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Editorial Material

The views expressed in the magazine are those of the individual author and may not necessarily be those of the Department of the Army or the staff of this publication. Manuscripts, drawings, photos, and other material cannot be returned unless accompanied by a stamped envelope bearing the submitter's return address.



Readiness: AMC's Business

by General Louis C. Wagner, CG, U.S. Army Materiel Command, Alexandria, VA

(Excerpts of an address given during the 1988 AAAA Convention Awards Luncheon in St. Louis, MO)

'm delighted and honored to be here representing the fine people of the U.S. Army Materiel Command, who, for the past 25 years, have had one and only one mission — to provide quality support to the soldier. AMC has been your strongest supporter during that entire time, and I assure you that we'll continue to be in the future.

We're the only Army major command that is literally at war every day — doing in peacetime what we would do during conflict. I bring with me AMC's greetings to the soldiers, family members, past aviation greats, and our industry partners who are here today.

Prime Measure of Success

I'm glad to see that you chose Aviation Readiness as your theme this year because readiness is the prime measure of the success of our Army. It's the Army's business, it's AMC's business, and it's the business of everyone here in this room. My remarks apply not only to the men and women in Army Aviation, but to our industry partners as well. An Army can have the greatest soldiers, equipment, and doctrine in the world (and that's what we have); but if that Army isn't ready to fight, it's not a deterrent.

Aviation Readiness has taken on much greater significance recently and gets a lion's share of attention (sometimes more than you want). That's as expected and as it should be because aviation is critical to our warfighting capability, because of aviation's role in force modernization, because aviation has stayed at the leading edge of technology, because it is one of the Army's newest branches, and because aviation is a relatively expensive commodity.

Aviation Readiness is a most significant and vital ingredient if our Army is to continue to be a credible deterrent, if our nation's Armed Forces are to achieve a highly versatile and flexible joint response to aggression no matter where it rears its head, and if we are to retain our leadership position in the free world.

For the past three decades, Army leadership has recognized this and earmarked a significant part of our procurement funds for aviation systems. Today we are counting more heavily than ever on aviation's "combat multiplier" potential.

Modernizing Systems

We're well on course in rebuilding what General "Shy" Meyer referred to as a "Hollow Army". To look first at the materiel side, we've made unprecedented progress in modernizing our Army weapon systems during this decade. With the advances made by our Army-Industry team, we've been able to upgrade our Vietnamera weapon systems with modern, state-of-theart warlighting capabilities that are second to none.

The APACHE, BLACK HAWK, AHIP, CHINOOK-D, ABRAMS tank, BRADLEY fighting vehicle, PATRIOT, and MLRS fieldings are well along, allowing us to replace older systems throughout the Total Army, shoring up force structure and combat capability, and allowing us to purge obsolete technology from our arsenal.

Just as these new systems are second-to-none, the soldiers who operate them are also the finest in our Army's history, a fact that's exemplified by the people receiving awards here today. They make me want to be a second lieutenant again.

One of the most enjoyable parts of my job is the chance I have to talk to soldiers on the frontiers of freedom in Europe and Korea, and I believe what these soldiers tell me about their

4 ARMY AVIATION

The battle in the air is first won in the lab. Developing composites and super alloys that are stronger, lighter, more heat resistant. For high-tech, low-risk processes that have set the world's pace in powerto-weight ratios.

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reduces manufacturing costs but also produces stronger parts.

Metal matrix composite shafts provide improved rotor dynamics by bonding a titanium alloy matrix together with ceramic fibers. This results in a lighter weight, higher stiffness material.

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LHX TECHNOLOGY: THE DECISIVE EDGE.

The U.S. Army's new light multimission helicopter will face an unprecedented array of threats on the battleliel of the 21st century. Winning the AirLand battle against these threats will require greater combat effectiveness through advanced LHX technology.

Boeing Sikorsky is first in LHX technology—first in the air with ACAP, an all-cormposite helicopter; SHADOW, a research helicopter that evaluates pilot workload reduction; and ADOCS, a fiber-optic flight control system.

Boeing Sikorsky is developing a lightweight, highly maneuverable and agile design which will allow the LHX to win in the nap-of-theearth and air-to-air combat environments. The foundation of this Boeing Sikorsky weapons system is the optimum mix of signature reduction and aircraft survivability equipment (ASE) technologies. These technologies will ensure that the LHX will survive and win on the battlefield.

First Team members have accepted the LHX challenge and are designing a fully integrated weapons system. A key element of the Mission Equipment Package is the helmetmounted display (HMD). The HMD uses advanced electronics and fiber optics to superimpose critical flight, sensor and weapons data on the pilot's view of the real world, enabling him to detect, acquire and destroy threats.

It's these technologies that will enable the Boeing Sikorsky LHX to fight, win and survive to fight again.



Boeing Helicopters • Sikorsky Aircraft • Boeing Electronics • Boeing Military Airptanes • Boeing Simulation & Training Systems • Rockwell Collins • Hamilton Standard • Harris • IBM • Kaiser Electronics • Martin Marietta • Northrop • Sandera Associates • Singer Training Systems • TRW • Westinghouse weapons and equipment, not what I read in the newspapers. Our soldiers tell me about looking across the border to the soldiers on the other side. They tell me about the fear they see in the eyes of those soldiers on the other side when they see how ready we are and how great our equipment is. Finally, they tell me they're sure they could blow those adversaries away if they had to. Those are the people I listen to.

Proper Support

But we mustn't let recent modernization lull us into complacency. We must collectively ensure that this fine armament is properly supported and adequately maintained so that it continues to perform to its top potential. A lot of that responsibility falls directly on AMC's shoulders.

Also, we must prove that we, as Army-Industry partners, are responsible stewards, that the taxpayers' dollars are being invested wisely and cared for wisely.

An effective Army requires more from its equipment than technological superiority. We need an aviation industry dedicated to providing built-in quality and reliability, and we need to examine how we will support this modern Army. All elements of the readiness support system must be delicately balanced so that we can offset the Warsaw Pact's numerical superiority and at the same time meet the ever-increasing threat of low-intensity conflict that we face in many parts of the world.

As I see it, we're at a crossroads for Aviation Readiness. Our older, displaced aircraft are continuing to build up hours in the active and reserve components. Although we're removing 350 UH-1s and 100 OH-58s from our inventory, those that remain will demand increased levels and frequency of maintenance.

Depot maintenance requirements are also increasing as our newer, more sophisticated, more complex systems are beginning to cycle through our depots. For example, we're now seeing the first BLACK HAWKs coming into depot overhaul programs.

In the meantime, we face funding shortfalls in spite of growing depot maintenance requirements. This year alone we can support only 63% of our depot end-item maintenance, and our projection for next year is 71%. The end result: deferred maintenance, which results in an increased maintenance burden on our soldiers to keep their equipment in an operational and safe, but less reliable condition.

This is compounded by several factors. Implicit with the proliferation of new systems throughout our Army is a need for increased individual, collective, and unit training to finely hone our readiness edge. As you're well aware, the Chief of Staff recognizes this and is committed to an increase in flight hours over the next two years.

On the support side, our Army of Excellence force structure stripped the peacetime fat out of our TOEs. We no longer have the luxury of redundant skills and mechanic depth in our maintenance bays. For example, while fielding more electronic equipment, we haven't increased electricians in Aviation TOEs.

Reducing Field Maintenance

Although our weapon systems are more complex and require faster and more dependable troubleshooting to maintain, our plan is to evacuate more subsystems and modules to the rear and to CONUS for repair, thus reducing maintenance requirements in the field.

And, finally, fewer dollars are being earmarked for defense. We're still in the throes of budget exercises the likes of which I haven't seen for many years, and believe me when I say that the handwriting on the wall is not a forgery.

We, the Army and Industry, must collectively find new and more effective ways to use our shrinking resources.

We've got to do much better at building in quality up front and in designing our products so that we can devote less time and expense to correcting mistakes later. Our board of directors — the Congress and taxpayers — will tolerate nothing less. I'm concerned that they will cut resources even more unless we prove that we're able managers.

Also, some of us may still be reluctant to accept the notion that the Congress is dead serious about cutting defense outlays. I'm concerned that we don't have a lot of time to change the way we've routinely done business. We've got to change our attitudes, outlook, standards, expectations, and priorities — now!

8 ARMY AVIATION

We now add computer-based training and engine monitoring systems to an enviable lineage of T800 accomplishments.

It began when we teamed the energies of the Garrett Engine Division of Allied-Signal Aerospace Company with the Allison Gas Turbine Division of General Motors. Together we built the first T800 prototypes. We took them aloft first. Confirmed durability first. We validated the LSA data package over two successful maintainability demonstrations. And even validated depot tooling.

Now our commitment to RAM/ILS/MANPRINT is beyond rhetoric. Beyond question.

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Our computer-based engine monitoring system is in field test. Providing interactive fault diagnosis. To reduce downtime through automating the parts pipeline. To keep costs down and LHX in the sky.

MANPRINT COMPLIANCE: THE HUMAN FACTOR.

> Interactive computer-based training is being refined directly with 68-Bravo powerplant repairers. Advancing the principles of MANPRINT with the user who must maintain and support. LHTEC is taking the T800

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A pointed example: we've recently surfaced a COBRA readiness problem that may be symptomatic of an Army-wide problem. Specifically, maintenance condition assessments of COBRAs in units preparing to receive APACHEs revealed surprising armament readiness problems that weren't unique to any unit or geographical area. A joint team of AMC technicians and PM COBRA personnel who routinely conduct these reviews to determine requirements for maintenance prior to their transfer and reissue found that COBRAs in units throughout the world showed similar problems.

I admit to being puzzled at first. Why did it take the team to surface problems? And what factors may have contributed to these problems? Further, the report was particularly surprising because I make a point of questioning AMC logistic assistance representatives billeted with our units around the world on the quality of attack helicopter maintenance and logistics support. They routinely reassure me that there are no readiness issues that are cause for alarm.

Further, my conversations with unit aviation mechanics and technicians are also generally upbeat. They say they're satisfied with their training and confident that they have access to the necessary tools and test equipment to diagnose and repair armament system defects.

And, finally, field commanders, materiel readiness reports, and aviation resource management surveys (ARMS) don't show any significant fault or deviation from our standards.

First Indication

Having said all this. I view the COBRA armament maintenance dilemma as a point of reference only and don't view it as either COBRA — or aviation-unique. On the contrary, the situation with the COBRA may be only the first indication of potential maintenance problems of our increasingly sophisticated weaponry.

What we may be looking at are systemic flaws in our Army's logistics support infrastructure, to include areas of maintenance training and manuals; tables of organization, assigned maintenance personnel authorization, and logistics concepts and maintenance support doctrine. The fact that we, the Army, found these flaws and are fixing them is very important. And as a team, we will learn from this experience.

While insisting on speedy acquisition and fielding, we must never do so at the expense of quality and long-term reliability, and we must always take enough time to adequately soldiertest our maintenance and logistics concepts to support increasingly sophisticated systems.

On the other hand, this isn't an Army problem alone. What we may have created with our zeal to modernize the force is a situation that requires our collective efforts.

Here I allude to the quality problem I talked about earlier. Industry can help by taking our MANPRINT program to heart and by making the soldier the first and most important design element. As we develop the LHX, we must use available technology to make it soldier-friendly in all aspects — flying, training, and maintaining. You can also help by conducting better, more reliable logistics support analyses. Many of you have your own aviation feedback loops tapped right into our field units. What kind of data have you gathered, and what have you done with that data?

Let me sum up by telling you what I told the Senate Armed Services Committee's subcommittee on readiness just a couple of weeks ago. I told them that we've moved from a period when funds were adequate to a time when funds in some areas are simply insufficient, and I showed them areas where funding shortfalls are dirctly affecting readiness. For the first time in the six years that I've testified before this Committee, I had to tell them that the Army is faced with doing less with less — an unhappy prospect for all of us.

Yet what I want to tell you today is that we can't hide behind budget limitations and the possibility of future cuts, especially where aviation readiness is concerned. We have a job to do. You can say that the cup is half full or half empty, or you can do as I do and say that the cup is three-quarters full.

We must accept the budget realities we face. We must continually push for optimum readiness. We must work together — Army and Industry — to innovate and reduce costs at every step. We must take that "less with

(Readiness - continued on page 92)

12 ARMY AVIATION

The DOD and other government agencies with fixed and rotary wing aircraft have been coming to us for complete one-stop high technology systems integration services since 1961. The engineers at Collins Aircraft Modification Center (AMC) are experienced in such disciplines as avionics systems integration, structural analysis, human factors, vibration, environmental, aerodynamics, vulnerability, survivability, crashworthiness, EMP hardening and electro-magnetic interference, and compatibility. The Collins AMC—FAA Certified Repair Station No. 4240—modifies aircraft to either FAA, manufacturer or military specifications. We customize systems for any type or size aircraft, including the 747 series. For more information contact: Collins Defense Communications, Rockwell International, 3200 E. Renner Road, Richardson, Texas 75081, U.S.A. (214) 705-3950. Telex 795-530. Collins DEFENSE COMMUNICATIONS: The Integration Specialists.

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Branch Evolution Continues

by Major General Ellis D. Parker, Chief, Aviation Branch and Commanding General, U.S. Army Aviation Center and Ft. Rucker, AL

The Aviation Branch continues the process of change to a better, more efficient state. This month, let's look at a few of the recent developments in the personnel area.

New Area of Concentration

On February 16, 1988, HQDA approved Aviation Branch's proposal to establish Areas of Concentration (AOCs) by type mission. Shown below is a listing of old and new AOCs.

The old system was in existence prior to branch implementation and was designed to provide proponent affiliations (e.g., 155 proponent was the Signal Corps) for aviation. Additionally, there was little discernible difference between old AOCs 15A, B, and C.

The U.S. Army Soldier Support Center is currently implementing the new AOCs within the Army Authorization Documents System, and they should be reflected on unit documents soon.

Branch Qualification

In March of this year, we relooked the issue of branch qualification for aviation commissioned officers. We've made a few changes to the existing criteria, as Aviation Branch qualification is now defined as graduation from a resident

Old AOCs

- 15A General Aviation
- 15B Combat Aviation
- 15C Combat Support Aviation
- 15M Combat Intelligence Aviation
- 15S Combat Communications Avn (ATC)
- 15T Aviation Logistics

advanced course and one of the following:

Successful company/detachment command.

 Successful platoon leader in those platoons authorized CPTs as platoon leaders (e.g., 15C, D, E, and CH-47 units).

 Instructor or writer of aviation tactics or doctrine at USAAVNC or other branch school.

Instructor pilot at USAAVNC.

(CMF) 67 to Include Avionics

On March 23, 1988, LTG Allen K. Ono, the Deputy Chief of Staff for Personnel (DCSPER), approved the merger of CMF 28 and CMF 67. His decision culminates a five-year effort to bring all aviation maintenance under one CMF. There will be little or no effect on the way maintenance is performed because of this decision, but there are many personnel changes associated with it.

Avionics personnel presently hold Military Occupational Specialties (MOS) 35K, 35L, 35M, 35P and 35R. The approved change will cause these MOS to become 68N, 68L, 68Q, 68P and 68R respectively. Another major change will align career progression of avionics personnel with that of CMF 67. The current progression is capped to 35P (from 35K, L, M and R) at Staff Sergeant

(Evolution - continued on page 92)

New AOCs

- 15A Aviation General
- 15B Aviation Combined Arms Operations (Air Assault)
- 15C Aviation Tactical Intelligence
- 15D Aviation Logistics
- 15E Aviation Communications (ATC)

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Hardware: LHX Update: The First Months of 1988 by LTC Arnold E. (Sandy) Weand

ST LOUIS, MO — The last field report on the LHX stated we were to have a Milestone I Defense Acquisition Review Board (DAB) in December of 1987 to enter the Demonstration/Validation (DEM/VAL) phase of the airframe program.

This did not happen as was originally envisioned. However, the events between then and now have served to strengthen the requirement for the LHX, consolidate the Army's position and consensus on the LHX, and allow Army and industry engineers crucial time to reaffirm that the LHX is affordable and cost effective.

LTC Weand is Assistant Program Manager, T-800 Engine, LHX, PMO, Aviation Systems Command, St. Louis, MO.

This report will explain the circumstances and happenings to the LHX Program in the first months of 1988. The DAB, originally scheduled in December 1987, was held January 7, 1988. However, it was more an Army Aviation Modernization Plan DAB, which included a segment on LHX. The results of this DAB were finalized and an Army Decision Memorandum (ADM) was signed and issued on January 20.

Program Refocused

The ADM directed the Army to refocus the LHX program to develop and acquire a lightweight, low cost helicopter for the light attack/armed reconnaissance missions (see Figure 1

Primary Missions) to replace the aging AH-1 COBRA, and OH-58/OH-6 fleets. Near term focus was to continue exploration and risk-reduction efforts with emphasis on the Mission Equipment Package and integration of the Adverse Weather Weapons System, using appropriate technologies common to the Air Force's Advanced Tactical Fighter and the Navy's Advanced Tactical Aircraft programs. This refocused program was to be presented to the DAB not later than summer 1988 (currently scheduled for early June).

Based on this guidance the LHX Program Manager and his staff initiated coordination with DA and OSD leaders to define and pin down what the LHX is envisioned to be within the overall Army Aviation Modernization Plan and the constrained budget ceiling.

Continued Development

A February 25 memorandum signed by the Under Secretary (LHX — cont. on page 90)



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ARMY AVIATION — 1942-1988

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1988 Equipment Issue





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1950's



TG-3A Army/Air Force training glider



OH-13 Production source for cabin and frame assemblies

1960's

1970's



YO 3 A Quiet observation aircraft-operational in Southeast Asia

UH-60A Production source for gunner windows and other assemblies

1980's



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| n-35 | (McDonnell) see L-co |
| | |

H-36.....Reserved for Navy use, then cancelled. The designation was never utilized.

H-38.....Reserved for Navy use, then cancelled. The designation was later assigned to a classified project.

| H-39 (Sikorsky) |
|--|
| H-40 (Bell) See UH-1 |
| H-41 (Cessna) See YH-41 |
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| HO-1 Dilnn (Sud Avn) Also designated as |
| the YHO-1DJ |
| HO-2 (Hughes) Also designated as |
| the YHO-2HU and TH-55 |
| HO-3 (Brantley) Also designated as the YHO-3BR62 |
| LOH (McDonnell) Also designated as the OH-6A |
| OH-4A (Bell) |
| OH-5A (Hiller) |
| OH-6A Cavuse (Hughes) |
| OH-13 Sloux (Bell) |
| OH-23 Raven (Hiller) |
| OH-58 Kiowa (Bell) |
| RSRA (Sikorsky) |

R-1 (Platt-LePage)......Twin rotor side-by-side. P&W R-965-21 410 hp engine. Only two models were built.

R-2 (Kellett)..The YG-1C Autogyro. Jacobs R-915-1 300 hp engine. Only one R-2 was procured.

R-3 (Kellet).....Converted YG-1B Autogyro with feathering rotor. Jacobs R-755-3 225 hp engine. The R-2 and R-3 were the only true autogyros with official military designations.

| R-4 | (Sikorsky) |
|-----|-----------------------------|
| R-5 | (Sikorsky) |
| R-6 | (Sikorsky, Nash-Kelvinator) |

- R-7 (Sikorsky).....A redesignation of the R-6A. Designation was later cancelled.
- R-8 (Kellet)......Twin rotors, side-by-side. Franklin O-405-9, 240 hp engine. Two procured.

22 ARMY AVIATION

R-9 (G&A aircraft, Firestone).....Only one procured. One two-bladed rotor. Lycoming O-290-7 135 hp engine.

R-10 (Kellet).....Later redesignated as the H-10A. Crew of two; six litters. Two intermeshing rotors. Two P&W R-985-AN-5 engines. Two procured.

R-11 (Rotor-Craft, Magill)......Only one procured. Two contra-rotating, three-bladed rotors. Continental A-100 100 hp.

R-13 In 1948 both "R" and "H"designations were used for many aircraft, See OH-13.......65

R-14 (G&A Aircraft, Firestone)......Three procured, cancelled in 1946).

| Sioux Scout (Bell) See OH-13 | |
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| TH-55A Osage (Hughes) | |
| UH-1 Iroquois (Bell) | |
| UH-2 (Kaman) | |
| UH-19 Chickasaw (Sikorsky) | |
| UH-60A Black Hawk (Sikorsky) | |
| XCH-62 HLH (Boeing Vertol) | |
| XH-15 (Bell) | |
| XH-17 (Hughes) | |
| XH-51A (Lockheed) | |
| XH-51A Compound (Lockheed) | |
| YH-16 (Piasecki) | |
| YH-18A (Sikorsky) | |
| YH-41 Seneca (Cessna) | |
| YHC-1 (Boeing) | |
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| 16H-1C Compound (Plasecki) | |

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| VZ-2PH Tilt Wing (Vertol) | |
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| VZ-10 Hummingbird (Lockheed) Also known as the | XV-4A82 |
| X-Wing (Sikorsky) | |
| X-19 Tilt Wing (Curtiss-Wright) | |
| X-22A Ducted Fan (Bell Aerosystems) | |
| XC-142A Tilt Wing (Ling-Temco-Vought, Ryan, | |
| and Hiller) | |
| XH-59A (ABX) (Sikorsky) | |
| XV-1 (McDonnell) See L-25 | |
| XV-3 (Bell) See H-33 | |
| XV-4A Hummingbird (Lockheed) Also known as | |
| the VZ-10 | |
| XV-5A Vertiplane (Ryan) | |
| XV-6A Harrier (Hawker Siddeley) | |
| XV-8A Fleep (Ryan) | |
| XV-9A Hot Cycle (Hughes) | |
| XV-15 (Bell) | |
| | |

C-12D HURON



DESCRIPTION: Ten-place pressurized command transport, liaison, and cargo aircraft now utilized by all four branches of the Services.

MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.

POWER PLANT: Two P&W PTA6A-41 turbine engines, 850 shp each.

PROPELLERS: Three-bladed Hartzell fullfeathering, reversible propellers.

SPECIFICATIONS: Span: 54 ft, 6 in. Length: 43 ft, 10 in. Height: 14 ft, 6 in. Gross wt: 12,500 lbs. Empty wt: 8,060 lbs. Useful load: 4,391 lbs. Fuel: 544 gal.

PERFORMANCE: Cruising speed (25,000 ft): 280 kts. Economical cruising speed: 275 kts. Stall speed: 80 kts. Service ceiling: 35,000 ft. Max range: 1,755 nm. Rate of climb: 2,400 fpm. REMARKS: The utility of the "off-the-shelf" C-12 Super King Air is enhanced by the variety of operational takeoff weights ranging from 12,500 to 15,000 pounds and an avionics package which includes all of the necessities plus radar altimeter, color weather radar, comBELOW: 52 inch wide by 521/2 inch high cargo door is C-12 feature



plete autopilot system and RNAV. The C-12D has a large cargo door and a high-flotation landing gear which allows comfortable, high speed transport of either bulky cargo or personnel from short, unprepared fields. Its missions range from Photographic Reconnaissance, COMINT, ELINT, Infrared Surveillance, Maritime Surveillance, Atmospheric Sampling, Airways Facilities Inspection to Air Ambulance. A total of more than 330 C-12's are currently being operated in all four Services.

SD3-30

DESCRIPTION: Thirty-place unpressurized, twin engine turboprop with high wing and retractable tricycle landing.

MANUFACTURER: Short Brothers, PLC, Belfast, Northern Ireland.

POWER PLANT: Two Pratt and Whitney of Canada Limited PT6A-45R, turbo prop engines, rated at 1198 shp.

PROPELLERS: Hartzell five blade propellers of 9 foot 3 inch diameter.

SPECIFICATIONS: Span: 74 feet, 8 inches. Length: 58 feet. Height: 16 feet, 3 inches. Empty weight: 14,140 pounds. Gross weight: 22,900. PERFORMANCE: Max speed: 198 knots. Cruising speed: 190 knots. Service ceiling: 20,000 feet. Max range: 775 miles, 320 miles with 30 passengers. Rate of climb: 1180 feet per minute.

REMARKS: The Army currently operates six SD3-30 (four owned, two leased) from U.S. Army Kwajalein Atoll, Marshall Islands. These air-



craft replaced the aging C-7A Caribou in 1986, which had been in use on Kwajalein since 1973. They were originally purchased for use by the FAA and are now used to transport approximately 180 technicians daily to and from Kwajalein.



DESCRIPTION: Sixteen-place low wing high speed VIP jet transport.

MANUFACTURER: Gulfstream Aerospace, Savannah, GA.

POWER PLANT: Two Rolls Royce Spey MK 511-8 turbo fans.

SPECIFICATIONS: Span: 77.8 feet. Length: 83.1 feet. Height: 24.4 feet. Empty weight: 32,200 pounds. Gross weight: 69,700 pounds. PERFORMANCE: Max speed: Mach .85. Cruise speed: Mach .77. Service ceiling: 45,000 feet. Max range; 3,650 nautical miles. Rate of climb: 4,210 feet per minute.

REMARKS: The Army is currently taking delivery of two C-20 Es, the military version of the G3. These aircraft will supplement the Office of the Secretary of the Army fleet and support not only senior Army and Government officials, but will also be available for "Space Available" travelers.





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RADS technology originated at Stewart-Hughes (UK) Ltd. and was proven by Bell Helicopter. It is also in daily use at Sikorsky, the Royal Navy and elsewhere. RADS-AT was jointly developed by Stewart-Hughes and the Government Products Division of Scientific-Atlanta. For more information, please contact Mike Walter at 619-268-7323.



CV-2 CARIBOU



DESCRIPTION: Medium Tactical Transport (MTT) STOL aircraft with wheel or wheelskis. MANUFACTURER: DeHavilland Aircraft of

MANUFACTURER: DeHavilland Aircraft of Canada, Limited, Downsview, Ontario. POWER PLANT: Two Pratt & Whitney R2000-7M2 engines of 1,450 hp each.. PROPELLERS: Hamilton Standard threebladed, variable pitch metal propellers.

SPECIFICATIONS: Span: 95 ft, 8 in. Length: 72 ft, 7 in. Ht: 3I ft, 9 in. Empty wt: 16,920 lbs. Gross wt: 28,500 lbs. Places: Crew of two and 32 pass., 24 combat-equipped troops, or 14 litters and 8 troops.

PERFORMANCE: Max speed (SL): 216 knots. Cruise speed (SL): 149 knots. Service ceiling: 27,500 ft. Max range: 1,611 n.m. Rate of climb: 1,575 fpm.

REMARKS: Since initial procurement (Nov 1959) and first delivery (Jan 1961), the Army purchased 173 Caribou before releasing them to the USAF in April 1966 under a Army-Air Force agreement. The CV-2's were ferried to Vietnam in 1962 where their excellent short-field performance and three-ton payload served well. DOD later approved ('66) a twin-turbine, wide fuselage program.

CV-7 BUFFALO

DESCRIPTION: Medium Tactical Transport (MTT) STOL aircraft. MANUFACTURER: DeHavilland Aircraft of

Canada, Limited, Downsview, Ontario.

POWER PLANT: Two General Electric T64-10



turbo-prop engines of 2,850 horsepower each.

PROPELLERS: Hamilton Standard threebladed, reversible pitch metal propellers, 13 feet, 9 inches diameter.

SPECIFICATIONS: Span: 96 feet. Length: 77 feet, 3 inches. Height: 28 feet, 7 inches. Empty weight: 22,864 pounds. Gross weight: 41,000 pounds. Places: Crew of two and 41 passengers (or 35 paratroopers) or 24 litters and 6 troops.

PERFORMANCE: Maximum speed (Sea level): 234 knots. Cruising speed (Sea level): 222 knots. (5,000 feet): 443 knots. Service ceiling: 31,000 feet. Maximum range: 609 nautical miles. Rate of climb: 2,050 feet per minute.

REMARKS: The Buffalo is a larger turboprop version of the CV-2 Caribou. Since April, 1965, four prototypes of the CV-7 Buffalo were built under a U.S.-Canadian production-sharing agreement.

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Frequency band trend plot

L-1 VIGILANT



DESCRIPTION: Two-place metal frame, fabric covered high wing observation and reconnaissance aircraft employed in medical evacuation missions in its litter configuration. MANUFACTURER: Stinson Division of Consolidated Vultee Aircraft Corporation.

POWER PLANT: One Lycoming R-680-9 radial, 9 cylinder, aircooled engine of 295 horsepower.

PROPELLERS: Hamilton-Standard constant speed, 8 foot, 6 inch diameter.

SPECIFICATIONS: Gross Weight: 3,325 lbs. PERFORMANCE: Cruise speed (Sea level):

100 knots. Service ceiling: 14,000 feet. Maximum range: 317 nautical miles.

REMARKS: This aircraft was originally designated as the O-49 with its procurement being handled by the Army Air Corps. The Vultee-Stinson entry was the winner of a competition with the Bellanca YO-50 and the Ryan YO-51 Dragonfly. All models (A through F) had flaps and slots. 327 Vigilants were purchased in 1942 to include 142 L-1's, 182 L-1A's, and 3 L-1B ambulance aircraft. An additional 25 were bought in 1943 with 21 L-1D's being converted A's for familiarization in glider training.

L-2 GRASSHOPPER

DESCRIPTION: Two-place metal frame, fabric covered, high wing observation and reconnaissance aircraft. MANUFACTURER: Taylorcraft. POWER PLANT: One Continental O-170-3 4



cylinder, direct drive, horizontally opposed, aircooled engine of 65 horsepower.

PROPELLERS: Sensenich two-bladed fixed pitch wooden propeller, 6 foot diameter.

SPECIFICATIONS: Gross Weight: 1,300 lbs. PERFORMANCE: Cruise speed (Sea level): 84 knots. Service ceiling: 10,050 feet. Maximum range: 305 nautical miles.

REMARKS: Originally designated within the Army Air Forces as the O-57, the aircraft was used by both the AAF and the Army Ground Forces. All models, A through M and excluding "I", had 65 horsepower engines, except the L with its 50 horsepower engine. Procurement included 559 in 1942 (74 L-2's, 476 L-2A's, and one each of the C, D, E, F, G, H, J, K, and L models). 1943 procurement totaled 1,390 aircraft (490 L-2B's and 900 L-2M's). The H, J, K, and L's had side-by-side seating; all other models featured tandem seating.



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L-3 GRASSHOPPER

DESCRIPTION: Two-place metal frame, fabric-covered observation and reconnaissance aircraft. Military version of commercial "Challenger." Models ranged from "A" through "J", excluding "I".

MANUFACTURER: Aeronca Mfg. Company. POWER PLANT: One Continental O-170-3 4 cylinder, direct drive, horizontally opposed, aircooled engine of 65 horsepower.

PROPELLERS: "A" model: Freedman-Burnham ground adjustable, two-bladed propeller with aluminum hub. The "B" & "C" models had a Sensenich fixed pitch wooden propeller.

SPECIFICATIONS: Gross Weight: 1,300 lbs. PERFORMANCE: Cruise speed (SL): 76 knots. Service ceiling: 7,750 feet. Maximum range: 219 nautical miles.

REMARKS: Used by both AGF and AAF. Originally the O-58, the L-3 was dubbed "Grasshopper" by the Army. All models had



65 horsepower engines; all but the "F" and "G" with side-by-side seating, had tandem seats. 875 "B's" and 490 "C's" were purchased during 1942-1943 with total procurement being 1,465 aircraft.

ADD'L "L" AIRCRAFT

L-7 Monocoupe...Manufactured by Universal; powered by a 90 hp O-200-1 Franklin engine. All 19 two-place "A's" purchased in FY 1943 were sent to the ETO.

L-8 Cadet..Manufactured by Interstate; powered by a 65 hp O-170-3 Continental engine. Two-place commercial S-1A Cadet not used by the AGF; Bolivia bought 8.

L-9 Voyager...Manufactured by Stinson; powered by a 90 hp 0-200-1 Franklin engine. The British Navy bought eight three-place L-9A's in FY 42 and also used 12 L-9B's with 4AC-199-E3 engines.

L-10...Manufactured by Ryan Aeronautical; powered by a 145 hp 50-499 Warner engine. Designated as the Ryan **SCW** in 1937, one three-place L-10 was leased in FY 42.

L-11.. Manufactured by Bellanca as the sixplace 31-50. Powered by a 600 hp R-1340-41 Pratt & Whitney engine. One leased.

L-12 Reliant.. Manufactured by Stinson as

the SR-5A ("A" model) and the SM-7b ("B" model.) Two L-12's with a 300 hp R-680-9 Lycoming engine and two L-12A's with 300 hp R-985-A P&W engines were purchased by the AFF in FY 44 as four-place trainers.

L-18.. Manufactured by Piper as Cub 95; powered by a 90 hp 0-205-1 Continental engine. First purchased in FY 49 with the bulk of a 1,043 buy (105 "B's" and 938 "C's") being obtained by Turkey and a small number utilized by Army flying clubs.

L-22 Super Navion..Manufactured by Ryan Aeronautical; Only three aircraft carried this designation. Redesignated as XL-17D's.

L-25..Manufactured by McDonnell Aircraft; only aircraft to carry three designations; also known as the XV-1 and XH-35.

L-27...Manufactured by Cessna Aircraft as its commercial Model 310 twin-engine aircraft and used within the USAF. No Army procurement of this model.

L-4 CUB



BELOW: An L-4 on the deck

DESCRIPTION: Two-place metal frame, fabric-covered, high wing observation/liaison aircraft.

MANUFACTURER: Piper Aircraft Corporation, Lock Haven, Pennsylvania.

POWER PLANT: One Continental 0-170-3 piston engine of 65 horsepower.

PROPELLERS: Sensenich fixed pitch, two bladed wooden propeller.

SPECIFICATIONS: Span: 35 feet, 4 inches. Length: 22 feet, 4 inches. Height: 6 feet, 7 inches. Empty weight: 658 pounds. Gross weight: I,220 pounds.

PERFORMANCE: Maximum speed (Sea level): 76 knots. Cruising speed (Sea level): 66 knots. Stalling speed: 60 knots. Service ceiling: 9,300 ft. Maximum range: 219 n.m.

REMARKS: From initial '42 procurement until '45, the Army rec'd 5,671 L-4's. Ten models were purchased, ranging from the "A" (948 purchased) through the "J" (1,680 units). 981 "B's" and 1,801 "H's" were other major



LEFT: The L-4 is hand propped

buys. All had tandem seating, except the E and F. They also had a 75 hp Continental engine; three-places, one in front, two in back; and were used for pre-glider training. "G" had a 100 hp Lycoming engine. "H" was a "B" with a fixed pitch prop and a 65 hp Lycoming engine; the "J" was an "H" with a controllable pitch propeller. While the L-2, L-3, and L-4 were all called "Grasshoppers", the name "Cub" stuck to the L-4. It was also called the "Maytag Messerschmidt."



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L-5 SENTINEL



DESCRIPTION: Two-place metal frame, fabric covered high wing observationreconnaissance and medical evacuation aircraft used by the AAF, AGF, and the Navy. Originally the O-62, the models ranged from "A" to "G", excluding "D."

MANUFACTURER: Stinson Division of the Consolidated Vultee Aircraft Corporation. POWER PLANT: One Lycoming 0-435-1

engine of 185 horsepower.

PROPELLERS: Sensenich fixed pitch, twobladed wooden propeller, 7 feet, 1 inch diameter.

SPECIFICATIONS: Aircraft Gross weight: 2,020 pounds.

PERFORMANCE: Cruising speed (Sea level): 87 knots. Service ceiling: 15,800 feet. Maximum range: 483 nautical miles.

REMARKS: Army L- Pilots operated the L-5 from 1945 through the first months of the Korean hostilities. The "drop" rear seat permitted cargo or litter carrying. A total of 2,272 L-5's were purchased between 1942– 1945 (2,419 L-5 and L-5A's in 1942) (679 "B's" in 1943) (300 "C's", 558 "E's", and one "F" in 1944) (115 "G's" in 1945.)

L-6

DESCRIPTION: Two-place metal frame, high wing observation and reconnaissance aircraft.

MANUFACTURER: Interstate.

POWER PLANT: One air-cooled Franklin



O-200-5 engine of 102 horsepower.

PROPELLERS: U.S. Propeller fixed pitch, two-bladed propeller of 6 feet, 4 inches diameter.

SPECIFICATIONS: The aircraft's gross weight totaled 1,650 pounds.

PERFORMANCE: Cruising speed (Sea level): 76 knots. Service ceiling: 12,100 feet. Maximum range: 796 nautical miles.

REMARKS: This fabric-covered aircraft was sold commercially as the Interstate S-1B Cadet. Its original Army Air Corps military designation was the O-63. One XL-6 Interstate Cadet was procured in 1942 with an additional 250 of the aircraft being purchased by the government in 1943.
L-13



DESCRIPTION: Three-place, all-metal, high wing observation and reconaissance aircraft capable of fulfilling the medical evacuation mission.

MANUFACTURER: Stinson Division of the

Consolidated Vultee Aircraft Corporation. **POWER PLANT:** One air-cooled Franklin XO-425-5 engine of 245 horsepower.

PROPELLERS: Two-bladed, variable pitch propeller of 8 feet, 6 inch diameter.

SPECIFICATIONS: The aircraft had a gross weight of 2,900 pounds.

PERFORMANCE: Cruising speed (Sea level): 93 knots. Service ceiling: 15,000 feet. Maximum range: 562 nautical miles.

REMARKS: Although the Army Ground Forces tested two of these aircraft in 1945, the L-13 was not accepted at that time. Later, the Army Ground Forces procured the L-13 model and by June, 1951, there were 43 of this aircraft in the Army inventory. The L-13 could carry two litters in place of the rear passenger seats. The production prototypes of the L-13 aircraft had folding wings, but this particular model was not procured for use by the Army.

L-14

DESCRIPTION: Three-place, metal frame, fabric-covered observation and reconnaissance aircraft capable of fulfilling medical evacuation missions.

MANUFACTURER: Piper Aircraft Corpora-



tion of Lock Haven, Pennsylvania.

POWER PLANT: One Lycoming O-290-3 piston engine of 130 horsepower.

PROPELLERS: Sensenich two-bladed model 76 JB 44 propeller.

SPECIFICATIONS: Span: 35 feet, 10 inches. Length: 23 feet, 3 inches. Height: 7 feet. Empty weight: 1,100 pounds. Gross weight: 1,800 pounds.

PERFORMANCE: Maximum speed (Sea level): 117 knots. Cruising speed (Sea level): 104 knots. Service ceiling: 14,500 feet. Maximum range: 397 n.m. Endurance: 3.5 hours.

REMARKS: The Army Ground Forces procured five L-14's and cancelled an order for 845 more on VJ Day. The airplane had long landing gear, a litter-carrying configuration (over the rear seat and into the rear fuselage), and exceptional all-around visibility through the plexiglass .'birdhouse' in which the pilot sat.

L-15 SCOUT

DESCRIPTION: Two-place all-metal, high wing observation and reconnaissance aircraft with tricycle landing gear.

MANUFACTURER: TheBoeing Airplane Co. POWER PLANT: One Lycoming O-290-7 engine of 125 horsepower.

PROPELLERS: Two-bladed, variable pitch propeller.

SPECIFICATIONS: The aircraft had a gross weight of 2,216 lbs.

PERFORMANCE: Cruising speed (Sea level): 75 knots. Service ceiling: 12,500 feet. Maximum range: 250 nautical miles.

REMARKS: This was a production prototype that was never produced in quantity. Twelve YL-15 aircraft were procured by the Army Ground Forces between 1947 and 1949 for service and evaluation tests only. The YL-15's were later utilized in Alaska by the Forestry Service. The Boeing-built L-15 Scout used spoilers instead of ailerons and



full flaps. With its high wing and elevated tail boom, the L-15's observer was seated backwards and had a full panoramic downward view unobstructed by the normal tail structure of most observation aircraft.

L-16

DESCRIPTION: Two-place, metal frame, fabric-covered observation and reconnaissance aircraft.

MANUFACTURER: Aeronca Manufacturing Company.

POWER PLANT: One Continental O-190-1 engine of 95 horsepower.

PROPELLERS: McCauley fixed pitch, twobladed metal propeller of 6 feet, 1 inch diameter.

SPECIFICATIONS: The aircraft had a gross weight of 1,300 lbs.

PERFORMANCE: Cruising speed (Sea level): 71 knots. Service ceiling: 14,500 feet. Maximum range: 405 nautical miles.

REMARKS: This tandem-seating L-16 aircraft was the military version of the Aeronca "Champion", and was the most inexpensive aircraft ever purchased by the military. The initial date of Army procurement was in 1948, with a total of 742 L-16A's eventuallybeing delivered. There were 61 "B" Models through June 1948. The L-16 was used extensively in the early part of the Korean conflict in 1950, and a large number were also used in the Civil Air Patrol in the mid-'50's.



L-17 NAVION



DESCRIPTION: Four-place all-metal, low wing utility and liaison aircraft with fully-retractable landing gear.

MANUFACTURER: Ryan Aeronautical Company (L-17A). North American Aviation manufactured the "B" and "C" models of the L-17. **POWER PLANT:** One Continental O-470-7 engine of 185 horsepower ("A" Model); 205 horsepwer ("B" and "C" Models).

PROPELLERS: Hartzell two-bladed, variable pitch metal or plastic propeller, of 7 foot diameter.

SPECIFICATIONS: Gross weight: 3,050 lbs. PERFORMANCE: Cruising speed (Sea level): 106 knots. Service celling: 10,900 feet. Maximum range: 681 nautical miles.

REMARKS: Three models of the L-17 were procured by the Army. The "A" models were first purchased in FY 1947 with the inventory high point of 42 being reached by 1951. The "B" and "C" models had 205 horsepower engines and were purchased in FY 1949 with 196 "B's" and 35 "C's" being inventory highs in June 1949. The L-17 Navions were turned over to Army flying clubs on being phased out of service.

L-21 SUPER CUB

DESCRIPTION: Two-place observation and liaison aircraft.

MANUFACTURER: Piper Aircraft Corporation, Lock Haven, Pennsylvannia. POWER PLANT: One Lycoming O-290-D

USARM ISSS piston engine of 125 horsepower.

PROPELLERS: Sensenich fixed pitch, twobladed metal propeller.

SPECIFICATIONS: Span: 35 feet, 4 inches. Length: 22 feet, 3 inches. Height: 6 feet, 8 inches. Empty weight: 935 pounds. Gross weight: 1,500 pounds.

PERFORMANCE: Maximum speed (Sea level): 105 knots. Cruising speed (Sea level): 96 knots. Service ceiling: 16,000 feet. Maximum range: 345 nautical miles. Rate of climb: 1,000 feet per minute.

REMARKS: Since its initial delivery date in 1951, the Army procured 150 "A" models and 69 "B" models. This metal-frame, fabriccovered airplane was used mainly as a trainer. The "B" model saw extensive use in the Far East with leased aircraft being used in SFT by Reservists. The L-18C, used in MDAP, was the same as the L-21 except that it had a 90 horsepower Continental engine.

L-25 (XV-1, H-35)

DESCRIPTION: Four-place experimental convertiplane.

MANUFACTURER: McDonnell Aircraft Corporation, St. Louis, Missouri.

POWER PLANT: One Continental R-975-19 engine of 550 horsepower.

ROTOR SYSTEM: Single three-bladed rotor and two-bladed pusher propeller.

SPECIFICATIONS: Empty weight: 4,277 pounds. Gross weight: 5,505 pounds.

PERFORMANCE: Maximum speed (Sea level): 171 knots. Service ceiling: 11,800 feet. Maximum range: 414 nautical miles.

REMARKS: The Army procured two L-25 aircraft in FY 1954 from McDonnell Aircraft for state-of-the-art research and evaluation. This was the only aircraft ever given three separate designations. The Army originally called this aircraft the XH-35 while the USAF referred to the convertiplane as the XL-25 with the XV-1 being the compromise desig-



nation. The twin boom aircraft had a greenhouse-type cockpit and stressed skids. The XV-1 was followed by the XV-2 (Sikorsky) convertiplane (design study only) and the XV-3 (Bell) which achieved in-flight conversion.

LC-126

DESCRIPTION: Four-place utility airplane. MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.

POWER PLANT: One Jacobs R-755-11 direct drive engine of 300 horsepower.

PROPELLERS: Hamilton Standard constant speed metal propeller, 7 ft, 9 in diameter.

SPECIFICATIONS: Span: 36 feet, 2 inches. Length: 27 feet, 4 inches. Height: 8 feet, 3.5 inches. Empty weight: 2,250 pounds. Gross weight: 3,350 pounds.

PERFORMANCE: Maximum speed (Sea level): 158 knots. Cruising speed (Sea level): 118 knots. Service ceiling: 19,800 feet. Maximum range: 1,036 nautical miles. Endurance: 4 hours. Rate of climb: 1,200 feet per minute.

REMARKS: In 1950, five LC-126B's were purchased by the USAF for the Army National Guard. The Army issued a contract in 1952 for 63 LC-126C's for use in such varied missions as search and rescue, light cargo transport, and instrument training. The maximum inventory totals for the aircraft were eight "A's", five "B's", and 64 "C's", dropping to nine aircraft by January 1962.



O-1 BIRD DOG



DESCRIPTION: Two-place all-metal, high wing observation, reconnaissance, and liaison aircraft with tandem seating.

MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.

POWER PLANT: One Continental O-470-11 piston engine rated at 213 horsepower.

PROPELLERS: McCauley fixed pitch, twobladed metal propeller.

SPECIFICATIONS: Span: 36 ft. Length: 25 ft, 10 in. Height: 7 ft, 4 in. Empty wt: 1,614 lbs. Gross wt: 2,430 lbs. Fuel: 40 gal. Flaps, fixed landing gear.

PERFORMANCE: Max speed (SL): 101 knots. Cruising speed (SL): 100 knots. 170 knots. Stalling speed: 86 knots. Service ceiling: 18,500 ft. Max range: 681 n.m. Endurance: 4.67 hours. Rate of climb: 1,040 fpm. REMARKS: Developed for the Army after WW II, the Bird Dog (originally designated by the Army as the L-19) was Cessna's winning design competition entry in April 1950. The LEFT: A speciallyrigged O-1 Bird Dog is ready to drop two 82d Abn troopers.



Army accepted some 3,430 O-1A's and E's by March 1964 with the USMC using O-1B's and O-1C's. Later, the USAF utilized F's and G's in Vietnam for forward air controller missions. Nineteen other countries also purchased this versatile aircraft. The structurally stronger TO-1D served as the Army's instrument trainer version in having a variable pitch propeller and an instrument panel in the rear. The latter could be enclosed for hooded flight.

U-8D/F SEMINOLE



LEFT: RU-8D with APS-85 Radar

DESCRIPTION: Six-place all-metal, low-wing high performance, all-weather courier and personnel transport with retractable tricycle landing gear. Convertible to a medevac ambulance, pilot trainer, or cargo hauler.

MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.

POWER PLANT: Two Lycoming GSO-480-I engines rated at 340 horsepower each, supercharged for high altitude flight.

PROPELLERS: Hartzell three-bladed, allmetal featherable propellers.

SPECIFICATIONS ("F"): Span: 45 ft, 10.4 in. Length: 33 ft, 4 in. Height: 11 ft, 61/2 in. Empty wt: 5,112 lbs; gross wt: 7,700 lbs.

PERFORMANCE: Max speed (SL): 186 knots. Cruise speed (10,000 ft): 157 knots. Service ceiling: 27,000 ft. Max range: 1,519 n.m. Endurance: 8.36 hrs. Rate of climb: 1,300 feet per minute.

REMARKS: The U-8D (originally the L-23) is the military version of the Beechcraft Model



50 Twin-Bonanza with the "F" being a Beechcraft 65 Queen Air. 358 Seminoles were purchased during 1952-1962. Three production and 68 production U-8Fs were delivered starting in January 1962. The NU-8F, a turbinepowered, unpressurized U-8F (two Pratt & Whitney PT6A-6 turbine engines rated at 550 shaft horsepower each) was procured by the Army in 1964. Its increased speed, higher useful load, and greater range made it a welcome addition to the Army fleet.

OV-1 MOHAWK



DESCRIPTION: Two-place observation and reconnaissance aircraft.

MANUFACTURER: Grumman Aerospace, Old Bethpage, Long Island, New York.

POWER PLANT: Two Lycoming T53-L-701 turboprop engines, 1,400 shaft horsepower each. PROPELLERS: Hamilton-Standard threebladed reversing & feathering, 10 ft. diam.

SPECIFICATIONS: Span: 48 ft. Length: 41 ft. Length (with SLAR antenna): 43 ft. Height: 13 ft. Empty wt: 11,800 lbs. Fuel: 1,930 lbs; Two 150-gallon drop tanks: 2,368 lbs.

PERFORMANCE: Maximum speed (SL): 285 knots, (IR/photo). Cruise (SL): 210 knots. Service ceiling (80% fuel): 25,000 ft. Range (w/drop tanks): 890 n.m. (IR/photo).

REMARKS: The OV-1 was first purchased as the AO-1 in September 1960. The "A" utilized two 960 hp Lycoming T-53-L3 turboprop engines; a 1,100 hp T-53-L7 was installed in the "B" model in 1963. Designed to operate from small unimproved fields in the forward battle area, the "D" is deceptively similar to earlier LEFT: OV-1 Mohawk equipped with SLAR



versions but rapid configuration procedures enable a single OV-1D to perform the surveillance functions of any previous Mohawk. Capable of daylight, darkness, and inclement weather operations, the 'D' has a more accurate inertial navigation system, improved infrared and radar performance with automatic data annotation of imagery, three photographic systems that include a vertical and oblique firing camera and two panoramic cameras that provide vertical and horizontal terrain coverage horizon to horizon, a radiological monitoring system, and ECM equipment to assure mission success.

T-37



DESCRIPTION: Two-place, side-by-side offthe-shelf jet trainer. MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.

POWER PLANT: Two Continental J-69-T-9

turbojets developing I,840 pounds thrust. SPECIFICATIONS: Span: 33 feet, 8 inches. Length: 29 feet, 2 inches. Height: 9 feet, 1 inch. Gross weight: 6,600 pounds. Empty weight: 4,076 pounds.

PERFORMANCE: Maximum speed (10,000 feet): 355 knots at military power, 21,730 rpm. Cruising speed (25,000): 279 knots at normal rated power, 20,700 rpm. Service ceiling: 35,000 feet. Maximum range: 607 nautical miles. Endurance: 2.8 hours. Rate of climb (Sea level): 3.200 feet per minute.

REMARKS: This aircraft was procured by the USAF as a primary jet trainer. Three T-37's were loaned to the Army in 1958 for Project LONG ARM for the purpose of evaluating the use of high speed, high performance aircraft for long range artillery adjustment and observation as well as low altitude, high speed flight. More than 900 were built for the USAF and other nations.

DESCRIPTION: One-place high performance tactical reconnaissance jet fighter evaluated for use by the USA Aviation Test Board as an observation aircraft.

1 h

MANUFACTURER: Built for the NATO For-



ces by the Fiat Aviation Division of Turin, Italy.

POWER PLANT: Bristol-Siddeley Orpheus MK 803 axial flow turbojet engine of 4,078 pounds thrust each with after-burner. 5,000 pounds of rated sea level static thrust.

SPECIFICATIONS: Span: 29 feet. Length: 39 feet, 3 inches. Height: 14 feet, 5 inches. Empty weight: 8,380 pounds. Gross weight: 19,070 pounds.

PERFORMANCE: Maximum speed (Sea level): (G-91R) 603 knots, (G-91Y) 605 knots. Operational ceiling: 27,600 feet.

REMARKS: In 1961, the Army received the loan of three of these NATO fighters to be used for test and evaluation as a high speed, high performance observation aircraft. Testing was discontinued after two of these jets were lost in separate accidents. The G-91T was a two-place tandem-seating trainer version.

C-91

T-41B MESCALERO

DESCRIPTION: Four-place, all-metal, high wing single engine primary trainer.

MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.

POWER PLANT: One Continental IO-360-D piston engine of 210 horsepower.

PROPELLERS: One McCauley two-bladed, constant speed propeller. 6 ft., 4 in. dia. SPECIFICATIONS: 35 feet, 10 inches. Length: 26 feet, 11 inches. Height: 8 feet, 11 inches. Gross weight: 2,300 pounds. Empty weight: 1,255 pounds.

PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed (5,500 feet): 130 knots per hour. Service ceiling: 17,500 feet. Normal range (5,500 feet): 582 nautical miles. Maximum range (10,000 feet): 920 nautical miles. Takeoff, sod runway: 635 feet. Landing, sod: 400 feet. Fuel: 52 U.S. gallons. Rate of climb: 910 feet per minute. REMARKS: An off-the-shelf Cessna Model 172, 255 T-41B's were delivered through



March, 1967 under a \$4 million contract. With extensive nav-com equipment for student-instructor usage, the T-41 released the O-1 Bird Dog, then the Army's primary trainer, for other support missions.

T-42A

DESCRIPTION: Four-place off-the-shelf dual intrumented, all-weather instrument and transition trainer.

MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.

POWER PLANT: Two Continental IO-470-L fuel injection engines rated at 260 horsepower each.

PROPELLERS: McCauley constant speed, full-feathering two-bladed metal propellers, 6 feet, 6 inches diameter.

SPECIFICATIONS: Span: 37.9 feet. Length: 27.3 feet. Height: 9.6 feet. Empty weight: 3,423 pounds. Gross weight: 5,100 pounds.

PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed, 65 percent (Sea level): 175 knots. Service celling: 19,700 feet. Absolute ceiling: 21,000 feet. Maximum range: 1,226 nautical miles (with 45 minute reserve). Endurance: 7.5 hours. Rate of climb: 1,670 feet per minute.

REMARKS: Commercially known as the

Beechcraft B55 Baron, the T-42A was first purchased in '65 becoming one of the Army's most active trainers. Additional T-42's were flown to Turkey by US Army pilots under a Military Assistance Program.



45

U-1A OTTER



DESCRIPTION: Eleven-place all-metal, high wing utility STOL aircraft. MANUFACTURER: DeHavilland Aircraft of

Canada, Ltd., Downsview, Ontario, Canada. POWER PLANT: One Pratt & Whitney R-134059 piston engine of developing 600 horsepower.

PROPELLERS: Hamilton Standard threebladed, variable pitch metal propeller.

SPECIFICATIONS: Span: 58 feet. Length: 41 feet, 10 inches. Height: 12 feet, 7 inches. Empty weight: 4,431 pounds. Gross weight: 8,000 pounds., Fuel: 216 gallons.

PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed (Sea level): 105 knots. (5,000 feet): 121 knots. Service ceiling: 17,400 feet. Absolute ceiling: 20,5000 feet. Cruising range: 667 nautical miles. Rate of climb: 735 feet per minute. Endurance at cruise power: 6.9 hours.

REMARKS: Since the initial procurement in March 1955, the Army has purchased 205 Otters. Described as an "airborne one ton truck," the U-1A is one of the few service aircraft to retain its original designation. It employs wheels, skis, wheel-skis, and floats in filling Arctic, tropic, and normal missions.

U-6 BEAVER

DESCRIPTION: Six-place, all-metal, high wing general utility aircraft with nonretractable gear. Originally the Army L-20; Off-the-shelf commercial DHC-2.

MANUFACTURER: DeHavilland Aircraft of



Canada, Limited, Downsview, Ontario. **POWER PLANT:** One Pratt & Whitney R-985 AN-1 engine of 450 horsepower.

PROPELLERS: Hamilton Standard twobladed, variable pitch metal propeller.

SPECIFICATIONS: Span: 48 ft. Length: 30 ft, 4 in. Height: 9 ft. Empty wt: 3,000 lbs. Gross wt: 5,100 lbs.

PERFORMANCE: Max speed (SL): 136 knots. Cruise speed (SL): 110 knots. Service ceiling: 18,000 ft. Max range (5,000 ft): 794 n.m. Endurance: 8 hours. Rate of climb: 850 fpm. REMARKS: Operable on wheels, floats, skis, or with a wheel-ski combination, the L-20 was designed for Canada's "bush" country, its high wing allowing easy mooring at lakeside docks. Its Army missions included transporting and air-dropping personnel and supplies, wire laying, courier services, med evacuation, and command transport. 968 U-6s in all were delivered to the Army.

U-9 AERO COMMANDER



DESCRIPTION: Five-place all-metal, highwing, utility, command, and liaison aircraft. Originally designated as the Army L-26 (Models B through D, excluding A). Off-theshelf-version of the commercial Model 520. MANUFACTURER: Aero Design and Engineering Co., Bethany, Oklahoma (Later North American Rockwell Corporation). POWER PLANT: Two Lycoming GO-480-1

piston engines of 260 hp (YL-26); 270 hp (L-26B); 320 horsepower (C, D, and E models). **PROPELLERS:** Hartzell three-bladed variable pitch, metal propellers.

SPECIFICATIONS: Span: 49 ft, 6 in. Length: 35 ft, 1¼ in. Height: 14 ft, 9½ in. Empty wt: 4,475 lbs. Gross wt: 6,750 lbs. Fuel: 156 gal. PERFORMANCE: Max speed (SL): 186 knots. Cruise speed (SL): 159 knots. Service ceiling 21,000 ft. Max range: 1,464 n.m. Rate of climb: 1,525 fpm.

REMARKS: The first U-9 (YL-26) was obtained by the Army in 1953. Some seven 260 hp U-9's, one 270 hp "B", four 320 hp "C", 3 "D's" similar to the "C", and five RL-26's (SLAR-carriers) were purchased in '53'59 with only nine remaining by January 1962.

U-10 HELIO COURIER

DESCRIPTION: Six-place all-metal, high wing short takeoff and landing utility aircraft.

MANUFACTURER: Helio Aircraft Corporation, Bedford, Massachusetts.



POWER PLANT: One Lycoming GO-480-G1D6 engine developing 295 horsepower. PROPELLERS: Hartzell three-bladed, constant-speed propeller, 8 feet diameter. SPECIFICATIONS: Span: 39 feet. Length: 31 feet. Height: 8 feet, 10 inches. Empty weight: 2,037 pounds. Gross weight: 3,600 pounds. PERFORMANCE: Maximum speed (Sea level): 149 knots. Cruising speed (Sea level): 132 knots. (10,000 feet): 144 knots. Service ceiling: 16,500 feet. Maximum range: 1,267 nautical miles. Endurance: 14 hours. Rate of climb: 1,125 feet per minute. REMARKS: Originally designated the L-24,

REMARKS: Originally designated the L-24, the commercial Helio-Courier H-395 was purchased "off-the-shelf" in 1963 by the U.S. Army for operational testing and evaluation. Twenty U-10's were procured through Fiscal Year 1965 for use by the Army's Special Forces Groups. The L-28 was the USAF version of the Helio Courier.

U-21 UTE



BELOW: An RU-21D with SEMA antenna array similar to that on an RU-21E reconnaissance aircraft.

DESCRIPTION: Twelve place unpressurized, high performance, all-weather utility and tactical troop transport with a three-chair, threelitter air ambulance configuration.

MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.

POWER PLANT: Two United Aircraft of Canada PT 6A-20 free shaft turbine engines of 520 horsepower each.

PROPELLERS: Beech full-feathering, reversible propellers, 7 ft, 9 in diameter.

SPECIFICATIONS: Span: 50 ft, 3 in. Length: 35 ft, 6 in. Height: 14 ft, 2 in. Empty weight: 6,065 lbs. Gross weight: 7,700 lbs. Retractable tricyle landing gear with single wheels. PERFORMANCE: Max speed (10,000 ft): 197 knots. Cruising speed (10,000 ft): 184 knots. Service ceiling (at max gross wt): 27,000 ft. Max cruise range: 2,679 n.m. Rate of climb: 1,500 fpm.

REMARKS: A military combination of the Beechcraft corporate turbine-powered King



Air 90 and Queen Air, the U-21A is capable of carrying 3,000 lbs. of air cargo and features a spacious cabin with a large cargo door (53.5 in. x 51.5 in.). As a troop transport, the Ute can carry 10 field-equipped men with combat gear stowed under bench type seats. Initial U-21A acceptance took place in April 1967. Modified version of the Army's NU-8F, which underwent initial user evaluation in March 1964. Later F and J models are equivalent to A100 and Super King Air 200 respectively.

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AH-1 COBRA



BELOW: AH-1G with stabilized night sight LEFT & BELOW: An AH-1S is shown on the deck.



DESCRIPTION ("S"): Two-place attack helicopter.

MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.

POWER PLANT: Textron-Lycoming T53-L-703 turbine engine, 1,800 shaft horsepower.

ROTOR SYSTEM: Single composite twobladed semi-rigid fiberglass 44 ft. dia. main rotor; flapping hinge, 8 ft. 6 in. dia. tail rotor.

SPECIFICATIONS: Gross wt: 10,000 lbs. Empty wt: 6,598 lbs. Length: 44 ft. 7 in. Height: 12 ft. Fuel: 259 gallons.

PERFORMANCE: Maximum speed (SL): 171 knots, depending on stores. Max range: 362 n.m. Rate of climb: 1,580 fpm.

REMARKS: The AH-1 series, in replacing the UH-1 armed helicopter, started in April 1966 with a development and production contract for 110 AH-1G's. First delivery followed just 13 months later with combat introduction to Vietnam in August 1967. During 1967-1972, 1,126 G's were produced at the rate of 35 per month, logging over one million combat hours. In 1975, 91 G's were equipped with TOW systems as Q's and 198 G's received new a power train becoming the AH-1S (modified). In a three-step program beginning in March 1977, Bell produced 297 new S's by February 1981. In companion steps, the remaining G's were to be remodified in the Modernized "S" configuration and all earlier production "S's" were to receive Modernized Cobra features.

AH-56A CHEYENNE

BELOW: A pusherprop speeds the AH-56 along



BELOW: Gear up and doing about 380 knots!



MANUFACTURER: Lockheed-California Company, Burbank, California

POWER PLANT: One General Electric T64-GE-16 turbine of 3,435 shp.

ROTOR SYSTEM: Single rigid rotor, 50.4 ft dia.; tail rotor 10.0 ft dia.; 10 ft dia. pusher propeller for horizontal propulsion.

SPECIFICATIONS: Wing span: 26.7 ft. Gross wt: 16,995 lbs. Empty wt: 11,700 lbs. Length: 55 ft. Height: 13 ft, 7 in. Tandem-seating. PERFORMANCE: Max speed (SL): 214 kt. Cruise speed (SL): 197 kt. Service ceiling: 26,000 ft. Hover ceiling (OGE): 10,600 feet (std). Maximum range: 547 n.m. Endurance: 54 hrs. Rate of climb: 3,420 fpm.

REMARKS: The No. 1 prototype of the Army's AAFSS (Advanced Aerial Fire Support System) was rolled out on May 3, 1967, 13 months after the initial contract was let, with the 10th and final prototype being ac-



cepted in August, 1968. FAA certification took place in October '68 with Lockheed and its 813 suppliers to build 375 of the advanced attack helicopters for the U.S. Army. OSA terminated the Cheyenne contract in Aug '72 due to delayed development, rising costs, and the appearance of two competitive company-funded AAH candidates. In a July '72 report, a task force called for a more agile, smaller, and somewhat slower AAH with less sophisticated fire control and navigation equipment.

CH-21 SHAWNEE

BELOW: An H-21 with floats is tested at the Boeing Vertol facility. LEFT: A hook-up in South Vietnam.



DESCRIPTION: Twenty-two place single engine, twin rotor personnel and cargo helicopter.

MANUFACTURER: Piasecki Helicopter Corporation (later the Boeing Helicopter Co., Philadelphia, Pennsylvania).

POWER PLANT: One Curtiss-Wright supercharged R-1820-103 engine developing 1,425 horsepower,

ROTOR SYSTEM: Tandem fully-articulated three-bladed counter-rotating rotors, each 44 feet in diameter.

SPECIFICATIONS: Gross weight: 15,200 pounds. Empty weight: 8,950 pounds. Length: 52 feet, 6 inches. Height: 15 feet, 9 inches.

PERFORMANCE: Maximum speed (Sea level): 111 knots. Cruise speed (Sea level): 86 knots. Service ceiling: 18,600 feet. Maximum range: 281 nautical miles. Endurance: 2 hours, 41 minutes.

REMARKS: Since the intial date of procure-



LEFT: An Alaska ski landing.

ment in June 1950, the Army purchased 334 CH-21s of all models. It also obtained 16 B's from the USAF. In its litter configuration, the CH-21 could carry 12 litters plus seats for two medical attendants. A multi-mission helicopter, the Shawnee utilized wheels, skis, or floats. The Shawnee was, until late 1963, the workhorse of Vietnam, when it was replaced by the UH-1. Widely used by other nations, the French employed the "Flying Banana" in Algeria combat operations.



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CH-34 CHOCTAW



DESCRIPTION: 12- to 16-place cargo and light tactical transport helicopter. MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut. POWER PLANT: One Curtiss-Wright R-182084 piston engine of 1,425 horsepower.

ROTOR SYSTEM: Single four-bladed main rotor, 56 foot diameter. Four-bladed metal anti-torque rotor, 9 feet, 4 inch diameter.

SPECIFICATIONS: Gross Weight: 13,000 pounds. Empty Weight: 7,675 pounds. Length: 65 ft. 8 inches. Height: 15 feet, 10 inches.

PERFORMANCE: Maximum speed (Sea level): 107 knots. Cruise speed (SL): 95 knots. Service ceiling: 9,500 feet. Hover ceiling (OGE): 2,400 feet. Maximum range: 318 nautical miles. Rate of climb: 1,100 feet per minute.

REMARKS: Beginning in FY 1955, the Army procured a total of 437 Choctaws of A and C models through FY 65. The VH-34 was used for VIP transport, notably as the first helicopters used by the Presidential Flight Detachment. It had an eight-litter med evac capability.

CH-37 MOJAVE

DESCRIPTION: 26-place medium cargo helicopter.

MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.

POWER PLANT: Two R-2800-54 Pratt & Whit-



ney piston engines of 2,100 hp each.

ROTOR SYSTEM: Single five-bladed main rotor, 72 ft. diameter. Four-bladed metal antitorque tail rotor, 15 ft. diameter.

SPECIFICATIONS: Gross weight of the CH-37 is 31,000 pounds. Empty weight is 20,690 pounds. Length: 88 ft. Height: 22 feet. Rotor Diameter: 72 feet. Tail Rotor Dia.: 15 feet.

PERFORMANCE: Maximum speed (Sea level): 114 knots. Cruise speed (SL): 101 knots. Service ceiling: 8,700 feet. Hover ceiling (OGE): 1,100 feet. Maximum range 167 nautical miles. Rate of climb: 910 feet per minute. **REMARKS:** Since initial procurement in 1956, the Army purchased 91 similarly powered CH-37 "A" and "B" models through FY 65. The Mojave is loaded through clamshell doors in the nose portion of the aircraft. It also had a 24-litter med evac capability, or could carry three tons of cargo.

CH-47 CHINOOK

RIGHT: The CH-47 demonstrates its flotation ability.

DESCRIPTION ("D"): 47-place twin-turbine, deployable tandem-rotor medium lift transport helicopter.

MANUFACTURER: Boeing Helicopter Co., Philadelphia, Pennsylvania.

POWER PLANT: Two Lycoming T55-L-712 turboshaft engines, 3,750 shaft horsepower each. ROTOR SYSTEM: Tandem three-bladed, counter-rotating fiberglass rotors, 60 ft. dia.

SPECIFICATIONS: Max gross wt: 50,000 lbs. Empty wt: 23,149 lbs. Length: 51 ft. Height: 18 ft. 7.8 in. Fuel: 1,030 U.S. gallons.

PERFORMANCE (at gross wt.): : Max speed (SL): 142 knots. Service ceiling: 8,500 ft. Hover ceiling (OGE): 6,000 ft. Max range: 229 n.m. Rate of climb: 1,100 fpm.

REMARKS: Selected to produce a new medium transport lift helicopter in September 1958, the Vertol Division delivered its first Chinook to the Army four years later. Some 699 were delivered, the Chinook being a combat-tested performer



through Vietnam. The B and C models utilize the same airframe as the A, the B using T55-L-7C turbines and the C using the T55-L-11 engine. The rollout of the D prototype took place in March 1979 with the first flight occuring two months later. The Army is modifying earlier Chinooks to "D" specs with additional new production CH-47Ds being ordered. The special mission version of CH-47D includes air-to-air refueling capability.

CH-54 TARHE

DESCRIPTION: 48-place twin-turbine heavy lift helicopter.

MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.

POWER PLANT: Two Pratt & Whitney JFTD-12A-5A turbines of 4,800 hp each.

ROTOR SYSTEM: Single six-bladed main rotor; four-bladed metal anti-torque tail rotor. SPECIFICATIONS: Gross wt: 42,000 lbs. Useful load: 19,031 lbs. Length: 88 ft, 6 in. (Blades extended). Height: 25 ft, 4 in. Rotor Dia: 72 ft. Tail Rotor Dia: 15 ft, 4 in. Pod (28' 1" x 9', 6"): 24 litters + 15 seats; 45 troops. PERFORMANCE: Max speed (SL/GW): 111 kts. Cruise (SL/GW): 96 kts. Service ceiling: 13,000 feet. Hover ceiling (OGE): 4,000 feet. Best rate of climb: 1,700 fpm. Endurance: 2 hrs. 15 minutes.

REMARKS: Since first flight (1962) and initial procurement of six Sikorsky S-64 Skycranes (1964), the Army had purchased



28 CH-54's through FY 68. Designed to carry loads externally, it has a rear-facing pilot's seat to provide a clear view of the cargo during pickups and deliveries. By means of a hoist it can pick up or deposit loads without landing. A lightweight van (universal pod) can be attached to the fuselage and used as a CP, MASH, or repair shop. Particularly suited for recovering downed aircraft and offloading in ship-to-shore missions, the CH-54 did yeoman service in Vietnam.

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H-24



DESCRIPTION: Two-place (pilot and passenger) observation and medical evacuation helicopter. MANUFACTURER: Seibel Helicopter. POWER PLANT: One Avco Lycoming 4-cylinder, horizontally opposed, aircooled 0-290-D1 piston engine of 130 horsepower. **ROTOR SYSTEM:** One wooden main rotor blade of 29 foot diameter; a two-bladed 74 inch tail rotor.

SPECIFICATIONS: Gross weight: 1,540 pounds. Places: Two, or pilot and one litter. PERFORMANCE: Cruising speed (Sea level): 51 knots. Service ceiling; 4,300 feet. Maximimum range: 113 statute miles.

REMARKS: Two H-24 Selbel helicopters were procured in Fiscal Year 1951 for test and evaluation.

H-25 ARMY MULE

DESCRIPTION: Eight-place tandem rotor cargo and utility helicopter. MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania. POWER PLANT: One Continental Motors 9-



cylinder radial R-975-46 engine of 475 horsepower.

ROTOR SYSTEM: Two three-bladed counterrotating rotors. 35 foot diameter.

SPECIFICATIONS: Gross Weight: 5,500 pounds. Rotor Diameter: 35 feet. Fixed landing gear. The H-25 crew numbered two persons, with an optional load of three to six passengers.

PERFORMANCE: Cruising speed (Sea level): 80 knots. Service ceiling: 11,500 feet. Maximum range: 411 nautical miles.

REMARKS: The Piasecki H-25 was developed for the U.S. Navy for rescue operations, but with minor modification, it met Army operational needs in cargo and utility missions. The first H-25A Army Mules were purchased in FY 1953 with the highest fullyear inventory count reaching 63 in FY 1955. All inventory aircraft were later turned over to the Navy for use.

H-26



DESCRIPTION: One-place observation and reconnaissance research helicopter. MANUFACTURER: American Helicopter Company. POWER PLANT: Two American Helicopter 48 horsepower XPJ49-AH-3 tip-mounted pulse jet engines of 36 pounds thrust each. ROTOR SYSTEM: Single two-bladed teetering rotor system, with rotor blades by Prewitt.

SPECIFICATIONS: Gross Weight: 810 pounds.

PERFORMANCE: Cruising speed (Sea level): 65 knots. Service ceiling: 7,000 feet. Maximum range: 115 nautical mailes.

REMARKS: The Army procured five American Helicopter XH-26's during the period 1952-1954 for engineering and operational evaluation. The aircraft shown in the photograph is on permanent display at the U.S. Army Aviation Museum at Fort Rucker, Alabama.

H-30

DESCRIPTION: Two-place (pilot and passenger) observation, medical evacuation, and utility helicopter.

MANUFACTURER: McCulloch Motors Corporation.



POWER PLANT: One Franklin Motors 6A4-200-C6 6-cylinder, horizontally opposed, aircooled engine of 200 horsepower.

ROTOR SYSTEM: Tandem three-bladed rotor system with each blade being 22 feet in diameter.

SPECIFICATIONS: Gross Weight: 2,000 pounds. Rotor Diameter: 22 feet.

PERFORMANCE: Cruising speed (Sea level): 79 knots. Service ceiling: 12,000 feet. Maximum range: 228 nautical miles. Side-by-side crew seating.

REMARKS: Two McCulloch Motors H-30 helicopters were procured by the Army in 1952 for operational and engineering evaluation. The rotor hub of the H-30 was later used on the Hughes YHO-2 which eventually became the Army's TH-55. The H-30 had tricyle landing gear and a full "greenhouse" that afforded the pilot and passenger maximum all-around visibility.

H-31



DESCRIPTION: Eight-place (pilot and three to seven passengers) medical evacuation and utility helicopter.

MANUFACTURER: Doman Helicopters Inc, Danbury, Connecticut. POWER PLANT: One Avco Lycoming SO-580-D 8-cylinder piston engine of 400 horsepower.

ROTOR SYSTEM: Single four-bladed main rotor system utilizing wooden blades. Threebladed tail rotor (wooden blades).

SPECIFICATIONS: Gross Weight: 5,200 pounds (with eight persons aboard).

PERFORMANCE: Cruising speed (SL): 68 knots. Service celling: 5,700 feet. Maximum range: 394 nautical miles.

REMARKS: The Army procured two Doman Helicopters H-31's in 1952 for test and evaluation by the US Army Aviation Test Board at Fort Rucker, Alabama. The aircraft had a completely sealed, non-articulated rotor system (the first "rigid rotor" system in use), and featured four-wheel fixed landing gear and an oversize cargo door. The Doman commercial designation for the H-31 was LZ-5.

H-32 HORNET

DESCRIPTION: Two-place (pilot and passenger) observation helicopter.

MANUFACTURER: Hiller Aircraft Company, Palo Alto, California.

POWER PLANT: Two Hiller HR J2B Ram Jet



tip-mounted engines of 30 pounds thrust each.

ROTOR SYSTEM: Single two-bladed metalmain rotor and single two-bladed wooden tail rotor.

SPECIFICATIONS: Gross Weight: 1,080 pounds. Main Rotor Diameter: 23 feet. Tail Rotor Diameter: 32 inches.

PERFORMANCE: Cruising speed (Sea level): 61 knots. Service ceiling: 11,500 feet. Maximum range: 32 nautical miles.

REMARKS: The ram jet Hiller Hornet first flew in 1950, although the Army did not take delivery of this type of aircraft until 1956. at which time it purchased six. The H-32 featured extremely high maneuverability and agility, an exceptional rate of climb, side-byside seating for the pilot and the observerpassenger, and a sturdy landing skid in lieu of wheels. The Hornet was the first practical micro-copter in an era of large machines.

H-33 (XV-3)

DESCRIPTION: Two-place tilt-rotor research aircraft.

MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.

POWER PLANT: One Pratt & Whitney R-985-AN-3 engine of 450 horsepower.

ROTOR SYSTEM: Two two-bladed semi-rigid tilting prop-rotors of 23 feet diameter.

SPECIFICATIONS: Gross Weight: 4,850 pounds. Empty Weight: 4,200 pounds. Length: 30 feet, 4 inches. Height: 13 feet,-7 inches.

PERFORMANCE: Max speed (SL) : 131 knots. Cruising speed (SL): 114 knots. Service ceiling: 12,000 ft. Max range: 161 nautical miles.

REMARKS: Two aircraft were procured in '51 under a joint Army-USAF contract, No. 4147 being first flown in Aug '55. The prop-rotor H-33 was then destroyed in an accident, twobladed semi-rigid rotors being added to the



No. 4148. The latter achieved full in-flight conversion of its tilting rotors in Dec '58, a 10-second operation, the world's first such performance by this type of aircraft. The convertiplane was also designated as the XV-3.

H-39

DESCRIPTION: Four-place (pilot and three passengers) utilty helicopter.

MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.

POWER PLANT: One Turborneca Artouse II-XT-51-T3 turbine engine of 400 horsepower.

ROTOR SYSTEM: Single four-bladed articulated main rotor of 35 foot diameter and metal three-bladed anti-torque tail rotor of 6 foot, 4 inch diameter.

SPECIFICATIONS: Gross Weight: 3,361 pounds. Empty Weight: 2,105 pounds. Length: 41 ft, 9 in. Height: 9 ft, 7 in.

PERFORMANCE: Maximum speed (Sea level): 132 knots.Cruise speed (SL): 121 knots. Service ceiling: 17,900 feet. Hover ceiling (OGE): 15,100 feet. Maximum range: 305 nautical miles. Endurance: 2 hours. Rate of climb: 1,680 feet per minute.

REMARKS: The H-39 was basically a modified H-18 with an Artouse II gas turbine engine installed. In 1954 the Army obtained one Sikorsky YH-18A to be used for operational and engineering evaluation. The H-39 set World Records in 1954 for its class for speed (132 knots) and altitude (24,220 feet.)



HO-1 DJINN



DESCRIPTION: Two-place (pilot and passenger) obsevation and reconnaissance helicopter.

MANUFACTURER: Sud Aviation of Paris, France. POWER PLANT: Single Turbomeca compressed air Palouste 4 turbo-generator of 240 horsepower.

ROTOR SYSTEM: Single two-bladed main rotor, 35 feet, 5 inches in diameter. Air bledfrom the compressor was fed to the Djinn's blade-tip ejectors providing thrust for their rotational power.

SPECIFICATIONS: Gross Weight: 1,676 pounds. Empty Weight: 794 pounds. Length: 17 ft. 5 inches. Height: 8 feet, 7 inches.

PERFORMANCE: Max speed (SL): 68 knots. Cruise speed (SL): 54 knots. Hover ceiling (OGE): 4,000 ft. Hover ceiling (IGE): 2,500 ft. Max range: 144 nm Endurance: 2 hrs, 15 min. REMARKS: The Sud Djinn was the first aircraft to receive the Army's new "Helicopter Observation — HO" designation. Three YHO-1's were purchased by the Army for engineering and operational evaluation at its U.S. Army Aviation Test Board.

HO-3

DESCRIPTION: Two-place (pilot and passenger) observation and reconnaissance helicopter

MANUFACTURER: Brantley Helicopter Corporation, Frederick, Oklahoma.



POWER PLANT: One Lycoming VO-360 engine of 180 horsepower.

ROTOR SYSTEM: Single three-bladed main rotor of 28 feet, 3 inches diameter; Brantleydesigned two-section blades.

SPECIFICATIONS: Gross Weight: 1,670 pounds. Empty Weight: 1,020 pounds. Length: 21 feet, 9 inches. Height: 6 feet, 9 inches.

PERFORMANCE: Maximum speed (Sea level): 87 knots. Cruising speed (Sea level): 79 knots. Service ceiling: 9,000 feet. Hover ceiling (OGE): 4,000 feet. Normal range: 288 nautical miles. Rate of climb: 1,400 fpm. REMARKS: The Army purchased five YHO-3's (Commercial off-the-shelf Brantley B-2's) for engineering and operational evaluation. The Army test aircraft had skid gear instead of wheels as shown. The YHO-3 was referred to affectionately as an "ice cream cone" by all flight test personnel.

OH-4A



DESCRIPTION: Four-place light observation helicopter. MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.

POWER PLANT: One Allison T63 turbine

engine of 250 horsepower.

ROTOR SYSTEM: Single two-bladed main rotor system, 33.3 foot diameter; metal twobladed tail rotor, 5 feet, 2 inch diamater.

SPECIFICATIONS: Gross Weight: 2,573 pounds. Empty Weight: 1,536 pounds. Length: 38 feet, 8 inches. Height: 8 feet, 10 inches.

PERFORMANCE: Maximum speed (Sea level): 118 knots.Cruising speed (SL): 97 knots. Service ceiling: 20,000 feet. Hover ceiling (OGE): 8,000 feet. Maximum range: 326 n.m. Endurance: 2 hours, 35 minutes Rate of climb: 1,100 feet per minute.

REMARKS: Designated as the Bell D-250, the OH-4A (HO-4) was the first of the three competing Light Observation Helicopters (LOH) to fly, taking to the air in December 1962. Five OH-4's were delivered to the U.S. Army Aviation Test Board for test and evaluation in January 1964.

OH-5A

DESCRIPTION: Four-place light observation helicopter (LOH). MANUFACTURER: Hiller Aircraft Company.

Palo Alto, California.

POWER PLANT: One Allison Division T63-



A-5 turbine engine of 250 shaft horsepower. **ROTOR SYSTEM:** Single two-bladed Hiller "L" rotor by Parsons, 35 ft. 5 in. diameter. **Two-bladed metal tail rotor**, 6 ft. diameter. **SPECIFICATIONS:** Length: 41 ft. 4 in. Height: 9 ft. 2 in. Gross Weight: 2,530 pounds. Empty Weight: 1,395 pounds.

PERFORMANCE: Max speed (SL): 112 knots. Cruise speed: 110 knots. Service ceiling: 16,400 feet. Hover ceiling (OGE): 12,000 feet. (IGE):15,950 feet. Endurance: 8.1 hours. Rate of climb: 1,830 feet per minute.

REMARKS: Five OH-5As were built for the Army to test and compare with two other versions of the proposed LOH. The first flying model was turned over to the Army in December 1963. The Hiller OH-5A was the first of the three LOH's to be eliminated fom the LOH competition. A modified version of the Hiller LOH is marketed as the FH-1100.

OH-6A CAYUSE

DESCRIPTION: Four-place light observation helicopter (LOH).

MANUFACTURER: McDonnell Douglas POWER PLANT: One Allison T63-A-5A turbine of 252 horsepower (derated).

ROTOR SYSTEM: Single four-bladed main rotor, 26 ft. 4 in. Two-bladed metal tail rotor, 4 ft. 3 in.

SPECIFICATIONS: Mission gross weight: 2,163 lbs. Overload gross wt: 2,700 lbs. Empty weight: 1,030 lbs. Overall length: 30 ft. 4 in. Fuselage length: 23 ft. Height: 8 ft., 6in.

PERFORMANCE (at 2,400 lbs.): Cruising speed (SL): 125 knots. Service ceiling: 15,800 ft. Hover ceiling (OGE): 7,200 ft. (IGE): 12,100 ft. Normal range: 475 n.m. at 5,000 feet. Rate of climb: 1,550 fpm. Fuel: 400 lb.

REMARKS: Commercially marketed as the Hughes 500, the OH-6A was the winning LOH design tested and evaluated by the USA Aviation Test Board. The initial date of procurement for the Hughes OH-6A Cayuse was May 26,

LEFT: A Cayuse pilot checks his gun mountings.

1965 with first deliveries to U.S. Army, Vietnam commencing in early 1968. Organic to division, brigade, and battalion or equivalent units, the OH-6A was employed in performing command and control, visual observation, target acquisition, and reconnaissance missions. Highly popular with aviators in USARV, the "Loach" proved to be virtually indestructible, taking major hits from ground fire and still coming home. The OH-6A is currently active in ARNG units and is being updated and maintained through AVSCOM.

OH-13 SIOUX

RIGHT: An OH-13B in flight at the Bell plant, BELOW: A turbo-supercharged OH-13S helicopter on the ramp.



BELOW: Sioux Scout, a 2-place experimental armed helicopter that led to the HueyCobra.

DESCRIPTION: Three-place observation, recon, and medical evacuation helicopter. MANUFACTURER: Bell Helicopter Company, Fort Worth, Texas.

POWER PLANT: One Lycoming VO-435-25 6cylinder, horizontally opposed, aircooled, turbo-supercharged engine of 260 hp.

ROTOR SYSTEM: Single two-bladed metal main rotor, 37 ft. diameter; two-bladed metal tail rotor, 5 ft, 10 in. diameter.

SPECIFICATIONS: Gross Weight: 2,950 pounds. Empty Weight: 1,936 pounds. Length: 43 ft., 4 in. Height: 9 ft., 3 in.

PERFORMANCE: Max speed (Sea level): 92 knots. Cruise speed (SL): 82 knots. Service ceiling: 20,000 feet. Hover ceiling (OGE): 18,600 feet. Maximum range: 373 nautical miles. Endurance: 2 hours. Rate of climb: 880 feet per minute.

REMARKS: The Army procured its first YR-13 in Dec 1946. Since that date, it has



purchased 2,197 OH-13's of all models ranging from A's through T's. An E model drone demonstrated a remote control capability more than six miles away from its ground control unit. Many OH-13's performed admirably in the Korean War as scouts and med evac aircraft. The T served as a basic instrument trainer. Very agile, OH-13's were crowd pleasers for many years as Bozo, the clown, or in their numerous Square Dance demonstrations or lifting a 70 lb. Yo-Yo.

OH-23 RAVEN



BELOW: A familiar sight in Korea: the two-litter OH-23 descending to the pad

DESCRIPTION ("G"): Four-place observation, utility, and med evac helicopter. MANUFACTURER: Hiller Aircraft Company.

Palo Alto, California.

POWER PLANT ("G"): One Lycoming VO-540 6 cylinder, horizontally opposed, aircooled engine of 305 hp.

ROTOR SYSTEM: Single two-bladed metal main rotor, 35 ft, 5 in. dia.; two-bladed tail rotor, 5 ft., 6 in. dia.

SPECIFICATIONS: Gross wt: 2,800 lbs. Empty wt: 1,759 lbs. Length: 40 ft., 8 in. Height: 10 ft., 2 in.

PERFORMANCE: Max speed (SL): 84 knots. Cruise speed (SL): 79 knots. Service ceiling: 15,200 ft. Hover ceiling (OGE): 5,800 ft. Maxrange: 259 n.m. Endurance: 3 hrs, 12 min. Rate of climb: 1,290 fpm.

REMARKS: With procurement starting in FY 1950, the Army ordered A through G models, excluding E. Used in the Korean War with two external litters, the A's and B's had

178-200 hp Aircooled Motors. The "D" model Raven was used mainly as the primary helicopter trainer until late 1965 when it was replaced by the TH-55A. The four-place F was used throughout Latin America for Coast & Geodetic Survey missions. The F and G models were very similar in capabilities, the F being slightly larger and heavier and being sold commercially as the E4. By January 1962 the Army had 656 OH-13 Ravens in its inventory.

OH-58 KIOWA

BELOW: The OH-58A.

LEFT: An OH-58D (AHIP) utilizing a mast mounted sight.

BELOW: Kiowa with inflatable floats.

DESCRIPTION: Two-place, single engine light observation helicopter used as an interim scout.

MANUFACTURER: Bell Helicopter Textron. POWER PLANT: Allison T63-A-700 turbine engine with 317 horsepower at takeoff and 270 continuous horsepower.

ROTOR SYSTEM: Two-bladed semi-rigid main rotor, 35' 4" diameter; two-bladed tail rotor of 5' 2" diameter.

SPECIFICATIONS: Fuselage length: 32' 3.5". Height: 9' 6.5" Maximum gross weight (C): 3,200 lbs. Empty wt: 1,930 lbs. Armor: 112 lbs. Cargo volume: 40 cubic feet. Fuel: 70 gals. PERFORMANCE (Observation Mission): Maximum allowable airspeed: 121 knots. Maximum cruise speed: (Sea level to 4,000 feet): 102 knots. Cruising range: 345 nautical miles. Hover ceiling (OGE): 5,400; (IGE): 10,500 feet. Endurance: 35 hrs. Rate of climb: 1,200+ fpm. REMARKS: As an interim scout, 585 OH-58As have been modified to the "C" configuration, and now have new T63-A-720 turbine engines, flat plate windshields, IR suppression, redun-



LEFT: The OH-58C, note differences between the C and the A versions.

dant tail rotor controls, and improved transmission and driveshaft covers to protect hangar bearings and tail rotor driveshafts. In performing its roles, the Kiowa will operate in air cavalry, attack helicopter, and field artillery units. Under the Army Helicopter Improvement Program (AHIP), Bell is modifying approximately 500 OH-58As to the OH-58D advanced scout configuration. The "D" model incorporates a mast-mounted sight, fully integrated multiplexed cockpit, a four bladed composte main rotor and a power matched drive train with an Allison 250-C30R engine and Bell's "Run Dry" capable main transmission.







Sikorsky Aircraft. First 'copter to be procured in quantity. Firt obtained in FY 1942. 134 purchased ranging through "C". Twoplace, side-by-side. 165, 180, 200 hp. Used for observation, recon, and med evacuation.

R-6

(1945)



Sikorsky Aircraft. The first XR-5 in 1944 was a tandem rotor model, the VS-272; all others were single rotor. 132 procured in 11 models; later redesignated as the H-5. Powered by a P&W R-985-AN-5 540 horsepower engine.





Sikorsky Aircraft/Nash Kelvinator. 225 of the Sikorsky design produced by N/K in 1944. All except D had 450 hp P&W R-985-AN-5 engines; D had a 600 hp P&W R-1340 engine. Used primarliy by US Navy and Coast Guard.



Boeing Vertol. 1974 R&D heavy lift project. Loads of 35-tons + lifted at 150 knots. First aircraft designed for "fly-by-wire." Powered by three Allison T701 turboshaft engines of 24,000 total shp. Program cancelled in 1976.

TH-55 OSAGE

DESCRIPTION: Two-place side-by-side, dual control primary trainer helicopter.

MANUFACTURER: Hughes Tool Company, Aircraft Division, Culver City, California.

POWER PLANT: One Lycoming HIO-360-B1A engine of 180 horsepower.

ROTOR SYSTEM: Single three-bladed main rotor, 25' 4" dia.; two-bladed metal antitorque rotor, 3' 4".

SPECIFICATIONS: Gross Wt: 1,600 lb. Empty Wt: 1,010 lb. Useful load: 590 lb. Length: 28' 5". Height: 8' 3".

PERFORMANCE: Max speed (SL): 75 knots. Cruising speed (SL): 66 knots. Hover (OGE): 4,000 ft. (IGE): 6,400 ft. Max range: 235 n.m. Endurance: 2.5 hrs. Rate of climb: 1,350 fpm. REMARKS: The TH-55A (formerly designated as the HO-2) was purchased off-theshelf after Army tests and evaluation by the Army. Commercially known as the Hughes 200, the Osage was initially procured in Nov



'64 with some 860 TH-55A's eventually being purchased. Features: 360-degree visibility, 8-foot ground-to-rotor clearance; low vibration and noise; and well-designed skids to absorb hard student landings.

16H-1C

DESCRIPTION: Eight-place developmental shaft compound, ring-tail helicopter.

MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania 19153.

POWER PLANT: One General Electric Company T-58-5 turbine engine of 1,500 shaft horsepower.

ROTOR SYSTEM: Fully-articulated 3-bladed main rotor, 44 dia.; 3-bladed controllable pitch ducted tail-prop for forward propulsion and anti-torque directional control.

SPECIFICATIONS: Empty wt: 4,800 lb. STOL Gross wt: 8,150 lb. Disc loading: 5.36 lb./sq ft. STOL Gross wt: 10,800 lb.

PERFORMANCE: Max speed (SL): 182 knots. Cruising speed (SL): 66 knots at 80% Takeoff power. Service ceiling: 18,700 ft. Hover ceiling (OGE): 7,800 ft. Maximum range: 235 n.m.

REMARKS: Developed initially by the Piasecki Aircraft Corporation as a private company-funded project using the 16H-1 Pathfinder project name, this compound aircraft was later modified to the Pathfinder II under a joint Army-Navy contract to explore high speeds in rotary wing aircraft..



UH-1 IROQUOIS



DESCRIPTION ("H"): 13-place tactical transport helicopter.

MANUFACTURER: Bell Helicopter Textron, Fort Worth Texas.

POWER PLANT: Textron Lycoming T53-L-13 turbine engine, 1,400 shaft horsepower.

ROTOR SYSTEM: Two-bladed semi-rigid metal 48 ft. diameter main rotor; two-bladed semirigid metal tail rotor, 8' 6'' diameter.

SPECIFICATIONS ("H"): Gross weight: 9,500 lbs. Empty weight: 5,210 lbs. Length: 41' 11". Height: 11' 9". Fuel: 211 gal. External cargo: 4,000 lbs. Internal cargo: 220 cu. ft.

PERFORMANCE: Max cruise speed (SL): 111 knots. Maximum endurance: 3.4 hours.

REMARKS: A major Army asset since its initial procurement in 1959, the UH-1 series has evolved through 13 models (A through V). Starting its career as a medevac aircraft, the Huey has flown more than 20 million flight hours in supporting a wide variety of Army missions. From the seven-place UH-1A of 1959-1961 (173



purchased), the Army procured 1,033 nineplace Bs during 1961-1965 and 749 Cs/Ms during 1965-1967. More than 7,534 Ds/Hs have been bought since 1963. The Army's utility fleet of today is composed of 86% Hs, 6% Ms and 8% Vs (medevac aircraft). The "Slick" was the backbone of all air-mobile combat operations in Vietnam. The last production "H" for the Army was delivered in December '76 with the average fleet age now at 19.7 years. The UH-1H is still being co-assembled for foreign military orders.

UH-2



DESCRIPTION: A compound version of the six- to thirteen-place UH-2 general utility helicopter.

MANUFACTURER: Kaman Aircraft Corporation, Bloomfield, Connecticut. POWER PLANT: One General Electric T58-8 turbine engine of 1,250 shaft horsepower, and one GE J-85 turbojet of 2,500 lb/thrust for auxiliary propulsion.

ROTOR SYSTEM: Single four-bladed main rotor of 44 feet diameter; and a three-bladed tail rotor of 9 feet, 4 inches diameter.

SPECIFICATIONS: Gross Weight: 8,637 pounds. Empty Weight: 6,100 pounds. Length: 52 feet, 6 inches. Height: 13 feet, 7 inches.

PERFORMANCE: Maximum speed (Sea level): In excess of 197 knots. No other performance figures are available.

REMARKS: The UH-2 compound Seasprite helicopter was flown in 1965 under a joint Army-Navy test program to investigate the high speed potential of the Seasprite rotor system. The UH-2 compound is basically a UH-2 with stub wings and auxiliary jet engine added.

UH-19 CHICKASAW

DESCRIPTION: Twelve-place utility and light tactical helicopter.

MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.

POWER PLANT ("D"): One Curtiss-Wright



R-1300-3 piston engine of 700 horsepower; the A and C models used a 550 horsepower Pratt & Whitney R-1340-57 engine.

ROTOR SYSTEM: Single three-bladed main rotor of 53 foot diameter; metal two-bladed tail rotor of 8 foot diameter.

SPECIFICATIONS: Fuselage length: 41 feet, 2 inches. Height: 15 feet, 6 inches. Empty weight: 5,250 lb. Gross weight: 7,500 lb.

PERFORMANCE: Max speed (SL): 98 knots. Cruising speed (SL): 80 knots. Service ceiling: 10,600 ft. Hover ceiling (OGE): 2,300 ft. Max range: 414 n.m. Endurance: 4.3 hrs. Rate of climb: 1,020 fpm.

REMARKS: The world's first transport helicopter and the first to be used for commercial scheduled service. Crew of two plus six litters and one medical orderly, or ten passengers. Since its initial procurement in Nov 1949, 355 Chickasaws were brought into the Army inventory through FY 1965.

UH-60A BLACK HAWK



BELOW: Hooking up at Fort Campbell



DESCRIPTION: 14-place combat assault helicopter. Crew of three and 11 fully equipped troops, four stretcher patients, internal cargo, or 8,000 pounds of slung cargo.

MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.

POWER PLANT: Two General Electric T-700 turboshaft engines, 1,543 shaft horsepower. ROTOR SYSTEM: Composite (titanium and fiberglass) four-bladed main rotor 53' 8" diameter.

SPECIFICATIONS: Mission gross weight: 16,450 lbs. Gross weight: 20,250 lbs. Length: 50' 34''.

PERFORMANCE: Maximum speed: 160 knots. Hover ceiling (OGE): 10,400 ft.; (IGE): 14,700 ft. Service ceiling: 17,690 ft. Range: 429 nautical miles. Rate of climb: 450 fpm. Required endurance: 2.3 hours.

REMARKS: Following an extensive, exhaustive and highly competitive test and evaluation, the





LEFT: 105mm howitzer in tow

Sikorsky UTTAS (Utility Tactical Transport Aircraft System) was selected by the Army from a field of five companies on December 23, 1976. Currently, more than 1200 BLACK HAWKs have been procured or are on order with the Aviation Modernization Plan calling for more than 2200 total aircraft through FY2005.
XH-15



DESCRIPTION: Four-place (pilot and three passengers) experimental observation-utility helicopter.

MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas. POWER PLANT: One Continental XO-470-5 turbo-supercharged engine of 275 horsepower.

ROTOR SYSTEM: Single two-bladed rotor system, wooden blades, 36 feet, 10 inch diameter.

SPECIFICATIONS: Length: 43 feet. Gross weight: 2,700 pounds.

PERFORMANCE: Maximum speed (Sea level): 87 knots. Service ceiling: 20,000 feet. No other mission data is available in that only experimental work was completed.

REMARKS: In FY 1950, the Army Air Forces procured three Bell XH-15 helicopters for service test and evaluation. Because the aircraft never became a production article, many of the operational parameters were never firmly established. The XH-15 was designed as a high altitude helicopter for the USAF and was the first helicopter to incorporate a turbo-supercharged engine.

XH-17

DESCRIPTION: Three-place heavy lift research helicopter. MANUFACTURER: Hughes Helicopters,

Division of Summa Corporation, Culver City, California.



POWER PLANT: One TG-80 (J-36) modified gas turbine engine of 3,480 horsepower.

ROTOR SYSTEM: Single two-bladed metal main rotor of 168 foot diameter and 68-inch chord.

SPECIFICATIONS: Gross Weight: 47,500 pounds.

PERFORMANCE: This was a test aircraft and no performance data is available.

REMARKS: This was the first effort to prove to prove the feasibility and the advantages of jet power for rotary wing aircraft. Built and demonstrated by Hughes, the XH-17 was procured by the USAF in 1952 and flew numerous tests through 1955. All evaluation data was supplied to the Army with invaluable knowledge of jet engine installation, complex ducting, and pressurized structures being "fallout." The project was initially launched by Kellett Aircraft and and later taken over by Hughes Helicopters.

XH-51A

DESCRIPTION: Two-place developmental rigid-rotor compound research helicopter. MANUFACTURER: Lockheed-California Company, Burbank, California.

POWER PLANT: One UA of Canada PT-6B-6 550 shp turbine engine; P&W J60-P2 turbojet of 2,900 lb/thrust for auxiliary propulsion. ROTOR SYSTEM: Single four-bladed Lockheed rigid-rotor, 35' dia; 6' tail rotor. SPECIFICATIONS: Fuselage length: 32 ft, 10 in. Height: 8 ft, 2 in. Empty wt: 4,000 lb. Gross wt: 4,500 lb. Retractable landing gear. PERFORMANCE: Max speed (SL): 153 knots. Cruising speed (SL): 126 knots. Hover ceiling (OGE): 7,000 ft. Max range: 330 n.m. Endurance: 2.7 hrs. Rate of climb: 1,850 fpm. REMARKS: The XH-51A compound helicop-

ter was developed under a joint Army-Navy contract as a research vehicle for high performance rotary wing aircraft, completing its first flight in November 1962. The XH-51N



has PT6B-9 550 shp engine, three-bladed rigid rotor, gross weight of 3,500 lbs, and 2,650 lb. empty weight. Lockheed also developed a commercial model of the XH-51 designated as its Model 286.

YH-16

DESCRIPTION ("B"): 50-place tandem rotor, heavy cargo helicopter. "A" was 44-place aircraft first designated as the H-27.

MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania.

POWER PLANT: Two T-56-A5 Allison turbine engines of 2,100 hp. Initial YH-16A (H-27) had two Allison T-38-A3 engines.

ROTOR SYSTEM: Tandem four-bladed metal fully-articulated rotor system. Diameter: 82 feet.

SPECIFICATIONS: Gross weight: 46,700 pounds.

PERFORMANCE: Cruise speed (Sea level): 125 knots. Service ceiling: 15,600 feet. Maximum range: 230 nautical miles.

REMARKS: The Army procured two Piasecki YH-16 cargo helicopters for test and evaluation purposes, the second H-16 being an "A" model employing the Allison T38 turbine engine. The project was terminated in 1956.



AH-64A APACHE

DESCRIPTION: Two-place, twin engine advanced attack helicopter.

MANUFACTURER: McDonnell Douglas Helicopter Co., Mesa, AZ.

POWER PLANT: Two General Electric T700-GE-701 turboshaft engines of 1,694 shaft horsepower each.

ROTOR SYSTEM: Four-bladed articulated main rotor, 48 feet diameter, with static mast; four-bladed tail rotor.

SPECIFICATIONS: Gross weight: 18,500 lbs. Length: 49' 5".

PERFORMANCE (Primary Mission): Cruise speed (SL): 160 knots TAS, Maximum forward speed: 197 knots. Sidewards and Rearwards: 45 knots. Max gross weight: 14,694 lbs. Endurance (SL): 2.63 hours. Max Endurance: 3.10 hours. Sustained rate of climb: 3,150 fpm.

REMARKS: This winner of the 1983 Collier Trophy was selected after a competitive flyoff in December '76. The APACHE received its production go ahead in March '82, with the first of



315 contracted aircraft delivered in January '84. The Army currently plans to acquire approximately 900 APACHEs. A potential antihelicopter helicopter, the AH-64A with its TADS target acquisition capability and its HELLFIRE missiles, is regarded as "the most lethal and survivable helicopter in aviation history." With the latest counter-measures systems, withering firepower, and an around-the-clock capability, the APACHE as an addition to the Combined Arms Team is a formidable anti-tank weapon and a deadly deterrent to any enemy force.

YH-18A

DESCRIPTION: Four-place (pilot and three passengers) utility helicopter.

MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.

POWER PLANT: One Franklin 0-425-1 piston engine of 245 horsepower.

ROTOR SYSTEM: Single three-bladed metal main rotor, 33 feet in diameter, two-bladed metal tail rotor of 5 feet, 5 inch diameter. **SPECIFICATIONS:** Length: 35 feet. Height: 8 feet, 6 inches. Gross weight: 2,700 pounds. Four-wheel landing gear.

PERFORMANCE: Maximum speed (Sea level): 96 knots. Cruising speed (Sea level): 81 knots. Service ceiling: 13,800 feet. Hover ceiling (OGE): 1,100 feet. Maximum range: 351 nautical miles. Endurance: 3.5 hours. Rate of climb: 1,050 feet per minute.

REMARKS: The Army obtained four Sikorsky Aircraft YH-18A's for service test and evaluation in FY 1980.



YH-41 SENECA

DESCRIPTION: Four-place observation helicopter.

MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.

POWER PLANT: One Continental FSO-526 horizontally piston engine of 270 hp.

ROTOR SYSTEM: Single two-bladed metal main rotor, 35' ft dia. Two-bladed metal tail rotor, 7 ft. dia.

SPECIFICATIONS: Gross Wt: 3,000 lb. Empty wt: 2,050 lb. Length: 42' 5". Height: 8' 5". PERFORMANCE: Max speed (SL): 107 knots. Cruise: 105 + knots. Hover ceiling: 14,500 ft. (OGE): 6,500 ft. Max range: 357 nm. Endurance: 3.37 hrs. Rate of climb: 1,030 fpm. REMARKS: The Army procured ten H-41 helicopters in 1957 for high altitude operation test and evaluation. None were boughtafter that date. The initial two YH-41 of the evaluation quantity went to Edwards AFB; the remainder were sent to Ft. Rucker. In Dec '57 a YH-41, with Army CPT James E. Bowman as pilot, broke the then world altitude records for helicopters in two categories (under 2,204 lbs. and unlimited weight) reaching approximately 30,300 feet.



YHC-1



DESCRIPTION: 28-place medium transport helicopter.

MANUFACTURER: Boeing Vertol Division, Morton, Pennsylvania.

POWER PLANT: Two General Electric Com

pany T58-6 turbine engines of 1,050 shaft horsepower each.

ROTOR SYSTEM: Tandem three-bladed rotor system. The rotor diameter was 48 feet, 4 inches.

SPECIFICATIONS: Gross Weight: 18,700 pounds. Empty Weight: 11,716 pounds. Length: 44 feet, 7 inches. Height: 16 feet, 10 inches.

PERFORMANCE: Maximum speed (Sea level): 147 knots. Cruise speed (Sea level): 136 knots. Service ceiling: 13,700 feet. Hover ceiling (OGE): 6,500 feet. Maximum range: 132 nautical miles. Rate of climb: 1,700 feet per minute.

REMARKS: The U.S. Army procured three YHC-1's in 1959 for service test and evaluation. Engineering and operational data obtained from this aircraft led to the later development of the company-funded Boeing 107, the CH-46, and the CH-47 Chinook.

YUH-1B

DESCRIPTION: High Performance Research compound helicopter.

MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.

POWER PLANT: One Lycoming T53-L-11 tur



bine engine of 1,100 shaft horsepower and two J69-T27 turbojet engines of 1,260 pound/thrust each.

ROTOR SYSTEM: Single two-bladed main rotor with tapered blade tips, 44 foot diameter. Two-bladed tail rotor.

SPECIFICATIONS: Basically the UH-1B with modifications for mounting the two turbojet engines, two stub wings, and additional fairings around the mast and cross tubes. Overall length: 53'. Fuselage length: 42' 7". Height: 12' 8".

PERFORMANCE: The YUH-1B was flown in excess of 219 mph in level flight during 1963-1964 time frame.

REMARKS: Developed under a joint Bell-U.S. Army Transportation Research Command (TRECOM), the YUH-1B test bed flew with a three-bladed rigid rotor, three-bladed gimbal-mounted rotor, and standard semirigid rotor.

RSRA



DESCRIPTION: Multi-purpose 3-place flying test bed designed to flight test current and advanced rotor systems.

MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut. POWER PLANT: Two GE T58-GE-5 turbines of 1,400 horsepower each. Compound has two auxillary TF34-GE-400A turbofans with 9,275 lb, maximum thrust.

ROTOR: 5-bladed, 62 feet diameter; 5-bladed, 10.67 feet diameter tail rotor.

SPECIFICATIONS: Span: 45'-1/2". Fuselage length: 70'-7". Height: 17'-10". Design gross weight: 18,400 lb. Yankee extraction seat. Controls: Fly-by-Wire Primary with Mechanical Back-up. Compound: 26,200 lb. design gross weight.

PERFORMANCE: Maximum speed (Sea level): 160 knots. RSRA Compound: 300 knots.

REMARKS: RSRA represents a significant advance in R/W technology by virtue of its adaptability to a wide variety of gimbaled, articulated, and hingeless rotors. RSRA is the first R/W aircraft to be built with a blade severance/ crew escape system.

X-WING

DESCRIPTION: A modified RSRA (see above) which uses a four-black copter-like rotor system that rotates wer and low speed flight and stops at approximately 200 knots to become a fixed wing for high speed flight.

MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.

POWER PLANT: Two GE T58-GE-10 1,500 hp (each) and two GE TF34-GE-400A turbofans rated at 9,275 lbs. of thrust each.

X-WING: Four blades, 57.6 ft. diameter, 3.2 ft. root chord, 2.8 ft. tip chord, 0° twist; tail rotor, five blades, 10.6 ft. diameter.

SPECIFICATIONS: Wing span: 45.1 ft., fuselage length 70.6 ft. Height: 17.9 ft. Design gross weight: 33,276 lbs. Martin-Baker Ejection Seats, Hamilton Standard Full-Authority Quadruplex Fly-by-Wire System.

PERFORMANCE: Maximum speed: rotary wing, 200 kts.; stopped rotor, 300 kts.

REMARKS: In 1982, DARPA and NASA contracted with Sikorsky to build and flight test a full size X-Wing rotor system on the RSRA. The



RSRA is the ideal test vehicle for the X-Wing because it has a wing that can support the aircraft during initial X-Wing conversion tests. Some of the new systems developed for X-Wing include: all composite, high strength rotor/wing blades; compressor to provide air supply to blades for Coanda blowing; plenum and rotating pneumodynamic receiver system; fullauthority digital fly-by-wire vehicle management computer system.

VZ-1E FLYING PLATFORM

VZ-2PH TILT WING



Greater mobility for the individual soldier on scouting missions was the object of this '55 Hiller vehicle. A ducted fan, powered by three 40 hp Nelson engines, provided lift. Known as the Pawnee, the VZ-1 weighed 465 pounds.



This Vertol VTOL (commercially called the Model 76) completed full transition from vertical takeoff to cruise and back in July 1958. Its interconnected propellers were powered by a 600 hp Lycoming turbine (T53-L-1A).

VZ-3RY DEFLECTED SLIPSTREAM

VZ-4DA DUCTED PROPELLERS



Called the Vertiplane by Ryan, the VZ-3 em ployed two propeller-deflected slipstream: aided by a high-flapped wing. Its intercon nected propellers were powered by a T-53-L-Lycoming 825 hp turbine in the fuselage.



The Doak Aircraft two-place convertiplane's ducted props in its wing-tips rotated through 90° to convert the plane in flight. The Model 16 used one 825 hp T-43-L-1 turbine engine with its interconnected propellers.

VZ-5FA DEFLECTED SLIPSTREAM

VZ-6CH DUCTED PROPELLERS



This one-place research aircraft by Fairchild achieved VTOL by deflecting the slipstream downward by means of a high-flapped wing. Four interconnected props were powered by one 1,100 hp GE T-58-2A turbine engine.



A single place research aircraft designed by Chrysler to explore the aerial jeep concept. The shafting from a single 380 horsepower reciprocating engine transmitted the power to the aircraft's two ducted propellers.

VZ-7AP DUCTED FAN

VZ-8PB DUCTED FAN



This aerial jeep research vehicle was originally designed and constructed by the Curtiss-Wright Corporation and utilized four ducted fans. Later, the ducts were removed. Power came from one Artouste II turbine engine.



An aerial jeep powered by two Artouste II turbine engines. Built by Piasecki Aircraft, the VZ-8PB derived lift from two three-bladed rotors. An earlier version, utilizing a single turbine, made its first flight in 1958.

VZ-9A AVROCAR GEM

CURTISS-WRIGHT AIRCAR



Designed to explore VTOL techniques, this vehicle operated in ground effect only. Developed by AVRO Aircraft of Canada, the VZ-9A Ground Effects Machine was a joint project of the U.S. Army and the USAF.



A four-place Ground Effects Machine (GEM) designed by the Curtiss-Wright Corporation to skim six to 12 inches off the ground at speeds up to 35 mph. Two of these machines were bought "off-the-shelf" for research.

PRINCETON GEM

HZ-1DE FLYING PLATFORM



This Ground Effects Machine (GEM) was designed and built by Princeton University under U.S. Army contract to study the GEM phenomenon and particularly the problems of stability and control.



Another flying platform design, the DeLackner provided data on an unducted propeller concept. A later version used metal skids instead of outriggers — inflated bags. A 4 hp Mercury Mark 55 marine outboard engine.

VZ-10 (XV-4A) HUMMINGBIRD

DESCRIPTION: Experimental augmented jet ejector VTOL aircraft.

MANUFACTURER: Lockheed-Georgia Company, Marietta, Georgia

POWER PLANT: Two Pratt & Whitney JT-12 turbo jets of 3,300 lbs. thrust each with 40% augmentation for a total of 8,300 lbs. thrust in the VTOL mode.

LIFT SYSTEM: The aircraft achieved vertical flight by diverting the high velocity jets from both engines through a series of nozzles and ducts into mixing chambers in the center of the fuselage and thence downward toward the ground. Bomb bay-type doors in the top and bottom of the fuselage opened to expose the mixing chambers and nozzles.

SPECIFICATIONS: Span: 25' 10". Length: 33'. Height: 11' 9". Empty wt: 5,000 lb. VTOL gross wt: 7,200 lb.

PERFORMANCE: Max speed (SL): 579 knots. Service ceiling: 50,000 ft. Max range:



1,059 nm. Rate of climb: 18,000 fpm. **REMARKS:** The Army procured two test models; one was destroyed in an accident. In mid-1966, the USAF took over XV-4A operational control.

XV-5A VERTIPLANE

DESCRIPTION: Experimental fan-in-wing aircraft.

MANUFACTURER: Ryan Aeronautical Company, San Diego, California.

POWER PLANT: Two GE J85-5 turbines of 2,650 shaft horsepower each.

LIFT SYSTEM: The aircraft gets its vertical lift from downward thrust produced by two five-foot diameter fans submerged in the wings. The fans are powered by the exhaust from the engines.

SPECIFICATIONS: Span: 29 feet, 9 inches. Height: 14 feet, 8 inches. Empty weight: 7,500 pounds. VTOL Gross weight: 12,500 pounds. STOL Gross weight: 15,500 pounds. PERFORMANCE: Maximum speed (Sea level): 478 knots. Cruising speed (30,000 feet): 386 knots. Service ceiling: 45,000 feet. Hover ceiling (OGE): 12,000 feet. Maximum range: 1,381 nautical miles. Rate of climb: 9,500 feet per minute. REMARKS: Two XV-5As were built under the Army program; one being destroyed in an accident. Transition to forward flight was accomplished by vectoring control vanes (louvers) mounted under the back wing fan.



XV-6A HARRIER



DESCRIPTION: One-place vectored thrust V/STOL strike-reconnaissance fighter aircraft (First designated the P.1127, then the "Kestrel", the the Harrier.)

MANUFACTURER: Hawker Siddeley Avia-

tion, Ltd., Kingston-Upon-Thames, England. **POWER PLANT:** One Bristol Siddeley Pegasus engine of 15,500 pounds/thrust.

SPECIFICATIONS: Span: 22 feet, 10 inches. Length: 42 feet, 4 inches. Height: 10 feet, 8 inches. Empty weight: 13,159 pounds. Gross weight: 23,500 pounds.

PERFORMANCE: Maximum speed (Sea level): Mach + . Cruise speed (Sea level): 0.89 Mach. Cruise speed, 10,000 feet: 0.90 Mach. Service ceiling: 45,000 feet. Maximum range: 1,992 nautical miles. Endurance: 2.75 hours. Rate of climb: 13,000 feet per minute.

REMARKS: In 1961 the U.S. Army procured three of the nine XV-6As in the Tripartite Squadron and later took control of the three F.R.G. aircraft. The six XV-6As underwent triservice evaluation in the U.S. in early 1966. A later version has been employed by the USMC. The aircraft has exceeded the speed of sound in forward flight.

XV-8A FLEEP

DESCRIPTION: One-place flex-wing utility man-carrying vehicle designed to demonstrate the para-glider concept. MANUFACTURER: Ryan Aeronautical Com-

pany, San Diego, California.



POWER PLANT: One Continental pusher piston engine of 210 horsepower.

SPECIFICATIONS: Span: 33 feet, 5 inches. Length: 26 feet. Empty weight: 1,029 pounds. Gross weight: 2,359 pounds.

PERFORMANCE: Maximum speed (Sea level): 71 knots. Cruising speed (Sea level): 48 knots. Maximum range: 153 nautical miles.

REMARKS: Developed and wind-tunnel proven by Francis M. Rogallo, a NASA aeronautical engineer at the Langley Research Center, the paraglider began as a flexible, high performance tail-less toy kite. Later, Ryan Aeronautical was awarded a 30-hour flight test contract to prove the flight envelope with the first flight being completed in March 1961. The hang-gliders in use today stem from the development of the Rogallo Wing and Army-funded R&D on this program.

UV-18 TWIN OTTER



DESCRIPTION: 21 place high-wing "command administrative, logistical, and personnel" STOL aircraft capable of operating on wheels, wheel-skis, floats, or high-flotation tires. MANUFACTURER: De Havilland Aircraft, Limited, Downsview, Ontario, Canada.

POWER PLANT: Pratt & Whitney of Canada PT6A-20 turboprop of 579 shp.

SPECIFICATIONS: Span: 65 ft. Length: 51 ft, 9 in. Gross wt: 12,500 lbs.

PERFORMANCE: Cruising speed (SL): 184 knots. Service ceiling: 26,700 feet. Range: 928 nautical miles. Max T.O wt: 12,500 lbs. Rate of climb: 1,600 fpm. T.O. run: 860 ft. Landing run: 950 ft.

REMARKS: Joining the Alaska Army National Guard in 1970, the highly successful DHC-6 Twin Otter provided ARNG forces with a a multi-mission capability. On observation or search and rescue missions, the UV-18A can fly for more than six hours. Easily handled at only 129 knots, the aircraft can drop men and supplies by parachute with great precision. Its double-slotted flaps and ailerons provide safe, steep, visible descents.

UNFLYABLES



RIGHT: Not a gag but a real nuts-and-bolts creation of the Maintenance Section of "The Real Cal" — B Troop, 7/17th Air Cavalry Squadron, The "OH-6C" underwent a few additions (nose gun and side-by-side rocket pods) while "The Real Cav" was in the Pleiku area in early 1972. CWO Bill C. Walton submitted the photograph of this "Unflyable." LEFT: Tested with heavy ground fire in late '70, a full-scale mockup of Sikorsky Aircraft's Aerial Armored Reconnaissance Vehicle (AARV) passed the test! Both armorpiercing and ball projectiles were used with the armor plate being dented, but not penatrated. The impact of the projectiles can be seen on the AARV's lower front fuselage.





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XV-9A HOT CYCLE



DESCRIPTION: Two-place hot cycle research helicopter. MANUFACTURER: Hughes Helicopters, Culver City, California. POWER PLANT: Two General Electric Company YT64 gas generators with the main rotor being driven by tip propulsion.

ROTOR SYSTEM: Single three-bladed main rotor. Rotor diameter: 55 feet.

SPECIFICATIONS: Fuselage Length: 45 feet. Height: 12 feet. Empty weight: 8,600 pounds. Gross weight: 15,300 pounds. Overload gross weight: 25,500 pounds.

PERFORMANCE: Maximum speed (Sea level): 121 knots. Cruising speed (Sea level): 80 knots. Cruise speed, 5,000 feet: 80 knots. Service ceiling: 17,300 feet. Hover ceiling (OGE): 13,200 feet. Rate of climb: 2,000 feet per minute.

REMARKS: In September 1962, the Army procured one XV-9A for research and evaluation. Fuselage-mounted turbojets supplied high energy gas through ducts to the blade tips to drive the rotor. Light ducting was substituted for heavy, complex power turbines, gear boxes, shafting, and tail rotor.

X-19 TILT WING

DESCRIPTION: Six-place high-wing tilt-prop experimental V/STOL aircraft. MANUFACTURER: Curtiss-Wright Corporation, Wood-Ridge, New Jersey. POWER PLANT: Two Lycoming T55-L-7 tur-



bine engines of 2,650 shaft horsepower each mounted at the top of the aft fuselage.

PROPELLERS: Four Curtiss-Wright plastic 3-bladed propellers cross-shafted and mounted on the ends of two stub wings. 13 foot diameter.

SPECIFICATIONS: Span: 34 feet, 6 inches. Length: 44 feet, 5 inches. Height: 17 feet. Empty weight: 9,750 pounds. Gross weight in VTOL mode: 13,660 pounds. Gross weight in STOL mode: 14,750 pounds.

PERFORMANCE: Maximum speed at sea level: 403 knots. Cruising speed at sea level: 350 knots. Maximum range: 599 nautical miles. Rate of climb: 3,250 feet per minute. Other performance data unavailable.

REMARKS: Two X-19 aircraft were procured under a tri-service test and evaluation contract managed by the U.S. Air Force. Prior to termination of the program, one X-19 was destroyed in an accident in late 1965.

X-22A DUCTED FAN

DESCRIPTION: Eight-place V/STOL research aircraft.

MANUFACTURER: Bell Aerosystems Company, Buffalo, New York.

POWER PLANT: Four General Electric YT58-GE-8D turboshaft engines of 1,250 horsepower each mounted on aft wing.

PROPELLERS: Four three-bladed Hamilton Standard cross-shafted propellers of 7-foot diameter each.

SPECIFICATIONS: Span: 39.2 feet. Length: 39.6 feet. Height: 20.7 feet. VTOL gross weight: 16,274 pounds.Maximum gross: 18,016 pounds. STO over 50 feet. obstacle: 720 feet.

PERFORMANCE: Maximum speed (Sea level): 282 knots. Hover ceiling: 11,000 feet. Range: VTOL, 523 nautical miles; STOL, 788 nautical miles. Endurance: 4.4 hours.

REMARKS: Tri-service program under a Navy-administered contract. Roll-out took



place on May 25, 2965 with maiden hovering flight on March 17, 1966. STOL completed on June 30, 1966 with first VTOL, transition to conventional flight, and return to VTOL on March 1, 1967.

XC-142A TILT WING

DESCRIPTION: 35-place, tilt-wing, deflected slipstream V/STOL medium transport aircraft.

MANUFACTURER: LTV Aerospace Corporation, Dallas, Texas.

POWER PLANT: Four General Electric T64-6 turboprops of 3,080 shaft horsepower each. PROPELLERS: Four four-bladed Hamilton Standard cross-shafted propellers of 15' 6" diameter each. Three-bladed tail rotor for longitudinal control at low speeds.

SPECIFICATIONS: Span: 67 feet, 6 inches. Length: 58 feet. Height: 26 feet. Empty weight: 23,000 lb. Gross weight, STOL: 41,500 lb. Gross weight, VTOL: 37,500 lb. PERFORMANCE: Maximum speed (Sea level): 377 knots. Cruise speed, (Sea level): 250 knots. Cruise speed, 10,000 feet: 303 knots. Service ceiling: 25,000 feet. Hover ceiling (OGE): 6,000 feet. Maximum range: 529 nautical miles. Endurance: 6.5 hours. Rate of climb: 6,800 feet per minute. **REMARKS:** Five XC-142A's were built under a tri-service developmental program with Hiller Aircraft and the Ryan Aeronautical Company as associate contractors.



ABC (XH-59A)



(ABC) research helicopter. MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut. POWER PLANT: Twin P&W PT6 engines of 1,825 hp each. Aux propulsion: two outboard P&W J60 engines with 3,000 lb. add'l thrust. ROTOR SYSTEM: Two three-bladed, counter-rotating, coaxial, rigid rotors, 36 ft. dia. SPECIFICATIONS: Overall length: 41'-5". Height: 12'-11". Design gross weight: 9,000

lb; aux. version: 11,100 lb. **PERFORMANCE (Aux):** Max speed (SL): 160 kph (Aux: 437 kph). Service ceiling: 14,000 feet. Hover ceiling: 6,700 feet.

REMARKS: Currently a tri-Service/ NASA-Sikorsky-funded program. ABC flight testing began July 1975 with modification into a compound following. In April 1980 the compound reached 237 miles per hour. ABC's counter-rotating rotors on a common main shaft permit the advancing side of both rotor discs to generate lift, offering the potential of 300 knot speeds without the need of a wing to offload the rotor and the need for a tail rotor.

XV-15

DESCRIPTION: NASA/ Army/ Navy tiltrotor research aircraft. 20 troops plus crew. MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas. POWER PLANT: Three GE T700 turbines.



ROTOR SYSTEM: Two three-bladed semirigid tilt-rotors of 25 foot diameter each.

SPECIFICATIONS: Fuselage length: 42'-1". Span: 32'-2". Height: 15'-4". Max gross weight: 15,000 lb. Design gross weight: 13,000 lb. Empty weight: 9,700 lb.

PERFORMANCE: Model D303 max speed (SL): approx. 300 knots. At 20,000 normal cruising altitude, cruise speed is 265 knots. One engine inoperative service ceiling: 16,000 feet at 260 knots. Two engines inoperative: 180 knots at low altitudes.

REMARKS: In April 1973, Bell received a NASA-Army contract to design, manufacture, and test two tilt-rotor aircraft, and to determine the tilt-rotor technology's potential for civil and military applications. The Navy joined the program in 1979. Rollout, 1976; first flight, 1977; first airplane mode flight, 1979. Tri-engine growth version (D303), June 1982.



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LHX PROGRAM DEFINITION

- Missions: Light Attack, Armed Reconnaissance, and Air Combat
- Empty Weight: 7,500 Lbs
- Flyaway Cost: \$7.5M (FY88\$)
- Twin T800 Engines
- IOC 1996
- Production Rate: 216 Per Year (Two Producers)
- Procurement Quantity: 2100 Aircraft

LHX - cont. from p. 16

of the Army, Mr. James Ambrose and the Army Vice Chief Staff, GEN Arthur E. Brown Jr. directed the Army to continue advance development of an LHX aircraft through a DEM/VAL phase to provide the basic design information and feasibility demonstrations which may be needed to support and guide the MEP development program.

Activities during this phase include surrogate flight demonstrations, design, simulations and wind tunnel efforts.

Program Definitions

The LHX Program Definitions (see above) are to be:

 LHX is to be a light attack aircraft capable of carrying a variety of armament packages and relying on latest technology for mission equipment.

 LHX will have a unit fly away cost of \$7.5 Million, in FY88 dollars, based on approximately 2,100 aircraft.

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 LHX will be powered by twin T800 engines.

On April 21, Mr. Donald Fredericksen, Chairman of the Conventional Systems Committee (responsible for the final LHX program review prior to the DAB) issued a memorandum that further definitized the Army's February 25 memorandum.

This memorandum stressed the importance of two overriding constraints for the LHX program: affordability and cost effectiveness. It also stated the principal goal of the DEM/VAL program is to be the sizing on the LHX airframe, avionics and weapons suite to fit within the \$7.5 million average unit fly away cost cap.

Basis for Improvements

To capitalize on the increased capability the LHX will bring to Army Aviation, the LHX common architecture and MEP will be the basis for improvements of the avionics suites in the current fleet and

applied to future Army aircraft. Additionally the memorandum reiterated the LHX DEM/VAL program should be structured to identify the highest risks of the system and then reduce that risk to an acceptable level.

A Valuable Time

These early months of 1988 have been very valuable to the Army and industry as was the guidance provided in the ADM and ensuing memorandums. The LHX Program Office continued, and still continues, to prepare and provide the necessary documentation and briefings to support the DAB milestone review, develop the detailed planning required to support the new program schedule (shown on next page), and continues to work with senior Army leadership towards providing Army Aviation a LHX system that will provide a significantly increased capability beyond that of our current light fleet aircraft weapons systems.

A Commitment

The commitment of senior leadership to bring the LHX into Army Aviation is best expressed in the words of Chief of Staff, GEN Carl E. Vuono, during his address to the 1988 AAAA National Convention Awards Banquet in St. Louis. when he stated: "Faced with that threat, the U.S. and our Allies must continue to modernize our force. We simply can not afford to do otherwise, at least in the world we know today and the world I see tomorrow.

Let's make no mistake why we modernize. We modernize to improve our combat capability. And so we are going to devote our efforts, our energies, and our resources to those modernization efforts that give us the greatest war fighting capability.

The challenge then is to pick the right programs and develop them for today and tomorrow. LHX is the centerpiece of the Army Aviation modernization strategy.

As a system, the LHX enhanced capabilities will greatly add to our combat capability and allow us to field the best affordable technology. It will be fully integrated into our overall war fighting system of systems. It will exploit advanced technologies and aircraft design and give the United States the capability to defeat an enemy on the battlefield of the future.

In short it will be a lethal, agile and survivable aircraft capable of day and night operations under all combat conditions regardless of the level of conflict or region of the world.

As currently scheduled, and we're going to do everything in our power to stick to that schedule, we anticipate initial fielding of the LHX to occur in the mid 90's.

I want you to know I am completely committed to the Aviation Modernization Plan and I'm committed to the timely fielding of the LHX."

LHX PROGRAM SCHEDULE

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| FY 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 |



Evolution (continued from page 14)

(SSG). The new structure will progress from the base MOS through SSG and cap at Sergeant First Class (SFC), 68P40. All Sergeant Major (SGM) and Master Sergeant (MSG) 35P50's will be reclassified to 67Z50 as a result of the merger.

All reclassification will take place in October and November 1989. The positions will be recorded in tables of organization and equipment (TOE) and tables of distribution and allowances (TDA) units in the July-September 1989 change window. The 1988 MSG and SFC promotion boards will consider the avionics soldiers for promotion in their new MOS designations.

Revision of MOS 93P

The DCSPER also recently approved an MOS proposal revising MOS 93P, Flight Operations Coordinator. This proposal changed the MOS title to Aviation Operations Specialist, glving a clearer definition of the soldier's duties. The standards of grade authorizations have been changed, significantly reducing the TDA authorizations at the SFC through SGM levels while increasing the TOE Sergeant (SGT) and SSG authorizations. This action will eliminate the long-standing bottleneck in SGT and SSG promotions. Other changes include the provisions to utilize a SGT where only one 93P is authorized and to provide clearer instructions on grading TDA airfield operations positions.

From this sampling of many improvements going on within the personnel arena of the Aviation Branch, you can readily see that our rapid evolution continues as we strive to be "Above the Best."

Readiness (continued from page 12)

less" and turn it back into the old cliche of "more with less".

We will do this by finding and solving the troublesome readiness problems I've touched on today. Our soldiers need our help in this and have a right to expect us to deliver.

My final word is to the soldiers here today: when you rejoin your units next week, I know you'll do so with renewed determination to whip the socks off any adversary dumb enough to take us on!

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CW3's

BECKHAM, JOSEPH A. 2018 BABB ST COPPERAS COVE, TX 76522 CAYTON, DONALD L. 45TH TRANS CO, JAVIM/ APO SF 96271 CHURCH, WILLIAM A. 1/24TH AHB HUNTER AAF, GA 31409 COCHRANE, RÓBERT A JR 95-109 WAIKAUANI DRIVE WAHIAWA, HI 96786 DEGOLIA, RAYMOND N. 66 PINESTONE IRVINE, CA 92714 DRAGON, KELLEY B CO, S/158TH AVN REGT APO NY 09039 FROST, ERNEST W. Q.F. G CO, 4TH AVN REGT APO NY 09185

GIBSON, JACKIE T. 1437-A WERNER PARK FORT CAMPBELL, KY 42223 HUDSON, STANLEY D. 3405 A VICTORIA CIRCLE KILLUEN, TX 76543 HUGHES, ROBERT J. P.O. BOX 1556 TYBEE ISLAND, GA 31328 LEE, MARVIN A. 231 WEEKS DRIVE ENTERPRISE, AL 36330 LITTLETON, RON M. 106 EDINBURG DRIVE ENTERPRISE, AL 36330 MCKINLEY, JAMES L. 128 HOLLYBROOKE DRIVE LANGHORNE, PA 19047 OLIN, MICHAEL S. HHC 3/58 AVN REGT APO NY 09025 WALLACE, DENNIS D. C CO, 7-158TH AVN REGT APO NY 09457 WHEELER, SUSAN R. RT. 2, BOX 25 OZARK, AL 36360 ILLMORE, THOMAS R. C TRP, 132 2d CAS, 2d ACR APO NY 09092 WILSON, WILLIAM D. HHC 7-159TH AVN REGT **BOX 315** APO NY 09081

CW2's

BOWYER, STEVEN E. 17 GALT LANE FORT RUCKER, AL 36362 BROWN, DON L. B CO, 2-1 AVN REGT BOX 2172 APO NY 09250 FLANKEY, STEVEN F. 7229 SHADY GROVE LANE FAYETTEVILLE, NC 28304 HARWOOD, CHARLES L. B CO, 166TH AVN BN APO SF 96524 JOHNSON, NEIL W. APO SF 96224 ATIMER, FRANCIS E RD 2, BULLVILLE RD BOX 475 AONTGOMERY, NY 12549 MACPHERSON, PATRICK A. C CO, 7/158TH AVN REGT APO NY 09457 MONROE, MICHAEL R. B TRP, 2-6 CAV BOX D-86 APO NY 09140 MORRIS, STEVEN A. D CO. 4TH BN FORT RUCKER, AL 36: OPGAARD, REIDAR 302 SEMINOLE DRIVE AL 36362 ENTERPRISE, AL 36330 PARKER, MICHAEL K. 55TH AVN CO., K-16 NO. 556 APO SF 96301 PRESSLEY, MICHAEL C. 105 CANDLEWOOD DRIVE ENTERPRISE, AL 36330 RENCH, ROBERT F. 20 VERNA CIRCLE DALEVILLE, AL 36322 SCHALLA, JAMES T. JR 40 COUNTRY CLUB RD GROTON, CT 06340 SIMONEAU, TERRI K. 250 CARROLL DR., NO. 312 SIERRA VISTA, AZ 85635 STEADMAN, ROSS 1671 FT. CAMPBELL BLVD NO. F-8 CLARKSVILLE, TN 37042 STILLEY, ALFRED 7212A, BOX 8 FORT CARSON, CO 80913

ARMY AVIATION 95

THOMPSON, SYDNEY E. 1864 E. KRAMER DRIVE CARSON, CA 90746 TUTHILL, KENNETH 2-25 AHB GRIFFISS AFB, NY 13441 WHITAKER, FREDRICK S. 4301 E. RANCIER AVE.

APT 216 KILLEEN, TX 76543 WILKINSON, CHRIS E.

1911 STANDRIDGE KILEEN, TX 76543

W01's

COOK, JESSE D. 132 JACK MILLER BLVD APT. B9 CLARKSVILLE, TN 37042 OGER, TONY W. 201ST AVN CO, (AH) APO SF 96271 ROLAND, JEFFERY J. 6428 METCALF OVERLAND PARK, KS 66202 SMITH, JAMES H. H CO. 227TH AVN, BOX 196 APO NY 09165 VEBB, JEFFREY J 119 MOCKINGBIRD DRIVE DUBLIN, GA 31021 WIDRIG, GREGORY V. B CO, 3/227 AVN REGT APO NY 09165

Enlisted

BEASLEY, ROBERT SFC 300 CHARLES ST. NO. 9 NEWPORT NEWS, VA 23602 BOLDEN, KAREN Y. SP4 122 RED CLOUD ROAD FORT RUCKER, AL 36362 BULT, ANDREW CPL D TRP, 1/1 CAV, BOX G-D APO NY 09250 CHILDS, ROBERT G. SSG 2107 HOLLAND AVE UTICA, NY 13502 CHUBBOY, MARSHALL A. SGT CO A, 1ST BN 145TH AVN REGT, WOU 904 145TH A/N REGT, WOU 90 FORT RUCKER, AL 36362 CURTIS, JAMES R. SP4 A CO, TRP COMMAND FORT JACKSON, SC 29207 GILBERT, DEINNIS A. SGT 1209 SEMINOLE DRIVE 1209 SEMINOLE DHIVE INDIAN HBR BCH, FL 32937 GRIGGS, JOHN C. SSG PO, BOX 93 FORT MONMOUTH, NJ 07703 HOWDESHELL, MARK A. SP4 1205 CREST HILL DRIVE INNERSHELL, MARK A. SP4 JUNCTION CITY, KS 68441 JONES, ERNEST L. SSG 8000 WATERS RD, NO. 168 SAVANNAH, GA 31406 KSAU, KUNIO 19G 225TH AHB **GRIFFISS AFB, NY 13441** MOORE CHAINDA L. SGT F CO. 24TH AVN, BOX 333 HAAF, GA 31409 MUNOZ, JAVIER R. SP4 10TH AVN BDE GRIFFISS AFB, NY 13441 ODOM, LARRY J. SFC A CO, 2/227TH AVN, NO. 181 APO NY 09165 ORTIZ CASIANO, LUIS G. SFC 911 ERWIN COURT FT. WAINWRIGHT, AK 99703 PACK, DONALD F. SP4 817 SOUTH CENTER ROAD SAGINAW, MI 48603 SCHNAARE, KENNETH G. SFC 105 ROBERT DRIVE O'FALLON, IL 62265 SHACKLEFORD, ALTON MSG 99 BLACKHAWK DRIVE DALEVILLE, AL 36322

BEAVERTON, OR 97005 WIRICK, ERNEST J, JR SSG 1980 SWEARINGER DRIVE COLORADO SPGS, CO 80906 WOOD, RALPH J. ES 1313 OHIO ST ALAMOGORDO, NM 88310 Civilian ALBORNOZ, G. M. 7037 HATHOR ST. CORPUS CHRISTI, TX 78412 CASEY, CURTIS J. 2381 WINGED FOOT ROAD HALFMOON BAY, CA 94019 HOPKINS, RONNIE D. CHESAPEAKE BAY VP MEMB 3912 WILKINSON ROAD HAVRE DE GRACE, MD 21078 LANE, ALBERT TELEDYNE SYSTEMS CO. GERMANY ROAD, NO. 138 ROME, NY 13478 LUPO, MICHAEL V. 5819 GUM TREE COURT ST. LOUIS, MO 63129 MANAHAN, DONALD P. COBRO CORPORATION 4 SAWGRASS VLG. SUITE 120F PONTE VEDRA, FL 32082 MARTIN, MICHAEL J. 1750 SO. BRENTWOOD RENTWOOD, MO 63144 MENDEL, ROBERT T. 6 LEWALLEN DRIVE NEWPORT NEWS. VA 23502 MENDYKE, THOMAS A. 1804 SHOEMAKER DRIVE KILLEEN, TX 76543 MYERS, ALICE L. 6801 E. 75TH ST., SOUTH TULSA, OK 74133 PERKINS, BOBBY R. 131 COLE BLVD, APT. F ST. CHARLES, MO 63301 ST. CHARLES, MO 63301 PLANCON, PAUL NORTHROP CORP, DSD 1000 WILSON BLVD, STE 2300 ARLINGTON, VA 22209 RHODEHAMEL, KURT A. GOULD, COMPUTER SYS DIV 3165 MCCRORY PLACE, 135 OPLAND, EL 32803 ORLANDO, FL 32803 RHODES, WILMOT G. 11265 OAK STREET KANSAS CITY, MO 64114 SAVEL, JOHN M. 3970 THE WOODS DR. NO. A-207 SAN JOSE, CA 95138 SCHNAIDT, LORAN C. TIERNAY TURBINES, INC 514 EARTH CITY EXPWY, 171 EARTH CITY, MO 63045 SHUTTLEWORTH, ROBERT K. POWELL ROAD UNIONVILLE, PA 19375 SMITH, RIPP A. 303 S. GRAND BLVD., NO. 615 ST. LOUIS, MO 63103 STAFFORD, DON L. INSTRUMENTATION MKTG 1605 E. PALMDALE BLVD., #G PALMDALE, CA 93550 STROME, GERALD M. HUGHES AIRCRAFT 20801 HORACE STREET CHATSWORTH, CA 91311 TAYLOR, JOHN JANES' INFORMATION GRP 1340 BRADDOCK PL, STE 300 ALEXANDRIA, VA 22313 TESTA, STEVE 2402 PICKWICK DRIVE HENDERSON, NV 89014 TOGNOLA, EDMUND T. 121 DORCHESTER WAY SHREWSBURY, NJ 07702

SMITH, DAVID S. E4 6170 SW LOMBARD, NO. 29 TOIVONEN, ARNOLD A. DYNCOR 2000 EDMUND HALLEY DR RESTON, VA 22091 TURNER, JOHN E. ROUTE 1, BOX 118-2 HERMANN, MO 6504 MO 65041 YLECKI, STANLEY R. 3055 GOVERNOR'S CROSS'G WALL, NJ 07719 ULSETH, VICKIE K. 7169 BROOKEDGE LANE CORPUS CHRISTI, TX 78414 UTT, ROSS J. SYSTRON DONNER 1538 ZAIGER PLACE COLORADO SPGS, CO 80915 VENANCIO, AL HONEYWELL, DASD 9201 SAN MATEO BLVD ALBUQUERQUE, NM 87113 ALBOODERGUE, NM 8713 WALTERS, RICHARD C. RT 1, BOX 103 VIRGIL ROAD ORIDLEY, KS 68552 WERNER, RICHARD E. MARTIN MARIETTA CORP. P.O. BOX 179, M/S D1140 DENVER, CO 80201 WILBUR, SHARON FAYE 2501 BLUEBONNET DRIVE KILLEEN, TX 76542 WINN, MICHAEL T. 1605 KNIGHT CIRCLE GRAND PRAIRIE, TX 75050 YARMIE, ALEXANDER J PO DRAWER 2H TEMPE, AZ 85282 Retired ALDRIDGE, GEORGE W. COL HIGHLAND WEST NO. 1613 4450 SOUTH PARK AVE CHEVY CHASE, MD 20815 ANDERSON, MORRIS D. LTC 216 LAKEWOOD DRIVE ENTERPRISE, AL 36330 BANKIT, PAUL COL 2118 BLUE LAC DRIVE HASLETT, MI 48840

CLAPP, KENNETH M. LTC SHOD DUKE, APT. 123 FORT SMITH, AR 72903 COLWELL, ROBERT H. MSG RD 4, PO. BOX 202 EUFAULA, AL 36027 CURE, ED J. CW4 319 N. TAYLOR, NO. 2N ST. LOUIS, MO 63108 GUYRE, JAMES J. CW3 PO. BOX R APO NY 09080 JACOBSON, DUANE M. CW4 115 OAKLAND DRIVE ENTERPRISE, AL 36330 JUTZ, DONALD G. MAJ 1314 S. 76TH ST WEST ALLIS, WI 53214 KANE, RAY J. LTC 5611 SOUTH COLE ROAD E, ID 83709 BÔ KLINGENHAGEN, JOHN L. MG PRES-AAAA SCHLRSHIP FDN 823 GADWALL VIRGINIA BEACH, VA 23462 PHELPS, JON H. CW3 ROSS AVN INC., BOX 9124 ALBUQUERQUE, NM 87119 POWELL, RALPH J. COL 1 COVEY POINT LANE SAVANNAH, GA 31411 SCANLAN, WILLIAM H. LTC 30 BRAY WOOD ROAD WILLIAMSBURG, VA 23185 SMITH, PAUL H, CW4 208 W, CONGRESS ST. CHARLESTOWN, W/A 25414 SWAN, JOHN G., JR MAJ BENDOXKING AIR TRANS DIV 2100 N.W. 62ND ST., DEPT 780 FT LAUDERDALE, FL 33309 WHITE, JEWEL G. LTC 213 E. 6TH MTN HOME, AR 72653 WOZNIAK, LEON S. 15G 3203 S.M.U. BLVD. ORLANDO, FL 32817 YOUNG, RAYMOND H. COL 43014 N. 30TH ST. W., APT. 36 LANCASTER, CA 93538



JUNE 30, 1988

National Activities

A full 68-member slate now serves as the AAAA National Executive board.

The officers are MG Story C. Stevens (Pres), Hilton Head, SC; Arthur H. Kesten (Exec. VP), Westport, CT; BG James M. Hesson (Sr VP), Vienna, VA; and COL John J. Stanko. Jr. Warrenton, VA; and COL Harry W. Townsend, Ret., Silver Spring, MD.

Also appointed were LTC Ben M. Knisely, Bowle, MD; LTC Billy H. Pearson and CWA Kurt J. Porter, both of Springfield, VA; CSM John P. Traylor, Ft. Rucker, AL; Gary F.

MG Stevens, BG Hesson head new 68member 1988-89 Nat'l Board slate

(Sec-Trea), Aberdeen Proving Grounds, MD.

AAAA's National Vice Presidents include: COL Leslie H. Gilbert, CW4 David E. Helton, Joseph P. Cribbins, and MG Charles F. Drenz all from the D.C. area; LTG John J. Tolson, III, of Raleigh, NC, and COL John A. Lasch, III, Ft. Belvoir, VA.

COL Sylvester C. Berdux, Jr. was elected at the 1988 National Convention as the newest VP.

President Stevens appointed the following members as National Membersat-Large for the April 1988-1989 term: LTG James H. Merryman, Ret. Springfield, VA; MC Ellis D. Parker, Ft. Rucker, AL; MC Richard E. Stephenson, St. Louis, MO; COL Turner E. Grimsley, Rast, Washington, DC; Gary L. Smith, St. Charles, MO; Richard S. Steele, Eatontown, NJ; and Brennon R. Swindell, Ft. Worth, TX.

The AAAA's Past Presidents who serve in perpetuity on the National Board Include: Bryce Wilson, Genoa, NV: GEN Hamilton H. Howze, Ft. Worth, TX: MG Delk M. Oden, Alexandria, VA: COL Edward L. Nielsen, N. Palm Beach, FL; and LTG John M. Wright, Jr., Irving, TX. Also LTG Robert R. Williams, Ft. Worth; MG George S. Beatty, Jr., Savannah, GA; COL John W. Marr, Arlington, VA; MG James C. Smith, St. Petersburg, FL; and MG George W. Putnam, Jr., Falls Church, VA.

The presidents of chapters with more than 150 members fill out the 68-member Board.



MC Stevens



BG Hesson



COL Stanko

New Industry Members

(Designated Representative indicated in parenthesis)

Aerospace / Defense Group of Hightstown, NJ. (Ms. Janice E. Amano)

A&M Engineered Composites of Marlboro, MA. (Ms. Laura Grasso)

Conax Florida Corp. of St. Petersburg, FL. (Mr. Thomas Hallis)

Creative Sales and Manufacturing Inc. of Whitefish, MT. (Mr. John E. Byers)

Datametrics Corporation of Chatsworth, CA. (Mr. Garland S. White)

DeHavilland Aircraft of Canada of Ontario, CAN. (Mr. Frank C. Polo)

Fastening Systems Int'l of Sonoma, CA. (Mr. Roger M. Mikkel)

FLIR Systems, Inc. of Portland, OR. (Mr. Robert P. Daltry)

Hughes Aircraft-Microelectron of Rancho Santa Margarita, CA. (Mr. James L. Waters)

IPAC Inc. of Washington, D.C. (Mr. William A. Gorton)

TRW, Inc. of Reston, VA. (MAJ Ronald J. Potts, Ret.)

Virtual Prototypes, Inc. of Montreal, CAN. (Mr. Eugene R. Joseph)

Key Dates

Sept. 9 — Receipt of "CY1987 ASE Award" Nominations.

Dec. 1 — Deadline for return of completed AAAA Scholarship Application to AAAA National Office.

Jan. 15 — Suspense date for the submission of nominations for CY 1988 AAAA National Awards.

Apr. 5-9 — The AAAA National Convention, Atlanta, GA.



In an executive action, MG Story C. Stevens, USA, Retired, President, AAAA, established the SILVER EAGLES Program to recognize those AAAA supporters who have been members for at least 30 years. SILVER EAGLES receive a special 30-year membership pin, a listing in ARMY AVIATION

magazine and recognition at the AAAA Convention. We've come a long way since 1957 — when a small group pf aviation officers banded together to form the AAAA. Thank you SILVER EAGLES for your

continued support.

— 1957 — Achee, Sidney W., COL Aldridge, George W., COL Allgood, Charles N., COL Anderson, John H., LTC Anderson, William L., LTC Andrus, Rulon, CPT Armstrong, Donald, LTC Asbury, Harold D., LTC Balley, Lawrence R., COL Baldasare, Michael L., LTC Barr, Arthur W., LTC Barrice, Willie W.J., LTC Baugh, Wilford A., MAJ Bayer, A.W., MR. Bearden, William A., COL Bergeron, Leo E., COL Blatt, Donald C., LTC Bobo, Carl E., Jr, LTC Bolin, Denald H., CSM Bonifacio, Robert A., COL Bourne, Eldred G., CWO Bourne, Harold O., LTC Bowden, Elleen, MRS. Boyle, Garrison J., COL Bradley, William C., COL Bransford, Thomas, COL Briggs, John L., LTC Bristol, Vivian, MRS. Britton, Weldon C., LTC Brock, Eldridge W., LTC Brooks, Frank B., MAJ Brown, George A., COL Burbules, John G., COL Burton, Kenneth J., COL Bush, Harry L., COL Calcatera, Kenneth J., COL

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Calvert, Charles L., COL Campbell, James T., MAJ Cantlebary, Lee R., LTC Carrillo, Arnold R., LTC Carter, William C., LTC Cassidy, Robert F., COL Chaires, William R., MAJ Chamberlain, Donald, LTC Chambers, Herry W., LTC Chambers, Stanley L., MAJ Chapman, Raymond C., MAJ Christle, Thomas C., LTC Claybourn, Guy R. Jr., LTC Coles, Gordon L., CW4 Collins, Benjamin L., LTC Colozzi, Carl A., LTC Cook, Edward B., MR. Cook, Morris G., LTC Corley, William L., COL Cornell, Robert F. Jr., LTC Craddock, William P., LTC Culbertson, Robert G., LTC Dale, John R., COL Dantzer, Laurence L., LTC Darrough, Glenn E., LTC Dewitt, Paul A., LTC Dodrill, James E., LTC Dunne, Robert V., LTC Easterbrook, Ernest F., MG Edwards, Charles A., COL Ellasson, Arne H., COL Ellis, Clarence H., COL Fisher, Walter L., CW3 Fleming, E Pearce, Jr., COL Ford, Eddle L., LTC Fountain, Charles D., COL Franchina, Charles T., LTC

Franklin, Swayne B., LTC French, Keith A., LTC Fuller, Melvyn, LTC Fulton, Fred F., COL Gardner, William S., LTC Garner, James A., CW3 Geary, John C., MRS. Gerard, Laura, MRS Gilmore, Edward A., CW4 Gonseth, Jules E. Jr., COL* Gonzales, Orlando E., MG Goode, Franklyn C., COL Goodwin, Frederick C, COL Goodwin, Norman W., LTC Gorsuch, George W. Jr, LTC Graeber, Charles R., CW4 Greene, John H., MAJ Grey, Frank O. Jr., COL Gude, Joseph L., COL Gurley, William F., LTC Haney, Roy W., Jr., COL Hagett, Claude E., MRS. Hargrove, William T., CW4 Harrison, Benjamin L., MG Haugerud, Howard E., MR. Hawkins, William S., COL Hayes, Rudolph V., CW3 Head, Robert L., COL Heins, Milton H., MAJ Hely, Joseph W., LTC Henley, Reymon D., LTC Hester, Leroy V., LTC Hibbard, Frank S., CW4 Hill, Elbert B., LTC Hill, James F., LTC Horwitz, Milton, COL Howell, William A., LTC Howze, Hamilton H., GEN Hyman, Robert D., LTC Iller, Alfred J. Jr., COL Johnson, Raymond E., DR Jones, Herschel C., MAJ Jones, Robert N., LTC Joyce, Donald R., CW4 Juliano, Amore V., LTC Junot, Arthur J., BG Jutz, Donald G., MAJ Kellogg, Kenneth E., COL Kesten, Arthur H., MR. Kesten, Dorothy, MRS. Kilman, Howard T., LTC King, Aaron L. Jr., DR King, Edward J., LTC Kinney, Arthur K. Jr., MAJ Kisling, Richard D., COL Klim, William Jr., LTC Klingenhagen, John L., MG Kluever, Emil E., COL Knudellen, Martin G., CW4 Koepp, Robert W., LTC Kracht, Peter M., LTC Large, Ulysses S., COL Laumeyer, Norman G., LTC Leister, Glenn A., LTC Lewis, Richard W., MR. Litle, Robert F. Jr., COL Loftin, Thomas W., LTC Long, Richard L., MRS. Luce, Donald F., MR. Lukert, Edward P. Jr., COL MacMillan, Richard H. Jr., MG* Maddox, Wm. J., Jr., MG Mahone, Nelson A. Jr., COL Mahone, Worthington, COL Marinelli, Jack L., MRS. Matheny, Charles W., COL Mathews, William R., COL McConnell, Lewis J., COL McDonald, Harold F., LTC McDowell, Chester W., COL McGee, Bernard A., COL McGregor, Thomas, LTC McHenry, Paul M., LTC McKee, Henry H., COL McLennan, Stuart G. Jr., LTC

McMaken, Edward, COL McNamara, Thomas F., LTC McNutt, George R., LTC McPhall, Billy B., MAJ Mellish, James R., LTC Merritt, Ronald H., LTC Merryman, James H., LTG Mertel, Kenneth D., COL Mesnier, Charles R., LTC Mialaret, Gerard J., COL Michel, Robert W., LTC Mikula, J. George, COL Miller, Raymond A., MAJ Miller, William R., LTC Montgomery, Homer T., LTC Moore, Jimmy N., LTC Mounts, Leonard J., CW4 Neamtz, John C., MAJ Nelson, Huey R., CW4 Nichols, Frank S., LTC Nielsen, Edward L., COL Noeding, John P., LTC Ogletree, Clarence, 1SG O'Hara, Daniel, LTC Oldefendt, Glendon E., COL Packer, Jacob L., MAJ Paquette, Dean R., COL Patterson, George E., LTC Pearson, Neville A., LTC Phillips, Donald W., LTC Phillips, Donald W., LTC Phillips, Wayne N., COL Phillips, Wm. Gene, COL Pierce, Fred W., Jr, LTC Pierce, John T., III, COL Potts, Bennie B., CW4 Powell, Edwin L., Jr., BG Provencher, Conrad J., LTC* Pumphrey, A.T., COL Quinlan, James A., COL Radspinner, Frank H., LTC* Rankin, Alexander J, COL Rey, Jack O., LTC Rockwell, Warren T., MR. Rusk, Richard A., DR Sabiston, Thomas J., LTC Salch, Joseph F., LTC Saich, Joseph P., LTC Sandidge, Charles R., LTC Sarko, John S., LTC Schanzenbach, Adolph P., CW4 Schryer, Malcolm S., LTC Scott, Harry A. Jr., COL Seneff, George P, Jr., LTG Shanklin, David M., CW4 Share, Louis L., MAJ Shaw, Ambrose C., COL Shea, Gerald H., COL Shepard, Claude L. Jr., COL Shiveley, Harry T., LTC Slegert, Robert W. Jr., COL* Singley, George T.Jr, LTC Small, Harold I., MG Smith, Blair E., LTC Smith, James C., MG Smithey, Paul C., COL Snyder, Harold R., LTC Sparks, Richard A., MAJ* Sparks, Leroy C., LTC Stech, Richard J., CW2 Steine, Joel R., LTC Stevens, Francis J., MAJ Stevens, Story C., MG Stewart, Edward A., LTC Strok, Michael J., COL Sullivan, John F., COL Sundby, Selmer A., COL Taylor, Billy R., MA Taylor, Cloyd V., LTC Teese, James L., MAJ Thiring, Florian A., LTC Thomas, John W., COL Thomson, Donald B., LTC Tillery, George G., COL Tolson, John J. III, LTG Toner, Francis J., MG Tourtillott, Raymond J., COL

Trapo, Turner J., COL Traver, Daniel G., LTC Tuggey, Howard J., COL Turvey, Clifford V., CW4 Ulery, Vincent L., COL Underwood, Orlie J., LTC Van Landwyt, Dixon D., LTC Van Natta, Thomas F., MG Von Kenn, Clifton E. MG Walden, Oliver W., COL Walker, Hugh E., MR. Wann, Henry S., LTC Warzecha, Edward M., LTC Weaver, Eugene E., LTC Webber, Herbert M., LTC White, William G., LTC Williams, Robert M., LTC Williams, Robert R., LTG Wilson, Bryce, MR. Wingate, Charles S., COL Winalow, Roger D. Jr., MAJ Wolfe, Alfred J., LTC Wolff, William H., LTC Wood, Gordon F., LTC Wood, Robert W., COL Young, Ray A., COL

— 1958 —

Adoue, Eugene L., LTC Aguanno, Edwin M., MG Akin, Robert F., MAJ Allen, George L., CW4 Anderson, Elmer G., CW4 Anderson, Thomas E., COL Armfield, William F., LTC Arnet, Robert A., COL Aschoff, John F., Jr., LTC Astrike, Charles H., CW4 Atkinson, Donald E., LTC Atkins, James F., MR. Bankit, Paul, COL Banks, Douglas T., LTC Bannock, Russell, MR. Barker, William L., LTC Barkley, James R., LTC Basom, Darrel W., LTC Bass, Paul W., MAJ Baugh, Russell E., COL Rell, John E., COL Berdux, Sylvester C., COL Black, William G., COL Blanchard, Howard B. Jr., COL Bloom, Frank H., MAJ Bonasso, Russell P., COL Bosan, George S., COL Bowen, James D., COL Brady, Morris J., MG Brameler, Charles L., CW3 Brannan, Robert E. Jr., LTC Brantley, Danon L., LTC Brozeale, Charles R., LTC Brier, James R., COL Britton, James H., MAJ Brockway, George B., LTC Brofer, Duane R., COL Brown, Charles E., CW4 Brown, Chas. T. Jr., LTC Brown, Jack W., LTC Brown, John P., COL Bruce, Bobby G., CW4 Buckner, Boyce B., LTC Bullock, Charles A., COL Burch, Alvin F., LTC Burnett, Clark A., COL Burns, Joseph C., COL Butler, Olva B., COL Callaway, Charles P., LTC Campbell, Bruce B., COL Campbell, James E. Jr., COL Campbell, John W., COL

Campbell, Joseph R., COL Cass, Stanley D., COL Chamberlain, Walter J. MRS Chritton, Wm. R., Jr., COL Clance, Charles L., COL Clark, Dan C., LTC Cockerham, Samuel G., BG Conroy, Arthur T. Jr., COL Crowell, W. Bruce, COL Culling Bohart B LTC Cunningham, Adrian D., COL Damon, Charles P. LTC Daniels, Geoffrey M., COL Davis G. B. Jr. MAJ Deets, Robert M., LTC Descoteau, Rudolph D., COL Detwiler, Harvey C., LTC Dibrell, Jack H., MRS. Dillahunt, Chester A., LTC DiStelano, Joseph, LTC Donley, Kenneth G., CW4 Drane, Elbert E., MR. Druckenmiller, Perry R., 15G Drummond, Chas. H. Jr., LTC Dugger, Morris W., COL Dunagan, Clarence M. LTC Dunn, Jack A., LTC Dyer, William B., COL Fellerhoff, John H., LTC* Finley, Thomas O., LTC Foreman, Bichard G. CPT Fraker, William W., COL Franseen, Leonard R., COL Franzol, Larry C. Sr., MR. Geiges, Elmer B. Jr., MAJ Gilbert, Leslie H., COL Gile, Richard E., LTC Gillingham, Richard I., LTC Godwin, Doyal V., CW4* Goldsberry, James O., CW4 Graham, Robert L., LTC Guion, James L., LTC Hafers, Ernest R., LTC Hall, Gary C., LTC Hamlet, James F., MG Hammack, J.Y., COL Hankins, Curtis L., COL Hannum, Alden G., LTC Hanson, Gerald H., LTC Haxton, Owen, LTC' Hayes, Patrick H., CW4 Heffner, Gary R., LTC Henschel, Densmore F., LTC Hensley, James R., LTC Henson, Virgil A. Jr., LTC Hesson, James M., BG Holcombe, Albert M., CW4 Holleran, Raymond F., LTC Holloman, Robert A., BG Holroyd, Donald E., COL* Holt, Billy R., CW4 Holtzclaw, Bobby L., CW4 Hooks, William G., LTC House, Gordon H., LTC House, James H., LTC Hubbard, Samuel, COL Huebner, Otto W., COL Humes, Richard A., LTC Humphrys, James G., COL Hunt, Gordon M., COL Hutchens, Douglas L., COL Ihlenfeldt, Bruce O., LTC Jaggers, Joseph N., MG Janssen, Arlo D., LTC Jarrett, Richard S., COL Jensen, Frank L. Jr., COL Jersey, Donald H., COL Johnson, Albert A. Jr., COL Johnson, Carl C., COL Johnson, David S., COL Johnson, Flavil L., LTC

Johnson, Paul H., CW4 Jolley, Oran B., MAJ Jones, Charles W., LTC Jones, Harry L., COL Jordan, Donald R., LTC Joyce, John J., MAJ Joyce, Warren C., LTC Kalagian, Samuel P., COL Kean, Helen A., MRS Keating, Richard P., LTC Kennedy, James E., COL Kennedy, Richard J., COL Kerloot, Lester R.Jr. LTC Kersey, Invin J., LTC Kilpatrick, Thomas M., COL* Kinder, Jimmie B., LTC King, David B. II. COL Kinley, Gordon L., LTC Kirklighter, Gerald W., COL Knight, Dan, B., Jr. COL Knight, Emmett F., COL Koehler, Joseph R., COL Legener, Richard G., COL Leuppert, Fred W., LTC Levinson, Joseph. COL Lewis, Donald J., LTC Lewis, Mose E. III, MR. Lindsley, Fred, CW4 Love, John A., COL Mackell, Bernard B., MAJ Mackin, Richard E., COL Mackmull, Jack V., LTG Madden, Michael J., CW4 Makuch, Walter S., LTC Maschmann, Shirley G., MRS Matthews, Ralph A., COL McAndrew, Thomas J. Jr., LTC McClintock, Alfred B., LTC McDonald, Fritz J., MAJ McDonald, James A., LTC McGurl, Peter W., COL McNair, Carl H., Jr., MG Meyer, Richard D., LTG Moeller, Gene L., LTC Molinelli, Robert F., MRS. Money, David H., LTC Monroe, Melvin C., LTC Montgomery, Earl B., LTC Moore, Howard M., COL Moore, James E., LTC Moore, Robert K., COL Murray, George W., CW3 Nakajo, Mas M., COL Nanartowich, Richard H., COL* Needles, Paul E., COL Neu, George T., LTC Newport, Dennis E., LTC Newton, Albert, COL Nicholson, Rowland J., LTC Norwine, Philip C., MR Nowalk, Charles L., COL Oakley, Howard H., COL Oden, James R., CW4 Odneal, Billy L., COL O'Donohue, John D., COL Orsburn, Presley O., LTC* Oswalt, John W., COL O'Tier, Harry V., MAJ* Panzitte, Val, LTC Park, Stewart R., CWO* Passano, John D., LTC Patnode, Clarence A., COL Patterson, John F., LTC Payne, Thomas L., LTC Peppler, T.P., MR Pergerson, Benard S. Jr., COL* Petersen, Darwin A., COL Petty, Floyd E., COL Petty, Lloyd J., COL Pierce, James D., LTC Pittman, Charles D., LTC

Plissey, Robert D., LTC Pohlen, Jerome J., COL Post, Alton G., MG Potter, Russell C., LTC Proctor, James H., LTC Quesrry, Bobby R., CW4 Raley, Royce D., CW4 Rathbone, William A., COL Reese, John B., LTC Reid, Robert W., LTC Reuter, Robert M., COI Richards, David A . COL Rios, Jose R., CW3 Rixon, M. David, COL Roberts, Donald A., COL Robison, Paul B., COL Roeder, Helmut A., DR. Rochl, William A., COL Roop, Richard F., COL Rovetto, John L., CW4 Royals, Gerald E., COL Buth, Francia J. CW3 **Butkowski, Joseph F., COL** Subey, Walter D., CW3 Sandera, Burnett R., COL Schuett, Darwin L., LTC Schulte, Victor J., LTC Sheppard, Orval H., COL Shields, George D., COL Shively, Jowarren B., MAJ Simpson, William F., LTC Slott, Charles A., LTC Siye, Kenneth M., MAJ Siye, Wm. T., Jr., LTC Smith, Herbert M., LTC Smith, Joseph P., COL Smith, Wayne R., MR Snyder, Paul B., COL Soucek, Leo E., BG Stacy, John F., LTC Stewart, Harvey E., COL Stewart, Jessle E., COL Steward, Thomas B., COL Stipech, Edward F., LTC Stoessner, Richard L., COL Stone, Lawrence J., LTC Strange, Loren C. Sr., COL Swindell, Brennon R., MR. Tedesco, William J., LTC Thomas, Rich, W. Jr., LTC Tiemann, Floyd J., LTC Tillery, Samuel E., LTC Tilley, Halcum G., CW3 Toblasen, Alchard D., LTC Touchet, James C., LTC Tow, James L., COL Tyson, Robert M., LTC Ulzheimer, Robert, LTC Urbach, Walter, Jr., COL Van Dyken, Harold B., COL Van Rensselser, H.B., Jr., CPT Vandiver, Gilmer L., LTC Vierling, Raymond A., CWO Voelkel, Eugene, LTC Vovilla, Harold K., LTC Wagner, Paul R., COL Waldron, Garald L., COL Weems, Sands S. III, LTC Weichsel, Hans, MR. Wells, James F., COL Wilkins, Henry J., LTC Williams, Chas. J. Jr., CW4 Williams, Howard M., COL Williams, Ramon R., CW4 Wilson, Carl A., Jr., LTC Wilson, Gary L., LTC Wilson, Leonard R., MAJ Wollver, Clarence H., COL Woodard, James O., LTC Woolnough, James P., MR. Wray, Donald P., COL

* denotes active duty

ARMY AVIATION 99



1988 Aircraft Survivability Equipment (ASE) Symposium St. Louis. Missouri — November 9-10, 1988

The Army Avlation Association, in cooperation with its industry member firms, is pleased to announce the Sixth Annual Aircraft Survivability Equipment (ASE) Symposium. This Symposium will explore "ASE Development in the Joint Arena: Modeling Simulation, Testing, and Effectiveness Measurement" and will be hosted by Emerson Electronics and Space Division, in St. Louis, MO, November 9-10, 1988.

Major General. Ellis D. Parker, Chief, Aviation Branch and Commanding General USAAVNC and Ft. Rucker, will deliver the keynote address. Major General Richard E. Stephenson, Commanding General, U.S. Army Aviation Systems Command, will be the Guest Speaker at the Awards Banquet. The Banquet ceremonies will also include presentation of the CY87 AAAA Aircraft Survivability Equipment Award.

The **1988 ASE Symposium** is open to all interested AAAA members who possess the appropriate level clearance. The classification level of the Symposium will be determined after DA review and classification of the final paper selections. Please contact Terry Coakley, AAAA National Office, at (203) 226-8184, if you have any questions on registration or housing.

AAAA Aircraft Survivability Equipment Award Call For Nominations

Sponsored by Loral Electronics Systems, this National Award will be presented "to the person who has made an outstanding individual contribution to Army Aviation in the area of Alrcraft Survivability Equipment during the awards period encompassing the previous calendar year."

AWARD TROPHY

The trophy is retained at the U.S. Army Aviation Museum in Ft. Rucker, AL, where it is on permanent display, except for the period of presentation. Award winners receive replicas of the trophy for permanent retention.

The "Aircraft Survivability Equipment Award" is a six-sided pyramid, 20 inches high, and approximately one foot in diameter. The trophy bears the incription: "This trophy is dedicated to those who have contributed immeasurably to Army Aviation combat effectiveness by providing new dimensions in aircraft survivability equipment for tomorrow's battlefield."

ELIGIBILITY

A candidate for this AAAA National Award may be a military or a civilian nominee and must be actively involved in the field of Aircraft Survivability Equipment.

Membership in the AAAA is not a requirement for consideration. The individual contribution of the nominee should have been initiated during the awards period encompassing the previous calendar year.

SUSPENSE DATE

To nominate a candidate, request an official ASE Awards Nomination Form from the AAAA National Office at (203) 226-8184. Nominations must be returned to the AAAA National Office at 49 Richmondville Ave., Westport, CT 06880-2000 by Friday, Sept. 9, 1988.

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HELITOW





GEN Howze



LTG Williams



LTG Wright



COL LItle



Board of Trustees to prepare '89 Hall of Fame Ballot

General Hamilton H. Howze, Ret., Chairman, will convene the Army Aviation Hall of Fame Board of Trustees, Saturday, August 13, In Ft. Worth, TX, to select the candidates whose names will appear in the Fall 1988 Hall of Fame Ballot.

Nominations for the 1989 induction to the Hall of Fame closed July 1. The Trustees will select a specific number of candidates for the ballot from those nominations received.

The selected candidates, their qualifications, and their photos will be published in the ballot to be mailed to some 4,000 AAAA members with seven or more years of current, continuous membership. These members will elect a specified number of inductees from those candidates in the ballot.

The elected candidates will then enter the Army Aviation Hall of Fame during an Induction Luncheon held at the AAAA National Convention in Atlanta, April 6, 1989.

BOARD OF TRUSTEES General Howze, top left, serves as the permanent Chairman of the Hall of Fame Board of Trustees. The remaining eight Trustees — all members of the Hall of Fame — serve as appointees for one



three-year term of office.

LEFT: LTG John M. Wright, Jr. (Right) AAAA President, presents 1976 Hall of Fame Inductee MG Spurgeon Neel with a souvenir portrait.



COL Nevins



COL Oswalt



COL Pumphrey



CW4 Sandidge



Mr. Kesten

JUNE 30, 1988



Renowned throughout the world for superbly-engineered aircraft, we take quiet pride in our dedication to excellence and in our commitment to the future. *de HAVILLAND A BOEING CANADA*



The AAAA President's Annual Report for the 1987-1988 Membership Year

The following remarks are excerpts from the AAAA President's Annual Report delivered by MG Story Stevens, Ret., AAAA President, during the General Membership Meeting, April 14, 1988, at the AAAA National Convention in St. Louis.

"Our organizational activities during April 1987-1988 were extensive.

We now have 159 firms as industry members, which is 15 above last year's Convention total of 144.

My slide rule says that's about a 10 percent gain in corporate members.

This total will be somewhat higher following the Convention as a certain number of representatives of non-member firms have already indicated they'll complete the necessary application paperwork for their firms on their return to their offices.

Less than a month ago, I attended a most productive gathering of members at the Annual Regional Convention in Garmisch, Germany.

The two-day professional program received command support and good membership participation, both military and industry.

In March, the Annual Joseph P. Cribbins Product Support Symposium sponsored by AAAA's Lindbergh Chapter set new attendance records.

The fifth Annual AAAA **Aircraft Survivability** Equipment (ASE) Symposium that was held in San Francisco In early November also established a new attendance high.

At the Chapter level, we have 51 Chapters worldwide with membership strengths varying between 25 and the Lindbergh Chapter's high of 1,319 members.

How important are the chapters?

Quite important! Over 90% of our members are affiliated with one of the 51 chapters.

During the April 1987—March, 1988 membership year, our Chapter activities conducted 202 separate chapter meetings. A majority of these meetings were professional in nature with key military and industry addressing Chapter members on a variety of subjects. The **Old Tucson Chapter** was activated last May as our 50th Chapter.and last month, the **Black Knights Chapter** was activated at West Point, N.Y., our 51st Chapter.

Requests for activation kits have been received from members in the Bethpage, NY; Wichita, KS; and Stockton, CA areas.

Seven of our chapters participate in what we feel is a unique program. They contribute \$1,000 each to the AAAA Scholarship Foundation and the Foundation provides a matching \$1,000 donation.

Under this program, the Chapter can then provide a \$2,000 scholarship in the Chapter name, or provide a \$1,000 scholarship and bank the matching \$1,000 in an escrow fund to build up a fully capitalized annual Chapter scholarship of \$1,000.

We're quite proud of this program.

Approximately a fifth of our chapters participate in a Chapter Awards Program that duplicates, to some degree, our National Awards Program.

The Chapters in many cases select their own local area Aviator of the Year, Soldier of the Year, DAC of the Year, and Unit of the Year. Several of this year's Convention's national award winners have already been honored in local area ceremonies.

I'd now like to turn towards our awards programs. In addition to the eight national awards that will be presented during the Convention, the Association also sponsors other significant awards and I'd like to cite the winners of these awards at this time:

Our Outstanding Aviation Logistic Support Unit of the year was the **Corpus Christi Army Depot**, Corpus Christi, TX commanded by **Colonel William J. Blair.**

There were co-winners of our calendar year 1987 Aviation Trainer of the Year Award, sponsored by the Singer Link Flight Simulation Division,

Major James D. Thurman of the Apache Training Brigade at Ft. Hood, TX shared this 1987 AAAA Award with Staff Sergeant Bobby

A.G.P.U.

1993年,1998年199日日日日日日日日

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THE AAAA SCHOLARSHIP FOUNDATION, INC. 49 Richmondville Avenue, Westport, CT 06880-2000 • Phone: (203) 226-8184

TO: Membership

In August, 1986, the AAAA Scholarship Foundation Board of Governors convened for the purpose of expanding the number and dollar amounts of AAAA National Scholarships to be awarded, and to make the necessary organizational changes to support an expanded program.

In the interests of expanding the scholarship program to include a broader section of the membership, the Foundation is considering additional categories of swards.

Before making its recommendations to the Board of Governors, the Foundation's Policy Committee believes it is important to present ideas to the membership for their consideration and response.

I wish to point out that the ourrent program has been very successful; it is continuing to grow in both the number and dollar amounts of its annual scholarship awards; and many AAAA members appear to be satisfied with the ourrent program.

We will welcome your comments on the following ideas for expansion:

(1) The inclusion of merit scholarship awards to members and/or their spouses who are college-entry freshmen. (The current program is limited to the sons and daughters of members or deceased members).

(2) The establishment of a low-interest, revolving loan fund to be available to members, spouses, and other dependents of members or deceased members on the basis of need for the pursuit of general educational objectives or job skill training.

Other ideas are welcome. It should be understood that any changes to the current program will require refiling of the AAAA Scholarship Foundation's Certificate of Incorporation with the State of Connecticut and refiling for a new tax-exempt status with the IRS and possible compliance with other Federal regulations.

Your comments on the program in general will also be welcome. Please mail your remarks by July 31 to AAAA Scholarship Foundation, Inc., 49 Richmondville Avenue, Westport, CT 06880-2000.

Sincerely yours,

Jok Man

John W. Marr Colonel, USA (Ret.) Chairman, Policy Committee

ISB-MARN-GR

AAAA offers \$60,000 aid in 1989 for college-entry Freshmen

BACKGROUND:

The AAAA Scholarship Foundation, a separate non-profit educational activity created to provide scholarship aid to the sons and daughters of AAAA members and deceased members, announces the availability of \$60,000 in assistance funds for the 1989 college-entry year.

SCHOLARSHIP AWARDS:

Twenty three scholarships will be presented — One 10,000 four year scholarship (2,500 a year); and one 8,000 four year scholarship (2,000 a year); and others ranging from 1,000 to 5,000 given out as one, two or four year scholarships.

AWARD PHILOSOPHY:

Operating on the premise that ample scholarship assistance is available to those in need, the AAAA National Scholarships are awarded primarily on the basis of academic merit and personal achievement. The AAAA seeks to honor those outstanding students whose well-rounded secondary school activities indicate solid career potential.

APPLICATION PROCEDURE:

To apply, please request a Scholarship Application and Personal Data Form and return it to the AAAA Scholarship Foundation, 49 Richmondville Avenue, Westport, CT 06880-2000 on or before December 1 (postmark will govern). On our receipt of the completed application, you will be mailed additional forms with further instructions and assigned an AAAA interviewer. These additional forms, together with other supporting data, must be returned to the Foundation on or before January 15 for consideration by the AAAA Awards Committee (postmark will govern). NOTE: If your address is different from that of your parent, who is the AAAA member, please be sure to provide this information on the application.

ELIGIBILITY CRITERIA:

An AAAA applicant must be unmarried, a citizen of the United States, and a high school senior who has applied to an accredited college or university for Fall 1989 entry as a freshman. Program participation is limited to the sons or daughters of members with an effective date of membership on or before March 31, 1988.

SELECTION AND NOTIFICATION:

Selection of winners will be made by the 22-member AAAA National Awards Committee during the February 1-15 period with each applicant to receive a list of the winners not later than April 1.



The AAAA President's Annual Report



W. Eades of the Air Operations Division, Department of Enlisted Training, at Ft. Rucker, AL

The CY87 winner of the AAAA's Aircraft Survivability Equipment Award sponsored by Loral Electronic Systems was Chief Warrant Officer Perry M. Smith of the Directorate of Training and Doctrine at Ft. Rucker, AL

Each year, the Association cites outstanding corporate and individual efforts that enhance our Materiel Readiness.

Our calendar year 1987 Individual Industry Award winners were Victor Conner of the McDonnell Douglas Helicopter Company based at Ft. Hood, TX and David M. Carpenter of the General Electric Company at Lynn, MA.

Our calendar year 1987 Small Business Industry Award winner was Aerodyne Investment Castings, Inc. of Tampa, FL

The winner of AAAA's CY87 Team, Group or Special Unit Industry Award was DYNCORP of McLean, VA.

Our calendar year 1987 AAAA Major Company Industry Award was the **COBRO Corporation** of Wheaton, MD.

We're also very proud of our Scholarship Program. The bottom line is that the sons and daughters of 23 members or deceased members will receive \$51,000 in scholarship aid for the academic year starting September 17, 1988.

It isn't widely known but we're in the second year of a fairly new program that provides Aviation Branch Insignias to newly-branched officers at Ft. Rucker, AL.

For many years, the Association has also provided sterling silver wings to the distinguished graduates of all fixed and rotary-wing classes at the Army Aviation Center.

The Association also recognizes the Outstanding Graduates of the Aviation Warrant Officer Career Course.

We also honor our own.

We turned 30 last year and those of you who were here last year may recall that we presented our 30-year members in attendance at the Membership Luncheon with a unique 30-year membership pin.

We'll do the same thing again this year and honor those members in attendance who joined us in 1958, some 30 years ago.

Finally, there's one aspect of our financial picture that I'd like to highlight. Under the caption, "It's worth repeating!", the following appeared in ARMY AVIATION MAGAZINE recently:

... Did you know that since January, 1977, the Army Aviation Association — without any Interim dues increase to its membership in the ten-year period:

 has more than halved again its CY77 membership strength of 9,945;

 has more than quintupled its CY77 emergency fund of \$19,000;

 has more than quadrupled its CY77 total of 35 industry member firms;

 has more than doubled the number of its four national awards;

 has more than doubled the number of its nine national scholarship awards;

 has more than doubled the number of its major worldwide symposia, conferences, and technical meetings;

 now provides more than 11 times the annual scholarship aid than it did in 1977;

 has undertaken a more than three-fold increase in its national convention attendance;

 and has instituted 14 new major programs of interest to all members in the ten-year period?

Enough said ... for now. I call the General Membership Meeting adjourned."

Are You Taking Advantage of Your Membership Benefits Privilege?

AAAA's Employment Referral Service

Did you know that active AAAA members can have a 30-word classified employment ad published in ARMY AVIATION MAGAZINE free of charge? The ads are stored chronologically and made available to AAAA industry members on request.

P.S. Are you using your AAAA Hertz Car Rental Discount Card?

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JUNE 30, 1988


AAAA Calendar

May. 1988

■ May 26. Redcatcher Chapter. General Membership Meeting. Redcatcher Gausthaus Guest Speaker: CPT Wayne R. Husemann, 3rd ATC Bn, 58th Aviation Regiment.

Center Chapter. Golf Scramble. Ft. Rucker Golf Club.

May 27. Bonn Area Chapter. Professional Social Meeting. Bodensee. Presentations by: MTU, Dornier and BGT Visit to 2D French Helicopter Regiment.

May 27. Tu-Can Chapter. Triathlon. (Golf, Bowling, Darts) Horoko Golf Course Club House.

June, 1988

■ June 7. Connecticut Chapter. Professional Dinner Meeting. 500 Blake Street Banquet Hall, New Haven. Guest Speaker: HON Jay R. Sculley.

■ June 7. Edwin A. Link Chapter. Professional Dinner Meeting. Morey's Restaurant. Guest Speaker: COL Curtis J. Herrick.

■ June 8. Jack H. Dibrell Chapter. General Membership Meeting. Academy of Health Sciences Officers' Club Annex.

■ June 8. Tennessee Valley Chapter. Professional Luncheon Meeting. The Executive Inn. Guest Speaker: MG Ellis D. Parker.

United States Content of Center Chapter. General Membership Social. Old Division Parade Field.

■ June 11. Lindbergh Chapter. Float Trip and BBQ Dinner. Meramec State Park. ■ June 15. Greater Atlanta Chapter. Professional Social Meeting. Ft. McPherson Officers' Club. Guest Speaker: Terry Coakley.

 June 15. Washington DC Chapter. Scholarship Fund Benefit Golf Tournament. Andrews AFB East Course.

■ June 20. Wings of the Marne Chapter. Professional Social Meeting. Giebelstadt Army Airfield Community Club. Election for Treasurer. Guest Speaker: LTC H. Hall.

■ June 21. Old Tucson Chapter. Professional Business Meeting LaFuente's Restaurant Lafayette Room. Guest Speaker: MG Richard E. Stephenson. Elections for President and Treasurer.

■ June 22. Fort Bragg Chapter. Professional Development Meeting. Fort Bragg Officers' Club. Guest Speakers: COL R. Dennis Kerr and Art Sifuentes.

■ June 23. Air Assault Chapter. Professional Social Meeting and Election of Officers. Top Six Club. Guest Speaker: COL William Loftin.

■ June 23. North Texas Chapter. Professional Social Meeting. Arlington Sheraton Centrepark Hotel. Guest speaker: BG William H. Forster.

General Membership Meeting. Howard NCO Club.

■ June 25. Chesapeake Bay Chapter. Annual Lobster and Clam Bake. Family Day Elections. Army National Guard Operating Activity Center.

New Sustaining Members

(Designated Representatives indicated in parenthesis)

Curtis Mathes Home Entertainment of Clarksville, TN. (Mr. Boyce R. Meers)

Treasurer of Logan County of Russelville, KY. (Treasurer)

Aviation Soldiers of the Month

PFC Martha S. Thompson, Aviation Center Chapter (May). MSG Paul E. Logan, Chesapeake Bay Chapter (Jan).

MSG Charles L. McNally, Chesapeake Bay Chapter (Feb).

MSG Kenneth W. Criffin, Jr., Chesapeake Bay Chapter (Mar).

Aces Club

The following members have been declared Aces in recognition of their being responsible for the signing up of five new members each.

Priscilla A. Caraway Terry E. Cunningham Tommie J. Roosmann MAJ Gary S. Coleman 1SG Frank H. Cox LTC (P) Floyd E. Edwards MAJ David P. Miller MSG Lorenzo R. Osorio SFC Jerry L. Calentine CPT John M. Adams

Honors

AAAA's worldwide Chapters are offered a program wherein they may select a Chapter "Aviation Soldier of the Month", notify AAAA of that selection, and have that soldier or Non-Commissioned Officer receive a full-year complimentary membership in AAAA, and publication of his or her selection in the AAAA pages of the issue.

Honorary Members

The following have been selected as National Honorary Members of the AAAA. Each receives a complimentary oneyear AAAA membership, citation in these pages, and a handlettered "Certificate of Honorary Membership".

LTG Dave R. Palmer, Superintendent, U.S. Military Academy, West Point, NY.

CDT Kenneth Scott Prygoski, recipient of the first Outstanding Aviation Branch Cadet Award, U.S. Military Academy, West Point, NY.

Similarly, the following person has been selected by the Old Ironsides Chapter as a Chapter Honorary Member and is entitled to the same benefits described above.

MG Frederick M. Franks, Jr. (Commanding General, 1st AD, APO NY).

New AAAA Officers

The following members were elected to the Executive Boards of their respective Chapters:

BG Robert S. Frix (Pres.), Air Assault Chapter.

COL William D. Loftin (Senior VP), Air Assault Chapter.

CPT (P) Theodore J. Vanderkamp, II (Sec'y), Air Assault Chapter.

MAJ Steven T. Cronin (Treasurer), Air Assault Chapter.

LTC Bryan D. Brown (VP, Publicity), Air Assault Chapter.

LTC Michael P. Vanairsdale (VP, Memb), Air Assault Chapter.

1LT Russell Butler (VP, Memb. Enroll), Taunus Chapter.

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Chapter News

Black Knights, West Point,

NY. In their initial Executive Board meeting March 17, 1988, the VP Membership LTC Sautter set a goal of 100 percent Aviation Cadet membership in the Chapter. It was decided by the Board that the Chapter will host a Football Weekend tailgate party, primary date: Sept, 10 vs. Holy Cross.

Wings of the Marne, APO, NY. In a general membership meeting Feb. 18, It was announced that the Marne Chapter Golf Tournament would be held June 5. Prizes, food and drink to be provided. - \$10 entry fee per player. LTC Neidig advised members that AAAA Scholarships are available to members with college age children and urged them to apply.

Redcatcher, APO NY. During the March 3 general membership meeting, upcoming events were decided, Including a golf tournament in May, sponsorship of a 10K run during Family Day in June, and elections in June. Two raffles were held and the drawing for a \$50 savings bond was won by SP4 Brown of N Troop.

Schwaebisch Hall, APO NY. Twenty-seven soldiers donated their time to a profitable German/American Festival recently. As compensation, the Schwaebisch Hall Chapter has enrolled them in AAAA and has paid for their membership.

NOTE: Please send in your Chapter Minutes for inclusion in this section.

AAAA Overview



WEST POINT, NY: LTC Rob Roberts (I), Black Knights Chapter President, joins BG James M. Hesson, Ret. (r), AAAA Senior VP, after presenting AAAA's first annual Outstanding Aviation Branch Cadet Award to the top cadet branched to aviation, CDT Kenneth Scott Prygoski (c) from W. Yandotte, Michigan, on May 23.

LTC William L. McCabe, guest speaker at the Edwin A. Link Memorial Chapter, Binghamton, NY, March 22, receives a commemorative "Blue Box" from Fred S. Belyea, Chapter President.



JUNE 30, 1988

Maintaining America's Readiness



L ast year DynCorp aviation specialists maintained, modified, repaired or performed other services on over 10,000 military aircraft. Fixed- or rotary-wing; jet, turboprop or piston; DynCorp people know them all. This knowledge is backed by over four decades of delivering dedicated service and support to U.S. armed forces in any part of the world under all conditions or any circumstances.



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2000 Edmund Halley Drive, Reston, Virginia 22091



Expertise and experience—a potent combination.

For the Apache, no light is no

problem. Until now, enemy tanks, troops and guns have moved freely under the cover of darkness.

Not any more. Because Apache owns the night. Built to avoid detection by sight and sound as well as by radar and heat-seeking missiles, the AH-64 Apache has advanced avionics that seek out, identify and lock onto targets several miles away. On the blackest night Laser-guided Hellfire missiles plus cannon and rockets make short work of enemy targets.

HENIGHTS

Combat-ready with U.S. Army units, Apache is establishing an impressive operating record in the field. It needs less than half the

For more information, write McDonnell Douglas Heticopter Company 5000 E. McDonnell Rd. Mesa, AZ 85205 maintenance that Army specs require. Its full-mission availability is consistently above 75%. And its reliability rate exceeds 100% of the Army requirement.

The Apache's capability in total darkness and adverse weather is unmatched. Clearly, Apache is made for the night shift, and heaven help anything the enemy shifts at night.



MCDONNELL DOUGLAS