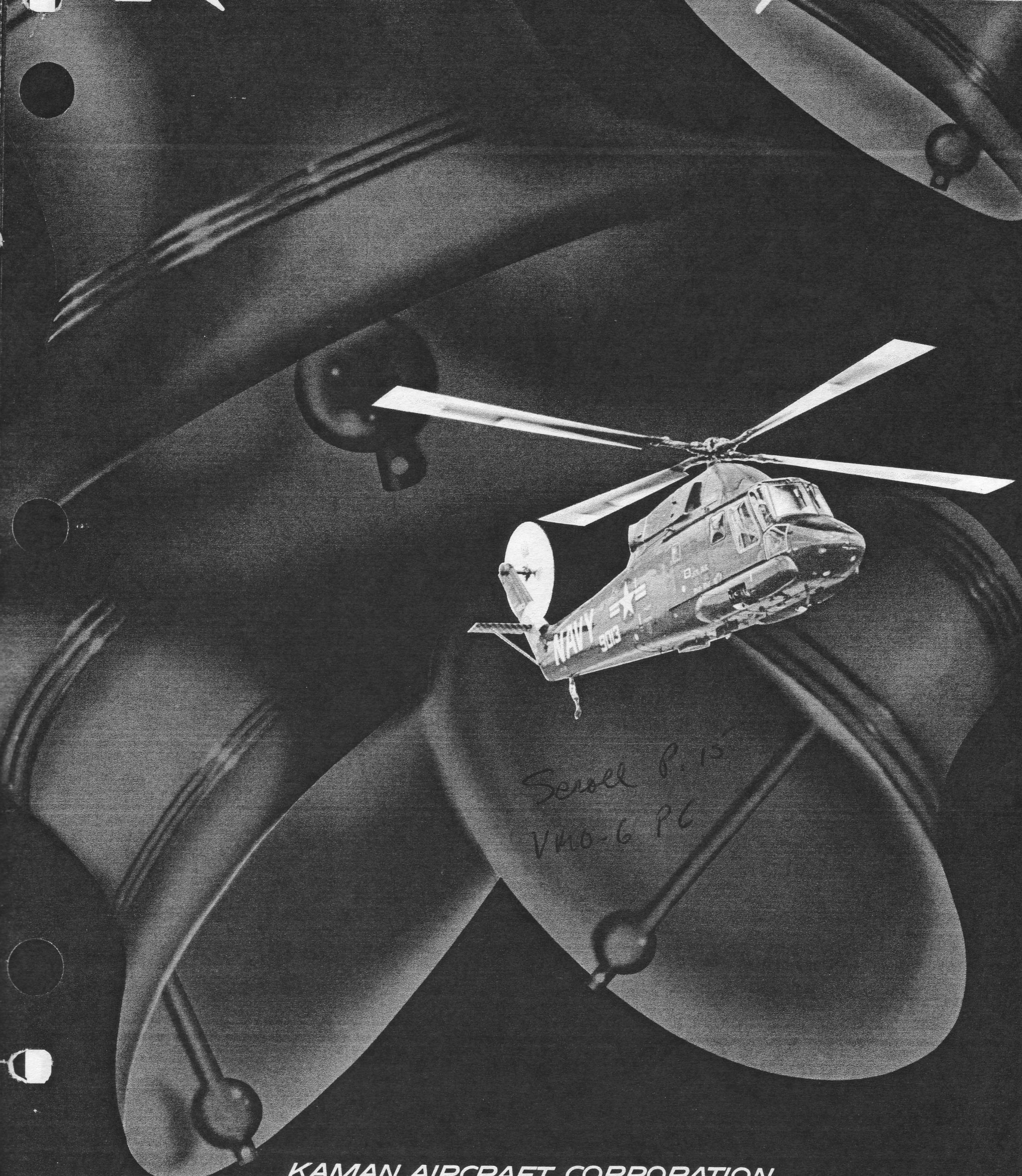
KAMAN *Rotor Tips*



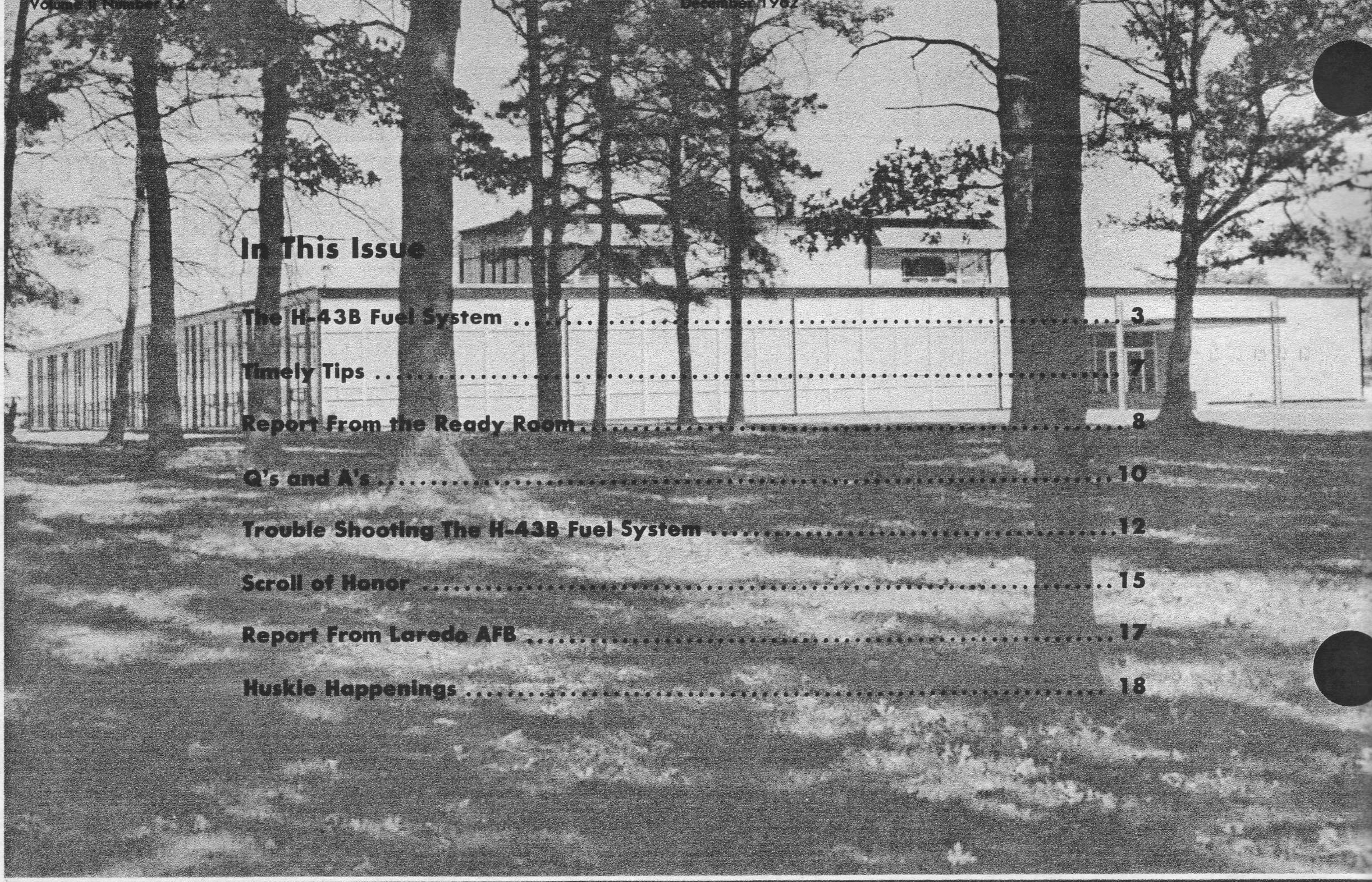
KAMAN AIRCRAFT CORPORATION

PIONEERS IN TURBINE POWERED HELICOPTERS

DECEMBER 19

KAMAN Rotor Tips

Volume II Number 12 December 1962



In This Issue

THE COVER

Proudly the UH-2A joins the family of "guardian angel" helicopters whose crews are dedicated to the saving of human life. Christmas can be truly joyful in many homes and many places because of their efforts.

ADDRESS ALL INQUIRIES TO
Kaman Rotor Tips
Field Service Department
The Kaman Aircraft Corp.
Old Windsor Rd.
Bloomfield, Connecticut

— PLEASE SHARE THIS COPY —

H-43B FUEL SYSTEM

by Ben S. Liff
Group Leader, Power Plants
Engineering

The H-43B fuel system was designed for maximum fuel capacity within the helicopter structure, maximum fuel availability, anti-icing protection, ease of filling, simplicity, and overall reliability. In addition, the cabin floor was to be kept free of projecting lines to permit full utilization of cargo space.

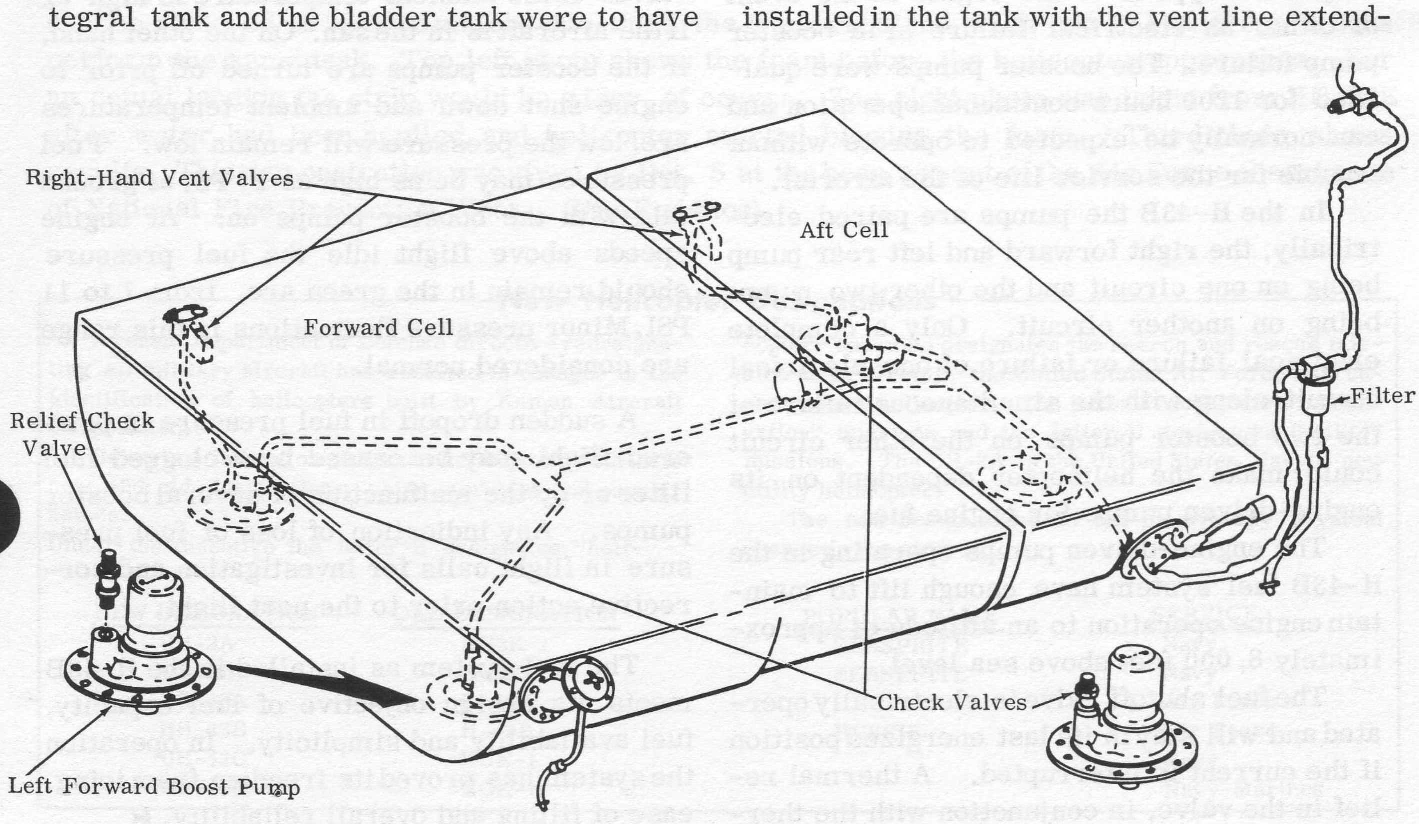
The initial problem was not only finding the space in the structure for 198 gallons of fuel but also means of making this fuel available to the engine in all attitudes of helicopter operation.

Two solutions were available for getting the 198 gallons of fuel under the cabin floor. One was to make an integral fuel tank with the skin and interior structure of the aircraft forming the walls of the tank; the other solution was to use two interconnected bladder cells to form a single tank with a major structural bulkhead between cells. In addition, the forward cell required a step in the bottom to meet the volume requirement. Both the integral tank and the bladder tank were to have essentially flat bottoms. This shape increases fuel capacity very quickly but complicates the problem of getting all the fuel out of the tank.

The higher cost of an integral fuel tank as well as the increased technical and manufacturing problems involved in the installation, decided the issue in favor of the bladder tank.

In order to insure good fuel availability, four D.C. booster pumps were installed in sumps located at the four corners of the tank. Each booster pump has sufficient capacity to meet the fuel requirements of the engine. Check valves were installed at the outlet of each pump to prevent recirculation of fuel in the event of a pump failure. One check valve was provided with thermal relief provisions. Interconnects and transfer lines between the cells and sumps were so arranged to insure that all of the fuel in the tank would remain available under any normal flight condition.

In order to keep the cabin floor clear of obstructions, float-operated vent valves were installed in the tank with the vent line extend-



ing through the bottom skin of the helicopter. A pressure relief system was incorporated in these valves to protect the tank and aircraft from any pressure buildup due to fuel expansion. The single tank filler was installed to fill directly into the expansion space in the forward cell with the aircraft in ground attitude. This permits filling the tank to capacity without the danger of fuel blowing back and soaking the fueling operator. Anti-icing protection was provided by adequate filter capacity and adequate drainage to remove water accumulations.

Accessible drain valves in the sumps and in the fuel filter were provided to simplify drainage of water and contaminants from the system. The sump volumes and the screen area in the fuel filter were designed with sufficient capacity to trap all the water and ice from normally saturated fuels. In the event the fuel is highly contaminated or has more free water than the filter can handle, a non-washing bypass in the filter opens and allows fuel to reach the engine. At this point the screens in the engine fuel system provide protection for the engine.

Design reliability was attained by selecting components with trouble-free operating characteristics. In addition, a certain amount of backup was provided in the basic system to keep fuel supplied to the engine in the event of either an electrical failure or a booster pump failure. The booster pumps were qualified for 1200 hours continuous operation and can normally be expected to operate without trouble for the service life of the aircraft.

In the H-43B the pumps are paired electrically, the right forward and left rear pump being on one circuit and the other two pumps being on another circuit. Only a complete electrical failure or failure of one electrical circuit along with the simultaneous failure of the two booster pumps on the other circuit could make the helicopter dependent on its engine-driven pumps for engine fuel.

The engine-driven pumps operating in the H-43B fuel system have enough lift to maintain engine operation to an altitude of approximately 8,000 feet above sea level.

The fuel shutoff valve is electrically operated and will stay in its last energized position if the current is interrupted. A thermal relief in the valve, in conjunction with the thermal relief in the check valve at one booster pump, protect the feed lines and pressure transmitter from damage due to high pressures caused by expansion of fuel in the lines.

A continuous gaging capacitance-type fuel gaging system utilizing three tank units is provided. This system gives accurate fuel quantity readings under all normal conditions of helicopter pitch and roll. A low-level fuel sensor which is independent of the gaging system actuates a caution light to indicate a minimum of 120 lbs. of fuel in the tank. Other than monitoring of the fuel quantity gage and fuel pressure gage, no management of the fuel system is required in flight.

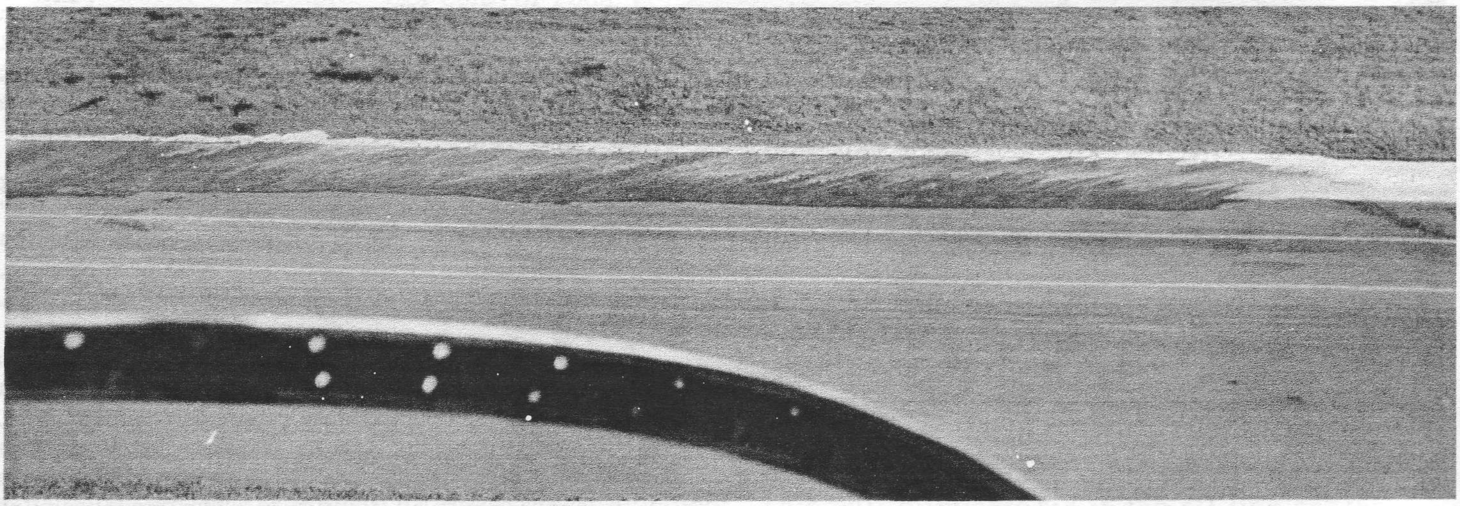
When the pumps are turned on and the shutoff valve is opened, fuel is fed from the booster pumps into a combined feed line, through the fuel filter, the shutoff valve, firewall disconnect and then the engine.

In operation, the fuel pressure gage indicates booster pump pressure at the engine inlet. Prior to starting the engine the gage may exhibit some seemingly inconsistent behavior. Readings may vary from about 80 PSI to 0 PSI and still be perfectly normal. If the engine is shut off prior to turning the booster pump off and the fuel shutoff valve is then closed, fuel pressures in the line may build up to the maximum settings of the relief valves if the ambient temperature is high or if the aircraft is in the sun. On the other hand, if the booster pumps are turned off prior to engine shut down and ambient temperatures are low the pressure will remain low. Fuel pressures may be as high as 17 PSI at ground idle with the booster pumps on. At engine speeds above flight idle the fuel pressure should remain in the green arc, from 7 to 11 PSI. Minor pressure fluctuations in this range are considered normal.

A sudden dropoff in fuel pressure in powered flight may be caused by a clogged fuel filter or by the malfunction of several booster pumps. Any indication of loss of fuel pressure in flight calls for investigation and corrective action prior to the next flight.

The fuel system as installed in the H-43B meets its design objective of fuel capacity, fuel availability and simplicity. In operation the system has proved its freedom from icing, ease of filling and overall reliability. K





RUNWAY FOAM REMOVAL - Det. 5, WARC, ARS, at McChord AFB, Wash., utilizes H-43B to expedite removal of fire preventive foam from runways. The water tanker waters the runway so the liquid flows under the foam blanket; the helicopter then approaches the runway at a 90° angle and the rotor wash literally rolls the foam off the side of the runway. A strip of foam can be removed in approximately one-third the time required when two 0-11A crash trucks perform the same task. Top left photo shows the foam before the helicopter approaches. For an actual landing the strip would be wider, of course. Top right photo was taken from HUSKIE after water had been applied and helicopter started blowing the foam. Third photo shows results. This demonstration was given by Det. 5 at the base as part of the Air Force observance of National Fire Prevention Week. (USAF photos)

New Helicopter Designations

A recent Department of Defense directive redesignating all military aircraft has resulted in changes in the identification of helicopters built by Kaman Aircraft Corporation.

Below is a tabulation of Kaman helicopters with their new and old designations, using services and popular names.

Under the directive the letter H designates "helicopter" and also designates the search and rescue mission as in HH-43B, the United States Air Force Search-and-rescue helicopter. The letter O designates "observation" missions and the letter U designates "utility" missions. The UH-2A is the United States Navy's new utility helicopter.

The new designations do not involve any physical change in the aircraft.

NEW DESIGNATION	OLD DESIGNATION	POPULAR NAME	SERVICE
UH-2A	HU2K-1	SEASPRITE	Navy
UH-2B	HU2K-1U	SEASPRITE	Navy
HH-43A	H-43A		Air Force
HH-43B	H-43B	HUSKIE	Air Force
UH-43C	HUK-1		Navy
OH-43D	HOK-1		Navy-Marines

LORING MECHANICS SHOW SKILL

REPAIR TEAM—Members of Det. 41 and the 42d Field Maintenance Squadron whose cooperative efforts returned the H-43B to service. Front row, l to r, CMSgt Robert T. Hamilton; SSgt Charles B. Bowling; A3C Albert J. Guy; TSgt Walter G. Coffman and A2C Gary S. Archdeacon. Rear row, A1C Bobby Mixon; SSgt William Roark; A3C C. C. Controneo and J. A. Connahey. (USAF photo)

How readily does a severely damaged aircraft lend itself to local base repair?

A question such as this is always of concern to military users, especially when the aircraft is to be utilized in rugged areas far from major overhaul facilities. In the case of a force-landed H-43B, the answer was supplied by maintenance personnel attached to Det. 41, EARC, ARS; and the 42d Field Maintenance Squadron at Loring Air Force Base. In the process, these men also saved the Air Force more than $9,000.

After an engine failure, the pilot of the H-43B, Capt. Richard C. Pfadenhauer, initiated emergency procedure and guided the aircraft to a small clearing surrounded by 40 to 70-foot trees. No personnel were injured in the landing*, however, the resulting major damage was estimated at $37,216 and 700 man-hours of repair work. Later, the prime depot for H-43B support advised Det. 41 that the aircraft could not be put in depot for almost ten months, so authorization was given to repair on base.

Det. 41, under the supervision of CMSgt. Robert T. Hamilton, NCOIC, utilizing TSgt. Walter C. Goffman, flight chief; A2C Gary S. Archdeacon, helicopter mechanic; and A3c Albert J. Guy, helicopter mechanic; set to work. With sheetmetal repairs provided through 42d Field Maintenance Squadron, SSgt. W. J. Roark and A3C C.C. Cotroneo and J.A. Connahey repaired the helicopter and returned it to operational status.

Utilizing 560 man hours (140 less than estimated), these men returned the helicopter to service four and a half months later. This was four months before the depot would have started repair work. The personnel saved $9,311 worth of man-hours, and expedited the return of an aircraft to operational service—an excellent example of the Air Force's "Money Tree" program in action at Loring. They also demonstrated that the helicopter chosen by ARS for its rescue work here and overseas can be repaired by Detachment or base personnel even though it sustained major damage.

*Readers may find the Rotor Tip's article "Design For Safety" of interest. This article appeared in the January, 1961, issue and describes the steps taken by Kaman engineers in designing the H-43B to provide as much crew safety as possible in the event of a crash. Copies are available. K

VMO-6 Passes "Magic Mark"

VMO-6, based at Camp Pendleton, Calif.; recently accumulated 10,000 accident-free flight hours from Aug. 18, 1961 to Aug. 3, 1962. The squadron, a part of MAG-36, flys HOK-1's and OE fixed-wing aircraft. The helicopters were flown for 4558 hours while the OE's totaled 5442.

Lt. Col. H.K. Bruce, the squadron's commanding officer, was airborne as the 10,000-hour "magic mark" was reached. The Colonel credited his entire squadron for the accident-free record, saying that every pilot, mechanic and man in the squadron was responsible.

During the months that the squadron was totaling up the hours, there was an entire observation squadron trained by VMO-6 and sent overseas in three cadres, Colonel Bruce said, and the squadron set a record in ship-board landings for a MAG-36 squadron. The entire complement were all qualified as submarine pilots after making landings aboard the USS Perch off the California coast. The squadron also made carrier landings with both helicopters and fixed-wing aircraft during "Operation Potshot." K

Recognition for HOK-1 Crew Chief

MERITORIOUS PROMOTION—Sgt. Frederick M. Chadwick's meritorious promotion warrant is read by Col. Robert L. Cochran, commanding officer of MAG-26, MCAF, New River, N.C. Lt. Col. Earl F. Cassidy, commanding officer of VMO-1 to which Chadwick is attached, looks on. The sergeant, crew chief of an HOK-1, was one of five Marines chosen throughout the entire 2nd Marine Aircraft wing to be thus promoted. The promotion was based not only on his maintenance ability, but for his high military standards and performance as a member of the Marine Corps. This is the second straight meritorious promotion for VMO-1. (USMC photo)

Timely Tips

Flight Controls No Plaything

Experienced helicopter personnel should caution visitors, new aerial observers, passengers and others who may not be familiar with H-43B's, HOK-1's or HUK-1's, not to "play" with the flight controls. In the air, the reason is obvious—on the ground, such action can lead to malfunctions in the directional flight control system and cause maintenance personnel unnecessary work. Example: Six control rods (P/N K353075-1) have been bent by individuals who pushed on the left rudder pedal from the co-pilot's seat while someone else pushed right pedal from the pilot's seat. *W. J. Wagemaker, Analyst*

Fuel Leak Cause

What causes fuel to leak out of the vent lines on the ground and in flight? These questions sometime pop up after an H-43B has been jacked for weight and balance checks or after the removal and replacement of a fuel cell for some reason. The probable cause is that the Valve Vent, H2025M, fig. 39-40 in the -4 Manual, has been bent causing the float to stick. *W. C. Barr, Service Rep.*

Pre-Oiling Info

When pre-oiling HOK/HUK engines, install a Wiggins quick disconnect on the pre-oiler hose and then attach it to the aircraft's oil line disconnect. This will eliminate air in the oil line and the possibility of having to bleed the oil gauge to eliminate fluctuating pressure. *D. M. Rush, Service Rep.*

Collective Limiter Oil Lines

During installation of the collective limiter in the H-43B, maintenance personnel should make certain that the oil lines are hooked up correctly. The lines on most H-43B's are identified with metal bands stating pressure and return. Occasionally in the past the lines have been reversed—pressure line to return and return to pressure. When this happened, the limiter would not operate. The collective stick remained in the full down position and could not be raised as it was necessary to overcome spring plus oil pressure loads. *W. J. Wagemaker, Analyst*

Save Time—Save Trouble

When changing a component or disassembling any part of the helicopter and replacement or reassembly is not to be made immediately, place the nuts, bolts, washers, etc. in bags or other appropriate containers. These containers should be plainly marked to indicate the area from which the contents were removed and then put in a safe place. This procedure will save many maintenance headaches, especially if any length of time elapses between removal and assembly. Nuts, bolts and other fasteners seem to have a way of "disappearing" if not secured in some manner (especially if it becomes necessary to move the helicopter). If this occurs and special bolts, washers, shims or nuts are missing, they may not be readily available for replacement purposes and it might be necessary to ground the aircraft. The danger also exists that a standard item may be erroneously substituted and this could create a future maintenance problem. There is also the big question as to where the missing bolts, etc. went. If they fell to the ground, FOD to an aircraft may result. If they fell into the helicopter, a possible safety-in-flight situation may have been created. *Kaman Rotor Tips*

REPORT *from the ready room*

HOVERING RESCUE AT 11,600 FEET

As a means of aiding other helicopter rescue units in their programs, Capt. Martin Donohue, USAF, agreed to a Rotor Tips' request for a personal account of the mission describing the conditions encountered and the action taken. Similar accounts written by Air Force, Navy and Marine helicopter pilots will appear from time to time with this purpose in mind.

CAPT. F. M. Donohue
3635th Flying Training Wing,
Stead AFB, Nev.

Stead AFB, Nev., is not numbered among the many LBR's scattered throughout the world but it does have eight Kaman H-43B's assigned. The H-43B mission at Stead is to upgrade Air Force pilots in a twenty-hour indoctrination course. Along with training Air Force pilots, the instructors perform a 24-hour standby alert for possible emergency rescue missions. The location of Stead AFB is on the eastern slopes of the Sierra Nevada Mountains, which rise to heights above 13,000 feet. The H-43B is the only current Air Force helicopter that can perform at these altitudes with a good power reserve. On 3 September 1962, Helicopter Operations scrambled the Stead AFB H-43B alert crew, Captain Martin Donohue, pilot; Captain George Kekuna, copilot; and SSgt. Charles E. Baker, crew chief. The mission was to airlift an injured mountain climber from the vicinity of Thousand Island Lakes, Calif., to the Bishop, Calif., hospital. The initial call was received at 1500 hours and takeoff to Bishop, 170 NM distance, was accomplished at 1555 hours. Three barrels of JP4 fuel were loaded on the aircraft because there was no JP4 fuel available enroute. At Stead we have encountered this problem before and we find it is essential to carry a high capacity hand pump with a chamois for refueling. The aircraft gross weight at takeoff was approximately 7800 pounds. Despite a 15-knot quartering head wind the trip to Bishop was made in two hours. The pilot and copilot alternated flying the aircraft every 15 minutes at an indicated airspeed of 80-85 knots.

Western Air Rescue Center had instructed the H-43B to fly to Bishop where a CAP representative would provide further information. Upon landing, the H-43B crew was informed that the climber was to be carried from the 13,100 foot slope of Mt. Ritter to a lower level by a ground rescue party. The pickup was to be made at the 9,500 foot level, 50 NM from Bishop. Due to the altitude and approaching darkness the HUSKIE was refueled to only 900 pounds and all unnecessary equipment left at Bishop. The aircraft was landed at the 9,500 foot, Thousand Island Lake site, at 1850 hours. The pilot was advised by base camp rescue personnel that they were having difficulty in moving the injured man, Robert Elliot, down the mountain. They also reported he was at the 12,000 foot level bleeding excessively from a severed finger and badly crushed foot; he had been on the mountain 28 hours since his fall and could not conceivably survive another night. For this reason Captain Donohue decided to search the mountain for a possible landing place as near the injured man as possible. The crew chief and remaining loose equipment aboard the aircraft were left at the 9,500 foot site. The injured climber's condition was reported to be extremely weak so Captain Donohue decided against attempting a hoist pickup. The rescue party and injured man were located at 1920 hours on a 70° slope where there was no landing site available. After two reconnaissance approaches a small ledge 100 yards from the ground party was noticed. The decision was made to hover over this ledge and attempt a loading through the side door.

The approach was made at 102% N2. Due to the steepness of the slope and small area of the ledge, there was little or no effective ground cushion and it took 29 PSI torque to hover. To aid in visibility during the final approach, Captain Kekuna turned on the landing and flood lights; a hover was established at 1930 hours (sunset was at 1918 hours). The lights were an excellent aid to the rescuers and were even more effective in helping Captain Kekuna advise Captain Donohue on the proximity of the rotor blades to the mountain side. The blade

THE TEAM THAT DID THE JOB—Capt. Martin Donohue, Capt. George Kekuna, SSgt. Charles E. Baker. (USAF photo)

approximately two feet from the mountain during the 20 minutes it took the rescue party to get to the H-43 and load the injured man. As the rescue party came down the slope, the aircraft was moved away slightly to insure that none of the ground party would be injured by the whirling blades in the darkness in case there was some turbulence. The winds were estimated at 10 to 15 knots at this time. As soon as the rescue party was safely in place, the aircraft was moved back into position and the loading accomplished from a one to two foot hover with no further difficulty. The climber was delivered to a waiting ambulance at Bishop Airport at 2025 hours. As the H-43B flew over the approach end of the Bishop runway the fuel low warning light came on; the light signified another successful mission for the HUSKIE crew.

Capt. Frederic M. Donohue, pilot, was born in 1931 and called in the Air Force from Glen Allen, Alaska. His first three years in the Air Force were spent as a GCI controller in Germany. He entered pilot training in 1958 and after graduation from Stead AFB helicopter school in 1959 was retained as an instructor. Captain Donohue has over 2000 hours flying time of which 1800 were logged in helicopters.

Capt. George L. Kekuna, co-pilot, was born in 1931 and is from Hilo, Hawaii. He enlisted in the Air Force in December 1952 and spent four and a half years in the Air Weather Service. After obtaining a commission from OCS he entered pilot training in 1958 and was retained as an instructor after completion of helicopter training at Stead AFB. Captain Kekuna has 1900 hours flying time of which 1600 is in helicopters.

SSgt Charles E. Baker, crew chief, was born in Texas and has been a mechanic on all three current Air Force helicopters—the H-19, H-21 and H-43B. He has been stationed at San Marcos, Texas, Langley Field, Va., Middletown, Pa. and Stead AFB. K

RECORDS OFFICIAL

The establishment of two new international distance records by an Air Force H-43B was recognized recently by the Federation Aeronautique Internationale, world-wide aviation record-keeping body.

The two new records, bringing to five the number held by the H-43B, were set three weeks apart by two ARS pilots. Established on July 5th was a straight-line distance record of 888.44 miles by Capt. Chester Ratcliffe, Jr., commander of ARS Det. 24, CARC, MATS; Kincheloe AFB, Mich. The previous record of 761.027 miles was set by a Soviet Mi-1 helicopter on September 21, 1960. On June 13th, Capt. Richard H. Coan of ARS Det. 52, EARC, Charleston AFB, S.C., flew an H-43B 655.64 miles around a closed course near Mono Lake, Calif., to break a record of 625.464 miles set by a Soviet Mi-1 helicopter in June, 1960.

The three other records held by the HUSKIE are: Altitude without payload, 32,840 feet, set Oct. 18, 1961 by Lt. Col. Francis M. Carney of Stead Air Force Base, Nev. Altitude with a 1,000 kilogram (2,204 pound) payload, 26,369 feet, set May 25th, 1961, by Capt. Walter C. McMeen of Luke Air Force Base, Ariz. Both records were previously held by Russia. Time-to-climb to 9,000 meters (30,000 feet) in 14 minutes, 11 seconds, also set by Colonel Carney and previously held by France.

The H-43B, powered by a Lycoming T-53 gas turbine engine, is an Air Force utility helicopter now stationed at more than 50 Air Force bases around the nation and overseas. The Air Rescue Service has established the HUSKIE as its standard helicopter and is using the aircraft for local base rescue duty. ARS has also used the helicopter in performing numerous off-base rescues involving both military personnel and civilians. Many of the rescues were made at high altitudes and under hazardous conditions. In addition, the H-43B has been utilized for ferrying personnel and supplies to disaster areas and as a "workhorse" to airlift transmitters and similar equipment to high places.

First To Hit 500?

1st Lt. Walter J. Zimmerman of Det. 42, EARC, Dow AFB, Me., is believed to be the first operational pilot to log 500 hours in the H-43B. The lieutenant hit the 500 mark on April 10th, 1962, but available records do not show if he actually was the first to pass this historic milestone.

Lieutenant Zimmerman wants to know if his claim is valid or if some other operational pilot "got there first." In any event, Rotor Tips would like to publish the names of all H-43B pilots who have logged 500 hours in the aircraft and the date this occured. And don't forget to let KRT know when any other significant milestones are logged.

Q's AND A's

If you have a question regarding Kaman Aircraft maintenance, send it along to Rotor Tips. The Service Department's analysts will be glad to answer it.

Q. (Applies H-43B) CAN THE K704020-1 ROTOR BLADE SUPPORT KIT BE CARRIED WITHIN THE CONFINES OF THE H-43B FUSELAGE?

A. Yes, this kit can be carried within the fuselage. The two shorter (aft) blade supports are placed on the floor on the port side of the cabin with the blade attaching end toward the front of the helicopter. The two longer (forward) blade supports are placed on the port side of the cabin with the blade attaching end of each strut toward the rear. The forward end is raised and extends into the pilot compartment at the upper left corner of the opening behind the left-hand seat. The support struts do not interfere in anyway with the pilot's functions or movements. The struts are secured to the fuselage structure with canvas straps or other suitable fasteners. Naturally, it is not intended that the supports be carried in the aircraft at all times, but this method may be used for air transport in the event that a temporary base of operations is set up. - N. E. W.

Q. (Applies H-43B, UH-2A) IF IT IS FOUND NECESSARY TO REPLACE THE ELECTRICAL WIRE LEADING FROM THE ENGINE THERMOCOUPLE TO THE EXHAUST GAS TEMPERATURE INDICATOR, WHAT PRECAUTION SHOULD MAINTENANCE PERSONNEL OBSERVE WHEN MANUFACTURING A REPLACEMENT?

A. The type and length of the replacement wire must be the same as the wire removed. Any variation in length will cause inaccurate instrument readings due to the change of circuit D.C. resistance. - P. A. G.

Q. (Applies H-43B) WHAT PROCEDURE SHOULD BE FOLLOWED IF OIL LEAKAGE APPEARS BETWEEN THE O-RING AND CONTAINER ON THE OIL FILTER ASSEMBLY?

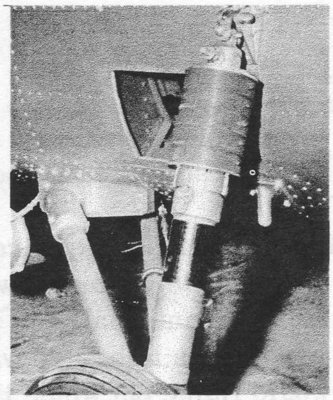
A. If such leakage appears, do not attempt to eliminate it by torquing the seal nut beyond 90 pound-inches. Over-torquing the cap screw could cause the oil filter stud to fracture at the cotter pin hole, thus compounding the oil leakage problem and possibly grounding the aircraft if another stud is not readily available. Instead, remove the seal nut and container. Inspect the O-ring and mating surfaces of the container and body for mutilations. Replace defective parts as necessary. -A. A. W.

Q. (Applies UH2A-B) WHY DO THE A. S. E. CONTROL ACTUATOR ALIGNMENT FIXTURES, P/N K604641 AND K604642 HAVE TWO POSITION SLOTS (ACTUATOR RIG AND SHIPS RIG)

A. These fixtures serve two purposes: (a) The slots marked "ACT. RIG" are used when bench rigging the actuator after installation of new parts such as a boost valve. This rigs the actuator itself to neutral or mid-stroke. (b) The slots marked "SHIP RIG" are used when rigging the longitudinal and collective channels to the aircraft's control system. These are provided to accommodate full down collective and the 1/3-aft and 2/3-forward longitudinal cyclic rigging. -P. M. C.

Q. (Applies HOK/HUK, H-43B) WHEN REMOVING OR INSTALLING THE AZIMUTH-TO-HUB CONTROLS, WHAT PRECAUTION SHOULD BE TAKEN?

A. In addition to carefully checking for proper control rod path, extreme care should be taken to avoid dropping parts down the rotor shaft. If a part does fall into the shaft, it may be necessary to remove the shaft or azimuth to make the recovery. This will of course increase the down time of the aircraft and add to the work load of maintenance personnel. -W. J. W.



Q. (Applies H-43B) HOW DOES THE H-43B MAIN STRUT DIFFER FROM OTHER OLEO STRUTS?

A. The H-43B main strut design differs from other oleo struts in that an external mechanical compression spring has been added. It is this rubber spring, not the compressed air in the strut cylinder, that carries most of the static weight of the aircraft and the greater part of the loads developed during taxi. The spring further serves to cushion the taxi ride. It is for this reason that it has become known as the "Taxi Spring". The compressed air, in addition to assisting the taxi spring, extends the strut during take-off and absorbs the initial shock at touch-down. Snubbing action of the strut is accomplished by hydraulic fluid, used in conjunction with a conventional orifice and metering pin combination.

Due to the decrease in the extent to which the compressed air is used to support the aircraft and cushion the taxi ride, the air pressure servicing requirement can now be held to a minimum (10 PSI, strut fully extended). This minimum pressure requirement has increased the H-43B's side slope landing capability. The reason for the increase can easily be recognized when one compares the operation of "B" struts with that of conventional struts during side-slope landings. The up-hill strut of a "B" will, because of its lower air pressure requirement, compress appreciably more than its conventional counterpart. Concurrently, the down-hill strut of a H-43B will compress less because of the stiffness of its taxi spring.

Service the struts in accordance with instructions contained in T.O. 1H-43B-2. If a strut has been improperly serviced with too much air pressure, the taxi spring is neutralized or out of play and the result is a springy strut. If the air pressure is low, the column of air in the strut chamber is not capable of assisting the taxi spring and a hard strut results. -F.E.S.

Q. (Applies H-43B, HOK-1, HUK-1) WHAT SIMPLE CHECK CAN BE MADE IF IT IS SUSPECTED THAT THE TEETER PIN BEARING IN THE ROTOR HUB IS WORN OR THAT THE WRONG BEARING HAS BEEN INSTALLED AT THE SMALL END OF THE TEETER PIN?

A. With the blade positioned laterally and the rotor brake on, pull the droop stop out and have a mechanic place the blade against either the lead or lag stop and apply light pressure at the blade tip. Place the index finger on top of the rotor shaft, resting the side of the finger against the hub. By "jockeying" the blade against the stop, excessive motion or play can be noted on the hub in relation to the shaft. Excessive motion warrants further investigation. -N. E. W.

Q. (Applies H-43B) WHAT IS THE FUNCTION OF THE TEMPERATURE SENSING ELEMENT IN THE FUEL CONTROL UNIT?

A. The temperature sensing element reacts to changes in the inlet air temperature and transmits each change through a capillary tube to a motor bellows inside the fuel control unit. The motor bellows, in turn, rotates the 3-D cam to change the fuel flow in relation to the air temperature. Maintenance personnel should be careful when installing this unit to avoid bending or kinking the capillary tube of the element. If the tube is damaged, the changes in inlet air temperature might not be transmitted and the 3-D cam would then operate at the fuel temperature within the fuel control. Engine operation in this event would be very erratic, if at all. -A.A.W.

KAMAN SERVICE ENGINEERING SECTION—*E. J. Polaski, Supervisor, Service Engineering, G. M. Legault, G. S. Garte, Asst. Supervisors; N. E. Warner, A. Savard, W. J. Rudershausen, Group Leaders.*

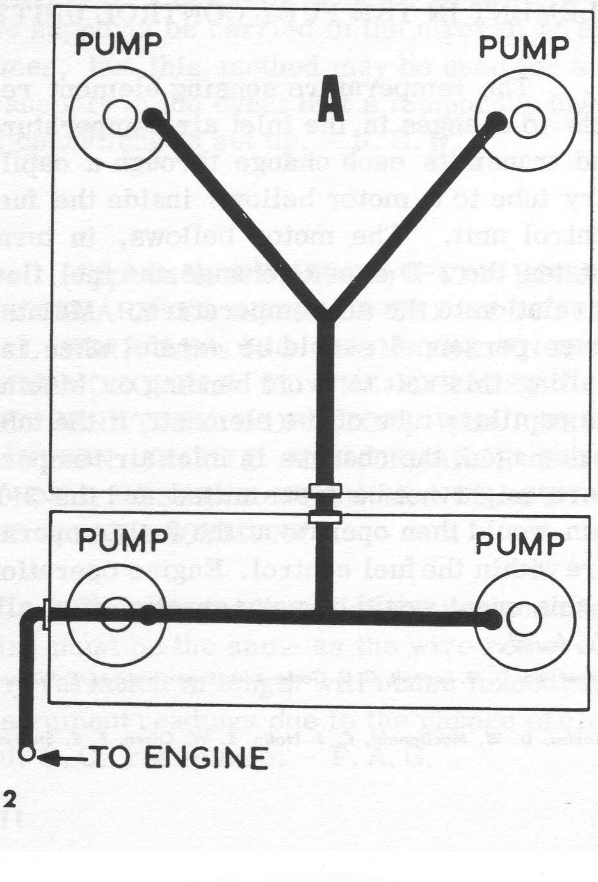
ANALYSTS—*F. E. Allen, P. M. Cummings, M. T. Fiaschetti, P. A. Greco, C. W. Jenkins, D. W. MacDonald, C. J. Nolin, R. W. Olsen, F. E. Starses, W. J. Wagemaker, A. A. Werkheiser.*

THE H-43B FUEL SYSTEM

William G. Wells
Ass't Supervisor,
Austin A. Werkheiser
Analyst,
Field Service Department

The following information is presented due to the interest expressed lately in the H-43B fuel system and its influence on engine operation.

In the simplified drawing "A" is shown part of a fuel system similar to that found in the HUSKIE. There is one important difference, however, which will be dealt with shortly. It can easily be seen by studying this drawing that failure of one or more of the booster pumps would allow the fuel pressure from the remaining pumps to feed back to the fuel cell through the inoperative pump or pumps. Pumping to the engine would require more pressure so the fuel takes this "easy way out" and is recirculated in the tank. It is also apparent that whenever the helicopter was shut down, all of the fuel in the lines would drain down from the engine and back into the fuel tank since the tank is vented to the atmosphere and the fuel control also permits the entrance of air through the high point in the system. With these conditions existing, a void would then be present in the line from the fuel control down to the level of the fuel in the tank.



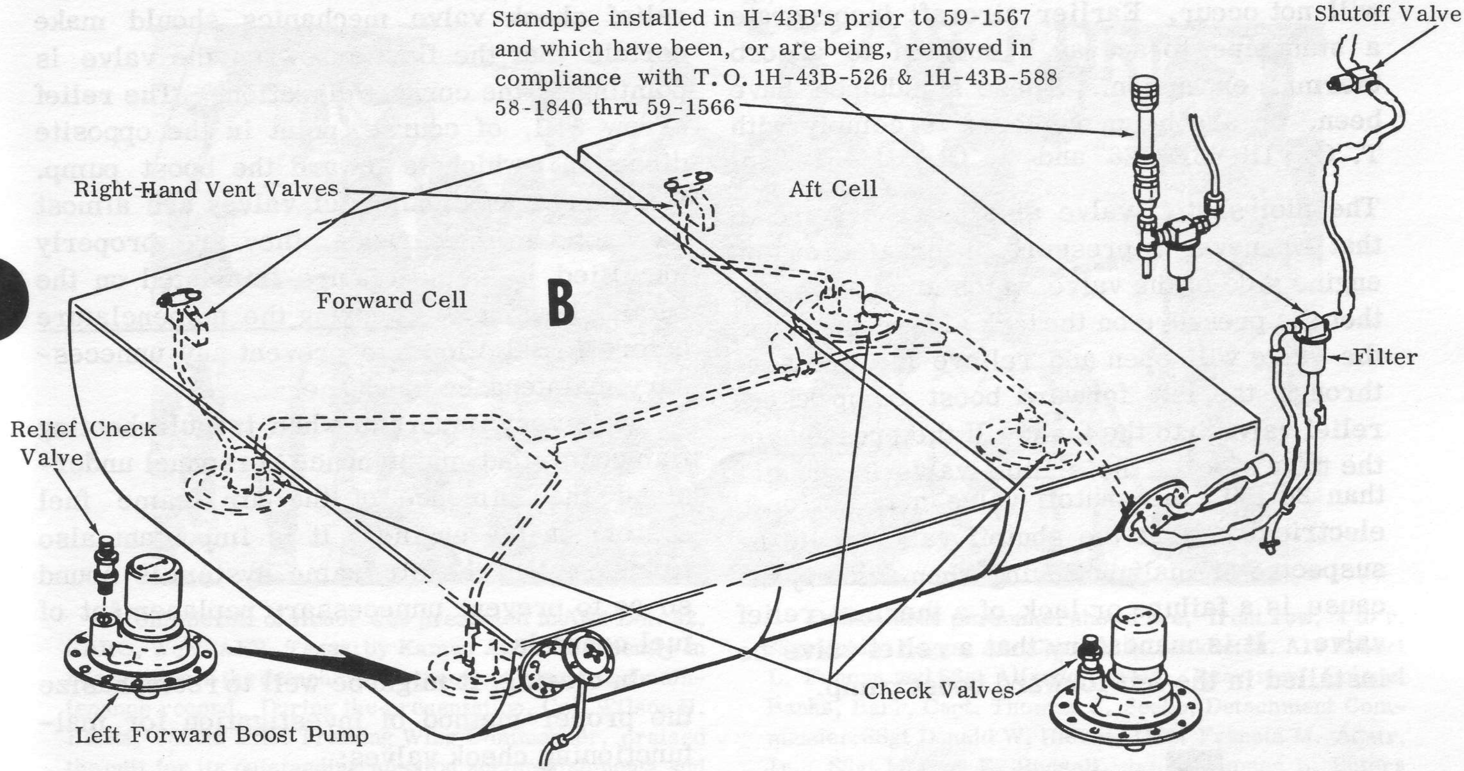
Under the above described circumstances, an engine start could be made with the fuel which was trapped internally in the control. However, as soon as this fuel was used up, the engine would flame out since the pocket of air in the line must pass through the fuel control in order for the system to purge itself. It is now readily apparent that the system shown in "A" would not function correctly and the "important difference" between this system and the one in the H-43B can be considered.

In order to prevent the fuel from flowing back into the tank through an inoperative booster pump, one-way check valves have been installed as shown in drawing "B." These check valves prevent pressure from feeding back to the tank through a disabled pump, and keep the fuel from draining down into the tank after shutdown. If, however, for some reason a check valve remains open, the engine would probably flameout after start as mentioned when drawing "A" was discussed. Obviously, it is imperative that maintenance personnel know the steps to be taken in looking for this type malfunction.

In trouble shooting for a check-valve problem, the easiest method is to turn on the fuel boost pumps. Once the pressure has stabilized, return the fuel boost switch to "OFF." The pressure should remain steady. If the pressure drops it is probably due to a malfunctioning check valve.

The pressure drop does not necessarily have to be a quick one (which would indicate that the check valve was stuck "wide open") but might be gradual. This could be caused by foreign matter, such as sand or dirt, causing the valve to stick when almost closed. If a slight decline or drop off is indicated then an individual check of each booster pump check valve should be made.

With the boost pump switch "ON," watch the fuel pressure indicator as each boost pump circuit breaker is pulled, one at a time. If the pressure drop had been rapid on the pre-



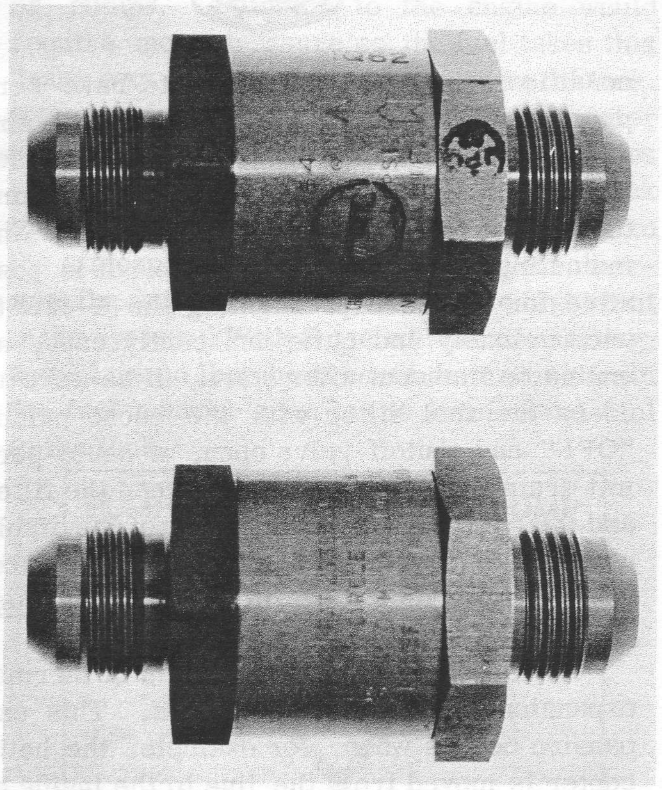
liminary check, the faulty check valve may become apparent as the boost pump circuit breakers are pulled. If the fuel pressure remains steady and within tolerance after the third circuit breaker has been pulled, pull the last circuit breaker and push in the first circuit breaker. In this manner one or two malfunctioning check valves can be found. If all of the check valves malfunction, there will be an almost equal fuel pressure on each pump so the problem will require removal and replacement of all valves. Flushing of the fuel tanks and pump sumps is also required. Whenever a boost pump is removed, maintenance personnel should automatically check and clean the valve and insure that it is installed properly to prevent future problems.

If, after the above test, there is no decline in pressure in approximately 10 minutes, it can be assumed that the check valves are seating properly; the interconnect lines in the tank should then be examined. A loose B-nut on a line in the tank could give the same indications. It is obviously very important when installing pumps, lines, or check valves in the fuel cell areas that all connections be made leak proof.

It can be said then, that if the fuel system is sound—has good check valves, and lines free from leaks—there will always be boost-pump pressure in the lines from the pumps to the fuel control. There is only one normal condition where it is possible to have zero pressure in the lines. If the engine is shut down AFTER the boost pumps are turned "OFF," the engine would naturally consume the available pressure in the lines and the indicating gage would go to zero. It is possible for a person preflighting the H-43B to unconsciously and quite innocently cause an engine to flameout after start. If he were to drain the fuel filter with the boost pumps "OFF" and shutoff valve open, it could permit drainage of the fuel line between the filter and the control. A flameout is not inevitable using this procedure but is likely. Therefore, any time the fuel filter is drained, the fuel shutoff valve should be closed.

Now, let's discuss the problem of thermal expansion of the fuel in the lines. This expansion occurs when, for example, the helicopter is moved from the line to the inside of a heated hangar. It is likely, without means of thermal relief, that fuel pressure transmitter problems would become chronic. With the fuel shutoff valve closed, thermal expansion in the fuel lines may increase pressure to the point where transmitter failure can occur. For this reason one booster pump incorporates a relief valve which opens at 17 PSI and reseats at approximately 12 PSI. In conjunction with the thermal relief provisions in the shutoff valve, pressures are reduced to the point where transmitter damage will not occur. Earlier aircraft incorporate a standpipe to act as a cushion to absorb thermal expansion. These standpipes have been, or are being removed to comply with T. O. 1H-43B-526 and T. O. 1H-43B-588.

The fuel shutoff valve also has a feature in that whenever a pressure is created on the engine side of the valve which is 65 PSI more then the pressure on the tank side of the valve, the valve will open and relieve the pressure through the left forward boost pump check relief valve into the tank. If the pressure on the tank side of the shutoff valve is greater than 20 PSI, the shutoff valve may not open electrically, thus the shutoff valve would be suspected of malfunctioning when actually the cause is a failure or lack of a thermal relief valve. It is mandatory that a relief valve be installed in the left forward boost pump.



The check valve and the relief valve are almost identical in appearance (see photo) and it is possible for maintenance personnel to install a check valve in place of the relief valve. If this happens then the above problem could occur. Conversely, the relief valve could be substituted for one of the required check valves. This would then present a possible chance for future problems because the check relief valve is more susceptible to malfunction from contaminants then the straight check valve. When installing the relief check valve mechanics should make certain that the flow arrow on the valve is pointing in the correct direction. The relief arrow will, of course, point in the opposite direction, which is toward the boost pump. While the check and relief valves are almost the same in appearance, they are properly identified by nomenclature imprinted on the outside housing. Checking the nomenclature before installation can prevent any unnecessary maintenance headache.

It is very important when troubleshooting flameouts, that maintenance personnel understand the influence of the air frame fuel system on the engine. It is important also to insure that the air frame system is sound so as to prevent unnecessary replacement of fuel controls.

In closing, it might be well to reemphasize the proper method of investigation for malfunctioning check valves:

1. Open the fuel shutoff valve and energize the fuel boost pumps.

2. Once the pressure has stabilized, return the fuel boost switch to "OFF." The pressure should remain steady. If the pressure drops, it is probably due to a malfunctioning check valve. The drop in pressure does not necessarily have to be a quick one.

3. Test each boost pump check valve. With the booster pump switch "ON," watch the fuel pressure indicator as each boost pump circuit is pulled.

4. If the pressure drop had been rapid on the prelimiary check, the faulty check valve may become apparent as the boost pump circuit breakers are pulled one at a time.

5. If the fuel pressure remains steady and within tolerance after the third circuit breaker has been pulled, pull the last circuit breaker and push in the first circuit breaker. In this manner, one or two malfunctioning check valves can be found.

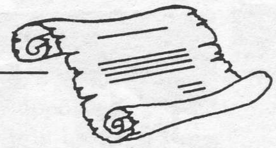
6. If all of the check valves are malfunctioning, there will be an almost equal fuel pressure on each pump and all pressures will be below 5 PSI. This problem will require removal and cleaning of all valves and the fuel tanks and pump sumps should be flushed.

If there are any questions regarding the fuel system in the H-43B, the Field Service Department will be happy to answer them. K

SCROLL OF HONOR

A Unit Scroll of Honor was presented to ARS Det. 32, CARC, Webb AFB, Texas; by Kaman Aircraft recently in recognition of the detachment's excellent rescue and maintenance record. During the presentation, Col. Wilson H. Banks, 3560th Pilot Training Wing Commander, praised the unit for its outstanding mission accomplishments and the "devoted duty and self sacrifice" shown by each individual in contributing to the unit's achievements. William C. Barr, KAC Field Service Representative who made the presentation, pointed out that the excellent support provided by Webb AFB was a very important factor in the detachment's success, and the base could share the unit's pride in receiving the award.

Detachment personnel shown are, front row, l to r, SSgt Veldon Boggs, A2c Charles L. Middleton, A1c Robert L. Duncan and SSgt Alfredo Garcia. Rear row, Colonel Banks, Barr, Capt. Thomas C. Seebo, Detachment Commander; SSgt Donald W. Haines, MSgt Francis M. Adair, Jr., SSgt Marcus E. Russell, 1st Lt. James L. Butera and 1st Lt. Keith H. Ricks. Not shown are Capt. William F. Glover, Jr., SSgt Morris L. Mixon, SSgt Floyd E. McCraw, SSgt Marx T. Richardson, A1c James O. Benson, A2c Philip C. Tubman, TSgt Dan W. Long, SSgt Elbert E. Hillhouse, SSgt William R. Ford, A2c John D. Owens and Walter Jordan. (USAF photo)



Two members of VMO-2's Sub-Unit 1 at NAS Atsugi, Japan; have been awarded Scrolls of Honor for the aerial evacuation, under hazardous conditions, of a Marine seriously injured in an automobile accident.

Capt. R. O. Meyers, USMC, was pilot and Lt. W. D. Merriss, USMC, copilot, of an HOK-1 utilized to fly the evacuee from the scene of the accident in an isolated section to the U.S. Naval Hospital at Yokusaka. An operation had to be performed quickly if the Marine was to retain the use of his slashed hand and ground transportation would have taken at least six hours. The HOK pilots took off in heavy rain and fog and flew most of the 30-mile trip over mountaineous territory with the ceiling between 35 and 50 feet. Twice the pilot air taxied for more than four miles through a fog-shrouded valley studded with high towers and crossed in several places with high tension cables.

Two other members of VMO-2 were also awarded Scrolls recently for an SAR mission on Okinawa.

1st Lt. James H. Marshall, USMC, and Cpl Charles Bundschu, III, USMC, in an HOK-1 were called upon to airlift a doctor to the scene of a reported drowning. The site of the mishap was on the banks of a stream located at the bottom of a deep ravine. In order to lower the doctor it was necessary to fully extend the hoist cable and also hover the helicopter between the rugged walls of the ravine. Corporal Bundschu gave continuous directions as the doctor was lowered through a small clearing in the trees. Clearance between the tops of the rotor blades was only 10 to 15 feet. The pilot held the helicopter in this position while the doctor examined the drowning victim for signs of life but, unfortunately, the man was dead. The helicopter was used to fly his body from the scene.

Four members of ARS Det. 5, WARC, McChord AFB, Wash., have received Scrolls of Honor for the rescue of an 18-year-old exchange student from Paraguay, seriously injured in a fall while mountain climbing.

1st Lt. James L. Cantey was H-43B pilot on the mission, 1st Lt. William A. Luther, copilot; SSgt Ronald A. Warren, crew chief; and A1c Karl F. Aldridge, paramedic. Because of the rugged terrain, tall trees, and a nearby cliff, the pickup was made with the hoist. The operation was complicated when the intercom system went dead. Dr. Otto T. Trott of the Seattle Unit, Mountain Rescue Council, who had gone to his aid, was also hoisted aboard. The survivor, suffering from head and back injuries and a severe concussion, was given first aid and oxygen by Doctor Trott and Aldridge on the flight back to the Sand Point Naval Air Station. K

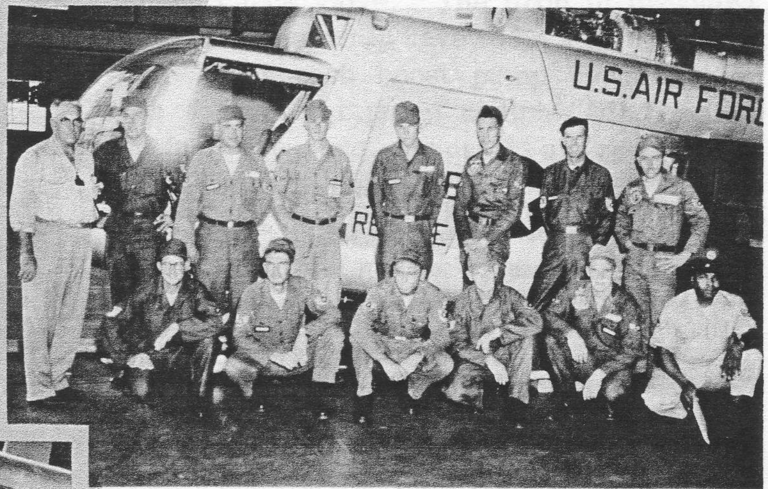
GRADUATION

H-43B TRAINING
SHEPPARD AIR FORCE BASE

3750TH TECHNICAL SCHOOL, USAF (ATC)

AUGUST 28, 1962—Front row, l to r, MSgt Romand D. Campos, Det. 154 ARS MATS, APO 23, N. Y.; A2C Dennis W. Palmer, Det. 24, Kincheloe AFB, Mich.; SSgt Ray E. Owen, Det. 33, Perrin AFB, Texas; A1C Bobby E. Heustess, 1001 Heli Sq., Bolling AFB, Washington, D. C.; A1C Thomas Arms (Instr.), Sheppard AFB. Rear row, TSgt William Terrace (Instr.), Sheppard AFB; SSgt James F. Mayo, 48th AR Sqdn., Eglin AFB, Fla.; A2C James A. Bowen, 2849th ABW, Hill AFB, Utah; A2C Larry D. Varuel, Det. 34, Biggs AFB, Texas; A2C Ronald E. Renard, Det. 26, Selfridge AFB, Mich. (USAF photo)

SEPTEMBER 25, 1962—Front row, l to r, TSgt Sessa M. Antonio, Bolivia, S.A.; A1C Chester A. Duprey, Det. 39, CARC, Laughlin AFB, Texas; SSgt Alsidez Rodriguez, Kirkland AFB, N.M.; A2C William F. Fleming, 1st OMS, Selfridge AFB, Mich.; A2C Charles F. Soderboom, Det. 36, CARC, Laredo AFB, Texas; MSgt Padro T. Jorga, Bolivia, S.A.; A1C T.E. Arms (Instr.), Sheppard AFB, Texas. Rear row, James A. Bice, Maxwell AFB, Ala.; A2C Thomas A. Roberts, 36th Air Reserve Sq, APO 970, San Francisco, Calif.; A2C Jerry T. Jones, Kingsley Field, Oregon; A2C Walter F. Kaferle, Det. 20, CARC, Minot AFB, N.D.; SSgt William F. Johnson, England AFB, La.; A2C James Gould, 1st OMS, Selfridge AFB, Mich.; Richard H. Maxwell (Instr.), Sheppard AFB, Texas. (USAF photo)



OCTOBER 16, 1962—Front row, l to r, TSgt George H. Burris, Goose AB, Labrador; SSgt Richard K. Wells, Andrews AFB, Md.; TSgt Albert R. Lee, Andrews AFB; SSgt William Gambel, Andrews AFB; A2C Brian V. Aspden, Det. 22, Duluth MAP, Minn.; SSgt Curtis Washington (Instr.) Sheppard AFB, Texas. Rear row, Richard H. Maxwell (Instr.) Sheppard AFB; SSgt Gordon L. Ball, Det. 2, ARS, Ernest Harmon, Nfld.; TSgt James W. Watson, Andrews AFB; A3C William E. Lane, Det. 49, EARS, Seymour Johnson AFB, N.C.; A1C Boyd L. Buchholz, Det. 25, Wurtsmith AFB, Mich.; A2C Robert L. Love, Det. 24 Kincheloe AFB, Mich.; TSgt Jack Anderson, Aux. 9, Elgin AFB, Fla.; SSgt Dorian A. Davis, Det. 2, ARS, Ernest Harmon. (USAF photo)

OCTOBER 23, 1962—Front row, l to r, A2C Phillip C. Tubman, Det. 32, CARC, Webb AFB, Texas; A1C Donald E. Jarvis, Det. 53, EARC, Craig AFB, Ala.; A3C Albert J. Guy, Det. 41, EARC, Loring AFB, Maine; A1C Roman Jennissen, Det. 27, CARC, Traux Field, Wisc.; A1C Charles G. Whitaker, Det. 37, CARC, England AFB, La. Rear row, A1C Elmer R. Howell, Det. 31, CARC, Reese AFB, Texas; SSgt Joe Batten, Jr., Det. 27, CARC, Traux Field; SSgt George S. Edwards, Det. 15, WARC, Luke AFB, Ariz.; TSgt Howard F. Alford, Det. 15, WARC, Luke AFB; SMSgt Edward M. Morgan, 54 ARS, Goose AFB, Labrador; A3C Noel C. Vandevender, Det. 49, EARC, Seymour Johnson AFB, N.C.; TSgt William Terrace (Instr.), Sheppard AFB, Texas. (USAF photo)

REPORT FROM LAREDO AFB

by 1st Lt. Donald E. Van Meter
Adminstrative Officer, Det. 36

Detachment 36, CARC (MATS), Laredo AFB, Texas; claims the following accomplishments with the H-43 helicopter.

1. The first two production H-43As delivered to the Air Force were accepted and ferried to Laredo AFB, Texas, by Captains Bert E. Cowden and Theodore C. Vurbeff on February and March 1959.

2. First helicopter unit in the Air Force to become operational utilizing the H-43 and the Fire Suppression Kit. Working with the Air Training Command Standardization Team, this helicopter section helped establish the procedures now used by Local Base Rescue detachments throughout the Air Force.

3. Capt. Theodore C. Vurbeff was the first USAF pilot to utilize the H-43 rotor wash on an actual crash on 9 July, 1959.

4. Capt. Bert E. Cowden was the first USAF pilot to utilize the H-43 rotor wash with the Fire Suppression Kit on an actual crash on 25 September 1959.

5. On 15 February 1960, Capt. Bert E. Cowden and Capt. John C. Shaeffer figured in a dramatic rescue operation evacuating 20 fishermen stranded on the Mexican shores of Falcon Lake during a violent storm. For this mission, Captains Cowden and Shaeffer were the first Air Force pilots to receive the Kaman Scroll of Honor.

6. Capt. Bert E. Cowden claims the distinction of being the first Air Force pilot to log 1000 hours in the H-43 helicopter. All this time was flown in support of the fire suppression crash rescue mission at this base.

7. First helicopter unit to log 1000 scramble missions with the H-43 and Fire Suppression Kit. The 1000th mission was flown on the 25th of June, 1962.

8. The helicopter unit with the most H-43 aircraft flying time. Over 2100 hours were flown of which 1754 was in the H-43A and 402 in the H-43B. All of this is accident free flying time.

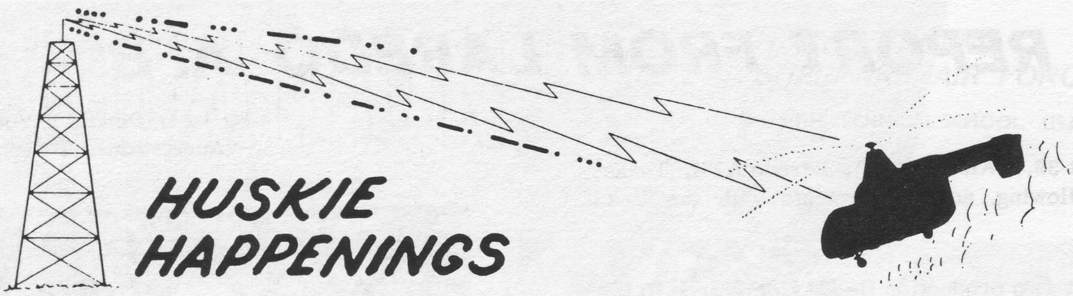
1,000 HOURS—Capt. Bert E. Cowden who flew 725 hours in the piston-engined H-43A and 275 hours in the turbine-powered H-43B HUSKIE. All this time was flown in support of the local base rescue mission at Laredo Air Force Base. During this time, he has flown over 200 scrambles with the H-43 and fire suppression kit. (USAF photo)

9. This LBR Detachment claims to have the greatest number of total helicopter pilot hours and the greatest number of pilot hours in the H-43 for the three assigned Rescue Crew Commanders. They have a combined total of 5580 helicopter hours for average of 1860 hours per Rescue Crew Commander. Of the 5580 hours, 2410 was flown in the H-43 helicopter for an average of 803 hours H-43 time per Rescue Crew Commander. All of this is accident free pilot flying time.

10. The greatest number of people rescued on one mission with the H-43B — 78 civilians — were evacuated during a flood in Mexico on 23 April, 62. The pilots were Captains Clyde W. Lemke and Theodore C. Vurbeff.

11. The greatest number of civilians rescued, a total of 99, by a helicopter unit utilizing the H-43 aircraft. K

DETACHMENT 36—Front row, left to right, Capts. Theodore C. Vurbeff, Clyde W. Lemke (Commander), Lt. Donald E. Van Meter, Capt. Bert E. Cowden. Middle row, A1C James D. Driver, SSgt. Jesus Munoz, Jr., A1C Kermit E. Arvin, A1C Donald D. Powell, SSgt. Leonard J. Bowker, A2C Guadalupe Gonzalez. Rear row, TSgt. William D. Atwell, A1C Charles K. Iten, SMSgt. Richard J. Ryan, SSgt. Louis J. Hosier, SSgt. Roberto Rodriguez, SSgt. Bobby W. Singleton. Not pictured are TSgt. Franklin G. Lee and A2C Charles F. Soderboom. (USAF photo)



HUSKIE HAPPENINGS

...H-43B crew from Det. 7, WARC, Malmstrom AFB, Mont.; tries valiantly to go to aid of diabetic boy seriously injured while riding horseback in rugged mountain area of Lewis and Clark National Forest, but driven back twice by 30 to 40 knot winds, snow, sleet and low cloud cover over China Wall Mountain. A1c J. T. Pease, medic; one of HUSKIE crew, and guide make 8-hour horseback trip in dark over rugged trails to accident victim. With weather slightly better, helicopter takes off at 0600 and picks up boy half an hour later, flys him to waiting ambulance. Also aboard H-43B are Capt. R. M. LeFevre, pilot; 1st Lt. J. H. Pinaud, copilot; and TSgt F. C. Renew, Sr., crew chief.

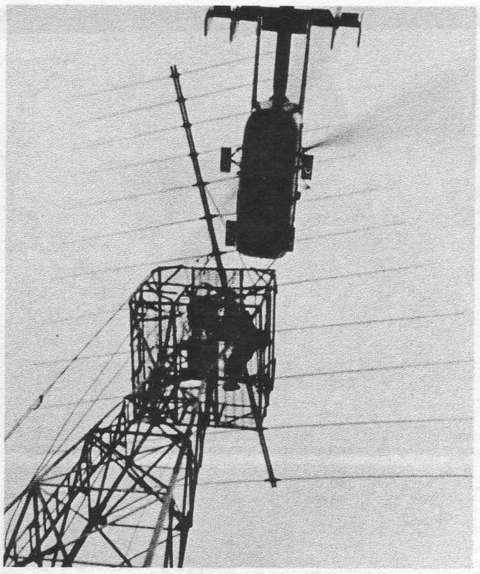
...HUSKIE from Det. 9, WARC, Portland IAP, Ore.; teams up with member of Mountain Rescue Team to rescue college student who plunged down crevasse at 8,500 feet on Mt. Hood. Aboard H-43B are 1st Lt. Donald F. Donk, pilot; Capt. Dennis F. Chase, copilot; SSgt. Fred C. Williams, Jr., crew chief; SSgt William H. Anderson, medic; and Harold E. Frantz, MRT. No landing site available on 50-degree slope so, despite extreme turbulance, Lieutenant Donk sets forward wheels and bear paws on ice while Sergeant Williams and Frantz drop onto slippery surface and lift accident victim to hovering helicopter. Rescuee, suffering from broken leg and severe shock, flown to waiting ambulance.

...On 24 Sept., 1962, Det. 7, Malmstrom AFB, Mont.; becomes first detachment in WARC and second in ARS to log 600 hours on T-53-L-1B engine. Lt. Joseph H. Pinaud, detachment maintenance officer, pilot of H-43B when 600th hour logged. Lieutenant Pinaud was also copilot of new H-43B in which same engine was originally installed and ferried aircraft to F. W. Warren AFB, Wyo.; from factory in July, 1960....Det. 1, 54th ARS, Thule AFB, Greenland; dispatches H-43B after receiving word that 24-foot boat owned by Danish Government washed ashore and damaged at spot 85 miles from base. Trip made in marginal weather over ice cap, fjord and rugged mountains. Helicopter lands on beach close to grounded vessel and eight persons flown to safety. HUSKIE crew consists of Capt. W. J. Murphy, pilot; Capt. R. L. Foster, copilot; and A2c E. G. Gotcher, crew chief. ...H-43B from Det. 1, 54th ARS, Thule AFB, Greenland; flys seriously ill Eskimo woman from Kanak to hospital at Thule. Capt. R. C. Pfadenhaur and Capt. R. L. Foster pilots on mission.

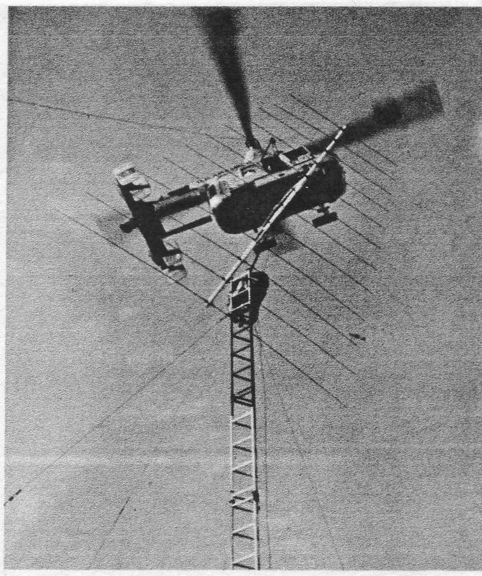
...Det. 6, WARC, Fairchild AFB, Wash.; called upon for assistance with H-43B after crop-dusting plane with two persons aboard crashes on Horseshoe Mountain at 8,072 feet. Detachment earlier informed that a civilian helicopter nearer the scene would give needed aid in rescue work but chopper proves too light to do job. Air Force HUSKIE proceeds to crash site in heavily wooded area and sole survivor, seriously injured, loaded aboard helicopter with help of Smoke Jumpers from Washington State Forestry Department who had parachuted to location earlier. Aboard the HUSKIE are Lt. R. H. Finley, pilot; Lt. P. R. Schildgen, copilot; SSgt. R. H. Meyer, crew chief; and SSgt. Murray, medic.

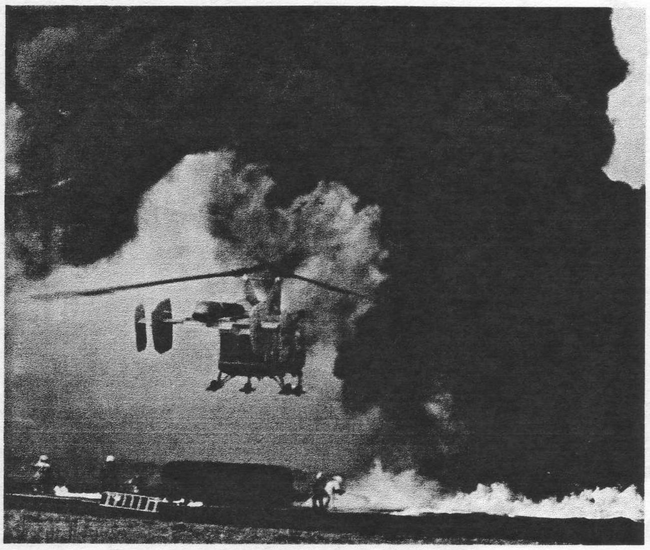
...Crew of HUSKIE from ARS Det. 4, WARC, Paine Field, Wash., called to aid of injured woman mountain climber who fell or slid almost 500 feet down 60-degree slope, finally coming to rest on narrow ledge at 4,200-foot level. H-43B piloted by Capt. Robert D. McDougal, moves in and hovers with rotor tips clearing steep slope by approximately six feet as SMSgt Thomas J. Sternad, medical technician; is lowered on sling. Copter moves off as sergeant gives first aid and secures rescuee in sling, then returns once again to precarious position as woman is loaded aboard. Further treatment then given by Capt. William B. Kinzie, a doctor from the 57th USAF Dispensary, as helicopter makes its way through mountains in gathering dusk. Landing made at Paine Field after dark. Also aboard the helicopter during hazardous mission are 1st Lt. Karl G. King, copilot; and TSgt James E. Johnson, helicopter mechanic.

1,000 HOURS—Capt. Theodore C. Vurbeff of Det. 36, CARC, Laredo AFB, Texas; logged his 1,000th hour in the H-43 helicopter on October 15th during a rescue mission involving a mid-air collision approximately 25 miles from the base. He located both aircraft and picked up the pilots who had parachuted to safety. Captain Vurbeff, center, is shown receiving congratulations from Capt. C. W. Lemke, right, detachment commander and Capt. B. E. Cowden. Captain Cowden, first USAF pilot to log 1,000 hours in the H-43 helicopter (see page 17) also welcomed Captain Vurbeff to the "H-43 1,000-hour club" as the second USAF pilot to log the required number of hours. (USAF photo)



"MISSION WORKHORSE"—Versatile ARS H-43B's help host bases save time and money by carrying out lifting jobs ordinarily performed by cranes. In left photo, HUSKIE from Det. 48, EARC, Dover AFB, Del., hoists 38-foot, 220-pound antenna element to the top of Military Affiliate Radio System's 60-foot tower, doing in 20 minutes what ordinarily would have taken hours utilizing manual labor. H-43B pilot was 1st Lt. Frank W. Larson, 1st Lt. Hugh G. Caldwell was copilot and A2c Andrew C. Paparella, hoist operator. Atop the tower are SSgt Edward Rodilosso Jr., and A2c David A. Weller. In photo at right, an H-43B from Det. 44, EARC, Westover AFB, Mass., is utilized to help place a 350-pound radio antenna atop a 65-foot tower. Capt. Jerome R. Luttinger was pilot, 1st. Lt. William J. Deming, copilot; and TSgt Joseph R. Ratte was hoist operator. Base MARS technicians on the tower are SSgt Richard D. Evans and A1c Daniel W. Grierson. (USAF photo)

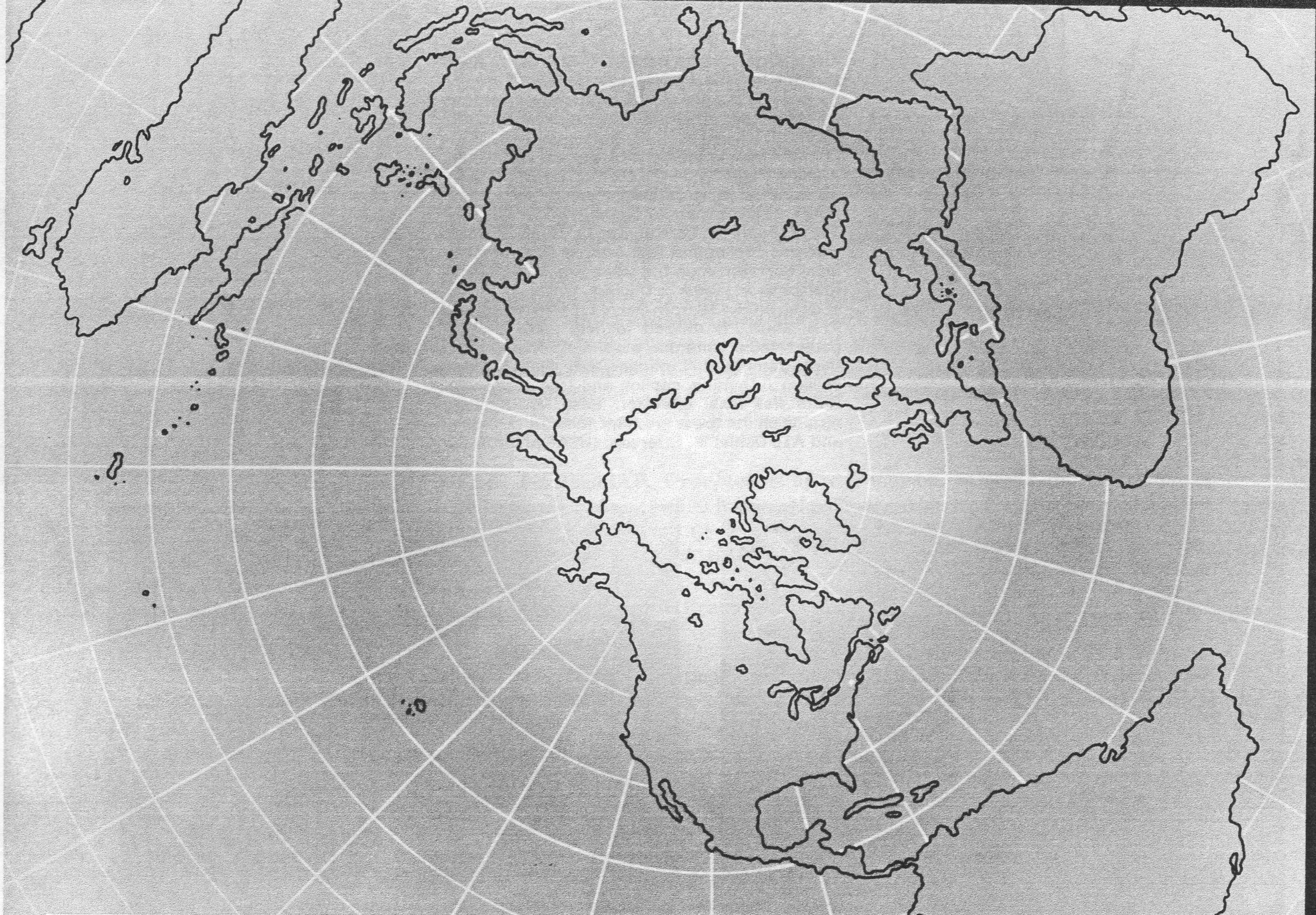




RESCUE TECHNIQUE SHOWN—Typical of demonstrations put on by many ARS units all over the United States in observance of National Fire Prevention Week was this one at Fairchild AFB, Wash. More than 200 boys, most of them Scouts, witnessed the demonstration by Det. 6, WARC. Manning the H-43B were Capt. Bruce M. Purvine, pilot; 1st Lt. Robert N. Schannep, copilot; SSgt Billy E. Harrison, crew chief; MSgt James D. Murray, medical technician; Sgt Gene A. Brownlee and SSgt Eldan L. Miller, rescue technicians. (USAF photo)

HELPING HAND—State Police were saved a back-breaking, 8-hour trip to the top of Mt. Tucumcari recently through the courtesy of ARS Det. 30, CARC, Cannon AFB, N.M. The police wanted to replace a radio transmitter and, since a climb of 600 feet "straight up" was involved, asked the detachment's help. The HUSKIE crew completed the airlift exchange in 25 minutes. Shown are, l to r, Lt. J. R. Miears, SSgt A. P. Parker, crew chief; a police technician; Lt. G. E. Brunk, State Police; Captain Keck, Det. 30 commander.

COMMENDATION MEDAL—Capt. John Armstrong, Jr., Det. 59, Andrews AFB, Md., receives the Air Force Commendation medal for his efforts during the rescue of 15 men from a C-123 which crashed at the Wilmington, N.C., air show in September, 1961. Captain Armstrong, stationed at Seymour Johnson AFB, N.C., at the time, used the rotor downwash of an H-43B to aid rescue work after the crash and also flew survivors to the hospital. On Captain Armstrong's right is Colonel Grover J. Dunkleberg, Commander of the Eastern Air Rescue Center. Colonel Personnette, Operational Control Commander of Det. 59, is shaking hands with Captain Armstrong. (USAF photo)



KAMAN SERVICE REPRESENTATIVES ON FIELD ASSIGNMENT

WILLIAM C. BARR
Cannon AFB, N. M.
Reese AFB, Texas
Sheppard AFB, Texas
Vance AFB, Okla.
Webb AFB, Texas
Kirtland AFB, N. M.
Biggs AFB, Texas

R. C. BOYD
Charleston AFB, S. C.
Myrtle Beach AFB, S. C.
Seymour Johnson AFB, N. C.
Shaw AFB, S. C.

JOHN D. ELLIOTT
Kingsley Field, Ore.
McChord AFB, Wash.
Paine Field, Wash.
Portland Int'l Airport, Ore.

CLINTON G. HARGROVE
Stead AFB, Nev.

DARRELL HEICK
Duluth AFB, Minn.
Grand Forks AFB, N. D.
Minot AFB, N. D.

HOMER HELM
NAAS Ream Field, Calif.

GAROLD W. HINES
Davis-Monthan AFB, Ariz.
George AFB, Calif.
Luke AFB, Ariz.
Nellis AFB, Nev.
Williams AFB, Ariz.

JOSEPH T. JONES
Edwards AFB, Calif.
NAS, Corpus Christi, Texas

JACK L. KING
DAVID M. RUSH
STANLEY M. BALCEZAK
EDWARD F. NOE
DONALD LOCKRIDGE
RICHARD FAIN
NATC, Patuxent River, Md.

ROBERT KRANS
NAS Lakehurst, N. J.

JOHN R. LACOUTURE
O&R, NAS North Island, Calif.
Midway Island
NAS Barbers Pt., Hawaii
VMO-6 Camp Pendleton, Calif.

ROBERT LAMBERT
Brookley AFB, Ala.
Craig AFB, Ala.
Moody AFB, Ga.
Maxwell AFB, Ala.

THOMAS C. LEONARD
Dow AFB, Maine
Loring AFB, Maine
Pease AFB, N. H.
Westover AFB, Mass.

BILL MAGNAN
NS, Mayport, Fla.
NAS Cecil Field, Fla.
O&R, NAS Jacksonville, Fla.

DOMINIC L. RAMONDETTA
England AFB, La.
James Connally AFB, Texas
Laredo AFB, Texas
Perrin AFB, Texas
Randolph AFB, Texas
Laughlin AFB, Texas

RICHARD A. REYNOLDS
Burma

RAY G. RUSSELL
VMO-1 MCAF Jacksonville, N. C.

JACK E. SMITH
Thailand

DONALD TANCREDI
Okinawa

HENRY J. TANZER
NAS Atsugi, Japan
NAS Agana, Guam
NAS Cubi Point P.I.
NAS Sangley Pt. P.I.
Shin Meiwa Ind. Co., Ltd.
Toyonaka City, Japan

TERRELL C. TURNER
Fairchild AFB, Wash.
Glasgow AFB, Mont.
Malmstrom AFB, Mont.

BILL C. WELDEN
K. I. Sawyer AFB, Mich.
Kincheloe AFB, Mich.
Selfridge AFB, Mich.
Wurtsmith AFB, Mich.

ROBERT I. WILSON
Dover AFB, Del.
Griffiss AFB, N. Y.
Suffolk County AFB, N. Y.
Andrews AFB, Md.

CUSTOMER OPERATIONS SECTION

R. L. BASSETT, Asst. Service Manager; W. G. WELLS, Asst. Supervisor, Field Service Representatives.
R. W. SPEAR, Asst. Supervisor, Training