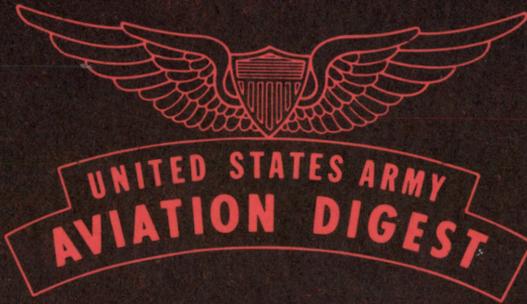


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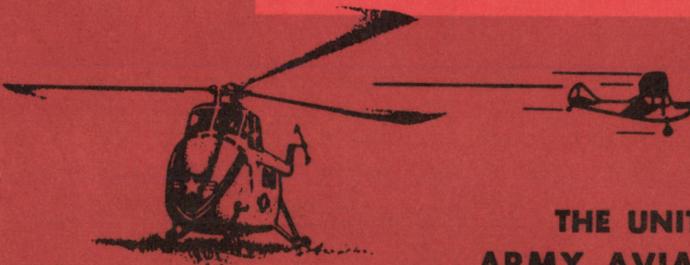
SPECIAL ISSUE

THE LAST THREE YEARS
OF ARMY AVIATION

PROGRESS & PROBLEMS

RESEARCH & DEVELOPMENT

OFFICER CAREER PROGRAM



THE UNITED STATES
ARMY AVIATION SCHOOL
FORT RUCKER, ALABAMA



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The mission of the U. S. ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

Manuscripts, photographs, and other illustrations pertaining to the above subjects of interest to personnel concerned with Army Aviation are invited. Direct communication is authorized to: Editor-in-Chief, U. S. ARMY AVIATION DIGEST, U. S. Army Aviation School, Fort Rucker, Alabama.

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NG: State AG.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

UNITED STATES ARMY AVIATION DIGEST

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March, 1958

Number 3

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COVER

Cover and interior artwork by Donald R. Smith, Supervisory Illustrator for the Department of Publications and Non-Resident Instruction, U. S. Army Aviation School.

The Last Three Years Of Army Aviation

Major General Hamilton H. Howze, USA
Director of Army Aviation, ODCSOPS*
(February 1955 — December 1957)

Preface

With the rapid expansion of Army Aviation over the past several years, I think it desirable to make known to you, who comprise this business, the most notable steps in our progress. I have, therefore, compiled this report, and will recommend to my successor that similar reports be issued annually.

I did not write all this myself, but I will take the blame for re-writing much of it in what I choose to call a narrative style. Basic material was submitted by those listed on the inside back cover. Many of these gentlemen will be greatly irritated by the liberties I have taken with their submissions; I ask their indulgence on the ground that such a document as this, to be readable, must be as brief as possible, even though an incomplete story results.

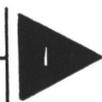
It may be noted that the period covered by this narrative corresponds roughly to my own tenure of office. There is a reason for this: I entered the field of Army Aviation as a total stranger; I observed the state of affairs (with a fresh, if ignorant, eye) at the time; and now that I am about to depart my position, I have the opportunity to look it over once more. I wish to make clear that I lay no personal claim to credit for the events chronicled in the paragraphs which follow. Indeed, many of the most notable accomplishments proceeded without my participation in any way, and some in spite of my initial personal opposition.

With rare exception names of personnel now active in Army Aviation are not mentioned, for the sole reason that it would be impossible not to omit many who deserve a great deal of credit.

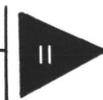
In the course of work on this literary project I have been struck once more by the extent of progress over the years—advances not apparent in the day-to-day conduct of business. And my pride in Army Aviation has grown appreciably. As you read this, I think yours will too.

With this preamble, I think we might start with—

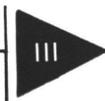
*Brigadier General Ernest F. Easterbrook succeeded Major General Howze as Director of Army Aviation on 16 December 1957. This report was compiled before General Howze departed for his present assignment as Commanding General, 82d Airborne Division, Fort Bragg, N. C.



SCHOOL & HIGHER ECHELON



FIELD ACTIVITY



STOL/VTOL



PROBLEMS



FUNCTIONS DEFINED

I. SCHOOL AND HIGHER ECHELON



Army Aviation in the Higher Levels of Government (1952-57).

War Department representation on the Air Coordinating Committee, the President's top level aviation policy body, was taken over by the Air Force when it was established as a separate service in 1947. The Army was represented by the Air Force in the ACC until 1952, when the President added the Army to its membership. This got the Army equal voice in the formulation of domestic and international aviation policies of the United States.

In May 1957 the Secretary of the Army assigned secretarial responsibility for Army Aviation matters (other than logistical) to the Assistant Secretary, Civil-Military Affairs, who had previously been assigned responsibility for ACC matters.

As in the case of the ACC, membership on the National Advisory Committee for Aeronautics had been taken over by the Air Force upon its establishment as a separate service. In 1954 Assistant Secretary Roderick approached the Chairman of the NACA concerning reinstatement of Army membership. Since the NACA operates under a charter established by Congress, legislation is required for revision of its membership. The Army had membership on va-

rious important subcommittees of NACA, but not in the top echelon. During the spring of 1957, additional conferences and correspondence between Secretary Brucker, Dr. Martin (Director of R&D), and top officials of the NACA resulted in the NACA requesting that legislation be enacted by Congress to provide for Army membership at the top level in this select aeronautical body. Favorable congressional action is anticipated in the near future.

The "ANC" manuals (now properly titled "United States Standard Manuals" as a result of Army suggestion) which establish standards in aeronautical procedures were originally a product of Army-Navy-Civil cooperation. With the establishment of a separate Air Force, the "A" took on a new meaning, and the Army was not a party to the development or promulgation of these criteria for several years. In 1955, as a result of its membership in the ACC, the Army resumed its participation in the preparation of these documents and again became a signatory agency.

Control Established for Army Aviation Activities Above Field Army Level (1955-57).

The first complete Army Avi-

ation plan for long-range guidance of the Department of the Army was drawn up by the General Staff in November 1954 and submitted in draft form for comment to all interested Army agencies worldwide. It recognized the inherent weakness of the then current fragmented organization for Army Aviation control and recommended a series of corrective actions, which in the aggregate were admirably bold, albeit in some regards premature.

In substance it proposed as immediate measures the establishment of an Aviation Division in G-3 for overall staff supervision, the centralization in G-1 of aviator assignment authority; the establishment of an Aviation Center at Fort Rucker, Alabama, to include an Aviation Test Board; the assumption by the Army of depot maintenance and supply; the strengthening of procurement control by the Army; and as an ultimate measure, the formation of an aviation branch in the Army.

The immediate measures received almost unanimous endorsement, but the proposal for an aviation branch generated mixed reactions, with the preponderance being favorable. (Editor's Note: Now a dead issue.)

After careful analysis of all comments, G-3 presented for approval of the Chief of Staff those recommendations from the draft plan which seemed vital to the progress of Army Aviation and yet acceptable to the Army in general. On 7 January 1955, the Chief of Staff approved those recommendations calling for appointment of a general

officer to coordinate Army Aviation matters in the General Staff, for centralization of control of aviation personnel, and for establishment of an aviation center, including a test board. In retrospect, this action by the Chief of Staff must be adjudged as one of the most significant of the three year period.

Army Aviation Center Established at Fort Rucker (1954-57).

On 29 July 1954, Department of the Army—after all manner of consideration and reconsideration—announced that the Army Aviation School would be moved from Fort Sill, Oklahoma, to Camp Rucker, Alabama.

A period of confusion and difficulty ensued, as might be expected. In August the advance party arrived at Rucker. While classes in progress at Fort Sill were completed there and subsequent classes were initiated at the new location, the post staff and school faculty at Rucker were transforming an infantry training camp into an aviation training base.

The transfer of the School was completed by February 1955. The Army Aviation Center was formally established amid waving wiregrass and flourishing peanut vines in February of 1955, and on 13 October Camp Rucker was designated a permanent station—a real, genuine, fort.

During the early stages of the reactivation of Fort Rucker, the staff ran into many sticky problems in their efforts to tailor facilities to meet requirements.



Early days at Ozark Army Air Field

In August of 1954, Ozark Army Air Field consisted only of the present runways and taxiways, two dilapidated buildings and one hangar with both ends missing. On one occasion the Chief of Staff, aided by other staff members, mixed gasoline and sand in number 10 cans and placed them along the runway to enable a late returning pilot to land after darkness. Obviously, a fine sample of ingenuity seldom found in post chiefs of staff.

By Christmas 1954, seven classes were being taught on regular schedule. Before the end of the year, Classes 54K and L graduated 120 officers. In 1955 old programs of instruction were re-evaluated and amended, new ones established. Plans were formulated for the rehabilitation of existing facilities and construction of new ones.

On 6 January 1955, the 351st Regimental Combat Team, composed of the 351st Infantry Battalion, 337th Field Artillery Battalion, and 517th Engineer Company, was organized and given the mission of providing troop support for the Aviation School, in addition to maintaining Class

III unit qualification. On 30 September 1956, the 351st was deactivated.

To continue troop support for the school, the 99th Battalion Combat Team was then activated, using a portion of the 351st Infantry plus the 337th Field Artillery Battalion.

After repeated requests for engineer support the 806th Engineer Battalion arrived in April 1956 from Eleuthera Auxiliary Air Force Base, British West Indies, and was followed shortly by the 929th Engineer Group in May. The construction of Beaver Lake Auxiliary Airfield Nr 1 and the clearing of areas for Capehart Housing construction were some of the more important projects undertaken.

When Camp Rucker became Fort Rucker, the Center Installation Planning Board was activated and charged with formulating a planned program of permanent construction. A long-range plan was developed providing for the construction of facilities in excess of \$85,000,000.

FY 1956 construction was principally for Ozark Army Airfield. Facilities approved for FY

THE LAST THREE YEARS OF ARMY AVIATION

1957 were hangars with shops and an administration building for the U. S. Army Aviation Board at Ozark Army Airfield; two maintenance hangars with shops for Auxiliary Nr 1; 256,000 square yards of rigid pavement (taxiways, landing pads, parking aprons); and an access road and vehicle parking area for Auxiliary Nr 2, the Rotary Wing Maintenance and Base field.

The FY 1958 program (\$7,549,000) is composed principally of enlisted barracks and supporting mess and administration buildings, and has been approved for design.

Student dormitories, a flight simulator building, additional pavement and night lighting for Auxiliary Nr 2, an academic building, and other construction to support the Center and the School comprise the FY 1959 MCA Program at an estimated cost of \$10,562,000.

In addition to military construction, 600 units of Capehart housing will provide on-post housing for 400 officers' and 200 non-commissioned officers' families. This project, costing in excess of \$9,000,000, is scheduled

for completion in September.

The construction just described will give us quarters and facilities fought for long and hard by our people on the spot, at Third Army, and in the Pentagon. Rucker is becoming a fine place to serve—from every point of view.

In addition to the normal number of U. S. students during the years 1954, 1955, and 1956, a total of seventy-one foreign students (some of whom *could* speak English) were enrolled in courses at the Army Aviation Center. These students were both officers and enlisted men, and came from Australia, Belgium, Canada, Chile, China, Germany, Great Britain, Japan, Spain, Thailand, Turkey, the Netherlands, and Venezuela. In addition visitors came from France, Italy, India, Korea, Sweden, and Panama. This proves that organic aviation for ground forces is an idea that is catching on.

The Army Aviation Center is changing and growing—and growing better. More and more it is becoming an installation befitting the activity it serves: Army Aviation.

II. FIELD ACTIVITY



Exercise SKY DROP II (1954).

Exercise SKY DROP II was conducted at Fort Bragg in the

summer of 1954, employing elements of the 82d Airborne Division and certain Engineer attachments.

The final report of the exer-



Photo courtesy DEHAVILLAND Aircraft

Beavers and Otters drop supplies to waiting paratroopers

cise yielded the following bits of wisdom: both helicopters and airplanes are required in Army Aviation; the helicopter is more expensive to operate than the airplane; the ton-mile per hour capability for ranges of 20 miles or less favors the helicopter, but for ranges of 50 miles or more the airplane is better; the 20 - 50 mile gap was not covered, so presumably is dealer's choice; the VHF communication and navigation system is better than the low frequency system.

Exercise SKY DROP II was instrumental in creating a requirement for fixed wing tactical transport units to furnish "direct support to forces in the combat zone by providing tactical aerial mobility and tactical aerial supply."

Fixed Wing Transport Companies Added to the Structure (1954-56).

In September 1954 the Chief of Staff approved early activation of three fixed wing transport companies. A TOE was developed along three lines: The mission was stated as "furnishing direct support to forces in the combat zone," etc.; the designation as Category I; and the assignment of a number in the I-series, Aviation. Organization of these companies constituted the first recognition of the airplane as a major element in Army tactical transport aviation. The Otter is proving itself a fine piece of equipment.

The first company (14th Army Aviation Company,



Float-equipped Bird Dog

FWTT) was activated at Fort Riley by DA order on 5 May 1955. This company was later redesignated the 1st Army Aviation Company (FWTT) and is presently in CONUS. Two additional companies were activated in 1956 and are now stationed in Germany. Another is coming up soon.

Army Aviation and Engineer Survey Operations (1950-).

During six consecutive summer seasons (through 1955) the 30th Engineers surveyed over 313,000 square miles of western and northern Alaska, from the Aleutians to the Arctic Ocean. This is tough country, completely devoid of roads, with glacier-covered mountains and muskeg bogs making surface travel next to impossible.

During the summer of 1955, when an area of 88,000 square miles was surveyed, the 30th Group operated 66 aircraft including Otters (the first six we received), Beavers, Bird Dogs, Chickasaws, Ravens and a Sem-

inole. Otters and Beavers were used to carry surveyors and their equipment to platoon camps and to keep the camps resupplied, while Bird Dogs were used for practically everything including reconnaissance, photography, and gathering data required by the cartographers who later compiled the final map. Airplanes landed on gravel bars along the rivers, or (when suitably equipped) on snow, ice, and water.

The small reconnaissance helicopter was the primary vehicle used to move surveyors and their instruments from point to point, often operating from mountain peaks as high as 7,000 feet. Utility helicopters maintained the flow of supplies to locations which could not be served by fixed wing aircraft, and established small POL dumps out from the platoon camps to extend the range of the reconnaissance helicopters.

The 30th has completed its work in Alaska and the biggest part of the group is now at Stockton, California.

The Inter-American Geodetic

Survey is presently engaged in survey work in Central and South America. The job is much like that in Alaska. Support is by the 937th Engineer Company (TOPO AVN), which is authorized 28 fixed wing aircraft and 24 helicopters. These are operating in 17 different countries, from Mexico to Brazil. Maintenance and accounting is a bit fantastic.

Another unit, the 329th Engineer Detachment (Geodetic Survey), is now operating in the Libyan desert with the aid of 20 aircraft, both fixed wing and helicopters. A similar small detachment of the 30th Engineer Group is surveying in Iran, and still another, the 29th Engineer Company (Survey Base), is at Bangkok, Thailand.

These outfits are proving every day that the airplane and helicopter can vastly increase the capability of an Army organization assigned any job requiring it to *move* and *see*.

Army Participation in National Air Shows (1953-56).

Army Aviation demonstrations date from the antics of a

lone L-4 pilot performing barrier string operations and dead stick landings. Early demonstrations were designed to show commanders and other military spectators the capabilities and limitations of Army aircraft — selling Army Aviation to the Army, so to speak. To move from such a fledgling status to full-scale participation in the National Air Show, where the Army competed with sister services for approval of audiences totaling up to 300,000 persons, is testimonial of advances made.

The Army portion of the National Air Shows usually consisted of two phases totaling approximately 40 minutes. The first, presenting various types of Army aircraft and the capabilities of each, included the Army's helicopter square dance team and Bozo the clown. These acts demonstrated the agility of the aircraft and the skill of the pilots and, being spectacular, attractive, and easy to see, were great crowd pleasers.

The second phase presented a tactical exercise in which Army aircraft supported the taking of a tactical objective. Assault troops were airlifted to the site and supported in quick, showy,

Square dance team entertains at National Air Show



and thoroughly unrealistic fashion by aircraft executing missions of resupply, wire laying, aero - evacuation, observation, etc. A narrator kept spectators excited about the situation as the demonstration unfolded. The show was climaxed by detonation of "Little Peachy," a simulated atomic artillery warhead. The fact that Little Peachy if real would have blown up demonstration equipment, participants, spectators and all, made no difference to anybody.

But in truth, the whole Army show was splendidly executed each year. In addition to the flying demonstration, the Army made static displays of its air-

craft and other equipment for public inspection.

The National Air Show was held at Dayton, Ohio, in 1953 and 1954; at Philadelphia, Pennsylvania, in 1955; and at Oklahoma City in 1956. Following the Oklahoma City show, the participation of military aircraft in the National Air Show was terminated in the interest of economy by announcement of the Department of Defense.

Army Aviation made fine impressions at these great shows. Large portions of the public came to understand that the Army was in the aviation business on a progressive and professional basis.

III. STOL/VTOL



Department of Defense Study on Short and Vertical Takeoff and Landing Aircraft (1955-56).

In September 1955 we presented a briefing to the Assistant Secretary of Defense for Research and Development on the Army's requirements for aircraft and air support, pointing out that the one characteristic required of all Army aircraft is the ability to land and take off from unprepared fields.

As a result Defense decided that a study should be made primarily of the Army's qualitative requirements for aircraft with these objectives: (1) to review the state-of-the-art; (2) to se-

lect preferred approaches for further development; (3) to estimate the time of service application of future STOL and VTOL systems.

Dr. Clifford C. Furnas, then Assistant Secretary of Defense for R&D, assigned a group of consultants to study the problem. The membership of this Ad Hoc Group on Short and Vertical Takeoff and Landing Aircraft of the Technical Advisory Panel on Aeronautics (short title AHGOSAVTOALAOTTA-POA) consisted of Dr. Lipp of Lockheed, Professor Dutton of Georgia Tech, Professor Nikolsky of Princeton, Mr. Pratt of Pratt & Whitney, Dr. Raspet of

Mississippi State, Dr. Schairer of Rand Corporation, and Mr. Zimmerman of NACA—a truly eminent group. Five types of military missions were studied: observation, close support, rescue, transport for intratheater use, and the flying crane.

A short or vertical takeoff and landing with a capability for unprepared field operations was the common requirement for all the missions studied. The term “unprepared field” was considered as meaning a reasonably level dirt field having no ditches, stumps, cows, or other large obstacles.

The group made a number of significant and valuable recommendations, now on file in our own R&D. The report received wide distribution in February 1957 by the Assistant Secretary of Defense to the military services as well as industry, providing desirable emphasis on the Army's R&D program. This report has also influenced favorable decisions from the Department of Defense on exceptions to the 5,000 pound empty weight limitation on Army aircraft.

Actually we can't do all the committee suggests, for lack of money. But guidance is valuable.

IV. PROBLEMS



Army's Right to Utilize Any Method of Aircraft Propulsion (1955).

In May 1955 Army Aviators briefed the Secretary of Defense and the Secretaries and Chiefs of Staff of the other services on the Army's plans and hopes for organic aviation. Everything visualized for Army Aviation was disclosed with complete candor including the pending Army procurement of T-37 twin-jet trainers.

The Air Force vigorously challenged this procurement, implying that jet aircraft were not within the Army province. Later the Secretary of the Air Force proposed to the Secretary of Defense that the procurement be

disapproved on the grounds that it would be an infringement upon Air Force functions. This clearly posed the question of whether the Army was to be denied the right to use whatever method of propulsion would best serve its purposes in the performance of its aviation functions.

The Secretary of Defense referred the question to the Joint Chiefs of Staff. In general, the Air Force argued that possession of jet aircraft would lead the Army to perform missions assigned exclusively to the Air Force. The Army, on the other hand, held resolutely to the view that nothing in the National Security Act of 1947 or in any of the implementing directives

could be interpreted as meaning or implying any limitation on the speed or method of propulsion of aircraft used by the Army in carrying out its assigned functions, and that the imposition of such limitations would be tantamount to withholding from the Army the benefits of normal development in the state of the aeronautical art.

The final decision of the Secretary of Defense in September 1955 compromised somewhat on the specific issue since it cancelled the procurement and arranged for the test aircraft to be made available on loan from the Air Force. But in principle, the outcome was favorable to the Army in that it constituted an official validation of the Army's right to use jet or any other type of aircraft propulsion for the performance of its assigned functions.

Army Aviation Unit Training Commands (1955-57).

To provide necessary supervision over activation and training of transport aviation units, OCAFF recommended to DA on 19 October 1954 that two AAUTC's be established: one command at Fort Sill for single rotor helicopter training and one at Fort Riley for tandem rotor helicopter and transport airplane training.

The missions were assigned to the 71st Transportation Battalion at Fort Riley which became operational 18 February 1955, and to the 45th Battalion at Fort Sill, 1 July 1955. Their tasks were first to supervise activation and unit training of avi-

ation companies, and second to conduct individual pilot helicopter flight transition training. This second mission was transferred to the U. S. Army Aviation School in 1957.

Since inception, the two AAUTC's have activated and given unit training to twelve helicopter and three FWTT companies. They have successfully performed an important job.

Army Participation in Joint Instrumentation Program (1954-57).

In December 1954 the Army joined the Navy in an integrated instrumentation research program to provide Army Aviators with one integrated instrument display for *all* flight information necessary for satisfactorily flying a plane in instrument weather.

Various research contracts in human engineering, computer, navigation, autopilot, control, communication and radar fields were awarded—at great expense—to provide the sensors, control, computation and presentation equipment required to accomplish the goal.

Some of these projects are now bearing fruit. Their results in some form will be incorporated into helicopters in the not too distant future. The first helicopter to make use of some of the research devices so far produced will be modified for this type of instrumentation in FY 1958. The results of flight test will determine the extent to which this "rake-off" will be incorporated in selected Army helicopters.

Progressively, as more research demonstrates the feasibility of ideas, additional types of helicopters will be equipped until ultimately the aviator will be able to see both forward and below a simulation of the real world superimposed on the real world, provided the real world is visible. (That's the way Signal people talk sometimes. Means that the terrain will be visible even in the fog.)

When we get this, we'll be hard to stop.

Exercise S A G E B R U S H (1955).

Exercise SAGEBRUSH, the largest field exercise since WW II, was conducted jointly by USCONARC and TAC in Louisiana in November and December 1955. Chief interest to USCON-

ARC was evaluation of the new type field army, "ATFA." Although ATFA itself has long since been buried with full military honors, the 1956 field army set the pattern for current combat units.

Important deficiencies uncovered, for which Army Aviation offers at least partial solutions, were: a need for more rapid acquisition of information and delivery of intelligence to using agencies, the inadequacy of a radiological monitoring system, and the need for all units to move rapidly and frequently with continuous communications and logistic support.

The need for a reliable communications system for passing flight information was emphasized in the exercise report. This plus the need for a mutually acceptable arrangement on the regulation of airspace are still two

Shawnee delivers cargo during Exercise Sagebrush

Photo Courtesy VERTOL Corporation



problems of great concern for effective employment of Army Aviation. Although much has been done toward solving these problems, both within the Army and between the Air Force and Army, the next few years must see much more progress.

And as for vulnerability of airstrips! They are hard to hide, doubly so when they are cluttered with helicopters. If we are to live to fight another day, we must lick this problem through camouflage, clever selection of strips, camouflage, dispersion, camouflage, concealment, and camouflage—and maybe most important of all, camouflage discipline.

In addition to testing new aviation units, the SKY CAV concept was tested. Although this trial did not yield conclusive results, it did point the way for further experimentation. The basic concept of combining limited air transport, close-to-the-ground air reconnaissance and air transportable ground recon elements into one unit under a single commander was evaluated as sound.

Camouflage of Army Aircraft (1955-).

During SAGEBRUSH, as just noted, Army aircraft stood out like the traditional bar of ivory soap in a coal scuttle. The distinctive pattern of unpainted helicopter rotor blades, the glossy finish, the Army markings and national insignia were all very apparent when the aircraft were parked in the open. (They *had* to be in the open because maneuver restrictions

forbade the cutting of trees.)

As a result, additional impetus was given to the camouflage R&D program at The Engineer Research and Development Laboratories (Fort Belvoir). Camouflage nets have proven to be too heavy and bulky to be carried in an aircraft, and require too many people to erect. In addition, an airplane under a camouflage net usually appears to be (guess?) a camouflaged airplane.

As a result of a series of tests, some new camouflage paints have been developed. Easily applied, they dry in about eight hours. Paint can be removed by wiping with a rag soaked in gasoline and the new paint applied. Paints have been treated with an ingredient to give protection against infrared photography (which can distinguish between natural foliage and most artificial materials). The new paints, combined with proper siting to take advantage of natural foliage and the use of available camouflage materials to cover up windshields and the like, will greatly aid in concealing aircraft.

The laboratories are laboring away on other camouflage materials. Under development is a foam which when released from its container will cover a portion of the aircraft, thus breaking up the outline. Pilots and mechanics will not be able to shave with it. Experimentation is also continuing on a spray which will form a fine web over part of the aircraft to help make it less distinguishable, and on very lightweight nets on which natural and artificial material can be hung.

A new training circular on camouflage painting is in final stages of preparation and is expected to be published in the near future as will a new field manual, FM 5-21, covering the entire subject of camouflage for aviation.

The Army Aviation Plan (1956).

The Draft Army Aviation Plan, FY 1955-56, drawn by the Army staff in November 1955, led to important decisions concerning Army Aviation but did not result in an approved plan. Accordingly there was no official document prior to 1956 presenting comprehensive guidance for the development of Army Aviation. On the contrary, there was a fairly widespread view in the Army staff that such a document would be unnecessary and untimely.

The Aviation part of the Army staff considered that the absence of a formal plan was serious because it permitted misunderstandings throughout the Army as to Army Aviation's true aims and purposes. The staff therefore proceeded to prepare a plan which had as one of its primary purposes the clear delineation of the functions to be performed by Army aircraft.

The Army Aviation Plan FY 1956-1960 was published on 5 March 1956. It set forth for the first time official guidance for coordination of the efforts of the Army staff, headquarters, and units in the field in their common effort to develop Army Aviation as a vital contribution to our battle effectiveness. It pro-

posed no functions not already within the authorization of the Memorandum of Understanding, but described them in more precise and understandable language.

The Army Aviation Plan, FY 56-60, proved to be very effective in establishing unity of opinion within the Army on the broad purposes of Army Aviation and in isolating for study those specific areas requiring official decision. Additionally it was of tremendous value as a standard source of information for dissemination to the public, the Congress, and the other services.

Weather Service for Army Airfields (1955-57).

Although the Army has always had a requirement for weather service support, even the requirement itself, as stated, was not sufficient to the growing needs of Army Aviation. From its infancy, aviation has established itself as a voracious user of weather information. The extent and growth of Army Aviation created a significant workload increase for the supplier of weather information, the Air Weather Service, and also pointed up a need for a better system within the Army for assessing needs and communicating them to the Air Force. In coordination with the AWS, procedures were instituted in 1955 which gathered together all the Army's needs in such a manner as to (1) take into account the two-year lead time necessary for the AWS to acquire the added weather serv-

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ice capability, and (2) present the requirements to the Air Force in a reasonably intelligible manner; i.e., in adequate detail and proper terminology.

Since the Army has a responsibility for logistical support of AWS facilities assigned to its units, the commands concerned had to be appraised of how their weather service requirements would be met in order to plan for this support. Information furnished included the schedule for phasing in the service requested, numbers of AWS personnel involved, facilities required—even the square footage of floor space needed.

The process of evaluating

present weather requirements and anticipating new ones is now continuous. This has resulted in the presentation, to the Air Weather Service, of requirements for weather facilities at virtually all major Army airfields. The AWS response has been a programmed effort to meet the Army's requirements. As a result, a substantial amount of the Army's stated needs are presently being met. Unfilled requirements are rapidly being satisfied as AWS generates the necessary added capability.

We are genuinely appreciative of this support by USAF. We really don't always fight with people.

V. FUNCTIONS DEFINED



Army Aviation Functions Crystallized (1955-57).

The National Security Act of 1947 legalized the separation of the Army Air Corps from the rest of the Army but at the same time provided for retention of that aviation which had already become organic to Army units—that is, Army Aviation. Although the wording of the Act was very general, it established the basic authority for whatever organic aviation is necessary for “prompt and sustained combat incident to operations on land.”

Implementation of the Act

was by the executive instrument popularly known as the Functions Paper. Although this DOD directive intended to spell out the functions assigned to each service, and although it expands considerably on the aviation functions of the other services, it adds little to the wording of the Act relative to Army Aviation and must be judged non-definitive in that regard.

Temporary remedy was provided by the Secretaries of the Army and Air Force in the form of Memoranda of Understanding, the latest of which was dated 4 November 1954. While this was a generally satisfactory document from the Army viewpoint,

it suffered from the disadvantage of being temporary and subservient to any DOD directives which might be issued.

This, then, was the general situation when the Secretary of the Air Force challenged the functional propriety of the Army's proposed procurement of T-37 jet trainer aircraft.

Following a presentation on Army Aviation before the Armed Forces Policy Council in May 1955, the Deputy Secretary of Defense requested the Army and Air Force staffs to examine the aviation activities of importance to the Army and come up with a joint position as to how the responsibilities ideally should be divided between the two services. Accordingly, the services agreed to the formation of an ad hoc committee which would examine each requirement for aviation support of ground forces, attempt to reach agreement on responsibilities and evaluate areas of difference.

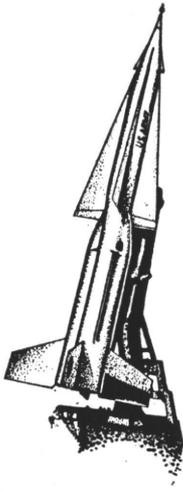
In preparation for this, the Army staff formulated precise statements of the functions to be performed by and in support of the Army. Although the ad hoc committee was never convened, and although the whole question was referred instead to the Joint Chiefs of Staff, these statements were invaluable later as explicit bases for Army Aviation planning.

In June 1955 the Secretary of Defense directed the JCS to review not only the T-37 procurement but also the whole Army Aviation program. Thus the stage was set for a full-scale formal debate between all services on the aviation needed by

the Army for its statutory responsibilities.

This debate was obviously vital to both the Army and Air Force and, because of its implications, was critical to the Navy; it lasted with unabated vigor until November 1956. In general the Air Force took the position that the Army, whether intentionally or inadvertently, was slowly and steadily encroaching upon exclusive Air Force functions. The Army, on the other hand, maintained that it was developing only that aviation which was essential to its statutory responsibility for "sustained combat incident to operations on land" and which was in fact noncompetitive with Air Force aviation. Having retreated not one inch from this basic position—because it was unsailable on any basis of logic—the Army staff can take pride, now that the smoke of battle has been dispelled, in having defended successfully all vital issues.

The final decisions of the Secretary of Defense are set forth in a DOD Directive of 18 March 1957 which supersedes the Memorandum of Understanding, but which authoritatively establishes all the Army Aviation functions agreed in that document. While there are details which the Army would change, the assignment of functions and the designation of the combat zone to be used in determining Army Aviation requirements are very satisfactory in the main. For the first time our aviation functions are not being challenged—we are in good shape as to our functional authority and are ready to proceed with confidence.



VI **PROGRESS**

VII **DISASTER & EMERGENCY
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VIII **U.S. ARMY AVIATION BOARD**

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VI. PROGRESS



Development of DUSAA as a Proper Coverpiece for Army Aviation (1955-57).

In 1955 Davison US Army Air Field at Fort Belvoir consisted of a runway and three temporary plywood buildings situated at the northwest end of the runway—a small hangar, an administration building with a “tower” on the roof, and a small building utilized to house supplies and small parts. Also decorating the scenery were miscellaneous piles of rusting fuel drums, a burned aircraft carcass, and a tumble-down shack with a drunken stove pipe. With the anticipated increase in scope of mission under MDW and with the prospective arrival of a helicopter company and supporting field maintenance unit, existing facilities looked a trifle inadequate.

A new hangar with a building attached to house supply and maintenance officers and storage for spare parts was partially completed (less doors) upon arrival of the helicopter company on 15 May 1955, at which time the building was occupied. An operations building, boiler house and fire station were put under construction.

A re-evaluation of the available buildings was made during January 1956 and it was deemed necessary to move operations to

the new buildings on the south side of the runway and to give the temporary buildings to the helicopter company.

Work was then commenced on a company-size heliport complete with parking aprons, runways, operations building, supply building, and crash and rescue station. A field maintenance hangar with its supporting access apron was also started, and on the same site as the heliport a modern airfield control tower is being erected. It is anticipated (hoped?) that all facilities will be in use by January 1958. (Secret information: construction people love *incompleted* projects. Nothing depresses them more than getting done and out of the mud.)

A TVOR is working but not yet CAA approved.

It is anticipated that the growth of the field will continue and plans are now being formulated for construction of a battalion size headquarters building, post exchange, cafeteria, barber shop, motor pool, and troop housing for an enlisted strength of 500. Also programmed is the construction of additional hangars, heliport night lighting, a rotating beacon for the water tower, sprinkler system for the fixed wing hangar, an aircraft parking apron, a perimeter road, security fence, vehicle parking areas, additional

fuel storage facilities, a field operations building, and high intensity approach lighting.

If we ever get this done, DUSAA will be something to look at. It will *still* have a 24-hour built-in 90-degree crosswind to entertain Army Aviators landing on its single runway.

Progress in Development (1954-57).

The great strides that have been made in our business during the past few years are, we think, obvious. Certain of the most important improvements are largely the responsibility of the Chief of Research and Development. The "Indians" in his shop have made phenomenal contributions; e.g., by their action Army Aviation now has a heritage of ancient American folklore ("Raven on the ramp," "Shawnee for takeoff," "Mohawk on final").*

Actually real progress has been made in the area of aircraft designation. By authority of AR 705-42 the Army, not the Air Force, will designate all Army aircraft in the future. The new AR prescribes designations which indicate the configuration of the aircraft (airplane, helicopter, or vertical lift) and the type (cargo, utility, etc.), as well as the model.

R&D, working closely with operations and other staff agencies, has the mission of establishing the course and the pace of development. During the past few years great effort has been

exerted to set in motion a logical program to develop superior equipment. It takes time, though, to transform ideas from the drawing board to hardware. Here is a brief rundown on some of the projects that are showing favorable results; we modestly omit a few that don't look like much.

The Bird Dog has done a creditable job in the observation role and will continue to do so for some time to come; but with the introduction of missiles and improved long range artillery, its use for some missions would be like sending a boy to do a man's job. We need faster aircraft that can make shallow penetrations of hostile territory, observe and adjust the fire of longer range weapons, carry the electronic gear that will become essential aids to future observation, and survive without the friendly protection normally available in the past.

By 1960 the Mohawk development program will give us a high performance observation airplane that will be capable of performing the mission. Powered by two T-53 turbine engines, the Grumman Mohawk will be capable of operation from short, unimproved fields and will fly at speeds up to 275 knots. Moreover, it's a good looking airplane despite some of the concepts turned out by artists.

With the availability of a satisfactory turbine powerplant, a successor to the Bird Dog will be introduced. It is true that we could get a better craft today, but it would not be sufficiently superior to warrant a change in production. With the new engine it will be possible to have a vast-

*We might as well live with this—it is bigger than all of us.

ly improved aircraft in speed, load-carrying capability, and short field performance. It is anticipated that the new 250-400 horsepower turbine will be available about 1960 and the new airplane sometime thereafter.

A lot of publicity has been given to the deHavilland Caribou, the airplane that broke the 5,000 pound barrier. By our previous standards, the Caribou will be of pretty good size, weighing about 13,000 pounds empty. It will have a payload of 2½ to 3 tons (depending on takeoff run), a cruising speed of about 150 knots, and good short field performance. Service tests are scheduled for early 1959. From all indications it appears that the Caribou is a natural to fill the long standing requirement for a light transport aircraft. Operating in concert with transport helicopters, these airplanes will provide commanders with a flexibility never before achieved.

For the close-in mission, it is generally agreed that we need a light aircraft to replace the present observation helicopters. The Raven and Sioux are pretty costly in their present configuration, both in original cost and upkeep, and we would need great numbers of this type aircraft in combat. We are presently investigating the light helicopters developed by Brantly and Hughes to fill this requirement. Actually, this is the Model T approach: a lightweight, low-cost, low-maintenance machine. This program, initiated in 1957, should produce an acceptable item by 1960-62.

For the utility helicopter mission, the Army began develop-

ment of the Iroquois (H-40) in 1954. This is the first U. S. helicopter designed to use a gas turbine engine (T-53). It will be a rugged, versatile aircraft with greatly increased performance capabilities over present utility models. Before this year is over the engineering tests on the Iroquois will be completed and service tests begun. Actual delivery of production models is scheduled for 1958.

A troop transport version of the Iroquois is possible. Ideally suited for the mission, it would provide Sky Cav units with a light aerial squad personnel carrier and a fire support weapons carrier.

In 1958, we will also see the Mojave (H-37) delivered to the units. This, the largest U. S. production helicopter, recently completed 1,000 hours of testing in only six months.

To improve the present light cargo helicopters, we are investigating the desirability of replacing the present engines with gas turbine powerplants. Installations are being made in the Navy version of the Choctaw (H-34A), and there is a multiturbine version of a Shawnee (YH-21D) that will be ready for flight test in a few months.

Since the introduction of the helicopter to Army Aviation, only passive measures have been available as a defense against enemy ground fire. This year we have started a program to correct this deficiency. Success will mean that helicopters will carry their own light weapons to deliver suppressive fire. Various types of weapons will be utilized in the initial installations.

Progress in Research (1954-).

Aircraft research has always created considerable interest but the Army used to leave this field to the other services since, after all, they were the experts. However, our requirements are unique, and if we are to get what we want, we will have to direct the research toward our particular needs.

We think we know what we want. We have told the designers and engineers not only our mission but that we must have (1) VTOL/STOL capability, (2) capability to operate from unimproved terrain, and (3) low maintenance.

Now we are well into a program that will produce equipment for our specific purposes. Flying test beds are being developed utilizing various high lift principles that may prove very successful. These are not just wind tunnel test models but actual flying machines that will prove principles and pave the way for costlier prototypes.

Specifically, the four principle areas of interest are:

Rotatable Ducted Fans: Built by Doak Aircraft Corporation, this test bed utilizes rotating ducted fans in the wings. By enclosing or shrouding the propellers (or fans), about 30 percent greater efficiency is obtained over unducted propellers. For takeoff the fans are positioned vertically, and for forward flight they are rotated to the horizontal. In this manner the thrust is always in the desired direction of flight.

Deflected or Vected Slipstream: The Ryan Aircraft Corporation is developing this

aircraft which utilizes the principle of deflecting the airflow to provide for vertical takeoffs and landings. Large flaps vector the slipstream downward when high lift is required and are retracted for normal flight conditions.

Tilt Wing: The entire wing rotates to provide the VTOL capability on the test bed built by Vertol, which was taxied and hovered last August.

Multiwing: Beech Aircraft Corporation is responsible for developing a multiwing flying test bed. Although it looks like a World War I triplane, a lot has been learned to modernize the idea. This is one way to shorten the wing span of Army aircraft, since more wing surface is in the propeller slipstream. The increased lift that results warrants investigation.

Flying platform

Photo Courtesy HILLER HELICOPTERS



The newest field of interest for the Army is that of *direct lift devices*. The Army's initial approach in this area has been made with the DeLackner Aero-cycle and the Pawnee (Hiller Flying Platform). The Pawnee has shown much promise and the Army is moving quickly to exploit it. However, it cannot carry all the equipment the soldier needs on today's battlefield, much less that of the future.

Accordingly, the next logical step is, probably, the aerial jeep. Until a few years ago such an idea was purely fantasy, but with the successful operation of the ducted fan, it is now well

within possibility. This year three different manufacturers accepted contracts to produce test bed models. Designed to carry a soldier and his equipment a few feet over the ground at slow speeds, the aerial jeep will be ideal for reconnaissance, messenger work, or patrolling. A logical outgrowth of this program will be to develop a vehicle which can stay in the air for several hours, move at speeds up to 50 miles an hour and carry 1,000 pounds or so of equipment and weapons. The possibilities of this weapon, *if* it can be built at a reasonable cost, are limited only by the imagina-

Artist's concept of flying crane utilizing tip propulsion principles

Photo Courtesy HILLER HELICOPTERS



tion.

All of the listed aircraft are dependent upon satisfactory powerplants. Limitations of size, weight, and ease of maintenance have made conventional engines unsatisfactory. As a result, the Army is developing a family of free shaft gas turbine engines. Already in production, the Lycoming T-53 engine develops approximately 800 horsepower and will be used in the Iroquois (H-40) and the Mohawk. A larger engine, the Lycoming T-55, developing 1500 to 1800 horsepower, will power later cargo helicopters and transport airplanes. In addition, there are two smaller engines—the T-66 of 55 hp that will be used in individual lift devices, and a 250 hp model for low-powered aircraft.

Successful development of these engines will give the Army a wide latitude in powerplant selection. The entire aviation industry, as well as the military services, is greatly interested in this program.

The trend is obvious—faster, more versatile, more mobile equipment is in the offing. We feel we are on the right track and that the results will be vastly superior equipment in the field.

Equipment for the Observation Role (1955-57).

It is increasingly evident that the observation function of Army Aviation is destined to achieve new importance. The value of visual reconnaissance from Army aircraft has long

been established, and the quality of aerial photography obtained by Army aircraft indicates a significant capacity in that business. Now we look to the employment of new and more sophisticated methods.

In 1955 various Army activities and developmental agencies were already exploring the possibilities of radar, infrared and television as reconnaissance sensors. Since radar, being an older art, had reached a more advanced state of development, it was only natural that emphasis here would bring quicker results. What was needed was some means of observing deep into enemy territory from the relative safety of our own territory. A radar which could be mounted on the side of an airplane and flown along the line of contact looking into enemy territory would be one such means.

Work was directed along these lines and by the spring of 1957 an interim side-looking airborne radar (inevitably becoming known as the "SLAR") was adopted. This model is expected to be improved upon substantially as development of radar as a reconnaissance sensor continues. Progress in the field of infrared devices has not reached the stage of hardware in the hands of troops, but knowledge gained to date clearly points the way toward the early adoption of a device of this kind for use in Army aircraft.

By virtue of these gadgets Army commanders may have a fighting chance of keeping tabs on what gives on that fluid, confused, rapidly moving, helter-skelter battlefield that everybody keeps talking about.

VII. DISASTER AND EMERGENCY RELIEF OPERATIONS



Army Aviation has turned up regularly at sites of trouble. Among the more unusual missions are:

a. Support of civil and military agencies during a volcanic eruption on Hawaii in 1955. Army aircraft were used in damage survey and transportation of key relief officials.

b. Support of civil authorities in the airliner collision over the Grand Canyon, June 1956; you'll remember they both fell into "the hole" at almost inac-

cessible spots. Under dangerous wind conditions, Army helicopters transported CAA investigation personnel to the wreckage and evacuated bodies of the victims. This was a great feat of flying, and received broad recognition.

c. Evacuation of survivors of a forced landing of an Air Force aircraft on an island in the Han River near Seoul, Korea, in 1956. Rapid evacuation of these people by our aircraft, under very difficult circumstances and at night, prevented their being swept out to sea by the rising tide, and got the injured quickly to hospitals. US-AF was extremely laudatory about the job done.

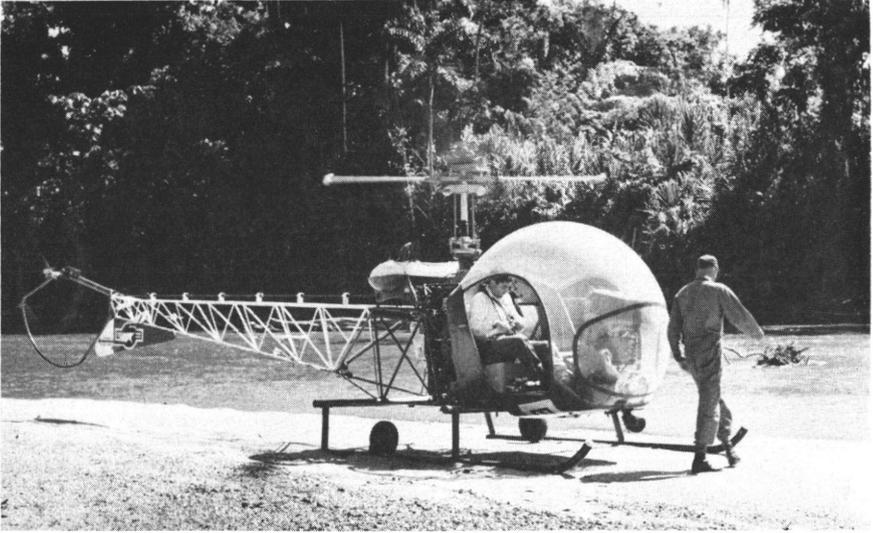
d. Support during a tidal wave in Hawaii in the spring of 1957. We provided an immediate means of conducting rapid survey of the stricken areas for accurate damage assessment and emergency relief.

e. Support of rescue operations following Hurricane Audrey on 27-28 June 1957 in the vicinity of Cameron and Lake Charles, Louisiana. Our aircraft were used to evacuate injured and to fly in food and other emergency supplies.

f. Flight into the jungles of Ecuador to find and bury the bodies of the missionaries killed by the Auca Indians. This mission was accomplished by an

Grand Canyon disaster





Army aviators search for missing missionaries

Army helicopter. Identification papers and personal possessions found on the bodies were flown out and turned over to proper authorities for disposition.

Army aircraft also assisted in emergency relief during more than fifteen floods (notably in New England and California) and forty-five forest fires throughout CONUS; transported food, fuel and supplies to snowbound persons during the

blizzard in the Texas Panhandle in March 1957; and performed numerous search, rescue and evacuation missions for lost or injured individuals in the Rocky Mountains.

g. There was also something about blowing water off cherry trees, but the details escape us.

Well, anyway, our aviation has *flexibility*—which is why we do such a variety of rescue work.

VIII. U.S. ARMY AVIATION BOARD



During the period 1945 to 1955, while Army Aviation as a whole was blowing up considerably, the capability to conduct service testing of Army aircraft

and allied equipment did not keep pace.

The Army had conducted its own service testing since 1946 when an Army Aviation Service

Test Division was created. During the 10-year period, this Division had experienced insignificant expansion. In January of 1955, the Army Policy Council approved a long-range Army Aviation plan that had been prepared in G-3; one of the recommendations in this plan was that an Army Aviation Board be established at Fort Rucker. At the time, service testing was being conducted by the Army Aviation Division at Fort Sill, and was part of CONARC Board Nr 1.

In October 1954 this Division was placed under command of Board Nr 5 (Fort Bragg) for administrative purposes, and was moved to Rucker. The purpose of this was to permit close coordination between the Division of Board 5 and the Center, which was responsible for the training of personnel and the development of doctrine, tactics, and techniques for Army Aviation.

On 1 August 1955 Board Nr 6, Continental Army Command, was officially established. The initial personnel authorization consisted of those 55 personnel previously authorized the Army Aviation Division of Board Nr 1. A new TD was immediately processed and on 1 December 1955 the personnel authorization was increased from 55 to 222. This brought the capability to conduct service testing of Army aircraft and allied equipment back in consonance with the size of the whole Army Aviation program.

On 1 January 1957 the name of the Board was changed from Board Nr 6, CONARC, to the U. S. Army Aviation Board. At

this point the Board President took a long breath and got fired up again.

Board 6 has already systematically conducted a large number of major equipment tests, thus providing Army Aviation a sound machinery with which to evaluate available equipment and to determine, where necessary, what modifications must be made in it. In 1956 the first tests were made which were conducted jointly by the Army and Air Force with the Army directing the test and assuming primary responsibility. Several were conducted during the year of 1956, among them climatic hangar testing of Seminole de-icing and anti-icing systems, exploration of the effect of wingtip vortices and sonic shock waves on Army aircraft in flight, and the weather capability of the Seminole.

Centralized Testing at Rucker (1956).

Establishment of the Army Aviation Board on a sound footing did not solve the entire problem of testing Army aircraft and allied equipment. If the Board was to accomplish its mission properly, it required specialized supply and maintenance support beyond that which could be provided by the normal systems of supply and maintenance. In addition, the testing of Army aircraft was slowly becoming fragmented. At this time, Transportation Corps proposed the initiation of a logistical evaluation of aircraft for the purpose of developing supply and maintenance information. The initial

proposal by TC was to conduct this testing at Fort Eustis, Virginia. But in an effort to centralize geographically the testing function (we could hardly support more than one test center), to still stay within command channels, and to provide the specialized supply and maintenance support required by the Army Aviation Board, CON-ARC, in September 1955, recommended to DA that Transportation Corps and Signal Corps establish activities at Fort Rucker. This recommendation was debated with some heat by the Army General Staff for several months. But in March 1956, the Vice Chief of Staff directed that TC and the Signal Corps establish Class II activities at Fort Rucker. This was a major step forward. It not only provided an organization that could support expeditious testing but it also provided a centralization of testing that would permit detailed coordination and maximum-mutual benefit from each hour flown. In July the U. S. Army Transportation Test and Support Activity was organized as a Class II activity at Fort Rucker, followed in September with the establishment of the U. S. Army Aviation Signal Test and Support Detachment at the same place, same status.

Everybody now seems happily established in the same nest. Shortly after TATSA and SCA-TSA were established at Rucker, a master plan of facilities was prepared for all test activities. All were to be located on Ozark Army Airfield and sufficient facilities were included in the plans to meet the needs of all

three detachments. Creation of the permanent establishment will require many years; however, the first major step was taken when the contracts were let in the summer of 1957 for one administration building, one permanent-type hangar, and two Luria-type hangars along with three supply buildings to support the facilities. Word was also received at this time that a 360-man barracks had been approved to be constructed from the FY 58 appropriation.

Accelerated Aircraft Logistical Evaluation (1956-57).

U. S. Army Transportation Aircraft Test and Support Activity (TATSA) was established at Rucker in July 1956. Studies made by the Transportation Corps indicated as early as 1953 that accurate advance data on new aircraft would result in savings. If, before a new aircraft went into general production and operational use, the Army knew the answers to a few highly intriguing questions it would take some of the guesswork out of planning. It was hard to get together essential pilots, mechanics and crew chiefs of necessary calibre; thus it was early in 1957 before the unit became operational. Maintenance was contracted to a subsidiary of Southern Airways. Personnel assigned were 15 officers, warrant officers, enlisted men and DA civilians. TATSA was placed under TSMC, St. Louis.

First job was the H-37, Mojave. TATSA was told to put 1,000 hours flying time on it

within a maximum of six months. Night and day, seven days a week, the bird was flown despite adverse weather, Alabama mosquitoes, and the dust which gave maintenance personnel fits. Much of the equipment used for maintenance, such as stands and lights, was designed and constructed as the work progressed. All maintenance was performed outside.

Maintenance men worked in shifts, so that the maximum number was available when the aircraft was not flying. Fifty one-hour inspections were scheduled for weekends. Pilots flew all hours of the day and night.

In May a sister ship started through the test cycle, increasing the problems of maintenance, refueling, flight scheduling, and personnel.

The test ended successfully at Fort Rucker on August 22, 1957, when the remaining machine (one was destroyed by accident) landed before a number of high

ranking officers and civilians from the Army and industry.

Results of the test were good: the Army discovered that helicopters could be operated for longer periods than had been considered possible, that major savings will result from the establishment of service life of various components, and that requirements and supply personnel were now on firm ground in ordering repair parts for the future.

Aircraft Procurement (1955-57).

Procurement has proceeded according to a planned program. The administrative procedures have been reduced in complexity by several factors, major among which is the stabilization of the program within the objectives outlined by the Army Aviation Guidelines and Five Year Materiel Program. Additionally,

Mighty Mojave underwent rigid testing



through a series of interservice conferences between the Army, Navy, and Air Force, the Army has authority as of July 1957 to procure aircraft through either the Air Force or the Navy, making unnecessary some of the fantastically complicated actions involving all three services.

The old timers among fixed wing aircraft (Cubs, L-17s, and LC-126s) are gradually disappearing from the scene, being superseded by Bird Dogs, Beav-

ers, and Seminoles. Later models include an instrument training version of the Bird Dog, and the L-23D, a decidedly improved model of the Seminole. And we have improved Sioux (Hs) and Ravens (Ds) coming off the lines.

Future procurement will continue efforts to streamline procedures for integration of new aircraft into production schedules, DCSLOG is trying to get them to us before they're obsolete.

IX. OFFICER CAREER



Major Personnel Policy Actions (1955-57).

With the advent of the Korean War, it became necessary in early 1951 to suspend the initial aviator career program established by SR 605-95-1, as all aviators were made available for full-time aviation duty.

By the time that fracas ended, Army Aviation had entered the military limelight and had ensured itself a more prominent place in the Army structure, but this turn of events carried with it the responsibility for developing aviation officers in the broad fields of military operations and management.

On 1 July 1955 a new *career program* was staffed by the Deputy Chief of Staff for Personnel which encompassed the concept of centralized control

for aviators. *That* put the egg in the fan, producing two thousand four hundred and eight opposing ideas on how to produce competent pilots. Bearing in mind the old adage "Patience and Perseverance made a Bishop of his Reverence" (Clausewitz, Suvorov, or von Moltke, I forget which), our personnel people bore ever onward, undaunted, cheerfully meeting every challenge. Various compromises resulted in an acceptable solution which was approved on 14 April 1956 and published as AR 600-105, Army Aviation Career Program, on 18 April.

Essentially, the major objective of the career program is to produce and develop qualified officers for the professional and technical phases of Army Aviation with simultaneous provision for career opportunities on

an equitable basis with other officers. Full implementation has not been accomplished due to the expanding nature of Army Aviation activities and the changing structure of the Army, but a considerable start in career programming has, nevertheless, been made. For one thing, we are at long last getting an even break on schooling.

Warrant Officer Pilots.

Warrant officers and enlisted men in any grade were authorized to volunteer for training as Army helicopter aviators (they are all given Warrants on graduation) on 21 February 1951, and a course of instruction to train selected individuals was established shortly thereafter.

The effectiveness and efficiency of the helicopter transport company program stands as first class testimony to the soundness of the concept of using warrant officers as pilots. Our WOs are devoted, capable aviators and a credit to the Army.

The Building of the Body.

The changes of the early 1950's found Army Aviation far short in aviators and even in applicants for flying training. Officer promotions had not kept pace with the demand for aviators in the higher grades and severe imbalances in aviation qualifications existed.

To meet the demand, extensive selling campaigns were initiated concurrently with increas-

es in training capacity. By 1956 nearly all of the existing 2,700 officer positions could be filled. Applications for flight training averaged nearly 300 per month and the outlook for the following year was bright.

In 1957 the picture was brighter. More than 5,000 aviators were on flying status in the active Army. Of the officers more than 50 percent were helicopter qualified, 30 percent instrument qualified and steady increases were being reported. Shortages in the senior grades and in some qualifications continued to exist, but most requirements were being met with adequate overages for schooling. Finally, rotation to branch duty under the career plan was becoming possible.

Grade Structure.

Next most important among improvements is the recently published C2, SR 210-20-15, establishing a revised grade structure for aviators. To obtain this long needed and partially equitable arrangement we found ourselves, once again, attacking a hotly contested objective. We gloriously prevailed, however, and now battalion aviation officers are authorized in grade of captain with a one-grade increase authorized at each successive command level, except for corps headquarters. Moreover, the commanding officer of an aviation company is now authorized the grade of major and aviators are authorized to be either captain or lieutenant grades. Overall, these constitute a major accomplishment toward

achieving a better managed Army Aviation.

Aeronautical Engineers.

We needed—and still need—to educate more aviators as aeronautical engineers to provide scientifically qualified, well developed aviation officers in positions requiring aircraft engineering know-how. Only four aviators were given graduate training in aeronautical engineering, commencing in 1949. Provisions have been made within the civil school program to qualify approximately ten more.

Senior Army Officers' Flying Training Program.

By early 1955 an expanding program found us with a requirement for more colonels and lieutenant colonels. Due to the limited time available to initiate a training program the first class of twelve officers was selected by Department of the Army without a general announcement for applications. This class entered training at Fort Rucker in September 1955 and graduated in May 1956. Of the twelve personnel entered into training, one failed to complete the course because of physical deficiency incurred during training.

In January 1956 a DA circular announced an FY 1957 Army Aviation flight training course for senior officers. The result was that eleven more very capable officers were qualified as Army Aviators.

Senior officer training was discontinued as a separate course of instruction—because the requirement had been largely met—at the end of FY 57. AR 611-110 provides for training Army officers in Army grade necessary for support of the approved Army force structure.

Army Flight Status Selection System Becomes Operative.

The first flight status review board was convened by The Adjutant General on 6 March 1957. This board reviewed all records of aviators completing 7, 14 and 21 years' service and any others needing special attention. The board recommended retention or suspension. Aviators recommended for suspension were notified and offered an opportunity to appeal while others with marginal performance records were enjoined to do better.

This self-policing action is a bit rough—but it is necessary, for no group can hope to maintain high standards unless there is a drain-off at the bottom. Review of effectiveness and necessary changes are to be expected.

Flight Manuals (1955).

In 1955 the Army started providing Jeppesen Airways Manuals (TM 11-2557) to all Army Aviators in the U. S., thus eliminating the need for a cockpit full of Esso road maps, farmers' almanacs, and divining rods. Jeppesen manuals require considerable space in the airplane and are imparting a one-should-

der-down stance to all Army Aviators, but they contain a lot of dope—all good, we think. In 1957 distribution of TM 11-2557 was started in Europe, and serv-

ice to the Far East and Caribbean is expected to start before 1 January 1958.

The Jep Manual is a professional aid to professional fliers.

X. ARMY AVIATION MEDICINE PROGRAM



Successful employment of Army Aviation depends on the proper selection and *care* of aviators (chicken in the pot, beer at the elbow, and no harsh noises, please). Commanders must have sound medical advice, and aviators must have adequate medical and psychiatric supervision. This advice and supervision now comes from officers trained in aviation medicine who know Army Aviation and its specific problems.

Since Army Aviation is organic to several branches of the service and to tactical units, medical problems are not concentrated in well-defined locations. The Army Medical Service is confronted with the problem of caring for steadily increasing numbers of flight personnel, widely dispersed, and with a variety of missions.

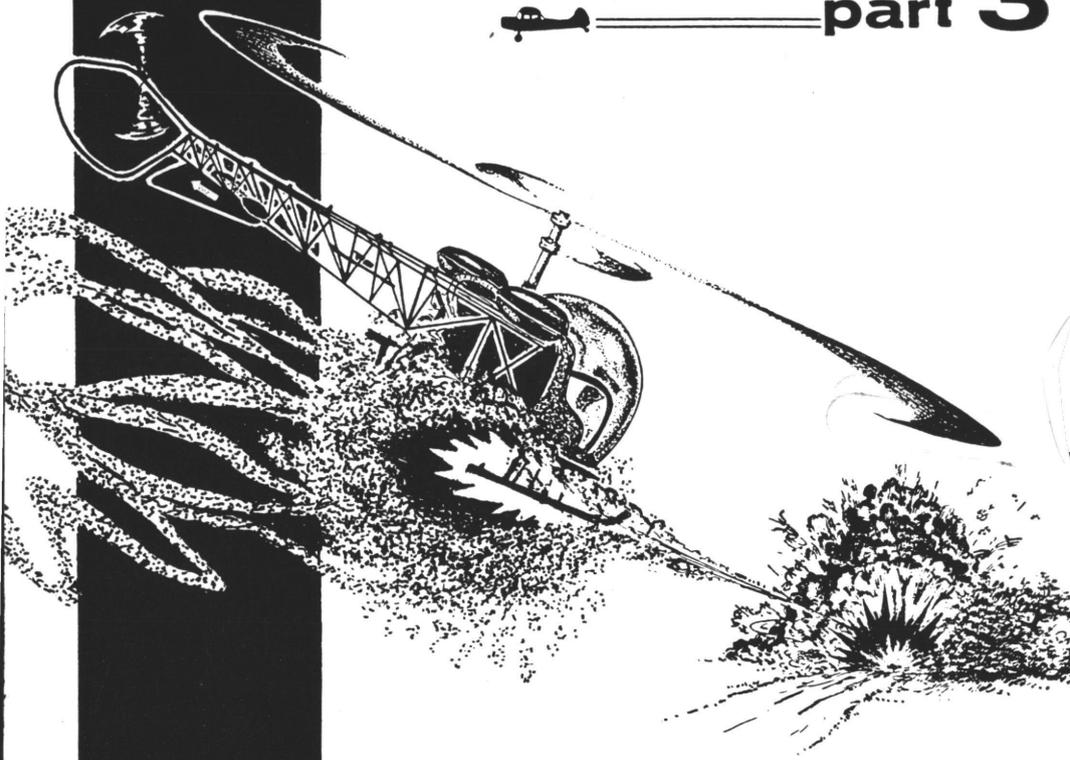
The program encompasses physical examinations for applicants, a "Care of the Flier" program (chicken in the pot, etc., etc.) to preserve maximum individual and unit efficiency, advice to commanders and boards of officers concerning medical aspects of aviation, and development of improved policies and

procedures for flying personnel, aircraft and equipment.

When the Air Force got its divorce, it took the children with it (i.e., it retained custody of most of the flight surgeons) and the Army had to borrow talent for the care of its aviators. In late 1953, The Surgeon General sent a group of junior medical officers to the Air Force School of Aviation Medicine for short courses of instruction; these were followed by brief periods of orientation at the Aviation School at Fort Sill.

In 1954 a revision of regulations authorized MOS 3160, "Aviation Medical Officer." These officers are graduates of a course in aviation medicine, either with the Air Force at Randolph or with the Navy School of Aviation Medicine at Pensacola — plus a one-month applicatory training phase in Army Aviation medicine at Fort Rucker.

The Surgeon General has established a sound Army Aviation Medical Program and is developing it commensurate with actual needs in the field. An important step forward.



XI AVIATION SAFETY (1955—1957)

XII KALEIDOSCOPE

XIII ARMY AVIATION IN SEVENTH ARMY (1955—1957)

XIV DEVELOPMENT OF "SKY CAV" (1955—1957)

XI. AVIATION SAFETY



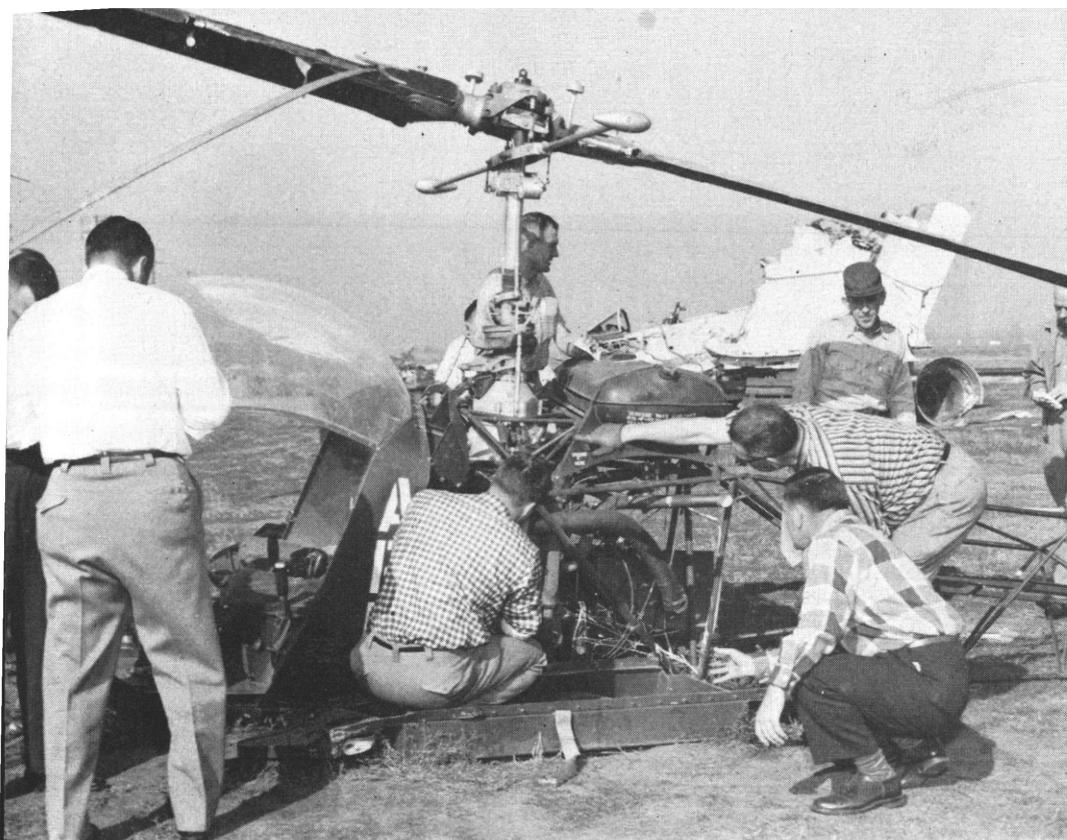
In 1955 the Department of the Army was advised of Army aircraft accidents by the newspapers—this was a system, but erratic. Everyone conceded that there were accidents but no one really knew how many, what kind, or what to do about it. In July the Office of Aviation Safety Inspector was established. For the next year the inspector sleuthed around the ZI and overseas to get acquainted with the problem.

In January 1956 a system of telegraphic reports was initiated. The so-called “crash” report was devised to give immediate notice of an aircraft accident to Department of the Army, intermediate commanders, and various other interested agencies. The telegram supplanted the newspaper (more reliable).

Arrangements were made with Cornell Aviation Crash Injury Research to assist the Army in analyzing the causes of injury in survivable Army accidents, the data obtained from this analysis to be used in design to “delethalize” aircraft. Somewhat akin to this arrangement is one with the Technical Development Center of the CAA at Indianapolis, the first tangible result of which has been the development of materials for crash-resistant fuel systems. It now appears that systems can

be designed for new aircraft so that fire will not result in a crash that the occupants otherwise would survive, and current aircraft can be retrofitted to give much greater protection than at present.

The Army Aviation Safety Board, formerly established as an activity of the U. S. Army Aviation Center, was established as a Class II activity under the jurisdiction of DCSOPS by GO 22, 1 May 1957. Mission is prescribed in AR 15-76. As the Board's activities developed, it became apparent that its most useful endeavor was the utilization of aviation accidents as research subjects, and accordingly it was redesignated the United States Army Board for Aviation Accident Research by GO 37, 25 July 1957. In its relatively short life the Board has produced nine design criteria for application to future aircraft, and has initiated action on several engineering changes in aircraft, as well as many safety-of-flight technical orders. These criteria, changes and technical orders were evolved from accident research, and were processed by DCSOPS through DCSLOG and CRD, as appropriate. The Board's studies also evolved many changes in operating techniques and practices which have been disseminated directly by DCSOPS.



Army Aviation Safety Course members probe actual wreck

In October 1956 the Army Aviation Safety Course was established by contract with the University of Southern California to train senior staff aviators in aviation safety. Five fields are covered — aircraft accident investigation, prevention, aeronautical engineering, aviation psychology and aviation physiology. The course produces about 75 graduates each year, and has resulted in a noteworthy improvement in investigation and reporting of aviation accidents.

The Office of Flight Safety Inspector was redesignated Aviation Safety Division in 1956. A civilian assistant was authorized, and a man with wide experience as an instructor in fixed

and rotary wing aircraft was selected to fill it.

Liaison has been established with other agencies active in aviation safety (e.g., NACA and Guggenheim Flight Safety Foundation) in order to draw on worldwide experience for the benefit of the Army, and we have representatives at the Naval Aviation Safety Center, Norfolk, and the USAF Directorate of Flight Safety Research, San Bernardino.

We still have plenty of accidents, a situation which demands our continuing effort to alleviate. But we have now a workable and going machinery with which to attack the problem.

XII. KALEIDOSCOPE



Introduction of Aviation to Army Air Defense Units (1955-57).

Starting originally in June 1955 when five Seminoles and two Beavers were assigned, US ARADCOM currently has a fairly husky approved authorization — about 50 aircraft. They're used in control, supply, and operation of the widely scattered air defense units. Fixed wing aircraft bring the widely scattered units within easy reach of the commander and his staff; rotary wing craft enable ready access of personnel and supplies to site locations, varying from congested metropolitan areas to isolated mountain tops.

Thus has aviation entered a new major area of the Army's activities.

The 3d Transportation Company (Hcptr) (1955-57).

The 509th Helicopter Company was activated in 1952 at Fort Bragg, and moved in May 1955 from Bragg to Davison AAF, Fort Belvoir. Operation Alert in June was its first big mission after the move: passengers included Mr. Herbert Hoover, Jr., Mr. Wilson, Admiral Radford and Mrs. Oveta Culp Hobby.

The company participated in maneuvers at the United States Military Academy, rescue operations during Hurricane Connie and her sister Diane, in sundry maneuvers and exercises, in the National Aircraft Show at Philadelphia, Pa., in Operation "National Security Council," and the transporting of members of the President's Cabinet.

In May 1956 the 509th was redesignated the 3d, and subsequently participated in Operations Alert 1956 and 1957, in the National Air Show at Oklahoma City, and in a rescue and relief mission after severe snows in and around Erie, Pa. Eight choppers have been plushed up and designated as VH-21s.

This company is much in the official eye because of its evacuation mission. It brings great credit to Army Aviation.

The National Guard (1955-57).

In 1957 Army NG aviators on flying status increased from 918 to 1,015, an average gain of eight aviators each month, and a total of 117,776 hours were flown. Programmed aviator strength for FY 57 was 97.7 percent accomplished; programmed flying hours, 98.1 percent. In FY 56 106,673 hours were flown by 918 NG pilots; in FY 55, 810 flew

THE LAST THREE YEARS OF ARMY AVIATION

89,425. If you can subtract, you can detect a commendable upward trend.

Four hundred and seventy-one highly experienced aviation personnel were employed in NG Army Aviation maintenance during FY 57; some of these have been qualified airplane and engine mechanics for over 18 years. A number have been employed by leading airlines, while others have worked as instructors in aviation mechanics schools, both civilian and military.

NG aircraft look good, fly well, and are a credit to the Army.

Military Construction Program for Helicopter Companies (1956-57).

The lack of adequate facilities for support of Army Aviation was recognized in 1955 at the U. S. Army Aviation Center and at other major posts such as Fort Bragg. However, no comprehensive study of overall construction requirements to support the expanding aviation program had been undertaken before FY 56. Field commanders were advised of proposed stationing schedule for helicopter units and requested to submit appropriate requests for necessary construction. Based on the inventory of facilities and computed requirements, the aviation items in the FY 58 construction program were successfully defended (lots of fast footwork necessary) in successive reviews. As a result of a sound program \$20.6 million was approved by Congress for the fol-

lowing posts:

Ft Devens	Ft Knox
Ft Meade	Ft Benning
Ft Rucker	Ft Hood
Ft Polk	Ft Riley
Ft Belvoir	Ft Richardson
Ft Bragg	Ft Campbell
Ft Lewis	Ft Ord
Atlanta General Depot	
Ft Worth General Depot	
New Cumberland Gen. Depot	
Sharpe General Depot	

The Annual Army Aviation Training Conference (1956-57).

The first conference was held in July 1956 at Fort Rucker. With the Army soon to assume complete training responsibility, the conference was designed to review the existing flight courses.

Representatives from Department of the Army, Continental Army Command, and all major commands within the ZI were invited. Working in four committees the conferees hashed over each training program and presented recommended modifications to meet immediate and future known needs.

The second conference was held again in the Wiregrass Area (local promotional plug) in August 1957. The turnover to complete Army responsibility for aviation training had been completed. It was deemed advisable this time to invite not only representatives from DA, CONARC, and major ZI commands, but also people from the major overseas commands. With each area possessing a different environment, a better cross section of the Aviation School product, aviators and mechanics,

was obtained.

These are the courses currently conducted or programmed at Fort Rucker:

- Army Aviation Tactics
- Army Helicopter Aviation Tactics
- Instrument Flight Examiners
- Army Aviator Transport Pilot (Rotary Wing), Phase III
- Army Helicopter Transport Tactical
- H-37 Helicopter Pilot Transition Flight Training
- Army Aviation Orientation
- Aerial Observer, Officer
- Army Aviation Medicine
- Advanced Aviation Officers
- Organizational Maintenance Officer
- Flight Simulator Operations and Maintenance
- Aircraft Maintenance (Entry)
- Airplane Maintenance
- Reconnaissance Helicopter Maintenance

Depot Support for Army Aviation (1955-57).

In October 1955 the Assistant Secretary of Defense approved, in principle, the transfer of depot support from the Air Force to the Army. In March 1956, after extensive staffing, the detailed plan for implementation was approved and the Depot Plan was rolling.

The major areas of responsibility that accrued to Army were depot maintenance; the receipt, storage and issue of all Army aircraft, repair parts and allied equipment; and the technical support of Army aircraft and allied material. Responsibilities remaining with the Air Force were the procurement of

Army aircraft and repair parts and equipment, and the necessary engineering services allied to Army Aviation.

The Transportation Supply and Maintenance Command at St. Louis is charged with centralized stock control and accountability for all TC air items. When the plan is fully functioning the excessive administrative lags in supply action will be, we hope, eliminated.

The Depot Plan was originally envisioned as a three-year time-phased program with the target date for the fully completed transfer, AF to Army, set for 1 April 1959. We are progressing according to the established schedule and, barring unforeseen difficulties, should make the deadline.

The Army Aviation Digest (1955-57).

The mission of this publication is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

Circulation during the first year of publication (1955) was 3,200 copies per issue. After the first year, the official circulation was increased to 6,000 with copies being provided to aircraft companies in return for their publications, and also distributed to the aviation editors of more than 200 leading newspapers. Surprising! Early in 1957, the DIGEST became available by subscription from

the Government Printing Office which also makes distribution to a special list of libraries.

In 1957 the magazine underwent an extensive change in format designed to make it more attractive and interesting to read. This change also resulted in an increase of 25 percent more material presented in each issue.

During the planning period which preceded the initial issue, it was believed that Army Aviation personnel throughout the world would provide most of the material which would appear in the magazine, but to date this has not been the case. A bit of buckup by aviators is quite in order.

With the assistance and cooperation of Army Aviation personnel everywhere, the DIGEST will continue to progress and fulfill its mission of providing current aviation information to the officers and men in the Army. It is surprising how often civilians in aviation and officers *not* in aviation mention this little magazine.

Army Takes Full Responsibility for Flight Training; Gary and Wolters Established (1954-56).

In November 1954 the Army first requested full responsibility for the training of its own pilots and mechanics. This move was strongly contested by the Air Force, and initial studies done by the Office of the Secretary of Defense recommended that that part of training being conducted by the Army be turned over to the Air Force — a

frightening proposition and quite the opposite of what we sought. There ensued a long series of really brutal flaps in the Army staff, the crescendo being reached in March 1956. Secretary Brucker and Assistant Secretary Milton carried the flag for us, and on 19 April 1956 the decision was made in favor of the Army. We were free.

The Army moved quickly to establish an efficient training system. From the Air Force we took over Wolters on 1 July and Gary on 15 December 1956. Contracts were let with Southern Airways for the conduct of primary helicopter training at Wolters, and with William Graham and Sons for primary fixed wing training at Gary. FlyTAF, under General Disosway, was extremely helpful to Headquarters Fourth Army in this process.

This was a major accomplishment. At Camp Gary and Camp Wolters we now have fine contractors doing primary training under the supervision of able military commanders and their staffs, and at Fort Rucker the Aviation School takes the graduates of the primary schools through advanced flight training, transitioning them into other aircraft and inculcating in them the processes of field operations and instrument flight. We are in business on a sound basis.

Army ROTC Flight Training Program (1956-57).

At a DA conference on 29 November 1955 USCONARC was advised of an immediate re-

quirement for a plan for initiating flight instruction as part of the ROTC program. A proposed plan was developed by USCONARC and presented to DA representatives on 21 December 1955, as a basis for a DA briefing of the Senate Armed Services Committee in January.

Public Law 879, 84th Congress, established authority to initiate Army flight training in 40 selected institutions during the academic year 1956-57. Institutions were selected to train 400 students by contract with civilian agencies on a CAA program for fixed wing training—about 70 hours instruction, half-and-half ground and flight, on an extra-curricular basis. Students agree to serve a three-year tour after being called to active duty, and are then available for entry into the Army Aviation program.

In FY 56 nearly 250 students completed ROTC flight training. In FY 58 it is planned to train approximately 700 in 48 approved colleges, including many of the best in the land.

A New Concept of Aircraft Maintenance Support (1956-57).

In early 1956 the Atomic Test Field Army (ATFA) concept was developed, tested, and found wanting. But not in vain—for one thing, it greatly increased the number of aircraft organic to division, corps, and army. And then it became apparent that the present maintenance and supply concept was not adequate.

Out of the ashes came ROCID, ROCAD, and ROTAD, together

with some refinements of the ATFA Corps and Army Aviation companies to form the nucleus of the new organization. As these new TOEs were being developed, so was the new maintenance concept.

It was considered necessary that all direct support units be 100 percent mobile, that on-the-spot field maintenance be provided the operator, that technical assistance (contact party) service be provided the operator on a dependable scheduled basis by all direct support units, that organizational stock levels be reduced to a minimum by providing expeditious delivery of requirements through a highly responsive supply system, and that maintenance exchange of aircraft be effected to the maximum extent possible.

How things will work:

A transportation maintenance and supply group will provide command, control and supervision for the five maintenance battalions within the type field army.

Using outfits will contain a one-day level of spares for organizational maintenance and will be supplied daily from supporting maintenance units.

Third echelon field maintenance and supply support for division and corps aircraft will be provided by two TAAM battalions.

A direct support battalion consisting of three support companies will provide support for division combat aviation companies. An intermediate support battalion will consist of four intermediate support companies to provide support for all aircraft attached to and operating

in the corps, as well as for the army headquarters aviation company.

Third echelon field maintenance and supply support for the cargo helicopter units will be provided by two transportation aircraft maintenance battalions, each consisting of three companies (two light cargo helicopter maintenance and one medium cargo aircraft maintenance) and a supply company.

Fourth echelon field maintenance and supply support will be provided for all aircraft by a TAAM battalion consisting of four companies: one aircraft heavy maintenance, two helicopter heavy maintenance, and one supply. Fourth echelon companies will maintain a 15-day level of spares in support of direct, intermediate, and heavy maintenance companies, in accordance with the appropriate supply manuals.

In overseas areas 5th echelon maintenance and supply support will be provided for all aircraft by a transportation army aircraft depot support battalion, located in the Comm Z, with an H and S Company, an aircraft component repair company, and an aircraft repair and overhaul company. The depot supply company will maintain a 90-day level of spares.

Some day, we may *get* enough spark plugs.

Reporting System for Army Aircraft and for Installed and Spare Engines (1956-57).

The Army has come a long way in the past few years in refining the reporting system for

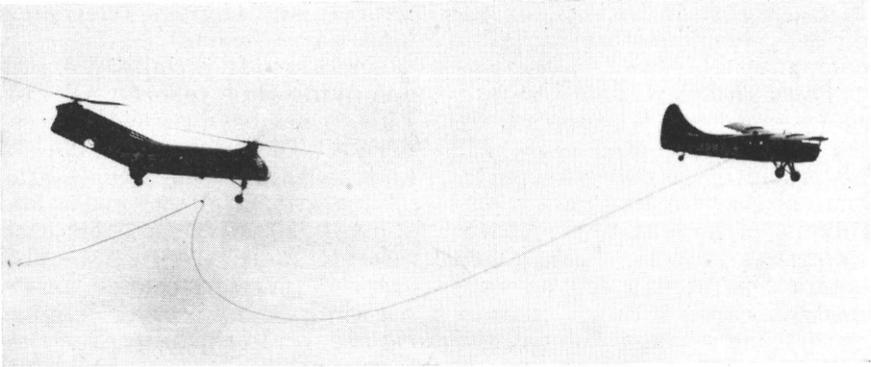
aircraft and engines (we had a long way to come).

The aircraft inventory status and flying time report (AR 710-1500-8) has been refined to great benefit. Today we are able to know within 45 days the status of operational effectiveness and support effectiveness for each aircraft in the Army; we also know authorizations and assets of aircraft by serial number right down to the unit level. Distribution has been improved thereby. The present reporting system has attained accuracy and timeliness, and covers a broad area of supply support, maintenance and operations.

A similar system keeps tabs on engines. By virtue of it we control distribution, develop better engine failure rates with better engine life expectancy factors, and arrive at better evaluation of engine logistics.

Speed and Endurance Records for Helicopters; In-Flight Refueling (1956).

In the spring of 1956 the Army Aviation Board decided, with commendable initiative, to investigate a few unknowns: How fast could a standard helicopter fly and what distance could it fly at these high speeds? What was the maximum range that a standard cargo helicopter could achieve nonstop carrying its own fuel? How long could a helicopter be kept in the air without any type of maintenance? How long could a crew sustain helicopter flight without rest? And how could the range of the helicopter be extended?



Nonstop coast to coast by helicopter

In July 1956 Captains Claude Hargett and Ellis Hill, flying a Choctaw, set three official speed records: *141.9 mph* for a *100-kilometer* closed course, *136.0 mph* for the *500-kilometer* closed course, and *132.6 mph* for the *1,000-kilometer* closed course. Please read those again.

In June 1956, Captain James Bowman and Mr. Joseph Givens (civilian test pilot with the Board) flew a Raven for a total of 30 hours without touchdown, proving that competent helicopter pilots who have had sufficient time to be at ease flying the aircraft could operate the aircraft continuously for long hours, without suffering paralysis of the southern exposure. It also raised speculation on whether the helicopter of 1956 was capable of operating for extended periods of time without extensive maintenance.

On 11 August 1956, Lt Col Harry Bush and Major William Dysinger took off from a small, unlighted field at 0300 of a dark night in a Shawnee filled with fuel to a mere 3,000 pounds over the normal maximum gross weight. Flying in a closed course,

they flew nonstop without refueling for 11.97 hours, establishing a new world range record of 1199.7 miles for a helicopter on a closed course.

Although this set a new world's record, the helicopter does not in fact have sufficient range to provide the mobility that will be required in the future. Another solution had to be found: in-flight refueling. The Otter was selected as the tanker aircraft, not because it was particularly suitable, but because it was the largest fixed wing aircraft in the Army inventory. In July 1956 at Fort Rucker, the first in-flight refueling of a helicopter from a fixed wing aircraft was accomplished. One month later, the same aircraft, operated by the same crews, took off from Miramar Naval Air Station at San Diego and the Shawnee, being refueled by the Otter en route, successfully completed the nonstop flight from San Diego to Washington, D. C., by way of Savannah, a distance of 2,349 miles. The flight required 31 hours 40 minutes, using a crew of three in the helicopter.

THE LAST THREE YEARS OF ARMY AVIATION

At the National Air Show in September 1956 at Oklahoma City, a Sioux helicopter took off with the intent of staying airborne throughout the entire Air Show. Did it, too. The crews were changed every four hours by bringing the helicopter to a hover and changing the crew one man at a time without permitting the aircraft to touch the ground. It was refueled from the hover. Flown by eight pilots the helicopter remained aloft for 57 hours and 50 minutes, establishing a new endurance record for helicopters.

All these were thoroughly fine accomplishments.

Oxygen and De-Icing Equipment on Army Aircraft (1956-57).

Airplane pilots have a well developed built-in aversion for airplanes that gradually and inexorably lose their ability to remain airborne. As a result, de-icer boots on the wings and tail and anti-icer slinger rings for the propellers of Seminoles have been created, and a Scott oxygen system is now available to field units. All have been service tested by the Board. Weight limitation on the earlier model L-23s precludes the installation of this stuff, but the "B" and all "D" models will be modified. The rebuild program will ultimately provide this equipment in all of our L-23 type airplanes.

Army Airplanes Heavier than 5,000 Lbs (1956-57).

The objection cited most fre-

quently by Army critics of the Memorandum of Understanding Relating to Army Organic Aviation was that it limited Army fixed wing aircraft to 5,000 pounds empty weight. While conscious that this limitation was not restrictive on Army intentions when the Memorandum was signed, the Army staff nevertheless persisted in an effort toward its removal or modification. Interest in the subject was intense throughout 1956, highlighted by the JCS study of the entire Army Aviation program.

As a matter of principle the Army staff desired complete removal of the weight limitation and freedom to select whatever aircraft were best suited to the effective performance of assigned Army functions. Recognizing, however, that some compromise was necessary to achieve any progress, the staff pressed successively for complete removal, substantial modification, and provision for individual exceptions. After repeated and strong personal representations by the Chief of Staff and the Secretary of the Army, the Secretary of Defense announced in a directive of 26 November 1956 (subsequently in a directive of 18 March 1957) that "Specific exceptions to weight limitations for specific purposes may be granted by the Secretary of Defense after coordination of U. S. Army requirements and appropriate U. S. Air Force functions and capabilities."

The first exception concerned the Army's requirement for organic aircraft to transport small combat units rapidly from one

part of the battle area to another on very short notice and to adapt the supply system generally to the demands of atomic warfare. Obviously the provision of the necessary aircraft for these missions was of urgent importance. Under the original concept this was to be accomplished by the family of transport helicopters, but the necessity for economy soon made it evident that helicopters would have to be supplemented by fixed wing aircraft wherever battlefield landing conditions would permit. Obviously lacking was a 3-ton payload transport airplane which could land and take off from small unprepared areas and thus perform some of the missions of the 3-ton helicopter. DeHavilland of Canada had under development a twin engine light transport (the DHC-4 "Caribou") which together with the Otter would provide the Army with short field airplanes comparable in payload to the standard transport helicopters. Citing the long range economies to be realized, the Army requested and received authorization to procure five DHC-4s for evaluation.

The second request for a specific exception concerned a higher performance observation airplane (HPOA). During World War II and the Korean campaign, the Army accomplished its missions of artillery observation and adjustment with light airplanes comparable in performance to the L-19. In future combat, however, the mobility of ground units, their dispersal over wide distances, and the interspersion of friendly and enemy units were expected to

create situations in which Army aircraft, either by design or accident, would fly over enemy areas defended by modern anti-aircraft means. Manifestly there was an urgent need under such conditions for an improved aircraft to supplement the standard observation type, one which would have appreciably greater speed while retaining the capability to operate from short unimproved fields. Acknowledging the validity of this requirement, and the fact that the Army and Marines had initiated development of an appropriate aircraft which would necessarily weigh more than 5,000 pounds, the Secretary of Defense authorized the Army to continue the development and procure a test quantity of this aircraft.

More important than the direct benefits to be realized from these exceptions is the fact that the Secretary of Defense has indicated clearly that his intent is not to limit the size of Army aircraft categorically, but rather to require thorough justification for large aircraft.

Electronic Gear (1955-57).

In 1953 the Army along with the other services adopted a plan to convert from VHF to UHF for air-ground communications, and, having adopted it, has been squabbling about it ever since. Initially conversion was to be accomplished by 1 July 1956 but lack of equipment caused a slippage in the schedule. The services adopted a new date of 1 July 1958 for conversion, but complete changeover will not come for another year or

eighteen months. The Army was the last of the services to really gain momentum on the conversion, but now all new production aircraft are being delivered with UHF radio communications and a retrofit program on in-service aircraft will be started in the future. By early 1959, Army should be completely equipped with UHF (so we can join everybody else jabbering away simultaneously on 255.4) with the exception of areas where other frequency bands are necessary because of the ground equipment of the particular area.

In 1956 the AN/ARC-44 FM radio was adopted for airborne use. This radio nets with the FM channels of Armor, Artillery, and Infantry, performing the functions previously attempted with little success by the AN/PRC 8, 9 and 10 in air-ground communication. It should be a real pleasure to be able to talk to people on the ground hereafter, the PRC jobs not having contributed much in this respect.

In 1956 and 1957 the Army tested and adopted the AN/GRN-6 low frequency radio beacon. It is transportable in a $\frac{3}{4}$ -ton truck or cargo helicopter and can be placed in operation in less than two hours. It operates in the 190 - 500 kc range and is used in conjunction with the ADF for navigation. In 1956 and 1957 we adopted the AN/ARN-59 (ARC Type 21) lightweight ADF. It weighs approximately 45 pounds less than the ARN-6, which is a comfort, and will be installed in all new production aircraft whose electronic configuration calls for an ADF. It will be used tactically

in conjunction with the AN/GRN-6 LF radio beacon.

The most mobile, rugged and flexible device available to Army which uses no airborne gear except the communications equipment is GCA; therefore, Army airfields and the tactical Army are being equipped with the AN/FPN-33 equipment which will permit approach and landing of Army aircraft under near-minimum weather conditions. It is flexible enough to locate lost aircraft if in line of sight and within range.

Army's own research and development program is pressing forward on two fronts, one to provide the aviator with those items USCONARC has selected for tactical use, the other to provide a greatly simplified display in the cockpit with greatly reduced weight of airborne equipment. The simplified cockpit display in helicopters is part of the Ideal Man-Helicopter Electronics Program (IMHEP).

The Army Aircraft Systems Management Plan (1956-57).

Heretofore, management of the whole program to develop any new aircraft has been, to put it mildly, a bit too diversified. There developed an obvious need for the establishment of an organization to keep all the facets of the program in proper perspective and balance. Transportation Corps accordingly established an aviation systems management plan.

From its inception this management concept was unique and unprecedented in TC annals; its formulation and development of-

ferred a stimulating and unparalleled challenge to the newly organized Aviation Systems Branch.

This challenge was met with resolution and fortitude. (One can almost see the Winged Wheel flag snapping in the breeze.) But anyway, a systems management was conceived whereby TC will:

a. Maintain a Management Program on each aircraft system throughout its life cycle by integrating and correlating all elements with respect to the critical governing factors of time, cost, capability and logistical support.

b. Maintain a line-of-balance analysis for each aircraft system to regulate and control areas of responsibility as follows: funding, research and development, engineering and testing, procurement and production, supply and maintenance, modification, obsolescence and disposal, personnel and training.

c. Provide management to ensure that the aircraft systems are individually and collectively compatible in terms of time, cost, compatibility, and logistical support.

An important forward step.

Army Aviation Tactical Units (1956-57).

The last half of 1956 saw Army Aviation units come into full bloom. Although commanders in the field have long recognized that Army aircraft could be more efficiently maintained and administered and more flexibly employed if they were pooled, the pros and cons were final-

ly resolved and official TOEs for aviation units started coming off the press. Not only was each type division provided with companies, but also numerous nondivisional aviation units became firm and started taking their places alongside our existing tactical transport helicopter and fixed wing units. A big hurdle had been overcome: The skeptics were convinced that centralized administrative and logistical control *could* be coupled (if the commanders check it often enough) with decentralized operational control to form the soundest doctrine for organization and employment of our complex and capricious family of helicopters and airplanes.

Army Aviation Section in Headquarters, USCONARC (1956-57).

On 22 October 1956 General Order Nr 40, Headquarters USCONARC, established an Army Aviation Section in Headquarters USCONARC. This action was prompted by the need for a single staff officer to whom CG USCONARC could turn for advice and staff action on all matters in the Army Aviation field. Responsibilities for aviation used to be diffused. Although the various general and special staff sections still retain the same functions and responsibilities for aviation as for other arms, services, and activities, the Aviation Section serves as a focal point and coordinator for all activities in this rapidly growing, complex, and many-sided field. This section takes its place both as to functions

and stature alongside the Infantry, Armor and Artillery Combat Arms special staff sections.

Fixed Wing Instrument Flight Training Program (1956-57).

As the possibilities of using Army Aviation on an increasingly large scale became apparent, the necessity for an operational capability in the soup also became equally apparent. From the personnel standpoint, this meant getting all of our aviators qualified as instrument pilots. As of the end of 1955, only about 20 percent of all Army flying personnel were instrument cardholders. Obviously we couldn't accomplish this mission overnight nor could we ask the Aviation School to take on the added training load as an exclusive enterprise.

After some consideration of the problems, three criteria were established:

1. A target date of 1961 was set for a 100 percent instrument qualified aviator population.

2. Starting in 1957 all RA and EAD graduates of the basic aviator course at Rucker are to receive instrument training and a ticket as part of their initial flying course of instruction.

3. To fill the gap, five contracts with civilian enterprises were let in order to train about 500 officers per year as instrument pilots.

During the summer of 1956, contracts were negotiated as planned and by late fall these schools began turning out gauge readers. Growing pains, some of them violent, were experienced in almost every contract school,

but difficulties were overcome and in FY 57 about 400 new instrument pilots were let loose on the economy. The output in FY 58 should exceed 500.

Standardization of Instrument Flight Examiners (1957).

Late in 1955 it became apparent that a wide latitude of tolerances existed in the conduct of instrument flight examinations. Some check rides lasted less than an hour while others went on and on. Obviously, this procedure did not produce uniformly competent instrument pilots.

At the end of 1956, after considerable deliberation, it was decided that standardization of instrument examiners could best be accomplished by sending a team out annually from the Army Aviation School to accomplish the mission.

Early in 1957 the first standardization team made its way around the world. These roving standardizers visited all ZI armies and made overseas stops at USAFFE, USARCARIB, Alaska, and USAREUR. Their efforts were considered very profitable by everyone concerned. Many suggestions arising from this first trip proved to have considerable merit; some have already been implemented, and others are being processed at this writing.

Instrument Flight Capability in Army Helicopters (1954-57).

Early recognition of the requirement to provide round-the-

clock low-visibility helicopter operations prompted the USAAVNS to investigate and contribute to the feasibility of helicopter instrument flight. Little technical information had been accumulated by any of the civil or other service agencies, so the project was started from pretty close to scratch in December 1954.

Of the two configurations the single-rotor helicopters proved more stable with less vibration during transition ranges, so the Chickasaw was selected for the initial student training program. Students were selected from Chickasaw instructor pilots at the school and given an instrument fixed wing flight examination prior to training, to ensure that everybody knew which way was up.

By January 1956 authority was obtained to operate helicopters under actual instrument conditions using local GCA facilities and civil airways. The success of this program established IFR helicopter flight effectiveness to the degree that helicopter instrument certificates were awarded for the first time in April 1956, and a helicopter instrument familiarization program was inaugurated in the U. S. Army, Europe.

The experience, techniques, and procedures accumulating to the Army Aviation School led to trial integration of instrument flight instruction to regular students along with visual flight instruction. While this did not prove *entirely* successful, the students were safely demonstrating control of their helicopters on basic instruments upon graduation.

By May 1957 the practicality of helicopter instrument flight was established and officially recognized in the Army. The significance of this prompted the CAA to send representatives through the Army helicopter instrument course to get a better understanding of how things are.

Instrumentation in helicopters is commanding growing support by industry in recognition of the serious lack of suitable equipment existing today. There is an important need for better instrument presentation and equipment which will alleviate excessive pilot fatigue during prolonged flight in the soup. Progress is encouraging, what with the recent introduction of automatic stabilization devices. These are currently being evaluated by the Army.

The advancement of helicopter instrument flight by the Army from its beginning in 1954 through 1957 accumulated a series of remarkable records. Over 2,800 hours of hooded instrument flight and 155 hours of actual instrument flight have been successfully accomplished. Nearly half of this experience was accrued on civil airways under ATC clearances. More than 2,800 GCA approaches and instrument takeoffs were made with cloud ceilings as low as 50 feet and visibility at 1/16—all completed without incident. Amen.

New Tactical Airfield and Heliport Lighting Sets (1956-57).

Considered nonhabit-forming is the experience of feeling about in the dark for field strips mark-

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ed by flare pots, construction crew lanterns, weak flashlights, and cigarette lighters.

We now have lighting sets numbers 6 and 7 for tactical airfields and heliports, respectively. Set number 6 contains sufficient lights, cables and transformers to light a runway 2,000 feet long and 200 feet wide. Lights are visible to a pilot only when he is directly in line with the approach end of the runway at a fairly low level. It is possible to adjust the hood so that a faint light may be emitted from the opposite side to enable a pilot to taxi back along the runway. In order to aid the pilot on the approach, a glide angle indicator is included in each set. Hot stuff.

Set number 7 for heliports contains only the glide scope indicator and two small floodlights which illuminate the ground sufficiently to enable a helicopter to land.

Sets are found on the TOEs of certain aviation units, notably division aviation companies and separate fixed wing and helicopter companies. Sets are now being assembled in depots and can be requisitioned through normal channels.

Army Aviation Air Traffic Operations (1956-57).

In December 1956 USCONARC recommended that implementation of an interim air traffic control system be completed for the Army in the field at the earliest possible date by activation of Army Aviation Operating Detachment (TOE 1-207C), utilizing the latest equipment, on the

basis of one per corps and field army, both in the CONUS and overseas. DA agreed and plans were started to activate the first AAOD during September 1957. After many conferences and initiations of action, our goal to activate an Army Aviation Operating Detachment, equip it, and provide adequate training literature for it, is gradually coming very close to realization, with the Sixth Aviation Operating Detachment (Army) activated in September 1957 at Fort Bragg as a STRAF Class 3 unit. Training Text 1-100-2 titled "Army Aviation Air Traffic Operations," completely staffed, is in the hands of the First Detachment Commander. TOE 1-207C has been modified to include specialist personnel and latest available equipment for the Sixth AAOD and other AAODs to be activated in the 3d quarter FY 58, FY 59, FY 60, and FY 61. The Army Aviation Operating Detachment will give the Army a means of controlling Army aircraft during VFR and IFR conditions. Later, the AAOD will be absorbed within the Aviation Company (Corps and Army).

Engineer Doctrine for Use of Aviation (1957).

Studies and tests by the Engineers indicate that their combat support capability, particularly in the fields of tactical bridging, minefield work, obstacle breaching and barrier execution, can be greatly increased by the use of Army Aviation. They've *got* to be increased, to stay with the requirement in the

“modern Army.” For river crossing operations combat engineers use helicopters for bringing assembled bridge sections to the crossing site from dispersed assembly areas, placing anchor cables across the river, towing ferries and assisting in placing the completed bridge. They also permit work to proceed simultaneously on the near and far shores—most important. Items that are carried by light cargo helicopters; nested plastic assault boats; complete bay of light, tactical, floating bridge; bridge erection boat; 18-ton pneumatic float and saddle assembly; 38-foot treadway balk spans (3,400 lbs); component parts of the light vehicle expedient bridge and the aluminum foot bridge—everything, indeed, but the Commanding General’s sedan (AOCP). In one test three Shawnees delivered a three-float vehicle raft which had been assembled into bays at a site well to the rear; within seven minutes after the first bay was released in the water, an M-59 APC was being ferried to the far shore. In testing the Mojave with the M4T6 bridge, float and saddle assemblies weighing 5,700 pounds were flown to the bridge site and put down without dropping the helicopter into the drink with it.

In minefield breaching, tests have shown the feasibility of dragging a metal sectional demolition snake 400 feet long and weighing 7,800 pounds into an enemy antitank minefield. Snake goes off with a terrific bang. Also, expedient drags and rollers have been fabricated and successfully pulled through anti-personnel minefields.

Possibilities are obvious in the use of aircraft for minefield marking and recording, in conjunction with dyes which later become invisible, to show outlines of the minefield on a photograph. The breaching of barbed wire and other types of obstacles has also been tested and shows much promise.

In any future war in which atomic weapons are used, considerable delay can be caused by tree blow-down. Here again, tests conducted with an H-21 equipped with a special towing device showed the value of a helicopter in clearing a path.

In barrier execution, helicopters will enable the engineers to construct obstacles simultaneously throughout the zone. In the *attack*, they can start work clearing the entire length of a road rather than progressing through successive obstacles. Helicopters will also make possible the removal of enemy obstacles from the enemy side, which is sometimes easier than when working from our side.

It is obvious that aviation properly applied will increase the capability of our combat engineers, in certain battlefield situations, *several fold*. And really, they’re just beginning to explore the possibilities. As in many areas, the sky’s the hope, not the limit.

Army Flying Club Program (1957).

Approval to establish flying clubs at CONUS installation level to operate as sundry fund activities on a self-supporting basis was granted by the Under

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Secretary of the Army on 4 March 1957. AR 28-95, dated 10 April 1957, governs establishment and operation. These regulations provide that the flying clubs will be conducted as an off-duty, voluntary participation program in the interest of welfare, recreation and morale.

To date DA has approved the establishment of clubs at 39 CONUS installations. Excess L-17 and L-21 airplanes have been allocated to meet club requirements. Four of these clubs are fully operational with a minimum of four CAA licensed aircraft on hand. Four are partially operational and the remainder are in various stages of being established.

Long Arm (1956-57).

"Long Arm" is the Army test

Operation "Long Arm" tests T-37 for observation use

of the Cessna T-37 jet trainer. You may remember that after lengthy discussions, numerous briefings, and occasional rebuffs, Department of Defense approved a plan for the Air Force to loan the Army three T-37 jet trainer aircraft for experimental use as observation aircraft. The loan period is for one year with an option for an additional year.

On 2 November 1956, a test unit was activated at Rucker with a mission to determine the organization, tactics, and techniques for employment of higher performance aircraft in support of tactical operations. Ten officers and thirty-two enlisted men were assigned to this unit. In June 1957, the aircraft were received.

Although it is early to press final judgment on the concept, some significant points have already become apparent:



a. The stability provided by jet power is good. You can even see through binoculars.

b. Pilot - observer teamwork is at an optimum in the side-by-side seating arrangement permitting eye-to-eye contact, better use of hand signals, and the same forward visibility for both people.

c. The wide range of safe operating speed (115 to 385 knots) affords ample flexibility in the execution of observation missions.

d. A jet without some sort of special STOL or VTOL gadget runs down the runway a long time before it gets airborne. T-37 lands fairly short, though.

It is planned for this unit to take part in as many field exercises as possible following the service school tests.

Army Aeromedical Doctrine (1957).

In 1956, The Surgeon General, in accordance with the regulations and within USCONARC guidelines, developed "Army Aeromedical Doctrinal and Guideline Statements" and duly published them as Change 5 to FM 100-1.

Unclassified portions say that during any anticipated warfare of the future a requirement exists for improvement of medical evacuation capabilities in speed, flexibility, and mobility, without large increases of personnel. With the door thus ajar, in marches guess who? Greater use of aeromedical evacuation by organic Army means, for routine as well as critical casualties, is obviously indicated.

Army aeromedical evacuation is that conducted within the combat zone, airhead or beachhead, to include battlefield pick-up of casualties, their transport to initial point of treatment, and any subsequent move to hospital facilities *within* the combat zone. Evacuation *from* the combat zone back to home and mother is an Air Force function.

Army Medical Service aerial ambulance units will be provided at appropriate levels to perform the mission of aeromedical evacuation of patients. In addition, other nonmedical aviation units have the capability of augmenting the aeromedical evacuation means with organic aircraft, particularly to meet peak requirements — we hope there won't be any.

Army Aviation-Industry Symposium (1957).

In June of 1957 the Aviation Center conducted the first Army Aviation-Industry Symposium, which was sponsored by the Association of the United States Army to acquaint leaders of American industry with the functions of Army Aviation.

Approximately 125 representatives of the Aviation industry and 50 senior military leaders, including the Under Secretary of the Army and the Chief of Staff, attended. The Post provided outstanding recommendations and facilities — the place never looked better. A static display of the aircraft, vehicles, radios, and equipment recently authorized for the Army Aviation Company of the newly reorganized combat Infantry Division was

exceedingly impressive. So, indeed, was the Sky Cav demonstration (discussed elsewhere) and the Board's demonstration of all things that fly or look like they *might* fly.

The response from industry was most encouraging. Everyone concerned was impressed by our progress — we made many new friends of a really influential variety.

Fire and Rescue Equipment (1955-57).

In the future, a pilot electing to clobber himself on the runway will be attended in greater style. An R&D program to develop equipment specifically designed to meet the needs of the

Army resulted in the adoption of Fire Fighting Equipment, Set Number 21. It includes a 530B fire truck and all the hooks, hacksaws, axes, pipe cutters and other miscellaneous items necessary to fight an aircraft fire. This truck carries 400 gallons of water and 40 gallons of foam. Sets are expected to be available within the next few months.

A portable kit known as Forced Entry and Rescue Equipment, Set Number 1, has also been developed for those units with only a small number of aircraft. This set can be carried in the back of a jeep, and includes portable fire extinguishers and many different types of tools for forcing entry into a burning aircraft. Should be available for issue in the very near future.

XIII. ARMY AVIATION IN SEVENTH ARMY



Inasmuch as it is the largest U. S. field army, what Seventh Army does in the way of employment of organic aircraft is important to everybody.

Indicative of the expansion of Army Aviation in 7A are the increases in Army Aviation personnel and equipment over a two-year period. Personnel have been made available to meet recently increased authorizations as well as the initial deficits which existed two years ago. Assignment of aircraft has not kept pace with the 50 percent

increase in authorizations due to our old friend "lead time"; nevertheless, over 700 pilots, 1,600 mechanics and 500 aircraft were in Seventh Army as of 1 July 1957. Lots of stuff.

The location of Seventh Army in a foreign country, the rapid expansion of civil aviation in that country, and the requirement to be combat ready all introduce aviation problems beyond those caused by expansion alone. These have been met in part by the establishment and operation of the Seventh U.

S. Army Aviation Training Center, a capable and impressive institution. One dividend: although the number of hours flown in 1956 was approximately 20 percent greater than in 1955, the aircraft accident rate decreased from 46 to 36 for each 10,000 hours flown.

The presence of the light cargo helicopter companies and the fixed wing tactical transport companies provides a means of considerable airlift by organic Army aircraft for small tactical units and critical supplies. Division commanders are able to utilize one or more aviation companies, in addition to their own increased division aviation, for tactical training and the development of techniques to increase mobility. All field exercises stress the potential of Army Aviation in increasing the battle capacity of Seventh Army.

Similar expansion of organic aviation has taken place in other elements of U. S. Army Europe. The USAREUR Army Aviation Depot has expanded facilities and personnel to support the increased numbers of aircraft assigned to the command. Increased emphasis has been provided at all levels to permit the maximum advantage to be taken of aviation assigned and to solve problems pertaining to the operation of large numbers of aircraft.

Army Flight Service in USAREUR (1957).

An Army Flight Operation Facility (AFOF) has been placed in operation in Western

Germany by the 5th Aviation Operating Detachment (Army). The mission of the AFOF is to promote the safe, orderly, and expeditious movement of Army air traffic. A very worthwhile aim. It is accomplished by assisting pilots in obtaining advice and information required for safe flight; expediting and maintaining an orderly flow of air traffic; monitoring of Army cross-country flights in an attempt to get the boys approximately where they'd like to go; alerting rescue organizations when aircraft are missing; and alerting Army Aviation activities when they are required for emergency search or rescue.

On June 6, 1957 (appropriately, on the 15th Anniversary of Army Aviation) AFOF began operations between 0700 and 2200 hours on a training basis. Full scale 24-hour operations were instituted on 1 July. During that month 5,976 flights were monitored with a total of 48,875 incoming and outgoing telephone calls.

In addition to AFOF the 5th Operating Detachment operates twenty-one airfield control towers located throughout Western Germany. Seven of these towers have approach control teams.

This is the Army's first attempt at a complete system. It is a successful attempt.

Transatlantic Flight Delivery of L-23D Aircraft (1957).

Army Aviators of the USAREUR, Seventh Army, and Comm Z Aviation Detachments flight-delivered five Seminoles across



End of successful transatlantic hop in newest Seminole

the North Atlantic in the months of June and August 1957.

Agencies other than the Army made valuable contributions to this effort, among them Beech Aircraft Corporation (technical assistance and cruise performance data) and Military Air Transport Service. Air Weather Service forecasters, Atlantic Division navigators, and Air Rescue Service flight crew members took part in the series of planning conferences that preceded the flights. During the course of both flights Air Weather Service and Air Rescue Service provided comprehensive

route weather forecasts and escort aircraft.

In June two Seminoles took the northern route via Labrador, Greenland, Iceland and Scotland to Germany; hops were within the capabilities of the aircraft utilizing only the standard fuel tankage. Flying time: 31 plus 44. In August three more, utilizing more favorable winds, flew the southern route (Newfoundland, the Azores, and Spain) in twenty-nine hours and forty minutes. At this writing (October) three more are about to take off. Pilots report that there is really quite a lot of water 'twixt here and there.

XIV. DEVELOPMENT OF "SKY CAV"



The development of Sky Cavalry has stemmed from a need for light combat forces whose speed and flexibility of movement are enhanced by the use of aircraft. The dispersion of units on the future battlefield, the highly fluid character of operations, and the greater ground mobility now characteristic of

all tactical units in modern armies, make mandatory the development of such forces.

The first Sky Cav contained both ground and air elements in the same unit, the aircraft being employed to support armored and motorized reconnaissance elements by collection of information and by airlifting pa-

EDITOR'S NOTE: The term "Sky Cav" means one type of unit and mission to Armor, a second to Intelligence, and still a third concept to the U. S. Army Aviation School; but for lack of a better term the U. S. Army Aviation School, until recently, used the title "Sky Cav" to represent an organization which was initially established in the summer of 1956 at Fort Rucker.

The Armor concept of Sky Cav involved the superimposition of a light helicopter company and some fixed wing aircraft upon the Armored Reconnaissance Battalion of the Armored Division to obtain additional mobility and capability for combat surveillance, observation, and reconnaissance. The Intelligence concept of Sky Cav is one involving the use of Army Aviation in a purely target acquisition role utilizing passive means such as infrared, TV, radar, and cameras. It was not intended that this unit fight to obtain intelligence but rather that it be a target getter for the missile commands. While both of these concepts involved the performance of useful functions for Intelligence and Armor, they did not represent the Army Aviation School's concept of Sky Cav.

The organization activated at Fort Rucker was designed to provide a completely air-mobile, air-mounted, fast moving, hard hitting, flexible means of searching out, fixing the enemy and performing the traditional missions of cavalry at an accelerated rate on the battlefield of tomorrow. Missions include covering force action; reconnaissance; counter-reconnaissance; flank protection, rear area defense to include antiguerrilla, anti-airborne, anti-infiltration; and economy-of-force role in filling in between major units on the dispersed battlefield of the future.

In order to help eliminate the confusion that has existed over the different types of Sky Cav, in November 1957 the Commanding General, USCONARC, designated the U. S. Army Aviation School concept as "Aerial Combat Reconnaissance." Currently the U. S. Army Aviation School has an Aerial Combat Reconnaissance Platoon, Provisional (Experimental) which has been employed in demonstrations at Fort Rucker, Fort Benning, Fort Knox, and other military installations. Recent Department of Army action indicates the activation on 24 March 1958 at Fort Rucker of the 7292nd Aerial Combat Reconnaissance Company (Experimental) as part of a new School troop organization. This experimental company is a basic building block toward a larger combined arms organization.

This recent official recognition of the Aerial Combat Reconnaissance Company concept should open the way for the development of more optimum weapons and aircraft for the unit and for the evaluation of tactical doctrine and organization.

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trols. By test of this concept on Exercise SAGEBRUSH it was concluded that the capability of the reconnaissance battalion was greatly enhanced by the addition of aircraft, but there were bugs (big black hairy ones) to be ironed out.

In June of 1956 a unit was developed which would possess the capability of performing all of the classic missions of cavalry, such as reconnaissance, security of open flanks, seizure of critical areas, pursuit, and to some extent exploitation. This concept involved the arming of helicopters with machine guns and rockets to provide a weapons platform with the same flexibility and agility of movement as the other elements of the organization. Before testing of the unit could proceed, a great deal

of work had to be done to determine the feasibility of mounting the necessary weapons on the helicopters. This was accomplished by a small group within the U. S. Army Aviation Center. By trial and error methods and with a commendable application of the soldierly principles of initiative, imagination, and moonlight requisitioning, this group demonstrated the practicability of using the helicopter as a weapons platform.

The Sky Cavalry organization developed at Fort Rucker has not yet been field-tested, but it has been used in a number of demonstrations and has jarred everybody witnessing it.

Although Sky Cavalry is still in the test phase of development, there is no doubt as to the feas-

Sioux ready for warpath



ibility of using aircraft to re-establish the "mobility differential" required by reconnaissance units of the future in accomplishing missions classic to cavalry in the past. Right now we are at a sort of gold rush stage: so many people have become so suddenly taken with the possibilities inherent in the general concept that everybody wants to grab a pan and head for the creek. That's a manifestation of enthusiasm, of course, but there really is a need for a synthesizing process so that we can proceed with due speed and coordination to achieve what everybody wants — light "cavalry" forces with the ultimate in battlefield mobility.

Enlightenment of the Unenlightened: Tactical Demonstrations at the Aviation School (1957).

The Aviation School currently shows to anybody it deems sufficiently important and influential (its own students qualifying as members of this category) two tactical demonstrations: Tactical Employment of Army Aircraft and "Sky Cav."

The purpose of the first is to show combat arms commanders, particularly, how they can use Army Aviation already available to them. All of our present fixed and rotary wing aircraft are displayed and discussed, and their capabilities and flexibility are shown in flight. Demonstrated are parachute and free-fall delivery of supplies, wire laying, medical evacuation, and helicopter delivery of small bodies of troops or supplies to a given

point on the battlefield. Old stuff, but still important.

The Sky Cav demonstration shows clearly how current flying machines, some of them equipped with light armament, can perform the traditional cavalry job. Execution of the missions of reconnaissance, security, and the seizure of a critical point occupied by an enemy force are demonstrated in three dimensions—and done faster, more accurately, and over a broader area than ever before by such a small force.

The Sky Cav demonstration captures the imagination of every thinking military man who is lucky enough to see it. Conducted in three phases, the entire show takes about an hour. In the first phase, the various experimental helicopter-mounted weapons are fired, with impressive effect. Phase II demonstrates the scope of operations of an experimental platoon-size formation, in this case consisting of seven armed reconnaissance helicopters, a utility helicopter, and two light cargo helicopters. Phase III shows the possible use of the unit in an atomic battle situation. Combined with this action is a demonstration of moving conventional infantry by helicopter, as was envisaged and explained in the tactical employment demonstration.

Both demonstrations are dynamic examples of what can be done by today's Army Aviation using today's aircraft. Tomorrow, with air vehicles and navigation and other equipment designed specifically for our type of operation, the sky is the limit—if, paradoxically, we keep low enough.

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