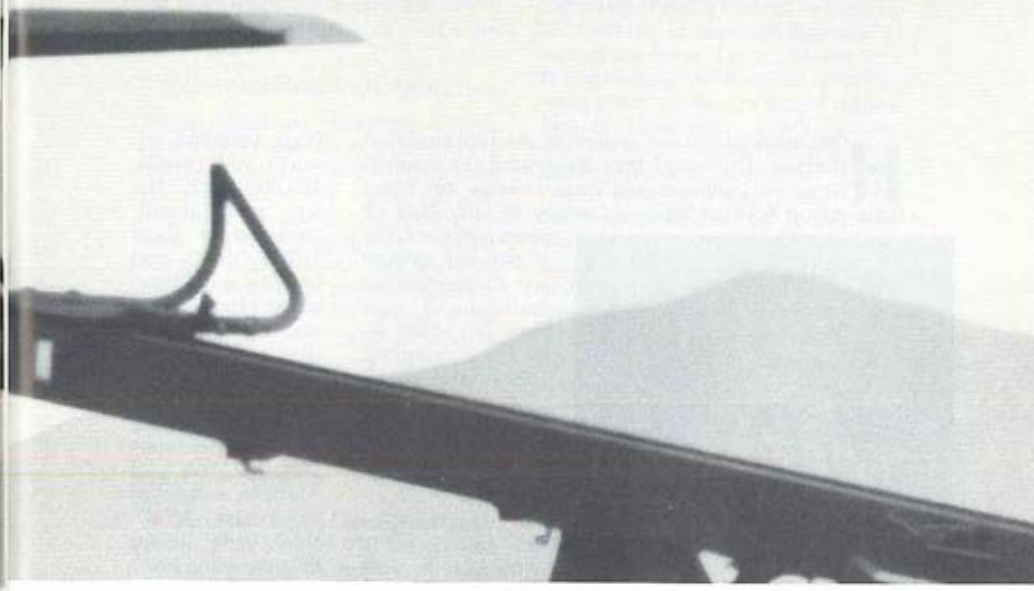
The tests of the full-scale development Aquila follow an earlier systems demonstration program of a total of 218 flights, 150 of them flown by U.S. Army soldiers under real-world conditions.

An eye on the action.

Aquila (Latin for "eagle") is a breakthrough that will give Army ground forces an upper hand in observation and target acquisition.

Just six feet long with a 13-foot wingspan, an Aquila will fly sorties of up to three hours each. It will pack

takes off.



makes its first flight.

advanced, jam-resistant electronics and will send real-time television views of the enemy situation to ground stations. It will pinpoint targets, interfacing with TACFIRE to make firing effective on first volleys.

To aid laser-guided munitions, Aquila will use its laser designator to illuminate targets precisely. And Aquila can also carry other tactical payloads for nighttime operations and other missions.

Making the bird even better.

The tests are proving the design that will make Aquila a great advance in target acquisition/reconnaissance. It will help Army artillery get steel on target faster, more accurately than ever before.

It's another example of Lockheed's using advanced technology to give our defenses a real edge.

Lockheed Aquila

by Joseph P. Cribbins

You've come a long way, TSARCOM!

HOW many of you will remember the Transportation Materiel Command later designated the Aviation Systems Command and more recently the Troop Support and Aviation Materiel Command? I do. After 42 years with the Army; 38 of it with aviation and 23 years in the Pentagon, I now have legitimate institutional memory. This kind of institutional memory not only knows where the bodies are buried, I knew the undertakers.

ABOUT THE AUTHOR
A recognized authority in Army Aviation logistics, Joseph P. Cribbins serves in the Office of the Deputy Chief of Staff for Logistics, Dept. of the Army.

Let me go back a way and give you some feel for what TSARCOM means to Army Aviation and where Army Aviation has progressed over the years. In 1959, when I first came to the Pentagon, we had 3,000 fixed wing and 2,500 rotary wing aircraft in the inventory flying a total of 1.4 million flying hours. Of the fixed wing aircraft, 2,000 were O-1 Bird Dogs procured for, would you believe, $20,000 each. Rotary wing aircraft consisted of about 1,400 OH-13 and OH-23 Light Observation Helicopters, rounded out with UH-19, CH-21, and CH-34's.

Total value of the aircraft inventory was approximately $600,000. We did not have a depot in those days. ARADMAC, better known as the Army Aeronautical Depot Maintenance Center, now **Corpus Christi Army Depot (CCAD)** did not exist until 1961. Depot overhaul and procurement of aircraft were being done by the Air Force.

It is hard to realize what has happened in the intervening 23 years. Undoubtedly, the greatest driver of

all was the 10 years we spent in Vietnam, where at one time the Army had 4,400 aircraft and the annual flying hour program reached a peak of six million flying hours per year. At the same time, we also reached the then peak of operational readiness when we were averaging 76-77% operational readiness while we had an average monthly flying hour rate of 45 hours per aircraft per month worldwide against a fleet of 12,000 aircraft.

"Well-meaning maintainers"

Many times I was asked how, with the highest flying hours ever, we also were able to attain the highest operational readiness. There are many explanations; e.g., the law of supply and demand, intensive management, stovepipe logistic system, etc. The simplistic answer and probably the most accurate one, was the fact that the natural habitat of the helicopter is in the air and when it is in the air, well-meaning maintainers can't fix what ain't broken.

Let me relate some of the initiatives that have taken place over the years for which TSARCOM and all aviation logisticians worldwide can be justly proud.

● **Aircraft Component Intensive Management System (ACIMS).** A system for reporting selected high value aircraft engines and components by serial number to give each change in condition, location and status. This was in 1961 when it was known as the engine reporting system; later in 1967 extended to other selected components and entitled ACIMS.

● In January 1964, we established an operational readiness reporting system for Army aircraft to the nearest hour 24-hours a day. Prior to that, an aircraft that had been operational four hours a day was considered operational all day; conversely, an aircraft down for four hours, was considered not operationally ready that day.

● In 1965 as Vietnam, heated up, the **Aircraft Intensive Management Item (AIMI)** system was established to intensively manage all high value ACIMS and selected critical items. Initially, AIMI held quarterly meetings, now they are semi-annual. It has been alleged that AIMI is a crutch to make up for short-fall in acknowledgement of true requirements. Let me assure you; that is wrong. AIMI is an intensive management system to assure optimal aircraft readiness within overall resource and materiel constraints by keeping inventories in motion.

● In 1974, we began using the **On Condition Maintenance (OCM)** concept for overhauling Army aircraft at depot level. Under this system, the average overhaul of an Army aircraft has been reduced from 20% of the fleet to less than 10% of the fleet annually. Would you believe, that for the UH-1 alone, this represents a cost avoidance/savings of about $55 million a year.

● Another OCM initiative is Phased Maintenance inspections which have taken the place of intermediate and periodic inspections formerly performed on aircraft in the field. Phased maintenance has reduced maintenance manhours, and repair parts consumption, and increased readiness.

● Recent improvements taken by CCAD in conjunction with TSARCOM have been establishment of a hot line to aircraft users worldwide to troubleshoot maintenance problems and removal of mandatory **Times Between Overhaul (TBO)** on T-53 engines and 42 and 90 degree gear boxes in the HUEY and COBRA.

● This past year, at the instigation of the DCSLOG, TSARCOM has established an expedited delivery system by

(A LONG WAY/Cont. on Page 72)

by Colonel Thomas M. Walker

TSARCOM's aviation-related Readiness Project Officers (RPO)

THE executive chartered by the Commander, TSARCOM, who is responsible for managing a system where continued intensive management is required, is the **Readiness Project Officer (RPO).** In this role, the RPO is primarily responsible for the readiness of the system. The Readiness Project Office manages major fielded systems with an average staff of four people per system, which is consistent with the concept of providing for the maximum return for each dollar spent. Management responsibility covers maintenance, supply, procurement, production, quality control, engineering, legalities, financial management, and related subfunctions with a specific emphasis on mission readiness.

ABOUT THE AUTHOR
Colonel Thomas M. Walker serves at the USA Troop Support and Aviation Materiel Readiness Command as its Director of Systems Management.

There are several areas of overlap since the RPO is also involved in the development and testing of an aircraft system which may have previously been fielded but which may also have been modified extensively through a **Product Improvement Program (PIP).** A good example of this is the conversion of the OH-58A Kiowa to the OH-58C, a configuration which is totally RPO managed.

The most important function of the Readiness Project Officer, insofar as the "user" is concerned, is to provide a responsive single point of contact to answer questions, solve problems, and keep mission capability as high as possible. Under his charter, the RPO exercises centralized "cradle-to-grave"

management of a system(s) such as the C-12, OH-58, UH-1, CH-47, SFTS, etc. This includes full command authority and responsibility for intensive care of each system, which is accomplished through a proven concept of a System Management Team consisting of experts from the functional directorates of TSARCOM (Maintenance, Materiel Management, Product Assurance, and Procurement and Production). The team members, although in daily contact, meet formally each quarter and are tasked by the RPO to identify and resolve problems, effect-coordination, and take all management actions required to support each fielded system.

The RPO or his representative also acts as an advisor on **Safety-of-Flight (SOF)** messages and assists in preparing his portion of the message. The RPO provides all data and input required for processing the SOF message to the preliminary SOF meeting. The RPO participates in drafting the SOF message and attends the director-level meeting when the SOF is submitted for approval. The responsibilities and message preparation guidelines are addressed in AR 95-18.

Single point of contact

For some systems, the **Training and Doctrine Command (TRADOC)** maintains a **TRADOC System Manager (TSM)** who is the single official point of RPO contact for user requirements on the system. In other cases, TRADOC Schools and Centers provide this coordination. The RPO also controls and directs the execution of approved funding programs and insures peparation of the **Product Improvement Management Information Report (PRIMIR)** which lays out the dollar requirements and schedules for modifications to the system — all in support of the priorities established by TRADOC, the user. The PRIMIRs are reviewed and approved annually by the Department of the Army.

Another major function of the RPO is the identification of potential problems — before they become actual problems. He does this by tasking TSARCOM functional directorates for **Quality Deficiency Report (QDR)** and **Equipment Improvement Recommendation (EIR)** data which is reviewed continuously. Additionally, he also maintains constant watch on the status of potential **Not Mission Capable Maintenance (NMCM)** problems and **Not Mission Capable Supply (NMCS)** items which may develop into maintenance/materiel problems or critical safety concerns if not corrected.

An excellent example

An excellent example of an RPO and how he supports a system is the Readiness Project Office for Scout/Observation Helicopters. This office is involved in a great many projects dealing with the **reliability, availability, and maintainability (RAM)** of the aircraft for which they have responsibility (OH-6A, TH-55A, and OH-58 series). For example, there is an ongoing contract with **Bell Helicopter Textron (BHT)** for the development of a new tail rotor drive system and a **stability augmentation system (SAS)** to rectify field identified problems with controllability. An additional task in that contract relative to the power loading of the main transmission has resulted in the uprating of the transmission to a 317 horsepower continuous rating. This new rating will be set out in forthcoming changes to the operator's manual for the OH-58C helicopter.

Reference engine problems, the OH-58 Power Droop Blue Ribbon Panel, established by the **Aviation Research and Development Com-**

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mand (AVRADCOM) at the request of the RPO, made specific recommendations in their final report as to changes and additions to the aircraft. To validate those recommendations, a program has been initiated with the **Aviation Development and Test Activity (ADTA)** at Fort Rucker to modify a select number of OH-58 helicopters with the changes and additions and collect data to substantiate the validity of the recommendations. The final report on that effort should be available in December, 1983.

In the way of overall aircraft improvements, the OH-58A to OH-58C conversion progam is in full swing with 160 aircraft to be converted by Bell Helicopter at Amarillo, TX and 150 aircraft to be converted by Israeli Aircraft Industries in Brussels, Belgium, for U.S. Army-Europe. The RPO must additionally furnish to the **Army Helicopter Improvement Program (AHIP)** a number of airframes for conversion to the OH-58D configuration.

Two-phase conversion

The problems associated with OH-58A helicopters are being addressed by the RPO in a new program which would convert all OH-58A helicopters to an improved configuration (all the accepted OH-58C modifications except the improved instrument panel) in a Pre-Planned Product Improvement Program (p3I) Phase I. A Phase II would follow which would provide a scout helicopter package for the improved OH-58As, making them compatible with the OH-58D and providing the low end of the scout high-low mix. The scout helicopter package in Phase II will be a by-product of the **Light Combat Helicopter (LCH)** experiment being conducted by the 9th ID at Fort Lewis, WA. For the Fort Lewis tests, the RPO has configured 12 OH-58C helicopters to act as surrogate LCH in the **Light Air Cavalry Troop Evaluation (LACTD).** These surrogates incorporate several types of direct view optic, target acquisition devices, provisions for multiple weapons systems (one at a time), and a doppler system to provide navigation and position information.

The OH-6A, with most of the aircraft in the National Guard, is getting a rejuvenation with a "Commercialization" program. This effort will take civilian parts that are form, fit, and function interchangeable with Army peculiar parts and provision them in the Army system. A further effort will look at standardizing the various configurations of the OH-6A to the latest Series III configuration. All-in-all, that's a pretty full schedule for the RPO. But it's a challenge that can and must be met.

The SFTS RPO

Another RPO worthy of mention is the RPO for **Synthetic Flight Trainer Systems (SFTS).** Like the others, this RPO is supplemented with a management team which consists of experts from all the other functional elements within the Command. However, the major difference between the aircraft systems and SFTS is the concept in which they are supported. Aircraft are supported by organic troops and supply system, whereas the SFTS is supported under the concept of **Contractor Logistics Support (CLS)** throughout its life cycle. Under CLS, the management effort of the RPO is to insure that the support package and data are identified and obtained during the development of new simulators so that a contractor will be able to take that data and provide uninterrupted maintenance support. The RPO for SFTS is not concerned with the Safety-of-Flight type actions that sometimes confront the other avia-

(THE RPO'S/Continued on Page 72)

USA TSARCOM PRODUCT AND PROJECT MANAGERS AND RPO'S

COL Ronald Andreson
Project Manager
BLACK HAWK
(DRSTS-BH)
263-1800

COL William D. Taylor
Product Manager
Special Electronic
Mission Aircraft
(DRSTS-AE)
263-0973

COL Donald R. Williamson
Project Manager
COBRA
(DRSTS-CO)
263-0935

LTC Roger H. Norris
RPO for Synthetic
Flight Trainers
(DRSTS-WG)
263-0609

LTC Don R. Watson
RPO for Fixed
Wing Aircraft
(DRSTS-WP)
263-0600

LTC Donald Merritt
RPO for Scout
Observation Helicopters
(DRSTS-WP)
263-0611

LTC Leroy L. Horvath
RPO for Cargo
Helicopters
(DRSTS-WC)
263-0604

MAJ David L. Shaw
RPO for Aerial
Delivery Equipment
(DRSTS-WD)
263-0614

By Frank J. Thomas

NET: Still a worldwide effort

WE think it is important to repeat that Webster's Dictionary defines New Equipment Training (NET) as "to teach so as to be fitted, qualified, or proficient." That was the definition in January '81 when **Rick J. Brown,** who wrote the preceding article on **NET,** approached this subject.

ABOUT THE AUTHOR
Frank J. Thomas, is Chief of the Aircraft Branch of the New Equipment Training Division in the Directorate of Maintenance at Hqs, USA TSARCOM.

Nothing is changed . . You can find as many definitions of NET as there are people, yet most of us in this business still refer to NET as the "initial transfer of knowledge."

Continuing on in **Rick's** words, "There are aspects of this definition that bear illumination; first, we train personnel who are already qualified in their basic specialty, and second, we provide only that information necessary to increase their skills and knowledge. This is not, therefore, a **military occupational specialty (MOS)** producing program.

"Our responsibility as a DARCOM representative activity is to integrate NET functions into the **Integrated Logistic Support (ILS)** process early in the materiel development life cycle. This is done to insure that NET and other ILS and related materiel system milestones are adequately identified and programmed for timely realization.

"There are four distinct phases of NET. **Phase I** begins the management process, and the Staff Planners course is a product for management functions. In **Phase II,** management efforts are reflected in the quality of training provided. **Phase III** begins the fielding

process and **Phase IV** is the final product for all NET managers, providing interim training until the **Training and Doctrine Command (TRADOC)** can produce qualified people through resident training. NET requires a well defined and disciplined management team and system to insure that training is available when new or improved equipment is distributed.

"In more practical terms the role of NET is to provide the initial transfer of knowledge from either the materiel developer or materiel provider on new or modified equpment entering the U.S. Army inventory for the first time.

"Due to the complexity and sophistication of many of the new major systems and equipments being fielded, or on the drawing boards, many in the NET business have to resort to private industry for the preparation and conduct of initial technical training courses.

"The bulk of these technical training courses are dedicated to hands-on training. Programs of instruction, lesson plans, and training aids that are also in use are made available to unit trainers. This is to assist them in presenting similar courses of instruction to others in their organizations.

The on-going programs

Here are some of the more significant on-going programs:

AH-1S (MC) — The New Equipment Training (NET) program was started during FY 76. During FY 81 and FY 82, a total of 798 students were trained at six locations. The NET effort is scheduled to end in FY 84.

AH-1S (MOD) — The NET Program was started this year (1982) on AH-1S (MOD) helicopters being redistributed from USAREUR. The training was established to upgrade the knowledge base of the receiving units. A total of 372 students have been trained so far this year at five locations. This NET effort is scheduled to terminate in FY 84.

UH-60A — The NET Program for this system started in FY 67 and presently TRADOC has established resident training courses. A **New Equipment Training Team (NETT)** has deployed to five CONUS sites and five OCONUS sites with three OCONUS visits scheduled for FY 83 and FY 84. The NETT effort began in FY 80 and completion is scheduled for FY 84.

CH-47D — The modernized CH-47D NET Program started during FY 74. Its target date for a NETT deployment in CONUS is FY 83 and OCONUS FY 86. In addition, NETT are being deployed to OCONUS and CONUS units on other CH-47 related systems i.e., Flight Simulator, Fiberglass Rotor Blades and T55-L712 engine.

Special Electronic Mission Aircraft — The NET Program effort started during FY 75. The Quick Fix 1B, EH-1H helicopter has completed OT III testing with approximately 90 test personnel receiving training provided by a NETT. An estimated deployment date for the NETT will take place during FY 83.

Aircraft Survivability Equipment (ASE) — Although there is no current NET operator training on-going at this time, numerous ASE items are on the way. Examples are as follows:

AN/APR-39(V) 2 — Basically the same as the (V) 1 but does not use strobes. There are alpha-numeric symbols that represent emitter signals and characters that represent the type of threat. Later on it will be upgraded with a voice warning also.

AN/ALQ-136 — Countermeasures set will be installed on attack helicopters which emits false radar signals to confuse pulse-type radar

(NET/Continued on Page 73)

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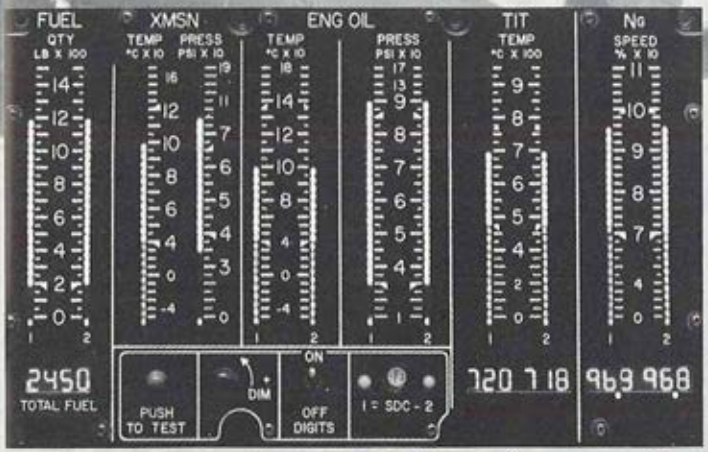

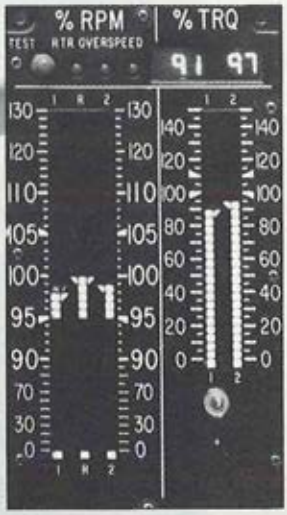

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by LTC(P) Paul A. Wilbur

Repair parts revisited!

THE 1981 TSARCOM issue of Army Aviation Magazine carried an article by my predecessor, **Mr. Maurice "Mo" Shriber,** titled "Aircraft Repair Parts: More Than Just a Number." The article was an excellent description of the management techniques used and problems encountered in attempting to sustain a pipeline of parts to the user community of Army Aviation. This article is intended to bring the reader up to date on what's happening in the repair parts business at the TSARCOM level since that last article.

ABOUT THE AUTHOR
Lieutenant Colonel (P) Paul A. Wilbur is the Director of Materiel Management, USA Army Troop Support & Aviation Materiel Readiness Command.

"Mo" indicated that **stock availability (SA)** was running about 84% in 1981 — in 1982 it's been around 81-82%. This "recession" largely stems from the significant jump in prices and lead times encountered in the '79-'81 timeframes. The majority of major systems are now showing an upturn with the UH-1 and OH-58 leading the way and currently maintaining an 84-85% level. BLACK HAWK and CHINOOK, both with significant requirements for high cost, long lead time investment-type items (gear boxes, rotor hubs, etc.) are still below target levels. The CH-47 was additionally impacted by the delays in overhaul encountered in the realignment of workloads at the New Cumberland Army Depot. COBRA SA was impacted by the decision to rotate OCONUS birds through Corpus Christi Army Depot prior to reassignment to CONUS units. The parts

draw down was much more significant than would have been the case with only standard transfer inspection requirements. Although COBRA SA was impacted, receiving units are much more satisfied than if only transfer serviceability standards had been met. met. And, of course, COBRA was significantly impacted by the safety problems of the fiberglass rotor blades.

The BLACK HAWK had the largest impact overall and in addition to the problems associated with lead time and cost of major investment items, was plagued with shortages of consumable items from the onset of organic support. Consumption rates had been higher than anticipated and we are still making major efforts to fill pipelines larger than originally estimated. The unusual move to place the system in special operations while still in the provisioning mode, and a continuing series of configuration changes complicated the support acquisition process significantly. Numerous "lessons learned" from the BLACK HAWK have been documented and oriented to the AH-64 program.

Money — and more money

The '81 article indicated that the aviation repair parts budget was "almost $400 million a year." In FY 82 that rose to $440 million for TSARCOM, and in FY 83 to over $600 million. Even with these significant increases, funding levels indicate that intensive management programs for aviation items (**Army Intensive Managed Items (AIMI)** for example) will still be very active for the next few years. The continued production of the UH-60, the initial production of the AH-64 will continue to drive repair parts budgets to higher levels. With the increasing acquisition of more modern, sophisticated high cost systems, the Army Aviation annual requirements for spare/repair parts acquisition could approach, or even exceed the billion dollar level by the end of this decade.

A service, not a constraint

As indicated above, AIMI is still with us and is likely to be for years to come, and will probably continue to be misunderstood during that period. There are really four categories of repair parts support for Army Aviation, two of these are AIMI. The other two are — first, the thousands of line items which are routinely supplied, day-in and day-out, with no problems. Requisitions are transceived in, processed by computer, shipping instructions automatically made to depots and shipped to the customer.

The fourth level is just the reverse, several hundred lines, which — for a number of reasons — are at zero balance and near term improvement appears unlikely. Their situation is such that inclusion in AIMI would serve no purpose in terms of supply availability or operational readiness. AIMI then represents two levels of support. One category is where assets are not fully available to fill pipelines, including ASL and PLL requirements, but are available in quantities roughly equivalent to monthly consumption levels.

The monthly levels are negotiated between the Materiel Readiness Commands (TSARCOM, MICOM, CECOM) on a semi-annual basis and requisitioned and issued so as to be in place at the first

NEXT MONTH!

The March 15, 1983 issue of **"ARMY AVIATION"** will devote a major part of its pages to a nine-article section on **Special Electronic Mission Aircraft (SEMA) and will also carry the 1983 DAC Pack Roster** listing the professional-personal data returned to AAAA by its DAC members.

of the month during which consumption will occur. This part of the AIMI program is pretty well understood and accepted by most participants. It's the other portion of AIMI — those items which are released on a **non-mission capable-supply (NMCS)** only basis which generates the controversy. These items are those whose asset position will not permit routine accommodation, or even monthly levels, but which will permit filling of NMCS requisitions without back ordering or back ordering for only a short period. NMCS requisitions are filled for all units worldwide, thereby permitting maintenance of operational ready rates and crew training, even in the lower priority units.

Within this NMCS only category, there are two different characteristics. First are those items whose asset position (current and projected) will permit only filling of NMCS requisitions — with little or no "surplus." Then, there are those items whose projected asset position will provide for slightly more than the estimated monthly NMCS requirements. These items become candidates for the AIMI Safeguard program. This concept provides for a small "pool" of items at the installation levels which are used to meet local NMCS requisitions, while the "pool" is replenished by NMCS requisitions on the NICP. This permits rapid fill of installation NMCS, reduction of unit level order-ship time and achievement of reasonable operational readiness rates.

Objectives for improvement

In summary, aviation repair parts programs continue to be impacted by prices and lead times, and complicated by Army efforts to increase flying hours to improve crew proficiency. However, these conditions are now visible at all levels of Army management and budgets for FY 83 and subsequent years have been proposed which would provide improved support for the planned higher operational levels. At TSARCOM, in the Aircraft Systems Division, Directorate for Materiel Management, we have multiple objectives for improvement:

(1) Improve the fourth category of items to a point they will at least qualify for AIMI.

(2) Improve the status of AIMI items to the point they can be removed from AIMI and routinely supported.

(3) Maintain improvements for all items with the objective of having full routine support, with only a few lines of very high dollar investment type items being retained in AIMI. These are ambitious objectives, but if funding is provided at adequate levels, if industry responsiveness can be significantly improved, and if supply and maintenance discipline in the operational and support units can be upgraded, they can be achieved. It will take all of us working a little harder—and smarter—but it can be done. IIIII

A UNIQUE FIRST!

Second Lieutenant Richard G. Hatch, the CY 82 "Army Aviator of the Year" to be honored at the AAAA's April 9 National Awards Banquet in Atlanta, is a unique DOUBLE Honoree. While assigned to the 3rd Brigade of the 1st Cavalry Division in '71, Hatch won national honors as the "Aviation Soldier of the Year'. He was a Specialist Fifth Grade at that time and subsequently became an Aviation Warrant Officer.

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by Gerald R. Erickson

An update on Integrated Logistics Support (ILS)

SPANNING the gap from aviation system conception to equipping the first unit requires effective team work to achieve the TSARCOM goal of fielding logistically supportable equipment. TSARCOM's **Integrated Logistics Support Office (ILSO)** effectively spans the gap through management of the TSARCOM **Integrated Logistics Support Team (ILSMT)** effort in support of DARCOM aviation system developers.

The ILSO Integrated Logistics Managers are assigned with the Project Managers for AVRADCOM developed aviation systems and serve as principle members of the PM's ILSMT. TSARCOM ILS managers are now serving full-time in support of the CH-47D MOD PMO, and the AHIP PMO, and the JVX Joint Vertical take-off PMO.

Additionally, the Advanced Attack Helicopter PMO has had a TSARCOM ILS manager assigned in support of logistics actions for over two years.

Prior to the initial fielding of the UH-60A BLACK HAWK, a TSARCOM ILS manager supported the PM through the logistics evaluation, planning, and coordination of the TSARCOM ILS team effort.

Our ILS management also provides for ILSO support of RPO Management Aircraft Systems and the Avn RPO managed systems.

In short, ILSO provides the catalyst for the effective teamwork needed to achieve our goal of fielding logistically supportable equipment. Command overview

ABOUT THE AUTHOR
Gerald R. Erickson is assigned to USA Troop Support & Aviation Materiel Readiness Command, as the Chief of its Integrated Logistics Office.

FT. RUCKER—William P. Jones, I., Boeing Vertol Director of Military Programs, is shown presenting a company donation of $10,000 to COL H.E. Brown, Ret., the Director of Development of the Army Aviation Museum. The ceremony took place during the presentation of the first CH-47D to the Aviation Center.

is accomplished through monthly Logistic's Pass-In-Review sessions which provide the Command Group with the ILS status and identification of corrective actions needed.

ILSO is the TSARCOM focal point for Force Modernization Program and leads the coordinated action of the TSARCOM Aviation Systems Managers and functional organizations.

Key to assuring effective system fielding has been the assignment of an ILSO ILS manager in Europe. As the TSARCOM representative for Force Modernization actions and ILS matters, he is the lead for management interface for such actions as Materiel Fielding Letters of Notification, Materiel Fielding Plans and the Force Modernization Planning Program. Additionally, close coordination is maintained with Force MOD offices for other theaters and Forces Command.

The ILSO provides leadership for the Configuration Management and Technical Data Package control within TSARCOM and serves as the Command coordinator for management of formal Requirements Documents and IPR actions.

As a special staff office, the ILSO accomplishes both logistics management of aviation systems prior to system management transition to TSARCOM, and special logistics oriented services. These services include logistics consulting, special reviews of system fielding, and examination of systemic problems impacting logistics support.

During the past year ILSO has successfully supported the conduct of the UH-60A BLACK HAWK Should Cost Study for the multi-year procurement and is actively supporting the TSARCOM T700 Engine Should Cost Study currently in process.

A final and significant ILSO responsibility is that of managing logistics oriented training for the Command. ILSO funds for, and coordinates, ILS onsite training and conducts specialized training and orientation as needed.

The ILSO plays a key role within TSARCOM and supports the "Action Command" theme through practical and effective Integrated Logistics Support management. IIIII

by Colonel Kenneth K. Kellogg

Security assistance of TSARCOM

SECURITY Assistance (SA) is a vital element of the TSARCOM mission. The **Directorate for International Logistics (DIL)** at TSARCOM is responsible for providing security assistance for troop support and aviation materiel to foreign countries and as such, has a direct impact upon the image of the United States and the success of its foreign policy. Security assistance has been described as the leading edge of U.S. foreign policy.

ABOUT THE AUTHOR
The Director for International Logistics at the time, Colonel Kenneth E. Kellogg is now serving as the new Deputy Commander of USATSARCOM.

The Directorate functions much like a project manager and is expected to orchestrate the total SA effort at TSARCOM to assure that foreign customers receive high quality equipment and services in a timely manner. This involves coordination of efforts with other directorates and project managers at TSARCOM to obtain the functional expertise to develop and execute IL programs.

One aspect of security assistance which is often not recognized by the general public is that all costs associated with **Foreign Military Sales (FMS)** must by law be recouped from foreign customers. This includes payment of salaries of personnel assigned to the DIL and other TSARCOM elements providing SA effort and recoupment of non-recurring engineering and production costs associated with developing and producing aircraft. The net result is that U.S. taxpayers do not pay for efforts associated with FMS and the U.S. Army gains an advantage by spreading non-

recurring costs over a larger number of aircraft. The mechanism for collection of funds to pay personnel involved in security assistance effort is by an administrative fee added to each FMS case. Security Assistance today is primarily composed of FMS in contrast to a large Grant Aid or "giveaway" program of a few years ago.

Today, the DIL manages active FMS cases for approximately 50 countries, with a total value in excess of $550 million. These cases include aircraft, aircraft support, troop support items, and logistics services.

TSARCOM has two ongoing significant cases for services with Kenya and Egypt. For Kenya, TSARCOM has contracted with Hughes Helicopters Company to provide pilot and mechanic training, logistics training, and technical assistance for the commercial Hughes 500D and 500MD aircraft sold under an FMS case. In the case of Egypt, logistics services and training are provided for CH-47 aircraft which Egypt bought from Agusta of Italy. These services are provided by **Northrop Worldwide Aviation Services, Inc. (NWASI).**

Foreign military support

Another significant part of TSARCOM security assistance effort is follow-on parts support for aircraft in the hands of foreign governments. One method to obtain this support is by a **Blanket Open-Ended (BOE)** FMS case with a specified dollar value limit, usually on an annual requirement basis, against which customers can order parts through the U.S. Army System. If the parts are not on hand, the customer must wait the lead time. Another method is through a defined line FMS case where specific parts are ordered. The preferred method however, is through a **Cooperative Logistics Supply Support Arrangement (CLSSA)** FMS case. This procedure requires the customers to deposit money before requisitioning in order that the U.S. Army stocks can be increased to support the customer's aircraft. Thus, if a country desires support for 100 UH-1Hs, the Army will stock to support an additional 100 UH-1Hs with the "up-front" money provided by the foreign customer. After sufficient time has passed to permit additional stockage, the customer is permitted to requisition against the U.S. Army supply system the same as U.S. Army units.

The same priority system is used and countries are assigned **Force Activity Designators (FAD).** The CLSSA permits foreign governments to take advantage of the already existing U.S. Army supply system and the economical advantage of quantity buys. Follow-on parts support can be a significant part of U.S. Army total Support. For example, approximately 1,500 UH-1Ds and Hs

MONTGOMERY, AL—Five of the 20 Army officers attending the USAF Air War College at Maxwell AFB are Army Aviators. Shown, l-r, are LTC's Bob Stack and Frank H. Mayer; COL Bill O'Hara, Jr.; and COL Lew Carter. COL Emmett F. Johnson was missing at the time of the photo.

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U.S. ARMY TI
MATERI

COL Kenneth E. Kellogg
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COMMAND CHART

OOP SUPPORT AND AVIATION
L READINESS COMMAND

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Director for Maintenance
(DRSTS-M)
263-2423

LTC Arther W. Mason
Director for Int'l Logistics
(DRSTS-I)
263-2807

Richard M. Battison
Director of Management Info Systems
(DRSTS-D)
263-3371

COL Thomas M. Walker
Director of Systems Management
(DRSTS-W)
263-2306

Don W. Schmitz
Director for Procurement and Production
(DRSTS-P)
263-3125

LTC(P) Paul A. Wilbur
Director of Materiel Management
(DRSTS-S)
263-3176

COL Francis W. Craig
Dir. for Personnel, Training and Force Development
(DRSTS-R)
263-2152

Wilmer G. Creel
Director of Product Assurance
(DRSTS-Q)
263-3478

COL S. Chip Byrom
Comptroller
Off, Comptroller
(DRSTS-C)
263-2001

LTC Owen L. Ratcliff, Jr.
Director of Plans and Systems Analysis
(DRSTS-B)
263-2077

have been provided through FMS and Grant Aid programs around the world and many are supported through the U.S. Army system.

The Total Package Approach

A current thrust within the DARCOM Security Assistance Community is the **Total Package Approach (TPA)** to FMS. TSARCOM DIL has been a leader in this effort in planning for acquisition and initial deployment of new aircraft to foreign countries. Specifically, there are major TPA efforts underway for sales of COBRAs to Jordan and Pakistan. Neither of these countries currently have COBRAs. The TPA is a concept that insures that foreign customers are aware of and afforded the opportunity to plan for and obtain all necessary support items, training and services to efficiently introduce and operationally sustain major items of equipment and/or systems considered for purchase. The U.S. Government has an obligation to insure that the foreign customers are satisfied with the equipment they purchase through FMS. The TPA, if properly used, will assure successful deployment, operation, and support.

The preferred method of writing FMS cases for major systems is to have a U.S. team first make a survey in-country to determine what the foreign country has to support the equipment being considered for purchase and then to design an FMS case to cover a total package. In reality, however, FMS cases are usually written and a survey is conducted after the customer has signed the case. This was what happened for Jordan and Pakistan. TSARCOM DIL's approach for both Pakistan and Jordan COBRA cases was to assemble a team of experts to include training representatives from TRADOC (Fort Rucker, Fort Eustis, and Fort Gordon) and representatives from other DARCOM commands as required.

Upon arrival in-country, a detailed survey of the country's capability vs requirements for TPA support was made. The country was briefed and informed of everything required to fully support the equipment and a report was written. Once back in CONUS, the DIL modified the FMS case as required to include those things agreed to by the foreign customers.

Some major considerations for the TPA are:

- Initial Support
- Training
- Technical Assistance
- Sustaining Support

Initial support includes aircraft configuration to meet the customer's needs, a concurrent spare parts support package to be delivered not later than aircraft arrival, tools and test equipment for support of the aircraft, technical publications and methods of shipment and delivery. In training, we are concerned both with pilot/operator training and logistics training. Training may be given at U.S. Army schools, by short term **Mobile Training Teams (MTT)** similar to U.S. Army **New Equipment Training Teams (NETT),** or by longer term **Technical Assistance Fielding Teams (TAFT)** by U.S. Army

(SECURITY/Continued on Page 72)

Feb. 1983 Breakdown
(AAAA Membership as at 24 Feb 1983)

Category	Membership Total
Generals	118
Colonels	620
Lieutenant Colonels	1,112
Majors	1,194
Captains	1,269
Lieutenants	705
CWO's	1,636
WO's	749
Enlisted	832
DAC's	1,677
Civilian (Non-Military)	1,733
Membership Total	11,676

by Colonel Ronald K. Andreson

The UH-60A: Performing today; Planning for tomorrow

THE demands for a versatile utility helicopter were well met during the Vietnam era by the UH-1. However, as missions and demands for aviation support increased, technology advanced, and the venerable UH-1 grew older, a replacement aircraft was needed to meet the Army's increased requirements.

ABOUT THE AUTHOR
A frequent contributor to "Army Aviation," Colonel Ronald K. Andreson is the Project Manager for the Army's UH-60A BLACK HAWK Program.

The Army needed an aircraft that was reliable, dependable, and one that could perform. This is what we have received:

- An aircraft designed from the beginning to perform its basic missions at the 4,000 ft/95°F criteria. Under these conditions, it has demonstrated that it will lift 11 combat-equipped troops and climb vertically in excess of 450 FPM, and cruise at 145 kts.
- An aircraft that can perform its basic mission with an endurance of 2.3 hours, including 30 minutes of reserve fuel.
- An aircraft in which the daily maintenance inspections have been reduced to every ten flight hours or seven days. Phased maintenance inspections are at 500-hour intervals, compared to every 100 hours for the UH-1.
- An aircraft where crash survivability of the occupants who greatly increased with the combination of a new landing gear and improved crashworthy seats, allowing for a vertical impact of up to 42 FPS without serious injury to the occupants.
- An aircraft with an external load capability of 8,000 pounds.

In addition to in-

Chart 1
BLACK HAWK SURVIVABILITY-VUNLNERABILITY FEATURES

DIFFICULT TO ACQUIRE
- Low Reflective Paint
- Reduced Noise Levels
- Reduced Radar Cross Section
- No Visible Engine Smoke/Flame

DIFFICULT TO HIT IF ACQUIRED
- Maneuverability in NOE
- IR Suppression
- Provisions For:
  - APR-39 Radar Warning Receiver
  - XM-130 Chaff Dispenser
  - ALQ-144 IR Jammer

DIFFICULT TO DOWN IF HIT
- 7.62mm Protection
- Armored Crew Seats
- Fuel Cell Self Sealing to 12.7mm
- Dual Engines Widely Separated
- Redundant Flt Controls, Hyd, Elect
- Gearboxes-30 Min Dry Run Capability
- Ballistically Tolerant Main & Tail Rotor Sytem
- Multiple Load Paths
- Engine and APU Fire Detector/ Extinguisher

CRASHWORTHY IF DOWNED

Chart 2
BLACK HAWK CRASHWORTHY FEATURES

- Structure Designed to Progressively Deform During A Crash
- Energy-Absorbing Landing Gear
- Crash-Attenuating Crew and Troops Seats
- Contoured Nose Prevents Plowing
- Crashworthy Fuel System
- Suction Fuel Pumps
- High Mass Components Contained to 20G
- Main And Tail Rotors Impact Tolerant
- Airframe Provides Roll Over Protection
- Fuel Cells Separated From Ignition Sources

creased performance and survivability, (**Chart 1, 2**) the main transmission and tail rotor gearboxes are designed to operate to 30 minutes without oil. The tail rotor has no bearings and requires no lubrication. The aircraft can safely operate with only one of the three hydraulic systems functioning. There is an onboard **Auxiliary Power Unit (APU)** for starts, run-up checks and emergency use. The aircraft has twin T700 GE engines for increased mission reliability. The **Automatic Flight Control System (AFCS)** provides a limited auto pilot capability that greatly reduces pilot workload. The **Command Instrumentation System (CIS)** enhances the ease and ability to fly under instrument flight conditions.

The UH-60 is far ahead

For those why fly and support the BLACK HAWK, the improvements over the UH-1 seem endless. This is not to imply that there are no problems with the aircraft. As with any new, complex, state-of-the-art aircraft, there are some problems. Most notable are water leakage, APU and repair parts problems. These and other problems are being attended to and will be corrected as funds and technology will allow. Even with these hindrances, the BLACK HAWK is far ahead of its competition.

The UH-60A is bettering its mean time between failure and maintenance

manhours per flight hour requirement. The mission reliability requirement has not quite been achieved. However, there has been substantial growth in this parameter throughout the fielding. Corrective actions have been identified for all failures and changes have been implemented on production line aircraft. The aircraft should achieve this requirement as reliability improvements continue to be applied to new and fielded systems.

1,107 requirement continues

The Army requirement for BLACK HAWK continues at 1107 aircraft (**Chart 3**). Current plans call for delivery of H-60 derivative aircraft at a rate of 96 per year. This rate includes procurement of the EH-60A Quick Fix systems when it enters production in 1984. Production is currently programmed through 1990.

As of October 1982, BLACK HAWK deployments have taken place at Fort Campbell, Fort Bragg, Fort Lewis, Fort Benning, Fort Stewart, and U.S. Army Europe (**Chart 4**). Thirteen **Combat Support Aviation Companies (CSAC),** two air cavalry squadrons, and two medical units have been fielded and are fully operational. The CSAC initially fielded at Fort Benning was subsequently deployed as a unit to Europe and became the first operational CSAC in USAREUR. Deliveries are currently ongoing to additional European units.

CHART 3

BLACK HAWK PROGRAM
AIRCRAFT QUANTITY

FY	BLACK HAWK	USAF	QUICK FIX	TOTAL
77	15			15
78	56			56
79	92			92
80	94			94
80	80	5		85
82	96	6		102
83	96			96
84	84		12	96
85	78		18	96
86	78		18	96
87	78		18	96
88	85		11	96
89	96			96
90	79			79
TOTAL	1,107	11	77	1,195

Chart 4

UH-60A BLACK HAWK PROGRAM DEPLOYMENT STATUS AS OF 1 OCTOBER 1982

101st Airborne Division (Air Assualt)	127
82nd Airborne Division/XVII ABN Corps	61
9th Infantry Division	28
24th Mechanized Division	15
USAREUR	35
Training Base—Other	34

Twenty-five aircraft support the training base, follow-on testing and other RDTE programs in CONUS. Fielding to Korea is scheduled to begin in October, 1983 followed by WESTCOM and additional FORSCOM units.

Tactical BLACK HAWK units have participated in numerous major exercises worldwide during the past three years. Notable was BRIGHT STAR II in 1981, which included an 82d Airborne Division CSAC. During the exercise, the aircraft flew over 300 hours while maintaining an operational readiness of 96%. This was more noteworthy considering the adverse environmental conditions created in the hot, dusty, and sandy Egyptian country.

The program has transitioned to the production/deployment phase. Hence, on 1 October 1981, the BLACK HAWK Project Manager's Office was reassigned to the U.S. Army **Troop Support and Aviation Materiel Readiness**

As the Army's newest utility helicopter, the UH-60A BLACK HAWK helicopter provides the ground commander with unparalleled tactical mobility. Here, four UH-60A's bring in an Artillery Battery.

Command (TSARCOM). In line with the TSARCOM mission, the principal current focus is to support the fielded aircraft. TSARCOM personnel are deeply involved in resolving field problems, particularly supply support. To add to the normal challenge of supply support, unprogrammed special missions were flown that exceeded anticipated usage, and additional funds were not provided. The transition from contractor to organic supply support presented another challenge. Delays in receipt of provisioning data, lengthy time required for processing and lack of NSN identification of items presented difficulty in transferring residual assets from contractor facilities to organic storage depots.

The transition period has been difficult and the **Not Mission Capable Supply (NMCS)** rate has been less than desirable. However, the mission capable rate is approaching the DA standard and is expected to continue to improve over the next few months. Notwithstanding the problems associated with maintaining and transitioning support, the operational readiness of BLACK HAWK has been maintained at an honorable level.

Although the BLACK HAWK has many capabilities its predecessors did not, time and experience have revealed shortcomings that need to be corrected and areas of improvement that will enhance the aircraft performance.

One future improvement that should be coming is a composite rotor blade. The benefits of a composite blade include reduction in cost, reduced requirement for a strategic material (titamium) and deletion of the **Blade Inspection Monitor (BIM).** A composite blade is currently being designed and tested. If successful, the composite

☐ **Surveillance** ☐ **Long Range Target Acquisition**
☐ **Precise Laser Designation** ☐ **Automatic Target Handoff**

AEROSCOUT McDonnell Douglas is developing a stabilized Mast Mounted Sight for the Bell Kiowa Aeroscout to provide survivable day or night battlefield management. The sight is part of the Army Helicopter Improvement Program.

Mast Mounted Sight
MCDONNELL DOUGLAS

blade for BLACK HAWK could possibly be in production by mid-1985.

Improvements being made to the APU will: allow the **Electronic Sequence Unit (ESU)** to withstand voltage spikes, eliminate the automatic restart of the APU in the event of an accidental APU shutdown, and an improved fuel purge system which prevents coking of the start nozzle.

Other improvements are in process on the fuel system, de-icing kits and a hover IR suppressor system. An **external stores support system (ESSS)** is under development. It will allow the aircraft to carry additional fuel for self-deployment. This capability will provide the BLACK HAWK a self-deployment of 1,150 nautical miles. Other missions will undoubtedly develop for the ESSS.

TRADOC is staffing a draft ROC for an improved BLACK HAWK to be fielded in 1989. The BLACK HAWK block improvement program is an integrated materiel improvement program for the UH-60A. The improvement program was narrowed to the following areas after evaluating all feasible improvements.

- Increased external lift
- Improved **reliability, availability, and maintainability (RAM)**
- Improved flexibility to perform multiple roles
- Improved crew effectiveness
- Improved combat survivability
- Worldwide self-deployability
- Expanded adverse environment operational capabilities

The need to transport the **High Mobility Multipurpose Wheeled Vehicle (HMMWV)** and perform other missions at high altitudes and temperatures has driven the need to improve the lift capability. Planned and projected growth for the GE T700 engine should enable it to provide the improved BLACK HAWK an operational gross weight of 24,500 pounds compared to 20,250 today. Additional improvements are planned in the areas of sand erosion, corrosion, protection from **electromagnetic pulse (EMP)** and lightning, high energy laser weapons, and larger caliber weapons.

Now in its fourth year since initial fielding, the BLACK HAWK has performed remarkably well and has met or exceeded most of its performance requirements and goals. It provides the commander with a troop and cargo mobility capability for present and future battlefields. When merged with the remainder of Army Aviation — attack, scout, cargo and electronic surveillance — the BLACK HAWK affords the commander the greatest multiplier of combat power he has ever enjoyed.

One good turn!

Chicago Area Chapter President LTC Lorry C. Thomas, Ret., left, presents a Certificate of Honorary (Chapter) Membership in AAAA to MG Johnny J. Johnston, Commanding General of Army Readiness and Mobilization Region V, Fort Sheridan, IL, in recognition of his outstanding interest and his advancement of the skills and techniques required in U.S. Army Aviation.

In a quick turnabout ceremony, Major General Johnston, right, opened his desk drawer and whipped out a U.S. Army Reserve Hat and a not-too-appropriate "I want you for the U.S. Army" T-shirt for the retired Army officer to don. "I'm flattered that the Army would still want me!" quipped the genial Quad-A officer. The double ceremony preceded the Chapter's dinner dinner meeting in Chicago on January 14.

By Colonel Donald R. Williamson

COBRA's bite gets bigger!

THE AH-1S **Modernized Cobra (MC),** representing the latest in armed helicopter state-of-the-art technology, evolved from a steadily updated and improved version of the AH-1 Cobra Helicopter. Starting with the HU-1 Warrior Project of 1962, the Cobra design has been improved to the point where the AH-1S Modernized Cobra is the most formidable fielded armed helicopter in the free world.

The Cobra Program serves as a ideal example of the benefits which can result from investment in Product Improvement. The current AH-1S features the following advanced subsystems (See Figure 1):

Improved Main Rotor Blade (IMRB): The IMRB was developed by Kaman Aerospace Corporation and is constructed from high technology composites utilizing a total composite design. The IRMB provides increased aerodynamics efficiency with a 3 to 5 percent lift improvement due to its non-symmetrical airfoil surface. The life span of the new blade is substantially greater than the previous metal blade. The use of composite materials increases blade life to 10,000 flight hours and requires less maintenance. The use of an efficient composite design has reduced rotor system radar signature and acoustic noise thereby improving aircraft survivability. The leading edge of the blade is protected by an erosion boot which provides superior protection in most sand environments. The IMRB represents a

ABOUT THE AUTHOR
Colonel Donald R. Williamson serves as the Project Manager in the COBRA Project Management Office at Hqs, USA TSARCOM, in St. Louis, MO.

significant improvement to the Cobra's safety, survivability and overall flight performance.

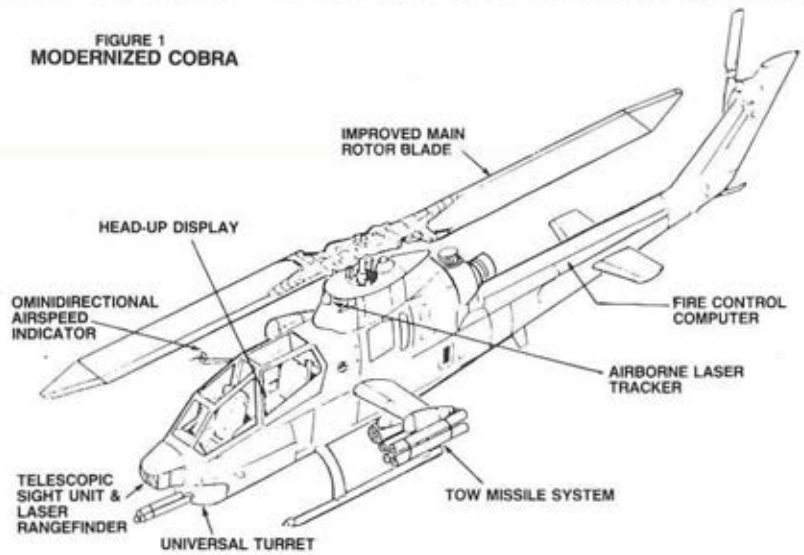
Fire Control System (FCS): The Cobra FCS incorporates an on-board digital computer which receives information and command signals from the aircraft subsystems such as the **Air Data System (ADS), Telescopic Sight Unit (TSU),** Laser Rangefinder and Laser Tracker.

ADS: The ADS provides three axis airspeed, rotor down wash, static pressure and outside air temperature to the fire control computer. The real time conditions are then used to establish aim point corrections for Cobra weapon systems. This compensation and the basic ballistics equations of the weapons themselves provide a first round hit capability for the Modernized Cobra Aircraft.

Telescopic Sight Unit: The Cobra TSU provides forward and side looking optics for target acquisition. The TSU allows the gunner to identify and track targets within the aircrafts weapons range. The Laser Rangefinder located in the TSU uses a series of light pulses to accurately identify target range for the fire control computer. The computer aligns the weapons system based on TSU sight information and laser distance to make accurate target strikes.

Airborne Laser Tracker (ALT): The ALT allows ground designated targets to be located and tracked from the air. The target area is indicated by coded pulses reflected from the target. The laser tracker aligns the TSU to the target location along the reflected light path which is received through the laser tracker sensor. This allows the gunner to sight in the designated target for weapons deployment. The increase in

FIGURE 1
MODERNIZED COBRA



target acquisition capability improves the Cobras anti-armor effectiveness.

Universal Turret (UT): The UT developed by General Electric Armament Systems houses the M197 20 mm cannon which replaces the 7.62/40mm, mini-gun/grenade launcher weapons system and is controlled by two sighting systems, the TSU and the **Helmet Sight Subsystem (HSS).** The UT provides the 20mm cannon with a targeting area of 15 to 20° evaluation, 50° depression and a 110° left and right of the aircraft center line. The 20mm cannon provides a significant increase in gunnery accuracy, range and fire power.

Rocket Management System (RMS): The RMS is used to preselect and fire 2.75 inch rockets. The RMS provides a capability to fire the new family of submunition rounds in addition to the standard warhead. The RMS provides the pilot with the ability to select a type, sequence and quantity of rockets to be fired. The RMS system also provides the pilot with a fuse setting capability enhancing rocket effectiveness against a range of targets either in the open or under tree cover.

Head Up Display (HUD): The HUD provides the pilot with targeting, weapons and flight information. The information is transmitted from the **Cathode Ray Tube (CRT)** located on the pilot's instrument panel to a optically linked transparent screen system. This design allows continuous monitoring of vital subsytem functions enhancing pilot and weapons system performance.

TOW Missile System (TMS): The TMS provides the Cobra aircraft with anti-armor firepower to combat the armor threat. When fired, the TOW missile automatically follows the gunners line of sight to the target. The gunner need only maintain target tracking to score a hit. The accuracy and range of the TOW system provides the Cobra with a stand-off weapons capability beyond the range of many enemy air defense and threat systems and is considered to be the primary weapons system on the Modernized Cobra.

Not surprisingly, the AH-1S (MC) configuration above is not the end all airframe. New subsystems are added to the snake to make it more versatile and operable within the present day flight envelopes. These subsystems consist of programmed and envisioned improvements.

Programmed Improvements

There are several Programmed Improvements, to include the Wire Strike Protection System and the TAH-1S Tanker Aircraft.

Wire Strike Protection System (WSPS): The WSPS is designed to guard against wire strike related accidents by providing cutters which prevent the aircraft from becoming entangled. Bristol Aerospace LTC has developed a wedge wire cutter oriented for helicopter aircraft. The design uses a 45° vertical fin which guides the obstructant wire into the wedge cutting blades to be severed (See **Fig. 2).**

Twin stabilizer struts are mounted to the fin body to increase rigidity allowing higher velocity wire strikes. The wedge cutting design provides the aircraft the ability to sever high strength multistrand wire used for high voltage purposes. The Cobra employs three centerline wedge cutters in critical areas. These three locations provide the aircraft with maximum cutting area capability. Wedge cutters are mounted to the upper canopy railing above the pilots seat, the underside fuselage panel behind the turret and the underside nose area in front of the turret. These positions, coupled with TSU and canopy deflec-

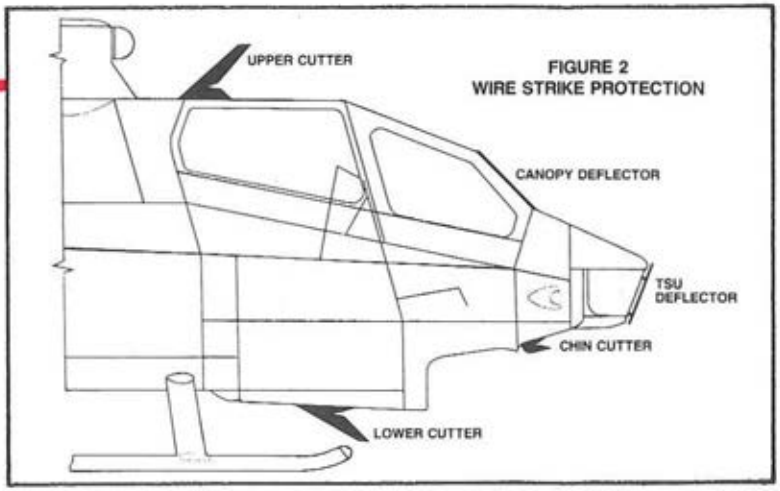


FIGURE 2
WIRE STRIKE PROTECTION

tors, allow the aircraft to head directly into the wire. The inclined surfaces of the aircraft will force the wire to travel over the canopy or under the nose to one of the cutters.

By using direct nose contact, the pilot is assured the wire will reach a cutter. Simulated wire strike testing proved the effectiveness of the cutting system by creating possible field encounters such as vertical and horizontal off angle strikes and multiple cuts. The WSPS did successfully complete all testing and will become an integral part of all Cobra aircraft. The low terrain level maneuvers now used to combat armor has increased the threat of wire strikes, the WSPS removed this new threat.

TAH-1S Trainer: The TAH-1S is designed to provide pilot contact flight training in an aircraft more suited for the job (See **Fig. 3).** The TAH-1S has removed the TSU and UTS which are not required. These systems have been replaced with ballast weight material to provide the aircraft with the same weight performance. Lightweight Heavy Duty Skid Shoes and Non-Chemmilling of the cross tubes have improved the aircraft's landing capability.

These trainers are repeatedly subjected to autorotation landings, simulated hydraulic failure landings and other nonstandard maneuvers which stress the landing gear. The most important addition to the trainers are the front seat cyclic boost kits. Conventional Cobra aircraft pilot cyclic stick has a 4 to 1 advantage over the gunner's cyclic stick. During flight training the Instructor Pilot teaches from the gunners position which allows the student to train in the pilot position. The hydraulic boost kit produces a 1 to 1 power ratio for the gunner's cyclic system. This system avoids having the Instructor Pilot at a control disadvantage to the student under conditions when he must take control to maintain safe flight.

Evolving Improvements: In June 1981, HQ DA tasked TRADOC and DARCOM to identify requirements for enhancing the capability and extending the life of the Cobra fleet through the year 2000. This tasking brought together representatives from training, doctrine, threat, development and evey Cobra unit world-wide to assess and identify program improvements which would satisfy future Cobra attack helicopter requirements. Labeled **"Cobra 2000,"** the primary focus of this improvement program is to upgrade the older AH-1S Modified, AH-1S Production and AH-1S **Enhanced Cobra Armament System (ECAS)** aircraft to a

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From the new MK66 wraparound fin and nozzle assembly that provides increased trajectory stability and range, to the expanded array of powerful warhead fuze combinations ... the STILETTO 70 brings new accuracy, versatility and cost effectiveness to the battle-proven 70mm/2.75 inch rocket.

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The system features three selectible firing rates (fast, slow and automatic), three firing modes (singles, pairs and quads) and selectibility of up to 5 on-board warhead/fuze types.

The M-138 features automatic inventory and display of quantity and type, total RC fuze capability, and is fire control computer/laser rangefinder interface compatible.

A new *lightweight* (5 lb.), easy to install, *single-box* micro-processor based RMS/AMS is now also available. This system not only provides for rocket firing and fuze setting as does the M-138, it also provides for gun control on the same panel for any helicopter or airplane.

AIR-TO-AIR
AIR-TO-GROUND
GROUND-TO-GROUND
GROUND-TO-AIR

Mission versatility against materiel, personnel and armor is provided by a broad range of warhead fuze combinations giving selective effects in four combat roles:

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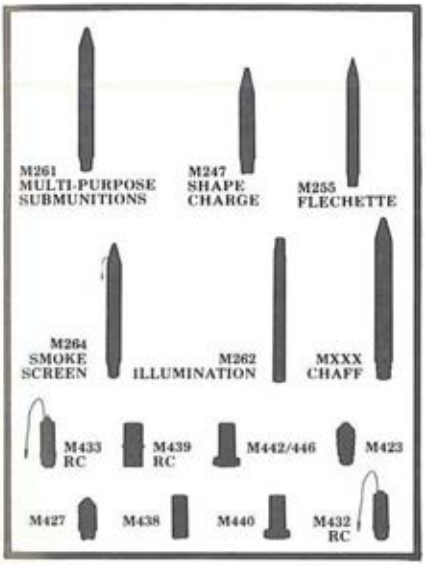
A BROAD RANGE OF WARHEAD FUZE COMBINATIONS



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more supportable, survivable and effective attack helicopter. Included in this program is a requirement to provide improved "hot day" performance; a night anti-armor, dirty battlefield capability compatible with the more effective TOW 2 Missile; and standardization of the older Cobra airframes for improved supportability.

The AH-1S Modified, Production and ECAS aircraft will undergo a factory conversion, upgrade to a Modernized Cobra configuration with complete provisions for fire control, laser rangefinder and ALT. This upgrade will standardize the Cobra fleet weapons systems, cockpit, communication, navigation and aircraft survivability equipment. Subsystem changes include the following improvements.

Four Bladed Rotor: A 46-foot diameter, four-bladed main rotor system will replace the present 44-foot two-bladed rotor. This change provides a significant improvement in aircraft performance — equivalent to 900 pounds of additional lift — to meet the hot day performance requirement. This change also enhances aircraft safety by reducing pilot workload, improving aircraft handling characteristics and provides improved safety for operations in the nap-of-the-earth flight regime. The four-bladed rotor hub, blades and rotating control system is FAA certified and in production on the Bell Commercial Model 412 Helicopter.

Environmental Control Unit (ECU): The present engine bleed-air driven ECU will be replaced with a higher output mechanical ECU, shaft driven from the main transmission. The mechanical ECU provides a significant improvement in performance by requiring 85 less horsepower for operation than the present system. This change provides over 500 pounds of additional lift under hot day conditions. Coupled with this performance improvement, the mechanical ECU also provides improved cooling capacity for crew members, avionics and sighting subsystems without creating engine power or internal engine temperature problems associated with the use of bleed-air.

Night Capability: To expand the operational capability of the M-65 Airborne TOW Missile System, a depot modification program will be conducted to integrate a thermal imaging, **forward looking infrared (FLIR)** sensor into the Cobra telescopic sight unit. The depot modification also encompasses TOW guidance link changes for employment of the more lethal TOW 2 Missile, reliability improvement for TOW system electronics and an expanded field repair capability through incorporation of modular design improvements. TOW System modifications retain the present two fields-of-view FLIR sensor which will provide a stand-off, passive, night capability, enhanced day capability and TOW 2 employment capability on the dirty battlefield — through reduced visibility conditions, smoke and electro-optical countermeasure environments. Cobra 2000 received HQ DA concept approval in April 1982 and will be seeking a program go-ahead decision in early 1983.

Filling the low side

A two phase program is being planned which will field the first improved performance aircraft iin March 1986 and the first full night capability in October 1987. When completed, the Cobra fleet will be comprised of approximately 500 newer AH-1XX (Cobra 2000) and 500 older AH-1S (Modernized Cobra) aircraft.

These two configurations of the AH-1 Cobra will fill the low side of the high-low attack helicopter force structure well into the year 2,000. IIIII

QUALITY MEANS PERFORMANCE

Rotair Industries, with 20 years of experience in Sikorsky parts, is now producing components for the UH-60A Black Hawk.

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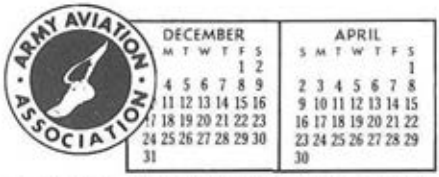
Calendar



JANUARY, 1983

■■**JAN. 10.** Ft. Bragg Chapter. Prof'l Membership Meeting. **BG William C. Roll,** Director of Officer Personnel Management, guest speaker. Ft. Bragg O-Club.

■■**JAN. 11.** Ft. Benning Chapter. Prof'l Luncheon Meeting. **J.J. Halisky,** PMO, HELLFIRE Missile System, guest speaker. Ft. Benning O-Club.

■■**JAN. 18.** Combined Arms Center Chapter. Quarterly Membership Meeting. **COL John D. Robinson,** Commander-Designee, 9th Cav Bde (AA), Ft. Lewis, guest speaker. Ft. Leavenworth O-Club.

■■**JAN. 18.** Washington, D.C. Chapter. Prof'l Luncheon Meeting. **COL Jimmie A. Creech,** USMC, guest speaker. Quality Inn, Pentagon City.

■■**JAN. 19.** S. California Chapter. Prof'l Dinner Meeting. **LTC Robert K. Merrill,** USA AEFA and **G. Warren Hall,** NASA, Ames Research Center, guest speakers. Super Buffet. Hacienda Hotel, El Segundo.

■■**JAN. 20.** Pikes Peak Chapter. Prof'l Membership Meeting; Election of Chapter Officers. **MAJ Roy E. Mann,** Commander/Head Coach, 1981 World Champion Helicopter Team, guest speaker. I-House (Ironside Saloon).

■■**JAN. 20.** Mt. Rainier Chapter. Prof'l Meeting; Election of Officers. Presentation by **Steve Riddle,** ERAU. Lake Lodge O-Club.

■■**JAN. 20.** Lindbergh Chapter. Prof'l Luncheon Meeting. **Joseph P. Cribbins,** ODCSLOG, guest speaker. Holiday Inn—Airport.

■■**JAN. 21.** Colonial Virginia Chapter. Prof'l Luncheon Meeting. **MG Carl H. McNair, Jr.,** CG USAAVNC, guest speaker. Ft.Eustis Main NCO Club.

■■**JAN. 27.** Corpus Christi Chapter. Prof'l Luncheon Meeting. **COL Jim Tuggey, Ret.,** Bell Helicopter Textron, guest speaker. NAS O-Club Ballroom.

■■**JAN. 28.** Monterey Bay Chapter. Prof'l Meeting. Hughes Aircraft Company presentation. Ft. Ord NCO Club Ballroom.

■■**JAN. 31.** Mainz Chapter. Chapter Elections; Garmisch '83 Information. Mainz-Finthen Club.

FEBRUARY 1983

■■**FEB. 2-6.** Monterey Bay Chapter. "Ski Extravaganza". Lake Tahoe.

■■**FEB. 4.** Aloha Chapter. Prof'l meeting. **MG Carl H. McNair, Jr.,** CG, USAAVNC, speaker. Wheeler O-Club.

■■**FEB. 4.** Citadel Chapter. Social Meeting. Alumni House. The Citadel.

■■**FEB. 5.** Ft. Indiantown Gap Chapter. Quarterly Membership Meeting; Chapter Elections. Presentations by DA Aviation Branch Personnel and Sikorsky Aircraft. EAATS Mess Hall.

■■**FEB. 8.** Wings of the Marne Chapter. General Membership Meeting; Chapter Election. **COL Kirby Lawson,** USAREUR Aviation Officer, guest speaker. Gast Haus Lutz, Giebelstadt.

■■**FEB. 12.** Chesapeake Bay Chapter. Valentine's Dinner Dance-Prof'l Meeting. Edgewood O-Club.

■■**FEB. 15.** Citadel Chapter. Prof'l Membership Meeting. **BG Charles E. Teeter,** DCG, USAAVNC, guest speaker. Mark Clark Hall Auditorium.

■■**FEB. 15.** Washington D.C. Chapter. Dinner Meeting. **LTC Edward R. Seiffert,** USMC, guest speaker. Ft. McNair O-Club.

■■**FEB. 17.** Army Aviation Center Chapter. Prof'l Meeting. Slide presentation by **Tuskegee Airmen's Institute.** Ft. Rucker O-Club.

■■**FEB. 17.** Lone Star Chapter. General Memb. Meeting. AHIP presentation by Bell Helicopter Textron. Coors Hospitality Room.

■■**FEB. 18.** Lindbergh Chapter. "Bring A New Member" Beer Bust! Flaming Pit Restaurant (Ferguson).

■■**FEB. 22.** Schwaebisch Hall Chapter. Quarterly Membership Meeting. Speakers to be announced.

■■**FEB. 23.** Air Cavalry Chapter. Quarterly Memb. meeting; Chapter elections. Main NCO Club, Ft. Knox.

■■**FEB. 23.** Colonial Virginia Chapter. Prof'l Dinner Meeting. **LTC E.R. Sieffert,** USMC, guest speaker, on "The Iranian Rescue Attempt". FEOOM.

■■**FEB. 24.** Monmouth Chapter. **Richard E. Lewis, II,** Technical Director, USA AVRADCOM, guest speaker. Gibbs Hall, Ft. Monmouth.

■■**FEB. 25.** Corpus Christi Chapter. Business Meeting. NAS O-Club Ballroom.

■■**FEB. 25.** Ft. Sill Chapter. Prof'l Luncheon Meeting. Chapter Elections; presentation by Bell Helicopter Textron. Ft. Sill O-Club.

■■**FEB. 28.** Stuttgart Chapter. General Memb. Meeting. **Abe Lauer,** Hughes Aircraft Company, guest speaker. Nellingen O-Club.

MARCH 1983

■■**MAR. 1.** Bonn Area Chapter. Prof'l Membership Meeting. Motorola presentation. Bad Godesberg American Embassy Club.

■■**MAR. 1.** Mid-American Chapter. Quarterly Memb. Meeting. Chapter elections. Ft. Riley Main O-Club.

■■**MAR. 2.** Tennessee Valley Chapter. Prof'l Dinner Meeting. **LTG Jack V. Mackmull,** CG, XVIII Abn Corps, guest speaker. Redstone O-Club.

■■**MAR. 4.** Corpus Christi Chapter. AAAA Barbecue and Dance. Moravian Hall.

■■**MAR. 4.** Ft. Sill Chapter. Aviation Safety Seminar. **COL James Lloyd,** DES Branch Chief, USAAVNC, speaker. Snow Hall Auditorium, Ft. Sill NCO Club.

■■**MAR. 10.** Ft. Bragg Chapter. Prof'l Meeting. **Norman Taylor,** Foreign Science and Technology Center, Charlottesville, VA, speaker on "Soviet Helicopter Capabilities (Classified Secret). JFK Center Auditorium.

■■**MAR. 12.** Chicago Area Chapter. Prof'l Dinner Meeting. **GEN John A. Wickham, Jr.,** Vice Chief of Staff, USA, guest speaker. Northrop Defense Systems Division, Rolling Meadows, IL.

■■**MAR. 17.** Rhine Valley Chapter. Chapter Party. Von Steuben Hotel, Garmisch AFRC.

■■**MAR. 18.** Lindbergh Chapter. Luck O' the Irish — AAAA Convention Warm-Up Dinner Dance. Creve Coeur Country Club.

■■**MAR. 18.** Stuttgart Chapter. Cocktail Party. Patton Hotel, Garmisch AFRC.

■■**MAR. 18.** Taunus Chapter. Cocktail Party Meeting. Capri Lounge, Von Steuben Hotel, Garmisch AFRC.

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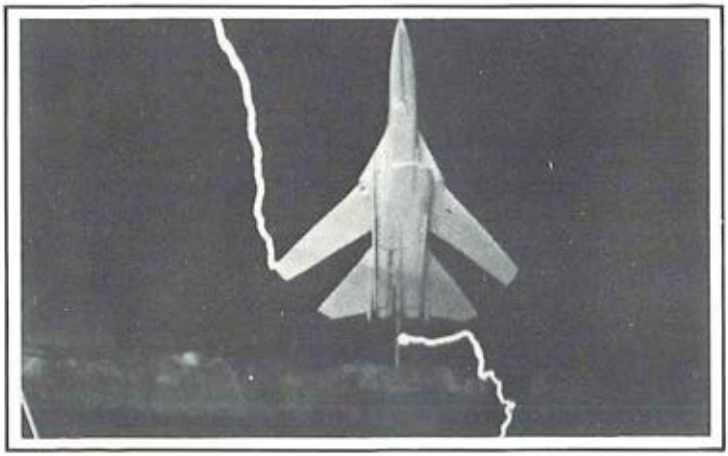

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by LTC Owen L. Ratcliff, Jr., and Ann Kemppinen

ORSA: A process under expansion

OPERATIONS research and systems analysis (ORSA) techniques and applications are expanding in geometric progression. The **Department of Defense (DOD)** uses highly sophisticated refinements of these techniques — often enhancing a private sector application for its own special uses. This is only fair, for it was the needs of the United States and the British military that first developed the field of operations research. This blossoming took place in the late 1930s and early 1940s. Today at TSARCOM, and throughout DOD, we benefit from those pioneering military scientists.

ABOUT THE AUTHOR
This article is co-authored by LTC Owen L. Ratcliff, Jr., Director of Plans and Systems Analysis, and Ann Kemppinen, Operations Research Analyst.

In attempts to define the term *operations research,* the word *system* usually creeps into the description before the first sentence is finished. For ORSA personnel in the **Directorate for Plans and Systems Analysis (D/P&SA),** it means looking at problems with the *systems approach* to decision making. The synergistic effect of combining varying talent and educational backgrounds plays a large part in ORSA success at TSARCOM. A team of 18 civilian operations research analysts, and three ORSA Captain positions, includes statisticians, mathematicians, engineers, computer scientists, economists, and business-and finance-educated personnel. Additionally, D/P&SA has planning specialists, and management analysts.

The projects and programs that D/P&SA has in its

purview are as diverse as the multidisciplinary team which executes them. The need for a quick response to a pressing problem can throw an analyst into high gear — often for just a day or two, while many other projects are long term in nature and require the efforts of two or more ORSA people. Often, Directorate analysts work in tandem with other directorates, project managers, or extra-TSARCOM elements such as HQ DARCOM, **Department of the Army (DA),** and other military services.

System Assessment Program

The HQ DARCOM-directed System Assessment Program provides a means for TSARCOM to interface with the users for the purpose of defining problems which may be degrading the system in areas of operational readiness, adequacy of training and manuals, maintenance, and safety. While the results of this measurement of field performance and user satisfaction are published in a standardized format known as the System Assessment Final Report, each assessment is unique. The 23 highly varied aviation and troop support commodity groups managed by TSARCOM present a wide variety of "management challenges," as well as lending themselves to several operations research techniques for analyzing field data.

The assessment program leans heavily upon field user questionnaires and personal interviews. For it is from the aviation mechanic operating in the German winter, or a unit in Korea charged with maintaining the company's air conditioners through the summer, that we, at TSARCOM, get a good fix on the problems. The publication of the final report is just the beginning, however. TSARCOM tracks each improvement action which has resulted from performance of a system assessment of an online system. The Command follows each problem through to resolution. The result of this program has been improvement of the total system, whether it be working with TRADOC, FORSCOM, USAREUR, Eighth Army, and other major Commands, or simply working harder and smarter in TSARCOM's own logistics and support management.

A high priority project in D/P&SA for the past few months has been the **Maximizing Daily Helicopter Flying Hours Study (MAX FLY).** As its name indicates, MAX FLY will determine the maximum number of flying hours for selected, first-line Army helicopters. By collecting, validating, and consolidating a complete reliability/maintainability description and asset position for the AH-1S, UH-60, OH-58C, CH-47C, and UH-1H helicopters using computer modeling, their projected life in a European scenario will be predicted.

Aircraft losses predicted

Another important project with respect to Army Aviation is the **Peace Time Replacement Factors (PTRF)** Project. Since its inception three years ago, D/P&SA has been able to predict aircraft losses quite accurately. The PTRF model relates accumulation of flying time to accumulation of incidents and accidents by class (such as Class A accidents) and by fleet. This realistic projection of aircraft losses allows for TSARCOM and the Army Aviation community to request funding appropriations from Congress which reflect the cost for replacement of lost assets. Although aviation safety is a primary consideration in the Army, it is the inevitable fact of life that losses will occur. Proper planning accommodates these materiel losses and ameliorates their impact.

Spares support for the UH-60 BLACK HAWK/T700 Modular Engine is another

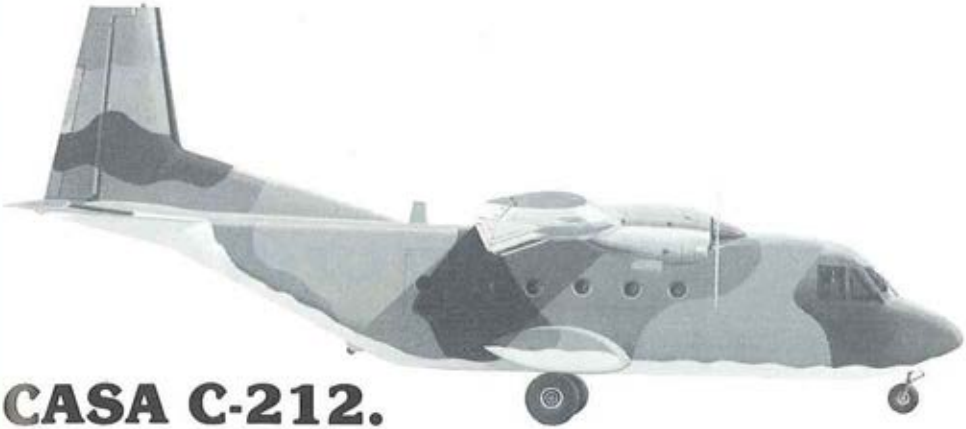
challenging D/P&SA project. The T700 Spare Parts Procurement Cost-Effectiveness Study had, as its initial objective, development of an acceptable technique for computing major spares' requirements for the T700 Modular Engine. The developing objective of this study of BLACK HAWK support is to set up an effective **integrated logistic support (ILS)** system for modular turboshaft engines. Working with the Project Manager, BLACK HAWK, D/P&SA will determine the number of spare "whole engines" and of spare modules which must be procured to support the BLACK HAWK fleet.

At any given time, several of D/P&SA's personnel are detailed to special projects. Not only does D/P&SA serve as a source of multi-disciplinary assistance, but the benefits of experience from these diverse assignments enhances the in-house pool of knowledge. Recent exposure as active participants on the UH-60 BLACK HAWK Should Cost and the CH-47 CHINOOK Should Cost teams is an example. Many cross-command assignments of D/P&SA personnel to AVRADCOM have broadened the analysts', and, therefore, the Directorate's scope. Working with various elements, D/P&SA seeks solutions with OR techniques such as probability theory, sequencing modeling, linear programming, and simulation, to name a few of the more commonly used approaches. It is an opportunity to marry TSARCOM's problems with D/P&SA's techniques.

Unconventional thinking

Problem solving in the Army Aviation Community demands intelligence, dedication, and open-minded savvy. Thinking about problems from angles which may be considered "unconventional" could be the key to continued success for our defense mission. The Army ORSA community, in which TSARCOM is represented well, is faced with problems that were unfathomable just a few years ago. By taking the problems apart, and examining them methodically with a *total systems approach,* optimal alternatives can, and will, be presented to the Command Group, directors, and project managers. This assists the actual decision makers who must be provided with competent analyses of complex problems in order to manage effectively, and to ensure the continuing success of the command in all of its activities. IIIII

FT. DEVENS—MAJ Alan D. Hix is shown receiving his Master AA wings from MG Joseph L. Fant, Commander, ARMR 1. Assigned to the 76th Division Maneuver Training Command (USAR) in Cranston, RI, Hix will attend C&GSC this year.



CASA C-212. THE TOUGH MILITARY MACHINE

One of the primary requirements of any military utility vehicle is that it be adaptable to a wide variety of missions. By definition, military airplanes must be tough machines, capable of handling a number of jobs under the worst possible conditions.

For more than a decade now, the CASA C-212 has been Spain's answer to the need for a modern, multi-mission aircraft at moderate cost; an aircraft good enough to replace the legendary C-47. A product of Construcciones Aeronauticas, S.A. in Madrid, Spain, the C-212 combines a variety of capabilities in one, tough, talented, STOL aircraft.

The CASA C-212 may be operated in a combi configuration combining personnel transport and cargo capability, an important advantage for an airplane that's called on to perform a variety of tasks. Whatever the cargo, the maximum 5,500 pound payload may be carried over distances of 310 nautical miles with a half-hour reserve.

The aircraft may be configured to carry up to 24 paratroopers with full combat packs. Alternatively, the C-212 can accommodate 12 stretchers and four attendants in the medical evacuation role.

The C-212 is also used to support ground personnel. The fold-down hydraulically operated, aft cargo door and standard roller system allows loading and cargo drops of items on pallets, as heavy as two tons.

In the optional search and patrol configuration, the airplane is fitted with up to 1,500 litre fuel tanks, extending endurance to more than 10 hours. Other options include provisions for photographic mapping, navigation training, geophysical survey, executive transport, rainmaking and a variety of other missions.

The CASA C-212 achieves its remarkable versatility through a combination of design simplicity and durable construction. The engines are reliable Garrett TPE-331 turboprops. The landing gear is a rugged fixed design to accommodate operation into short, unimproved, dirt runways with a minimum of maintenance support. All systems are readily accessible and built for easy serviceability.

In view of the CASA C-212's outstanding cost-efficiency, easy maintenance and ground support plus considerable talents for a wide range of missions, it's not surprising that the airplane is in military service in Spain, Indonesia, Portugal, Thailand, Chile, Nicaragua, Venezuela, Panama UAE, Jordan and a number of other countries.

For more information, contact: Construcciones Aeronauticas, S.A.; Rey Francisco, 4; Madrid 8, Spain. Telephone: 247 25 00. Telex: 27418.

CASA

by Wilmer G. Creel

The quality of Army aircraft

QUALITY is a major topic with respect to all American industry and is causing great concern. How does America stack up against the rest of the world? It is of no less concern to TSARCOM with respect to the Army's critical fleet of aircraft. The major question facing Product Assurance at this time is the quality of the new systems being introduced under Force Modernization Program, as well as the quality of repair parts to support the existing fleet.

ABOUT THE AUTHOR

Wilmer G. Creel serves as the Director of Product Assurance at Headqurters, U.S.Army Troop Support and Aviation Materiel Command.

During the development of an aircraft, hardware failures must be and are considered. The concept is to determine what failure rate can be tolerated based on mission requirements and cost effectiveness. Perfection does not exist and the closer one tries to get to it, the higher the cost soars or the goals/mission requirements must be sacrificed to obtain a simpler, less complex item. All of these considered trade-offs made, resulting in an aircraft system with an inherent reliability and a life cycle ownership cost.

When this is done, one other characteristic is established; the level of quality. This article will discuss what is required to maintain this level of quality during production, repair part procurement and depot maintenance in order that the reliability planned for is, in fact, maintained.

Quality control procedures during production is as diverse as there are producers. How one controls quality is not absolute, nor is

there a perfect method or even one good method that fits all situations. However, it has become quite evident in recent years that unless the program is at the grass roots level and involves the production workers, it will not succeed. Quality cannot be inspected in; it is an essential worker attitude. Intensive hands-on inspection can prevent a certain level of defects from entering the Army inventory, but does not solve quality problems and is extremely costly. Pride in doing the job right will yield the desired quality.

Thus far, the impression you have probably perceived is that quality is solely the domain of the contractor and his workforce. This is a fact of life. Then what is the Government's quality role? Simply stated, the Government's mission is to, by all legal means at its disposal, require the contractor to be a quality producer. At this time, it should be pointed out that "contractor", with respect to this article, includes the Government depot system.

How the Government performs its quality role for Army aircraft is basically a dual function. First, on-site quality involvement with the contractor is accomplished by DLA or by the various services in-plant administrative activities. Their role is to perform day-to-day cognizance of the contractor's performance, assuring his quality control is functioning; control non-conforming hardware; and, in fact, sign for Government ownership of the completed item. This is accomplished primarily using a systems monitoring approach. Hands-on inspection by Government personnel has long gone by the boards. This is performed only by exception when procuring command specifically requests it on selected characteristics. This leads to the other major elements involved in Army aircraft quality, TSARCOM.

TSARCOM's quality role is a three-phase program. First is to assure the technical information and procedures establishing the contractor's quality inspection system are adequate. This is done using quality engineers and specialists to review technical data packages and solicitations. When the contract is ready for signature, TSARCOM assures the level of quality control required is in the contract and a cost effective test program is in place.

Production management

The next phase of the TSARCOM quality mission is in the area of production management. This involves working with the Government in-plant quality personnel and the contractor to assure the provisions of the contract are being complied with and to provide hardware expertise to resolve or prevent substandard hardware entering the Army inventory. The last phase involves evaluating the effectiveness of the total quality

FT. HOOD—MG Benjamin E. Doty, the TRADOC Combined Test Activity Commander at West Ft. Hood, will take over command of the Army's Operational Test and Evaluation Agency (OTEA) in Falls Church, VA, eff July 1. (USA Photo)

operation as performed by both the contractor and the Government. This is accomplished using data available to TSARCOM.

Getting quality information

There are two prime sources for this information which are ultimately dependent upon field user/maintenance personnel feedback; one is a TSARCOM semi-controlled Field Sample Data Collection Program. This program is in place within selected sample field units and is functioning worldwide on all major fleets of Army aircraft. Semi-annual reports from this data base are published which summarizes and highlights the predominate hardware related maintenance events. Detailed investigations of apparent quality problems from this source involves direct interface with the computerized data base by extracting those parameters of interest.

The other prime source of quality information is the long established Quality Deficiency Report, SF 368. The criticality of this program to the overall quality program cannot be overstated. The user, whether it is the soldier in the field, depot or a contractor, is the ultimate evaluator of the quality. If the individual chooses to suffer in silence, then several events are triggered all bad for the Army. The depot stock is potentially contaminated with a probability of stock availability declining. If TSARCOM does not know parts are defective, replacement action is not initiated. Also the producer, whether intentionally or not, is ripping the Government off. The Army simply did not get what it paid for. TSARCOM will enter contracts with the producer with critical quality history missing. This will effect the level of Government involvement on current and follow-on contracts.

Quality-oriented workers

At the beginning of this article, the need for the production worker to be quality oriented was stressed as the key to quality. This leads to the question of what has the Government done to advance this concept. In essence, the Government has taken action to highlight and praise top quality producers. In a more positive action, DLA has designated high quality companies and corporations by certifying these organizations and removing Government quality operations relying solely on the contractor to issue quality hardware. TSARCOM, when dealing with an oganization with a good quality record, reduces the on-site audits and will generally reduce the testing program giving this contractor a competitive edge.

TSARCOM is open to any suggestions as to efforts that will enhance production quality. If you have any, send them to TSARCOM, DRSTS-Q. IIIII

By John O. Morris

Let's talk more about Safety of Flight

ONE of the major tasks that TSARCOM must face daily is the assessment of the safety status of the Army aircraft fleet. Action required when an unsafe condition develops is TSARCOM's No. 1 responsibility.

ABOUT THE AUTHOR
John O. Morris is the Acting Chief, Attack/Utility Helicopter Branch, in the Directorate of Maintenance at Headquarters, USA TSARCOM.

AR 95-18 "Safety-of-Flight Message" provides the basic guidances on how and when TSARCOM will inform the field that an unsafe condition may exist on their aircraft. The Safety-of-Flight AR was revised and issued effective 1 June 1980. The different categories of messages that will be transmitted are listed. By reviewing this AR, using units can better understand TSARCOM's position on a particular safety problem. The title relates the status of the particular Safety-of-Flight or potential Safety-of-Flight conditions being discussed in a message. Since AR 95-18 was issued there have been a significant new category of messages authorized in accordance with a forthcoming revision approved by DA. The Maintenance Mandatory was established—messages that are directive in nature and may or may not require reporting. They do not ground aircraft but provide maintenance information that should be implemented.

Also, the **Maintenance Information Message (MIM)** was established, which is not directive, but is a rapid vehicle for disseminating useful nice-to-know information to aircraft users. This is not to be construed as a Safety-of-Flight message as defined in AR 95-18.

A LONG WAY!

(Continued from Page 25)

AIMI materiel to Europe known as **Rapid Army Priority Item Distribution (RAPID)** system. Under RAPID, ALOC order and ship times which had been averaging 25 to 26 days have been reduced to 16-17 days.

No article would be complete without addressing the overall responsibilities of TSARCOM that extended far beyond aviation. On 1 July 1977, TSARCOM assumed responsibility for such diverse equipment and materiel as generators, watercraft, bridging, field hospitals, and numerous other items which support the troops. This broad range of items was brought under the management of TSARCOM by then **MG Richard H. Thompson,** first commander of TSARCOM, now the DCSLOG of the Army. Where feasible, he incorporated many of the highly innovative aviation materiel management and maintenance techniques to the benefit of those items assumed by TSARCOM while retaining the highly effective management of aeronautical materiel.

When I look back to 1959 and a $600 million fleet of Army aircraft, to the present fleet now worth over $3.5 billion, and the resources required for support of these aircraft, I must add the bottom line, "TSARCOM, you've come a long way, baby!" IIIII

THE RPO'S

(Continued from Page 29)

tion RPOs; however, he has to contend with building environmental problems, spare parts for outdated computers, etc., that affect the availability of the flight simulators. The availability of flight simulators is critical to the training of Army aviators and through CLS the availability has consistently exceeded 97%.

If the situation warrants, the RPO management team can be activated into an emergency action cell much like the "Readiness Action Team" formed to coordinate the worldwide transmission inspection and repair to the CH-47 helicopter fleet in an effort to expedite the restoration of operational readiness to that system. The RPO, as the system manager, must be prepared to respond to any emergency situation — even one as complex and demanding as the CH-47 helicopter transmission issue.

In summary, the RPO's job is dynamic, visible, every-changing, and challenging. For future Project Managers, the job provides the best practical PM training possible. The RPO function is not limited to U.S. Army troops. Under the total system management concept, the RPO is directly involved in State Department activities in the areas of Foreign Military Sales and Grant Aid programs. The management concept flexes to fill the needs of the ever-changing world situations and readily adjusts to the needs of the allied forces throughout the free world. IIIII

SECURITY

(Continued from Page 46)

personnel stationed in-country on a PCS basis. Contractor training is another option. Under technical assistance, we may recommend contractor technical representatives or U.S. Army TAFT or **Technical Assistance Teams (TAT).**

For sustaining support, repair parts replenishment is a major consideration. Considering lead times, the country must consider early in their program how the initial stockage of parts will be replaced when depleted. Options such as CLSSA's were discussed earlier. Another consideration for follow-on or sustaining support is the method of repair and overhaul for the system. As

reparable items become unserviceable, some means must be available to return them to a serviceable condition. This includes major airframe repair.

Options include use of military or commerical facilities in-country, use of contractors or a **Repair and Return (R&R)** FMS case through the U.S. Army. Corpus Christi Army Depot provides support to a number of countries for aircraft, engine, and other aircraft component repair via R&A FMS cases.

The resulting product of TSARCOM's TPA is a **Materiel Fielding Plan (MFP)** tailored for the customer but patterned after the MFP used for deployment of U.S. Army aircraft to U.S. Army units. The MFP is an agreed-to plan that will help assure successful deployment and operation of aircraft. This is essential if we are to provide high quality materiel and services in a timely manner to the satisfaction of the foreign customer in furtherance of our U.S. foreign policy.

NET WORLDWIDE

(Continued from Page 32)

systems.

AN/ALQ-162(V) 2 — Radar countermeasures set provides continuous self-protection and radar warnings for SEMA Aircraft against specific enemy air defense radar systems.

AN/ALQ-156 — Countermeasures set provides protection for the aircraft by detecting the approach of a missile and automatically fires the M/130 general purpose dispenser.

AN/AVR-2() — Laser Detection Set will be incorporated in the AN/APR-39 system and warns of lasers beams from weapons systems or range finders.

AN/ALQ-144 — Countermeasure Set emits false IR signals to confuse heat-seeking missiles.

AN/APR-44 — Provides visual and aural warning of SAM and Airborne intercept aircraft threats.

Future NET Programs

The major systems shown below with their target deployment dates are presently under a development phase of life cycle management:

- **Advanced Attack Helicopter (AH-64)..... FY '84**
- **Remotely Piloted Vehicle. FY 84**
- **Special Electronic Mission Helicopter (EH-1X)..... FY 83**
- **Special Electronic Mission Helicopter (EH-60A)..... FY 87**
- **Special Electronic Mission Aircraft (RC-12D)..... FY 84**
- **Army Helicopter Improvement Program (AHIP) (OH-58D)..... FY 86**
- **BLACK HAWK Block Improvement Program (UH-60)..... FY 89**

Why not?

"I've just got my AAAA renewal bill and along with my check I'd like to make a proposal. It is very good to find in "Army Aviation" the 1982 SPOOF Roster where I find all the names of all of my American Aviation friends.

You have some members of foreign countries like myself who have very close connections with American Army Aviators. It'd be nice if you could start a roster of those "foreign members," like myself, so my American friends know where I am to find. Best regards to all."

Gerhard Granz, COL (Ret.)
German Army Aviation
3000 Hannover 61, den
Winsener Strasse 35.

(Editor's Note: While we're blocked in CY 83, we plan to include separate ARNG-USAR, Enlisted, and Foreign Member professional-personal rosters in our Calendar Year 1984 publication schedule.)

Winners of 1983 AAAA National Scholarships

William B. Bunker Memorial Scholarship of $1,000.00
(Requirement: Selectee is to be an applicant to Engineering School)
WINNER — Linda K. Abornoz
Daughter of Mr. G.M. Albornoz, Corpus Christi, TX. AAAA Interviewer: LTC John P. Real.

Delbert L. Bristol Memorial Scholarship of $500.00
WINNER — Gregory A. Clarkson
Son of CW4 Clarence R. Clarkson, Jr., Norman, OK. AAAA Interv'r: LTC Donald E. Hendrickson, Ret.

B. Howard Dean Memorial Scholarship of $500.00
(This Award is limited to the children of Monmouth Chapter members)
WINNER — John Stuppi
Son of Mr. Charles Stuppi, Iselin, NJ.

B. Howard Dean Memorial Scholarship of $500.00
(This Award is limited to the children of Monmouth Chapter members)
WINNER — Stuart Slutsky
Son of Mr. Robert Slutsky, Oakhurst, NJ. AAAA Interviewer: Mr. Ralph C. Goodwin.

Jack H. Dibrell Memorial Scholarship of $500.00
WINNER — Eric Richards
Son of LTC Harold B. Richards, Huntsville, TX.

Charles V. Graft Memorial Scholarship of $500.00
WINNER — Kathleen E. Dunnington
Daughter of LTC Warren H. Dunnington, Fairfax, VA. AAAA Interviewer: COL Harry G. Christopher.

Randolph Kahl-Winter Memorial Scholarship of $500.00
(This scholarship is sponsored by the Monmouth Chapter of AAAA)
WINNER — Keith E. Stults
Son of LTC Theodore M. Stults, Canton, OH.

Randolph Kahl-Winter Memorial Scholarship of $500.00
(This scholarship is sponsored by the Monmouth Chapter of AAAA)
WINNER — Erik Neu
Son of LTC George T. Neu, Ret., Simsbury, CT.AAAA Interviewer: COL Jay W. Pershing.

Joseph and Madelyn McDonald Memorial Scholarship of $500.00
WINNER — Kenith E. Meissner, II
Son of LTC Kenith E. Meissner, Ret., Arlington, VA. AAAA Interviewer: COL William L. Corley, Ret.

Jane Phillips Memorial Scholarship of $500.00
WINNER — Shelli M. Dinius
Daughter of MAJ Alan D. Hix, Coventry, RI. AAAA Interviewer: MAJ Edward J. Sweeney, Jr.

Lindbergh Chapter $500.00 Award
(This scholarship is sponsored by the Lindbergh Chapter—AAAA)
WINNER — Beth Deasy
Daughter of COL William T. Deasy, APO NY 09742.

ODCSOPS Scholarship of $500.00
WINNER — Heidi Kambrod
Daughter of COL Matthew R. Kambrod, Burke Center, VA. AAAA Interviewer: COL Robert E. Filer.

1983 Merit Award Plaque Winners
Richard A. Buswell, son of COL Arthur W. Buswell, Ft. Wainwright, AK
Joy A. Adcock, daughter of LTC Jerry W. Adcock, Vacaville, CA
Robin S. Parks, daughter of LTC Robert R. Parks, Enterprise, AL
Mark R. Duckworth, son of LTC Robert G. Duckworth, Newtown, CT

by Major Mario Meola

EAATS: The Eastern ARNG Aviation Training Site

In recognizing that the Army National Guard with its 2,500 aircraft and over 4,500 aviators has a tremendous training requirement, the **Eastern ARNG Aviation Training Site, (EAATS)** located at Fort Indiantown Gap, PA was organized on 1 August 1981 to conduct aviation individual crewmember training.

Many aircraft in the ARNG, such as the CH-54 and OH-6, are no longer utilized in the active Army inventory, and to continue to qualify and standardize aviators within these systems, utilizing only the ARNG assets, an organization was needed to accomplish the task. In addition, the **Army Aviation Support Facilities (AASF)** needed to be relieved of the responsibility for individual training to devote more time to readiness and unit training.

Site's multiple advantages

Fort Indiantown Gap was selected for the Eastern Site for a number of resons. First, a **Regional Synthetic Flight Training Facility (SFTS)** was in place and has been in operation there since 1977. Initially a section of the State Headquarters Detachment, the SFTS became the first branch of the EAATS upon its organization. Supervised by **MAJ Mario Meola,** the SFTS presently supports over 1,000 aviators from the active Army, the Army National Guard, and the U.S. Army Reserve from the Northeast Region.

ABOUT THE AUTHOR
MAJ Mario Meola, Indiantown Gap Chapter President, supervises the SFTS at the Eastern ARNG Aviation Training Site.

MG Richard M. Scott, TAG, PAARNG, unveils a plaque dedicating the EAATS dormitory in memory of SSG Alan K. Platt, a PAARNG Flight Engineer killed in a 1979 CH-54 crash, as Mrs. Betty Platt and two of her children look on.

Substantial savings are recognized when the device is used for initial instrument qualification, rotary wing qualification courses, and non-aviator UH-1 run-up training. Secondly, the Pennsylvania ARNG has a very large AASF and approximately 90 aircraft ranging from CH-54's and CH-47's to U-3's and a U-21.

In addition, Fort Indiantown Gap and the surrounding state lands provide adequate areas for nap-of-the-earth (NOE) flight and Night Hawk and night vision goggle training with large airports and terminal areas nearby for advanced instrument procedures. An Air Force study of the local weather — using several years of data — revealed that the number of available training days was slightly better than that of Ft. Rucker, AL, for the same period.

The present organization, commanded by **COL Bill D. Badger,** only consists of 16 personnel, 14 of whom were on board as National Guard Technicians at the SFTF. A Supply Sergeant has recently been added and it is anticipated that the unit will be authorized to go to its full strength of 72 personnel at the beginning of FY 83. All the personnel will be in a military status (Active Guard/Reserve Component).

R/W Qualification Course

In FY 82, personnel from the SFTF organized and developed courses of instruction following Ft. Rucker guidance, and conducted some formal training courses. A 12-week RW qualification course was conducted for four ARNG aviators, with end-of-course evaluations being conducted by the **Directorate of Evaluation and Standardization (DES)** , or designated DES SIP's, using PAAR-NG aircraft and the SFTF.

The students — all ex-military aviators from other services — completed UH-1 qualification training, initial rotary wing instrument qualification, and NOE training. One class of two aviators completed the two-week U-21A aircraft qualification with two more scheduled for mid-September. Ten aviators will complete initial RW instrument qualification by 30 Sep in five separate three-week courses of instruction.

All of the courses were conducted by the 14 SFTF personnel and **COL Badger,** necessitating many extra hours and shift work, but the finished product and the experience gained was excellent. It's anticipated that at full capacity, the EAATS will graduate over 300 aviators a year from formal training courses in addition to accomplishing its Regional SFTF responsibilities.

In addition to the SFTF and Instrument Branch and the Headquarters Section, the EAATS will incorporate an Operations, Rotary Wing, Fixed Wing, and Combat Skills Branch. A Medical Branch, to include a fulltime flight

(EAATS/Continued on Page 80)

Shown cutting the ribbon at the formal opening of the EAATS are, from left, COL Bill D. Badger, EAATS Commander; MG Carl H. McNair, Jr., CG, USAAVNC; BG Herbert R. Temple, Jr., Director, ARNG; and John J. Stanko, Jr., Chief of the Aviation Division of the NGB.

Wyman-Gordon is at the hub of the Hawk.

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AAAA's Morning Calm Chapter Cites '82's Outstanding Efforts

ON the evening of 18 December 1982, the **Morning Calm Chapter** of the AAAA held its annual Christmas Formal and Awards Program. Honored guests at the function were **General Robert W. Sennewald,** Commander-in-Chief of the ROK/US Combined Forces Command/Commander, USFK//CG, EUSA; **BG Song, Jin Won,** Chief of ROK Army Aviation; and **BG General Choi, Sang Jin,** Commander, 1st ROK Army Aviation Brigade.

The 350 US and ROK guests in attendance were wined, dined, serenaded by the ROK Air Force Band, and held spellbound by the 17th Aviation Group (Cbt) Theatre Players uniformed portrayal of "**I Am The Aviator.**"

The highlight of the evening was the Awards Program, hosted by **COL N. Michael Bissell,** 17th Aviation Group (Cbt) Commander who is President of AAAA's Morning Calm Chapter.

EUSA Safety Awards were presented to **LTC Joshua L. Kiser,** Commander, 52d Aviation Bn (Combat), and **MAJ Tommy R. Wallace,** Commander, Co A, 2d Aviation Bn while **Mr. Edward C. Pingleton,** 45th Transportation Co, was recognized as the **DAC of the Year.** The **Morning Calm Chapter's Aviation Safety Award** was presented to **SGT Leslie D. Beals,** Co A, 2d Aviation Bn.

Interoperability training with participating Republic of Korea and U.S. units flying in joint exercises has made dramatic progress in the past year. In order to recognize this valiant effort, the **Morning Calm Chapter—AAAA** instituted an awards program parallel to the National organization to recognize the significant achievements of ROK units and ROK aviators. This year, for the first time, an award was presented to the outstanding **ROK Army Aviator of the Year. MAJ Jeong, Jong Hyong,** 203d Aviation Unit (ROK), was the first to receive the award. He was followed to the podium by **CW2 Richard C. Kretzschmar,** 377th Medical Co (Air Amb), who received the **Army Aviator of the Year Award** for his outstanding contribution to Army Aviation.

Finally, **General Sennewald** presented awards to **LTC Lee, Yong Kyun,** Commander, 501st Aviation Unit (ROK), and **MAJ Paul Noyes,** Commander, 201st Aviation Co (US), as being representative of the separate **ROK/US Army Aviation Units of the Year.**

Held in December at the end of each membership year, the Annual Awards Banquet is truly one of the finest activities sponsored by the **Morning Calm Chapter.**

OPPOSITE PAGE—General Robert W. Sennewald presents the ROK "Army Aviation Unit of the Year Award" to LTC Lee, Young Kyun, Cdr, 501st Aviation Unit. Observers are COL Lee, Jong Won, Cdr, 31st Avn Gp; BG Song, Jin Won, Chief of ROK Army Aviation; and BG Choi, Sang Jin, Cdr of the 1st Aviation Brigade.

★

ABOVE—BG John T. Quinn, ADC, 2d ID, presents the Morning Calm Chapter's Aviation Safety Award to SGT Leslie D. Beals.

★

TOP RIGHT—MG William C. Moore, ACofS, J-3, USFK/EUSA, presents CW2 Richard C. Kretzschmar with the Chapter's "Army Aviator of the Year Award" plaque.

★

RIGHT—General Robert W. Sennewald, l., presents the "Aviation Unit of the Year" trophy to MAJ Paul Noyes, Commander of the 201st Avn Co "Red Barons".

★

BELOW—MG Moore, l., presents the ROK "Army Aviator of the Year Award" to MAJ Jeong, Jong Hyong, as, l-r, COL Lee, Min Hee, Cdr, 61st Avn Gp; BG Song, Jin Won; and BG Choi, Sang Jin, look on.

PHOTO BELOW—BG Song, Jin Won, Chief of ROK Army Aviation, accepts an Army Aviation Association Honorary Plaque from COL N. Michael Bissell, l., Morning Calm Chapter President, for his outstanding support to the AAAA.

EAATS

(Continued from Page 76)

surgeon, is also part of the organization. This Branch would conduct flight physicals, provide emergency medical care, and furnish aeromedical advice to the commander.

While the Operations Branch will schedule and request aircraft, maintain flight records, and coordinate all training conducted, our Rotary Wing Branch will conduct aircraft qualification in ARNG standard aircraft and instructor pilot training not conducted at Ft. Rucker as well as providing a program for non-aviator run-up for the UH-1. When necessary the Rotary Wing Branch will have the capability to conduct rotary wing qualification training.

The Fixed Wing Branch will conduct transition training for the U-3, U-8, and U-21 aircraft as well as provide instructor pilot training for the U-3, U-8, and T-42.

The Combat Skills Branch will train aviators in tactical operations and employment, to include Night Hawk, night vision goggle, and NH/NVG instructor pilot and terrain flying.

Course quality under review

A Memorandum of Understanding between the National Guard Bureau and DCSOPS for DES is being developed to insure quality control of the training courses. All end-of-course instructor pilot evaluations and selcted other course evaluations will be given by a DES Standardization Instructor Pilot. It's envisioned that a very close working relationship will develop between the two organizations for the betterment of all Army Aviation.

Present facilities include the Flight Simulator and new Aircrewmember Dormitory/Physical Exam/Mess Facility, recently dedicated 14 August 1982. The 60-room facility accomodates crewmembers training at the EAATS and SFTF. A Temporary Headquarters building is undergoing renovation at present while a permanent building can be constructed (planned to FY 85). In FY 87 an AH-1 Flight Simulator is planned which will totally round out the training complex.

The EAATS and the PAARNG are also the hub of the Indiantown Gap Chapter of AAAA, the largest ARNG-supported activity in the Association. The Chapter, in which the writer serves as president and National Executive Board representative, has more than 150 members at present. IIIII

Record Breaker!

Is there an Aviation Branch on the horizon? According to **Joseph P. Cribbins,** ODCSLOG, the answer is "Yes . . and soon."

In the near future you can look forward to seeing an Aviation Branch in the Army," he said during a luncheon of AAAA's Lindbergh (St. Louis) Chapter. "That means that aviation operators and logisticians alike would be wearing wings and belong to an aviation branch."

Labeling the move "a long overdue step in the right direction, **Cribbins** made his remarks before a record-breaking, capacity crowd of 376 AAAA members and guests. **COL "Les" Weinstein,** Lindbergh President, noted that the Chapter event had established a new "Professional Luncheon" attendance high, and issued a challenge to other AAAA Chapters to match it. **Weinstein** pointed out that the meeting was not a joint meeting of any sort, and that the audience was pure AAAA.

SCIENCE/SCOPE

With the equivalent strength of almost one-half million pounds per square inch, the wire used to carry guidance signals to the TOW (Tube-launched, Optically tracked, Wire-guided) antitank missile boasts one of the highest tensile strengths of any steel wire in the world.

The wire measures less than six thousandths of an inch in diameter, yet can support a 10-pound weight. It is made by U.S. Steel Corp., one of few companies in the world with the equipment and skills to manufacture such thin wire with extreme purity. Hughes Aircraft Company produces TOW for the U.S. Army, U.S. Marine Corps, and 32 nations.

The first electro-optical use of a flexible machining system will be for manufacturing large numbers of ultra-precision optical housings. The new Hughes "flex-fab" system is a combination of nine computer-controlled milling machines connected by carts that are pulled on an endless chain towline built into the floor. Each machine has 68 different tools to choose from. Altogether there are 612 tools available, enabling flex-fab to do the work of 25 individual machines.

At first, flex-fab will machine aluminum chunks into housings for TOW antitank missile systems with an exactness to one thousandth of an inch. In the near future, engineers who are designing parts on a graphics computer will be able to ask flex-fab to build them, thus eliminating the need for blueprints.

Takeoffs – PCS

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PHOTO AT RIGHT

MG Story C. Stevens, Cdr, USA AVRADCOM, the guest speaker at AAAA's Dec. 14 dinner meeting of the Delaware Valley Chapter members and guests, is shown with Tom Nowrey, left, Chapter President, and William P. Jones, National VP—AAAA. The latter are Manager-Boeing Vertol, H-47 Logistics, and Director-Boeing Vertol Military Helicopter Programs respectively.

PHOTO AT LEFT

COL E. Kirby Lawson, III, USAREUR Aviation Officer (and Master Army Aviator), right, congratulates CW4 Cy A. Russum following the award of Master Army Aviator wings. CW4 Russum is assigned to the USAREUR Aviation Safety and Standardization Board, Schwaebisch Hall, Germany.

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