KAMAN *Rotor Tips*

KAMAN AIRCRAFT CORPORATION

PIONEERS IN TURBINE POWERED HELICOPTERS

KAMAN Rotor Tips

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THE COVER

HH-43B heads for lonely HIRAN station in Ethiopia during resupply mission. Every month the HUSKIES ferry in 13,000 pounds of water, fuel and other supplies to sustain each station. Cover by Donald Tisdale, Service Publications.

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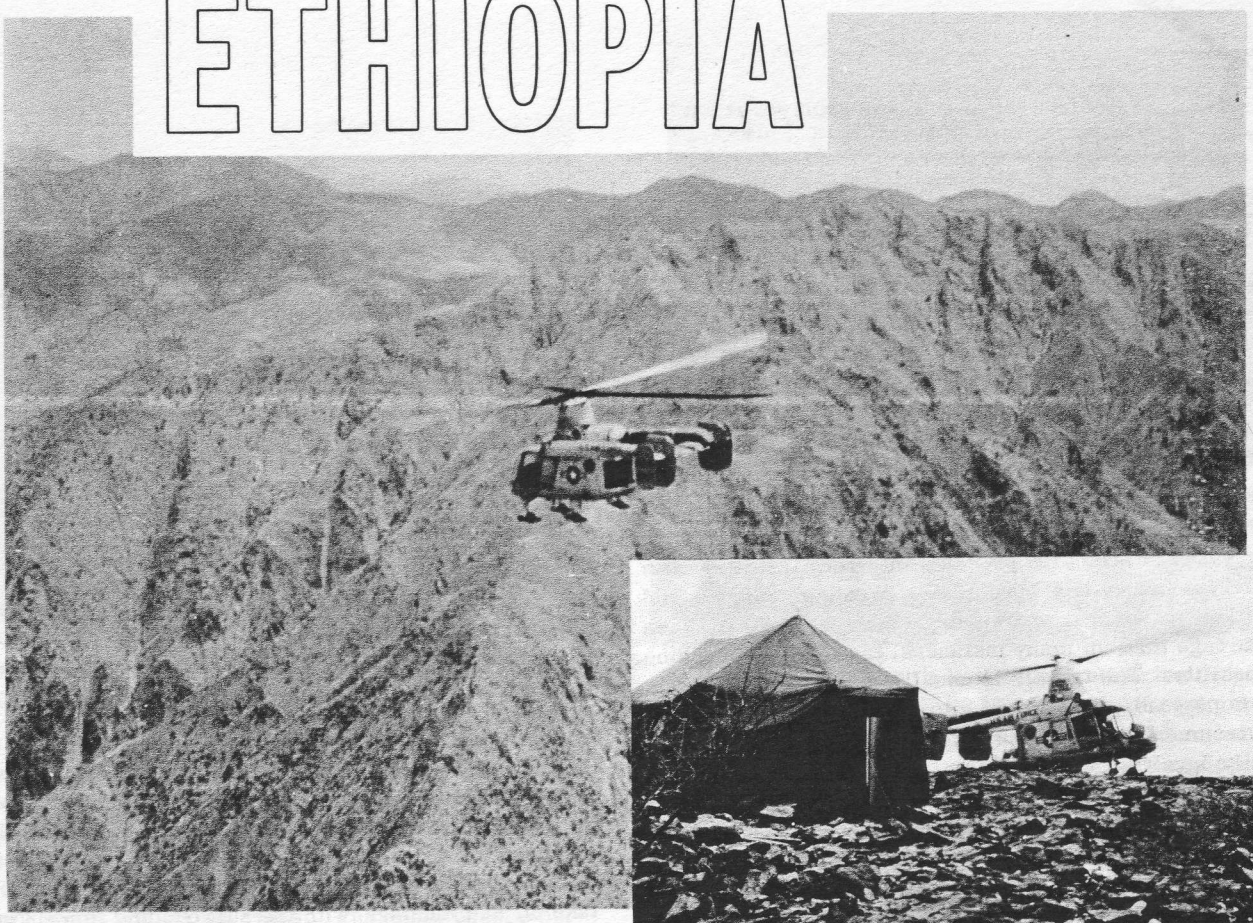
ETHIOPIA



HH-43B CREWS AID IN MATS MAPPING OPERATION

High-flying HH-43B HUSKIES are being utilized by the Military Air Transport Service to aid in mapping Ethiopia. The aerial photographing and mapping, requested by the Ethiopian Government, is being accomplished by three RC-130's from Aerial Survey Team #4, 1370th Photo Mapping Wing, Turner AFB, Ga., under the supervision of a joint Ethiopian-American Mission. The Air Rescue Service HH-43B's are used to supply remote ground stations, most of them on high, almost inaccessible mountain peaks, which form a part of the HIRAN-controlled aerial photography network. Several stations are already in operation in the northern part of Ethiopia and, eventually, a total of 14 will be set up throughout the country. All will be supplied by helicopter.

With its headquarters at the Atlantic Air Rescue Center (MATS), Ramstein AB, Germany, the HH-43B detachment in Ethiopia draws its personnel on a rotation basis from 11 Air Rescue detachments in Europe and Turkey. Personnel and a HUSKIE from the 55th ARSq at Kindley AB, Bermuda, were also called on to participate.

The following account of the Ethiopian mission is based primarily on reports written by Capt Owen A. Heeter, Det 9, AARC, Moron AB, Spain, one of the detachment's first arrivals in Ethiopia, and 1st Lt Maxmillian C. Falk, Det 153, TUSLOG, Cigli AB, Turkey. The photographs were supplied by Lieutenant Falk.

From Norah, a Red Sea island at near sea level to Ate Gebal Mountain, 12,539 feet, is the altitude range flown by the helicopter crews of the ARS detachment staging out of Asmara, Ethiopia. These are the lowest and highest HIRAN mapping stations supported by the detachment which is composed of approximately eight pilots and a dozen mechanics under the command of Capt James R. Lisko.* The HUSKIES carry approximately 20,000 pounds of supplies to each site when the installation is being set up and also ferry in the three-man teams who operate the stations. Most are located on the highest mountains, from 4,000 to 12,500 feet, in various parts of the country. The teams may be assigned as long as six months but, usually, each man spends approximately 45 to 60 days at a station and then is relieved. The airmen are completely isolated and their only contact with the outside world is by radio and helicopter. They usually live in tents except where sturdy Ethiopian Tukuls are required because of the tremendously strong winds. Each month the HUSKIES ferry in 13,000 pounds of water, fuel and other supplies to sustain each station. To the individuals, at their lonely posts perhaps the most important delivery is —— MAIL!

*Captain Lisko, from ARS Det 3, AARC(MATS), Toul AB, France, has since returned to his home detachment. He received the Commendation Medal for his work in Ethiopia.

Flying at an average gross weight of 7000 pounds, each HH-43B carries a payload of approximately 1200 pounds per sortie. Each site presents the HUSKIE crews with different operational problems. Weather, terrain and altitude in various and sundry combinations provide a challenge that, in many instances, tax the man/machine capability. The takeoff is usually made with the maximum payload/gross weight allowable for the operational environment of the supply bases. A flight profile normally involves a climb from desert conditions, flying over rough terrain, and then a cargo deposit/landing in the mountainous terrain of the stations. The landing pads vary from mesa-topped mountains with "no sweat" landing conditions to mountain knolls with an area barely large enough to accommodate the HH-43B landing gear wheels. The flights are often complicated by strong gusty winds and rapidly moving clouds which make enroute flying very difficult and landings at the station quite hazardous and at times impossible.

The type of helicopter operations demanded by this supply mission in Ethiopia is generally not familiar to the majority of the LBR helicopter pilots. Varying cargo weights of radios, generators, electronic equipment, supply boxes and mail occupy the cabin instead of the relatively constant weight of the LBR crew. External sling loads of fuel and water vary drastically when compared to the standard weight of the Fire Suppression Kit. The Ethiopian supply mission confronts the pilots with unusual and sometimes critical cargo loadings and configurations on every flight. Allowance for different helicopter performance at each landing site because of varying altitudes, terrain and weather conditions has become a part of the standard operating procedure.

The ground rules for safe flying during the Ethiopian mission were established by Captain Lisko as soon as the detachment arrived in Asmara. The pilots initially explored the aircraft characteristics while flying at high altitude in the Asmara area which provided 7,616 feet take off and landings with the surrounding terrain going 9,000 feet. Crews and helicopters then transitioned to enroute flying from Asmara to the sites. Two or three days were generally required to establish one station, but a qualified helicopter pilot first conducted a safety, survey before the supply work began. The survey included routes to the site, best approach routes, emergency landing areas, condition of the helicopter pad, weather at the site, power available, and other variables that might aid a pilot flying into the area for the first time. These surveys proved to be very helpful and well worth the time spent. Once the survey was completed, the newly-arrived pilots went to the charts in the Dash One and determined maximum payloads, fuel loads and calculated engine performance data. Operational safety

JOINT EFFORT-Shown after a site-supply mission are, left to right, SMSgt R. W. Ferguson, maintenance, 55th ARSq, Kindley AB, Bermuda; SMSgt D. R. Buchanan, NCOIC, Det 9, Moron AB, Spain; 1stLt R. A. Jones, Capt T. N. Brennan, pilots; 55th ARSq; Capt J. R. Lisko, commander, Det 3, Toul AB, France; Capt C. G. Lunt, pilot, Det 4, Ramstein AB, Germany; 1stLt D. L. Wiest, pilot, Det 84, TUSLOG, Incirlik AB, Turkey; 1stLt M. C. Falk, pilot, Det 153, TUSLOG, Cigli AB, Turkey; Capt H. W. Kruppenback, 1stLt H. R. Chappell, pilots, 55th ARSq; A1c A. E. Parsons (on box), crew chief, Det 8, Bitburg AB, Germany; SSgt B. W. Singleton, A1c J. T. Lavana, crew chiefs, 55th ARSq. All flying is done in civilian clothes.

TYPICAL MISSION—HH-43B's on Red Sea beach are loaded with supplies. HUSKIE, guided by ground crewman standing in a cloud of swirling sand, takes off with a sling load of fuel. Flying over Ethiopian desert with nothing visible but "miles and miles of miles and miles," helicopter heads for isolated HIRAN site. Landing is made on rock-strewn mountain.

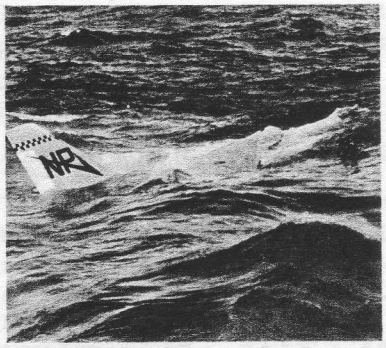
factors were increased by reducing the weight of the load by 200 to 300 pounds.

The living conditions while working away from Asmara were much different from those to which the LBR crews were accustomed. They ate C-rations and drank warm water for several days at a time. At one site they slept in and around the HUSKIES; at another near the coast of the Red Sea, the crews slept on blankets thrown on the floor of some old Italian ruins. The maintenance personnel often worked in the terrifically hot sun pumping fuel into the helicopter from barrels and loading the aircraft. With all of this, the morale was high and the quality of the work was excellent.

In the first month and a half of operation the detachment flew 120 hours, hauled 87,000 pounds of equipment, carried over 100 passengers and flew 7,000 miles of rugged unfamiliar terrain. Not one piece of equipment was lost, broken or damaged. Long hard days were flown in the two HH-43B's and the aircraft performed the job they were expected to do. The only time the aircraft were out of commission was during phase inspection. This says a lot for the aircraft and the quality of maintenance being performed by the ground crews.

"It is a job in which you can readily see your accomplishments and we were proud to go away from each site and say 'mission accomplished!'"

HU-1 In Action



THREE MINUTES TO DECK—The plane above left the angled deck of the USS Hancock and plunged into the sea. Less than three minutes later, HU-1's Det Lima flying plane guard had the pilot back on the carrier. The dramatic sequence was caught by the ship's photographer. Lt(jg) J. M. Fagundes was UH-2 pilot, Lt(jg) R. D. Lehman, copilot, A. P. Berthelot, ADJ3 and W. F. Carlson, ADJAN, crewmen. (Official USN photos)

DET 17 — SARA JOIN IN HUMANITARIAN EFFORT

by A1c Fred Ossmann

DAVIS-MONTHAN AIR FORCE BASE, Ariz., — All right, let's start hauling him up. Slow now... Keep those guide lines tight... Don't let that stretcher basket strike the side of the cliff. You, down below... Keep that basket steady. Let us know when you have the stretcher clear. Up some more... Slow... About 100 feet more. Is he all right? Great! Let's get him in the chopper and on the way to the hospital.

If this description of a few minutes of harrowing rescue procedure sounds like something from a radio drama, you are wrong. These sounds are often heard around the Tucson, Ariz., area. These procedures are continually used by the Southern Arizona Rescue Association (SARA) to teach its some 30 volunteer members the proper procedures for rescuing people from dangerous situations.

President of the group, Tom Harlan, and 30 members recently visited Det 17 of the Western Air Rescue Service at the invitation of 1stLt Jack K. Forsythe. Purpose of the visit was to observe the HH-43B helicopter used by the detachment, and the HUSKIE's associated equipment. In recent months the group has aided in finding and rescuing two people from the rugged terrain of the Catalina Mountains near Tucson.

The SARA is entirely voluntary and operates solely by dues and donations. Their training includes such courses as first aid, mountain rescue techniques, desert survival, use of the winch and cable and mountain climbing. The unit uses two trucks to transport their equipment as closely as possible to the site of the entrapped victims, then uses back-packs to carry the equipment to the scene. Two class sessions and two field trips are held each month to keep the group in good physical condition. This training also furthers their knowledge of rescue procedures necessary for any situation which might arise.

Due to the rugged terrain around Tucson, Det 17 has been called upon many times to assist with their chopper. This is often the only means of transportation which can quickly evacuate victims to Tucson hospitals. The HH-43B HUSKIE, a jet-powered helicopter, is an ideal hovering aircraft. It can move into narrow locations and either hover over the victim until a stretcher basket is lowered, or can land, if the terrain is suitable, and place the victim directly inside. These helicopters are ideally suited for the rugged, southern Arizona terrain.

Close cooperation between SARA and Det 17 has been quite evident in past rescue operations. In an operation in February to bring Neil Martin, a Tucson youth, out of the Tucson Mountains, over 45 volunteer rescue personnel and an HH-43B helicopter from D-M played a real life drama entailing much teamwork. Cooperation during this operation, bringing the boy out of the mountains, was outstanding. SARA and Det 17 personnel received much praise for their efforts.

Since no two rescue operations are ever exactly alike, the SARA has designed some special equipment to aid in unusual rescue operations. One of these was the fabrication of a detachable wheel for a stretcher. In actuality it is the front wheel and tire from a foreign motorcycle attached to the rescue basket. It makes it easier to move the victim through rugged terrain when the group must travel on foot. They have also designed plastic splints, portable first aid kits and various types of steel cable assemblies.

Past rescue operations have seen SARA assisting during floods and helping to locate lost children. The recent visit of the rescue group to Det 17 was to learn more about the capabilities of the Air Rescue Service, and to coordinate plans of action to be taken during disasters. Visual signals and communications procedures were also discussed.

VMO-2 Rescues

A wounded marine, his left thigh torn open and with several skin punctures and lacerations, was evacuated to the hospital in an OH-43D flown by Capt Myrl W. Allinder, Jr., USMC, from VMO-2, MAG-16, MCAF Futema, Okinawa. Sgt John A. Kuchar was crewman aboard the helicopter.

In another incident, an OH-43D piloted by Capt George E. Pratt evacuated an appendicitis-stricken marine from an LVT on the shore of Yuki Baru Island. GySgt Vincent A. Curto was crewman on the overwater flight. A back-up OH-43D was flown by Maj Jack E. Schlarp and Maj R. K. Jones.

SEASPRITE Crewman Honored

Cdr G. E. Kemp, commanding officer of HU-2, congratulates Walter Tkacz, AMS1, who received the Navy Commendation Medal from Secretary of the Navy Paul H. Nitze for heroism displayed in helicopter rescue operations. Tkacz saved two lives at the risk of his own while serving as a UH-2 rescue air crewman attached to HU-2's Det 42 aboard the USS Franklin D. Roosevelt.

Tkacz was in the SEASPRITE on plane guard duty when an aircraft crashed shortly after an evening takeoff from the Roosevelt. He leaped 40 feet into the sea to aid the survivors and, after finding one not in immediate need of assistance, swam through blinding jet fuel to aid the other who was injured and having difficulty in staying afloat. Twelve days later, Tkacz again jumped from a hovering SEASPRITE to rescue a drowning shipmate who had fallen overboard during aircraft recovery operations. The aircrewman fought his way through the turbulence in the wake of the giant carrier to reach the sailor who was completely exhausted and so weak he couldn't hold onto his rescuer. (Official USN photo)

Timely Tips

Spindle Bolt Installation (UH-2)

When installing a spindle bolt on the main rotor retention, be sure to secure the cross assembly to prevent breakage of the droop stop and/or anti-coning stop bumpers. When the retention is installed on the aircraft, the lead-lag pin secures the cross and prevents the bolt-tightening force from being transmitted through the bumpers. On some workbenchs, however, it is impossible to secure the cross assembly and the retention is secured by clamping the outer barrel. In these instances, ensure that the bumpers are either fully engaged or fully disengaged, since the bumpers will deform only if in a partially-engaged position.

W. J. Wagemaker, Service Engineer

Rotor Brake Adjustment (UH-2, HH-43B, HH-43F, OH-43D)

When adjusting the puck-to-disc gap on rotor brake assemblies, a soft-faced mallet should be used to tap the adjusting pins. Hammers have been known to miss and crack the rotor brake housing.

W. J. Wagemaker, Service Engineer

Heater Tube Installation (UH-2)

After accomplishing maintenance on the heater system blower and plenum chamber assembly which entails removal and reinstallation of heater tubes, do not install the cockpit floor panel until the full range of the cyclic control movement has been checked. An improperly positioned heater tube can cause chafing and possible binding of the cyclic control. The clearance is especially critical between the lateral control crank and the heater tube which conducts hot air from the plenum chamber to the windshield defogging diffuser. Correct positioning of the tubes is important. This information will be included in a future revision to NAVWEPS 01-260HCA-2-7.

H. Zubkoff, Service Engineer

Rotor Blade Storage (UH-2, HH-43B, HH-43F, OH-43D)

Before placing rotor blades in the storage racks, ensure that the protective padding on the racks is in good condition. Several recent reports of blade leading edge damage and deice element damage have been received. The evidence indicates that these blades were stored with inadequate protection.

W. J. Wagemaker, Service Engineer

Azimuth Rod Installation (UH-2)

To simplify installation of the K659027 azimuth-to-hub rods, secure the lower (FR4 and FR4R) rodends in the azimuth before the azimuth itself is installed. Using the K604816 rigging fixture, rig the azimuth height, install the azimuth rods and then gap fill each rod to the pitch control beam. Refer to the placard located adjacent to the mixer control assembly on the cabin roof for proper azimuth rod phasing. This information will be added to next revision of NAVWEPS 01-260HCA-2-5.

P. M. Cummings, Service Engineer

Thread Engagement (UH-2, HH-43B, HH-43F, OH-43D)

Safety holes on rod ends often become plugged with a mixture of grease and dirt, making it impossible to visually check for proper thread engagement. Run a piece of safety wire into the hole to check for thread engagement in the tube.

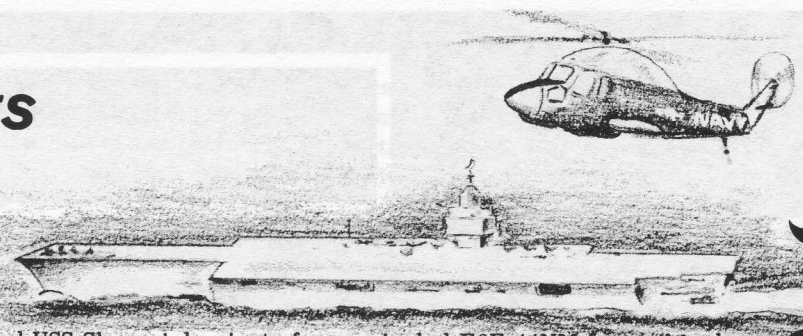
W. J. Wagemaker, Service Engineer

Grounding Wires (UH-2)

If the connection on the aircraft's external DC grounding wire, #P42A2N, or the starter's grounding wire, #K7A2, is dirty, corroded or loose, the high current will cause excessive heat at the connection. This heat may be sufficient to burn a hole in the airframe rib thus allowing the ground wire to drop free and open the circuit. Preventative maintenance should include a periodic inspection of the connection. The Handbook of Installation Practices for Aircraft Electric and Electronic Wiring, NAVAER 01-1A-505 and T.O. 1-1A-14, covers in detail, the grounding of electrical connection.

A. Savard, Service Engineer

SEASPRITE ACTIVITIES



...Air Force pilot attached to Navy squadron aboard USS Shangri-la ejects from crippled F8E 44NM from ship during night flight. SEASPRITE crew from Det 38, HU-2, vectored to scene in high-speed flight from ship and manual instrument doppler approach made. Survivor hoisted aboard by Guy W. McGuire, AMH3, in 30 seconds. Other crewman is Robert A. Schiele, ADR3. For Lt(jg) Paul M. Hoffman, pilot, and Lt James E. Roth, copilot (who have over 1300 hours in SEASPRITE) this is third rescue each in UH-2. Lieutenant Hoffman credits ship's Combat Information Center, the patrol plane and helo crewmen for successful rescue.

...Man overboard from USS Shelton rescued by UH-2 crew from HU-1's Det Alfa aboard USS Midway. Pilot of SEASPRITE is Lt(jg) Salvatore A. Pace; copilot, LCdr Weslie W. Wetzel; crewmen, Johnny E. Hale, ADJAN and Stanley L. Sewell, AE2.

...Fighter pilot who ejected from disabled craft hoisted to safety from small island in Chesapeake Bay by UH-2 crew from SAR, NATC Patuxent River, Md. W. Snell, ACC(AP), is pilot of SEASPRITE; D. W. Long, ADR2, copilot; and G. L. Stephens, ADJ2, crewman.

...UH-2 crew from MCAS Beaufort, S. C., picks up uninjured pilot almost immediately after ejection from stricken fighter. Capt W. David Andrews UH-2 pilot, Sgt Milton Gibson and LCpl Jack R. Amis, crewmen....

...Det Mike SEASPRITE utilized to transfer sailor from destroyer to Ranger for appendectomy. LCdr A. Dalla Betta, UH-2 pilot; Lt(jg) R. G. Nowak, copilot; J. A. Lakner, ADJ3 and T. J. Wisniewski, ADJ3, crewmen.

...Alert UH-2 crew from HU-2's Det 60 sees F4B throwing fiery fragments from engines while being catapulted from deck of USS Saratoga. Both occupants eject and helo is right overhead seconds later. SEASPRITE crewman L. K. Norwish, ADR3, lowered into water to aid radar intercept officer entangled in shroud lines. Crewman and rescuee picked up by life boat from USS Semmes. Other survivor hoisted aboard helicopter by James A. Smith, AE3. Lt Arthur Gover and Lt(jg) Tom Brandon are pilots of UH-2.

...SEASPRITE crew from MCAS Cherry Point, N.C., picks up seriously injured pilot four minutes after plane crash. UH-2 pilot is Lt Stanley B. Sprague, crewmen are Cpls Edward R. O'Connor and Lynn K. Radcliffe.

...UH-2 at NAS Cecil Field, Fla., not available, and other type helicopter without IFR capabilities, so Lt Frederick J. Lakeway borrows SEASPRITE from NAS Jacksonville to make night mercy flight. Accompanied by Louis E. Todd, ADR3, from NAS Jax, Lieutenant Lakeway flies 31 miles out to sea in rain and heavy overcast to pick up Navy chief suffering with appendicitis. Landing made on small flight deck of USS Compass Island, patient is loaded aboard helicopter and flown to hospital.

...SEASPRITE crew from Det Foxtrot aboard USS Constellation makes night rescue of pilot who ejected from aircraft after mid-air collision over ocean. UH-2 pilot is Lt(jg) Loran D. Gruman; Lt Lawrence F. Harpenau, copilot; Burt D. Milan, PR2, and Raymond A. Sprague, ATR3, crewmen.

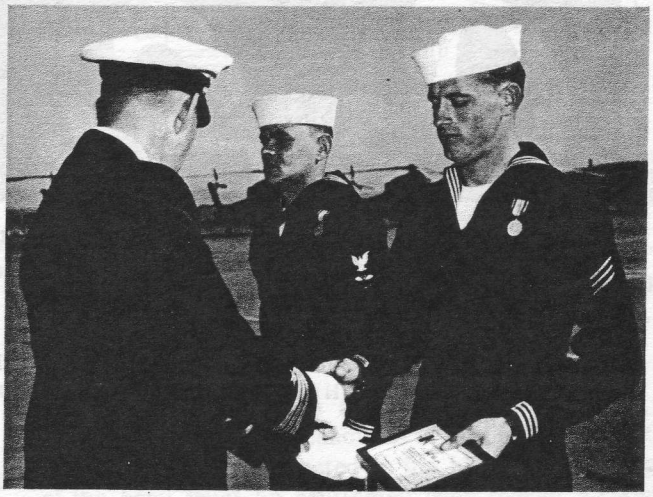
...SEASPRITE crew from SAR unit at NS Adak, Alaska, joins in widespread, week-long search for survivors of 32-man crew aboard SS San Patrick which struck rocks off Ulak Island. UH-2 recovers one body and utilized for photographic mission. LCdr Deloy A. Meyer, pilot; Lt William H. Sumrall, copilot; John Major, Jr., AMH1; Billie B. Stevenson ADR3; and Patrick J. Byrns, PH3, crewmen....SEASPRITE flown by Lieutenant Sumrall and Commander Meyer rescues man with broken hip from fishing boat. Injured man hoisted aboard in litter while helicopter hovers 30 feet above deck and five feet above mast. Crewmen aboard UH-2 are Stevenson and Jimmie D. Petty, AMSAN.

Fast, Fast, Fast

Quick rescue is ever uppermost in the minds of the men who man the plane guard helicopters — it's a big ocean and the man in the water may be injured and in need of immediate assistance.

One of the best examples of this concern with expeditious recovery was found recently when two A4's collided in midair near the USS Independence. The pilots, a Navy lieutenant and an Air Force captain, ejected successfully and were back aboard the carrier in six minutes.

The UH-2 crew which made the pickups had acted so quickly an unexpected hazard was encountered — debris from the midair crash was still falling from the sky when the helicopter swooped down to make the rescues. SEASPRITE pilot was LCdr Charles S. Sapp, Lt(jg) Thomas E. Santay, copilot and William R. Richardson, ADR3, crewman. All are from HU-2's Det 62.



HONORED BY KAC—UH-2 crew from HU-1's Det Echo receives Kaman Scrolls of Honor for hazardous night flight from USS Bon Homme Richard. The 2 a. m. instrument-guided flight was made in poor weather to bring medical aid to a seriously injured crewman aboard the oiler Ashtabula. In first photo, Cdr Dale W. Fisher, HU-1's commanding officer, presents a Scroll to LCdr Lawrence F. Bowman, SEASPRITE copilot. The pilot, Lt(jg) Franklin J. Hall is to Commander Bowman's right. In second photo, Scrolls are presented to SEASPRITE crewmen Clarence J. Britt, AN, right, and Walter E. Zimba, AMS3. (Official USN photos)

NAVY-KAC RESCUE— Lt John Osberg and KAC Test Pilot William J. Hoerman were on a pilot familiarization hop in a UH-2 from VX-1, NAS Key West, when a marine pilot ejected from his disabled aircraft 37 miles off the Florida coast. The SEASPRITE, flying over the station at the time, was immediately vectored to the scene by radar and a minute or two after it arrived the downed pilot was safely aboard the helicopter. Lieutenant Osberg was at the controls during the rescue while Mr. Hoerman operated the hoist from the aft cabin. The Lieutenant's handling of the situation was described later as "outstanding" in view of the fact he had only 12 hours time in the UH-2 and no crewmen or rescue equipment were aboard. Lieutenant Osberg, with model, and Mr. Hoerman, left, both received KAC Mission Awards at a ceremony later. At far left is KAC President Charles H. Kaman, who was visiting Key West at the time, and Capt Paul L. Ruehrmund, commanding officer of VX-1. (Official USN photo)

Personal Guardian Angel

Lt(jg) R. A. Bengtson, a fighter pilot from the Oriskany, has met UH-2 crewman R. E. Hall, AE2, twice under unusual circumstances. The meeting for both was a happy occasion (especially for the Lieutenant) although the circumstances were not. Recently the pilot was forced to eject when his jet was damaged in an attempted landing after returning to the ship from an "Operation Silver Lance" mission. Minutes later when Lieutenant Bengtson was hoisted aboard a hovering SEASPRITE, one of the crewmen assisting was Hall. The pilot and crewman first met six months ago — Lieutenant Bengtson was being rescued at the time.

Piloting the SEASPRITE during the most recent rescue were Lt(jg) F. C. Koch and Ens G. L. French. With Hall was M. B. Wolak, ATN3. The UH-2 is attached to Det Golf aboard the Oriskany and is home based at Helicopter Utility Squadron One, NAAS Ream Field, Calif. Hall, who has been flying for three years, has 700 hours in the UH-2 and has made seven at-sea rescues.

REUNION IN ITALY— LCdr James Yeatropoulos, right, of NAF Naples, Italy, receives congratulations from LCdr Richard Dawson after checking out in a UH-2 at the air facility. With them is Dave Rush, KAC senior service representative. Both officers formerly served in BUWEPSREP capacities at KAC's plant in Bloomfield, Conn. Commander Dawson is attached to HU-4, Lakehurst, N.J., and presently serving aboard the USS Altair. (Official USN photo)

Q's AND A's

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

Q. (Applies UH-2, HH-43B/F) WHAT PRECAUTION SHOULD BE TAKEN WHEN SECURING FLOTATION GEAR FAIRINGS?

A. Be sure and use the specified hardware. NO SUBSTITUTION should be made or it may prevent deployment of the flotation bags. In the UH-2 use AN3DD16A — Bolt, machine, aircraft, aluminum — FSN 5306-151-2184KZ. In the HH-43B/F use AN525D10R32 — Screw, aluminum (this screw is not stock listed by the Air Force).

P. M. Cummings, Service Engineer

Q. (Applies UH-2) IS IT PERMISSIBLE TO USE EXTERNAL WRENCHING BOLTS IN PLACE OF THE INTERNAL WRENCHING TYPE ON THE MAIN DRIVE SHAFT ASSEMBLY, PART NO. PD1320-1?

A. Yes it is. Experience has shown that the hex sockets of internal wrenching bolts are apt to strip after repeated removals and reinstallations. Latest configuration drive shafts are being delivered with external wrenching bolts, part no. EWB18-4H3, FSN RM5306-880-7028-X110.

F. E. Starses, Service Engineer

Q. (Applies UH-2, HH-43B/F, OH-43D) WHAT IS THE MEANING OF HOVERING IN GROUND EFFECT (IGE) AND OUT OF GROUND EFFECT (OGE).

A. When a helicopter is in hover, the air is driven downward through the rotor system. If the helicopter is close to the ground, within one rotor diameter, this downwash strikes the ground below the rotor and air turbulence is formed. The result is that the air between the rotor and the ground is slightly compressed. Being more dense as a result, it forms a cushioning effect between the helicopter and the ground. This is termed the "ground effect." Its net effect is to better support the rotor (and the aircraft) thereby allowing lower power settings for a given gross weight. However this "in ground effect" can be misleading because, as the aircraft moves off (horizontally or vertically), additional power must be applied in order to sustain the same altitude for "out of ground effect." The UH-2 has 22-foot blades and will be aided by ground effect up to 44 feet above the ground. With the HH-43B/F and the OH-43D the blades are 23-1/2 feet long; therefore, these helicopters will be aided by ground effect up to 47 feet above the ground. Ground effect is lost at airspeeds greater than approximately 10 miles per hour since the downwash then is "blown out" below and behind the rotor, rather than building up between it and the ground.

G. M. Legault, Service Engineer

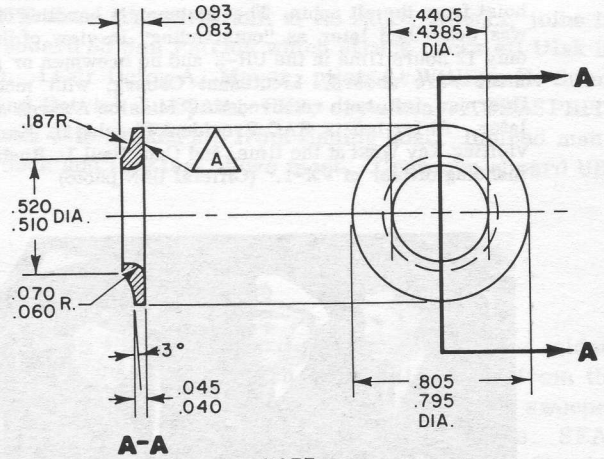
Q. (Applies HH-43B/F, OH-43D, UH-2) WHAT ROUTINE PRECAUTIONS SHOULD ALWAYS BE OBSERVED WITH REGARD TO LUBRICANTS?

A. (1) Make sure to use the lubricant specified in the handbook. Using a lubricant other than the one specified may not only reduce lubricating efficiency but, in some cases, can be harmful. (2) Make sure that grease containers and grease guns are well identified as to content and that they are kept clean. Grease containers should be kept covered and before a grease gun or other containers is filled, it should be checked to make sure it is free of dirt or grit. Leaving grease containers uncovered or dipping into them with unclean equipment can nullify any amount of diligent lubrication and generally will cause more harm than inadequate lubrication. (3) Always wipe grease fittings clean before lubricating to avoid forcing foreign matter into joints and, after lubricating, wipe the fittings again to prevent foreign particles from being trapped in the excess grease. This will also prevent grease from being slung onto adjacent surfaces where they may have an adverse effect and, in addition, create a safety hazard for personnel. (4) Whenever it is suspected that a grease other than the one specified has been used in bearings or equipment, they should be thoroughly purged or washed in solvent prior to reservicing with a new type. Always consult the maintenance handbook for the specified lubricant. Many of the grease concerns and recommendations also apply to the use of oils in helicopter systems. These systems should be serviced only with specified types of oil and be handled with clean equipment. Oil systems of costly components can be contaminated by such offhand carelessness as failure to wipe off a dirty dip stick prior to reinserting it into a tank, or installing unclean plugs into sumps.

G. M. Legault, Service Engineer

Q. (Applies UH-2) CAN SPACER K615082-13, USED WITH THE INBOARD FLAP BEARINGS, BE MANUFACTURED LOCALLY?

A. Yes, if necessary, these spacers can be manufactured locally by using the drawing below.



NOTE

17-4 PH CORROSION RESISTANT STEEL BAR CONFORMING TO AMS 5643.

HARDEN TO H1025, RC 35-42.

W. J. Wagemaker, Service Engineer

Q. (Applies UH-2, HH-43B/F) WHAT PRECAUTIONS SHOULD BE TAKEN WHEN ESTABLISHING ALKALINE BATTERY (NICKEL-CADMIUM, SILVER-ZINC) MAINTENANCE FACILITIES?

A. Separate facilities should be maintained. The Handbook of Naval Aircraft Storage Batteries, NAVWEPS 17-15 BAD-1, advises that "separate battery ships or, at least, separate rooms should be reserved for lead-acid and alkaline batteries. The usual battery shop benches, tools and other equipment used with the lead-acid battery are contaminated by sulfuric acid which will damage nickel-cadmium or silver-zinc batteries."

A. Savard, Service Engineer

Q. (Applies UH-2) WHEN INSTALLING FLAPPING BEARINGS IN THE RETENTION ASSEMBLY CLEVIS BORES, SHOULD THEY BE RETAINED WITH "LOCKTITE" OR ZINC CHROMATE PRIMER?

A. The use of either "Locktite" or zinc chromate primer is NOT RECOMMENDED during this installation. By design tolerance the fit of these bearings in the clevis bores can be from 0.0008 loose to 0.0008 tight. Normally, only hand pressure is necessary to install the bearings in the clevis bores. Using "Locktite" or zinc chromate primer could contaminate the bearings and, in addition, the "Locktite" might create the need for excessive force when removing the bearings, possibly causing damage to the clevis ears.

W. J. Wagemaker, Service Engineer

Q. (Applies UH-2) WHAT TORQUE SHOULD BE USED WHEN INSTALLING THE CHIP DETECTOR ON THE SPEED DECREASER GEAR BOX?

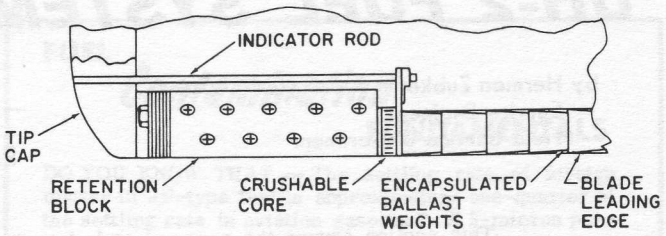
A. The proper torque is 50 to 70 pound-inches. This information will appear in the next revision to the Handbook of Maintenance Instructions, NAVWEPS 03-1-176.

H. Zubkoff, Service Engineer

Q. (Applies UH-2, HH-43B/F, OH-43D) WHAT DOES THE LAST LETTER REPRESENT IN MIL SPECIFICATION NUMBERS?

A. This letter represents a MIL specification change but does not effect the intended use of the material called out by the specification. An instance of this is MIL-L-7808D oil. This MIL specification has had four changes as indicated by the letter "D;" however, the use of applications of the oil have not changed. If the material is changed to such a degree that it can no longer meet the specification, the specification will then be obsoleted and a new one issued under another number.

G. M. Legault, Service Engineer



Q. (Applies UH-2) WHAT IS THE PURPOSE OF THE SLOTTED SCREW HEAD SEEN AT THE EXTREME OUTBOARD SURFACE OF THE STAINLESS STEEL TIP CAP ON THE K611008-209 ROTOR BLADES?

A. The screw head is actually an indicator rod. Its purpose is to show the condition of the bond which retains the ballast weights located in the blade spar. Integrity of the bond must be confirmed even though a retention block is attached to the spar one-half inch outboard of the weights to act as a fail-safe and prevent loss of the weights in the event the bond should fail. Between the weights and the retention block an indicator assembly is installed which is designed to crush if centrifugal compressive loads—such as those induced by loosened weights from rotor overspeeds—are encountered. This assembly includes the indicator rod which extends to, and is adjusted to be flush with, the tip cap surface. In the event of a bond failure, the weights will move outboard to the retention block, crushing the indicator assembly and causing the indicator rod to protrude through the orifice in the tip cap. The position of the retention block and indicator assembly restricts movement of the unbonded weights to 3/8 inch. The indicator rod should be adjusted only at assembly or tip cap replacement, but should be checked visually at each daily inspection and after any suspected rotor overspeed. Any protrusion of the indicator rod through the tip cap makes blade replacement mandatory.

N. E. Warner, Service Engineer

Q. (Applies UH-2, HH-43B/F, OH-43D) IN ADDITION TO CHECKING THE GENERAL CONDITION OF COMPONENTS AND THE SECURITY OF ATTACHING HARDWARE, WHAT ARE SOME OF THE TELLTALE SIGNS OF IMPENDING TROUBLE WHICH AN EXPERIENCED MECHANIC LOOKS FOR WHILE INSPECTING THE HELICOPTER?

A. An experienced mechanic looks for: excessive fuel, oil, and grease leaks; discoloration or finish blistering which is usually associated with an overheating condition; black lines on aluminum surfaces which can indicate the beginning of a crack; whitish color under fiberglass which indicates a void; white crazing lines which indicate a crack or surface failure; defects, such as lines in finish which, especially in wood, can foretell of cracks developing underneath; buckled or distorted skin which indicates possible damage underneath; rubbing or chafing marks which indicate something has shifted.

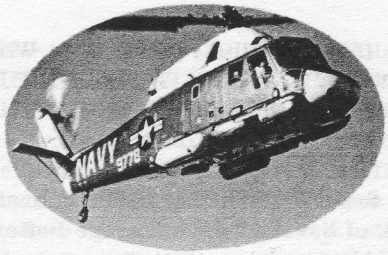
N. E. Warner, Service Engineer

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

UH-2 FUEL SYSTEM

by Herman Zubkoff
Service Engineer
Field Service Department

PART IV



This section covers the power plant fuel system. The three preceding issues of Rotor Tips carried Part I — The aircraft internal and auxiliary fuel system; Part II — fuel transfer system and Part III — pressure fueling, suction defueling, and the fuel quantity system. The concluding part of the UH-2A/2B fuel system description will appear in the next issue and deal with the fuel control system.

The Power Plant Fuel System will be discussed in the following order: (a) general (b) centrifugal purifier (c) fuel pump (d) fuel control, pilot valve and stator vane actuator (e) oil cooler (f) static filter (g) flow divider (h) fuel manifold and nozzle assembly.

(a) General: The power plant fuel system (see fig. 1, fuel system components) delivers fuel from the aircraft supply to the combustion section of the engine. Fuel is supplied by the aircraft boost pump to the inlet of the engine-driven centrifugal fuel purifier. It then passes into the engine-driven fuel pump inlet. The fuel is converted into high pressure by the high pressure element of the fuel pump and then passes through the fuel control filter into the fuel control unit. Metered fuel then flows from the fuel control, through the oil cooler, the static filter, the flow divider and into the fuel manifolds and nozzles which spray the fuel into the combustion chamber. Excess fuel is returned from the fuel control unit, through an internal passage, to the engine-driven fuel pump inlet. Fuel nozzles in the manifold are equally spaced through 360° and project into the combustion chamber through the dome of the combustion liner. This spacing provides for a circular spray pattern under all operating conditions and power settings. The fuel control also includes an emergency system. In the event of malfunction of the automatic portion of the fuel control, the throttle valve can be manually opened and controlled by the pilot. This will be further explained in sub-paragraph (d). A by-pass or "detuner" line between the fuel control and the oil cooler provides fuel system pressure stability by absorbing fuel surges. As the fuel

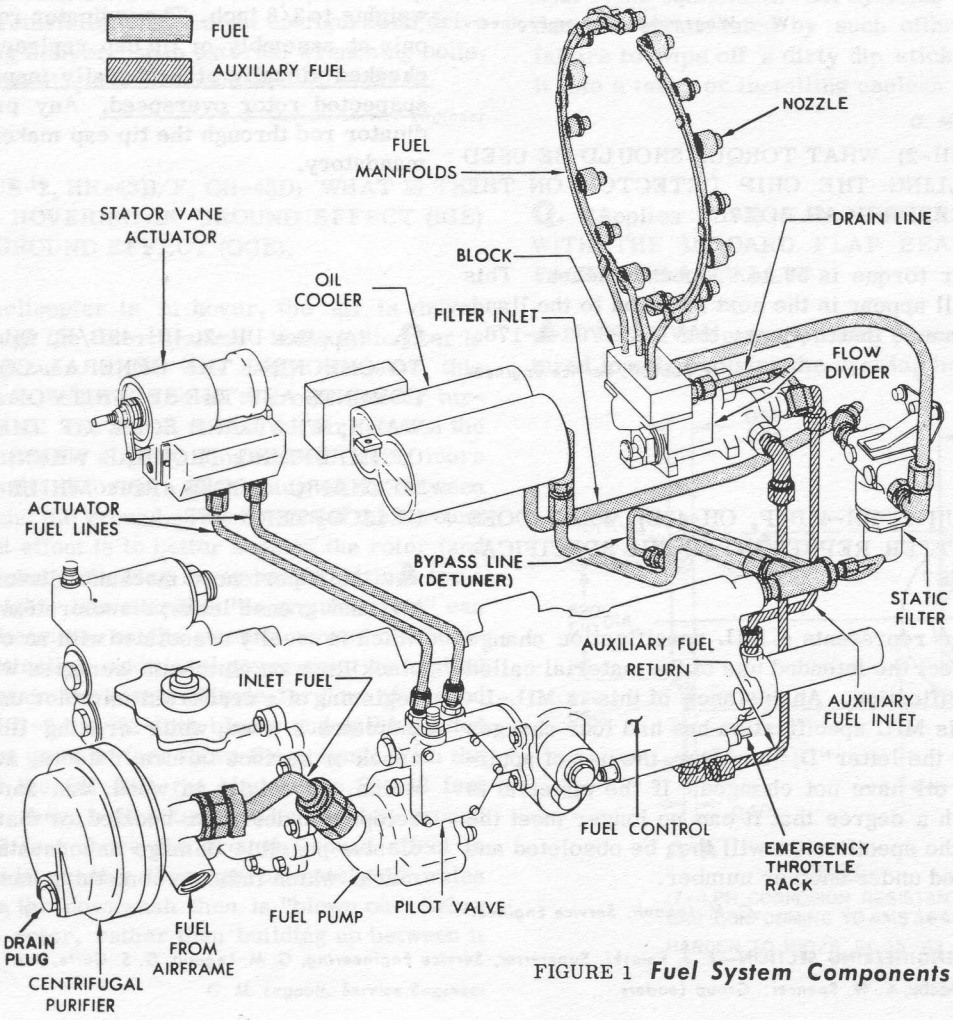


FIGURE 1 *Fuel System Components*

passes through the fuel control unit, a portion of the fuel is directed into the pilot valve, where it is further metered and then directed into the stator vane actuator. This will also be further explained in sub-paragraph (d). An auxiliary metering valve in the fuel control directs additional fuel into the flow divider through the auxiliary fuel inlet line. A temperature-sensing valve bellows in the flow divider allows this auxiliary fuel to flow into the combustion chamber to compensate for low fuel temperature during the starting cycle. Excess auxiliary fuel is returned to the fuel control through the auxiliary fuel return.

(b) Centrifugal Purifier: The centrifugal purifier (see fig. 1) is mounted on the left side of the engine on the forward face of the accessory drive gear case. It is driven by a splined shaft from the accessory gear train and removes fuel contaminants by centrifugal action. The filtering element consists of an inner and outer centrifuge, each of which includes a contaminant trap. The element rotates at a speed of 4200 RPM when the gas generator RPM is 26,300 (100%). A simple clamp arrangement permits removal of the element for cleaning and inspection without removing the entire purifier from the engine, and without disconnecting any of the lines. A drain plug is provided to drain off trapped fuel before the element cover is removed.

(c) Fuel Pump: The fuel pump (see fig. 1) is mounted on the aft left face of the accessory drive gear case, opposite the centrifugal purifier. It is driven by a splined shaft from the accessory gear train and is bolted to the fuel control. Removal of the pump requires removal of the complete fuel control and fuel pump as an assembly, after which the pump can be separated from the fuel control. The engine-driven fuel pump converts aircraft boost pump pressure to the high pressure required to operate the fuel control. The pump is composed of two sections: a centrifugal impeller boost pump and a single element high-pressure gear pump. Both are contained in a single housing. Fuel from the purifier is directed through the fuel pump 'IN' port which leads to the impeller boost pump section. It then passes into the high-pressure gear pump section, through the pump internal 'OUT' port and directly into the mating fuel control inlet.

FUEL *Contamination* FUNDAMENTALS

DO YOU KNOW THAT — The settling rate of foreign matter in JP-type fuel is approximately one-quarter of the settling rate in aviation gasoline? A 5-micron particle will settle approximately 1-1/2 feet per hour in gasoline but only about 4 inches per hour in JP fuel. Foreign matter in JP fuel, therefore, remains in suspension longer and cannot be drained from the sumps of gas turbine aircraft, on a daily basis, as effectively as from the sumps of reciprocating aircraft.

(d) Fuel Control, Pilot Valve and Stator Vane Actuator: The fuel control (see fig. 1) is attached to the fuel pump and is driven by a splined shaft from the pump. It includes the pilot valve which controls the variable stator vanes. The fuel control filters the fuel, controls the internal fuel pressure and automatically adjusts fuel flow to maintain the desired power output.

The pilot valve (see fig. 2, pilot valve and actuator) is mounted on the forward part of the fuel control. It is connected to the variable stator vane actuator by a flexible feed-back cable and two fuel tubes. A signal rod from the fuel control mechanically positions the pilot valve piston, which meters fuel from the fuel control to the stator vane actuator. This metered fuel positions the actuator piston which, through mechanical motion, adjusts the variable stator vanes to the position called for by the fuel control. The flexible feed back cable senses the relative change in the position of the actuator piston and mechanically transmits this back to the pilot valve, returning the pilot valve piston to a neutral position, where it is then ready for new input signals from the fuel control.

Fuel flow from the fuel pump (see fig. 1) into the fuel control passes through the fuel control filter located in the forward part of the fuel control housing. The filter assembly consists of a cylinder, a fine mesh filter screen, a by-pass valve and a drain plug. If the filter

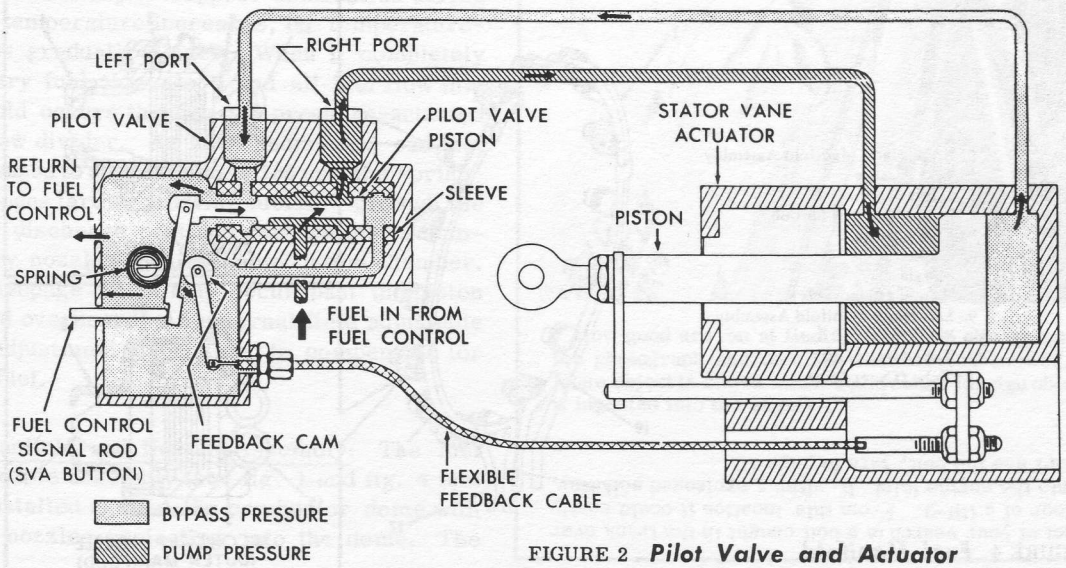


FIGURE 2 *Pilot Valve and Actuator*

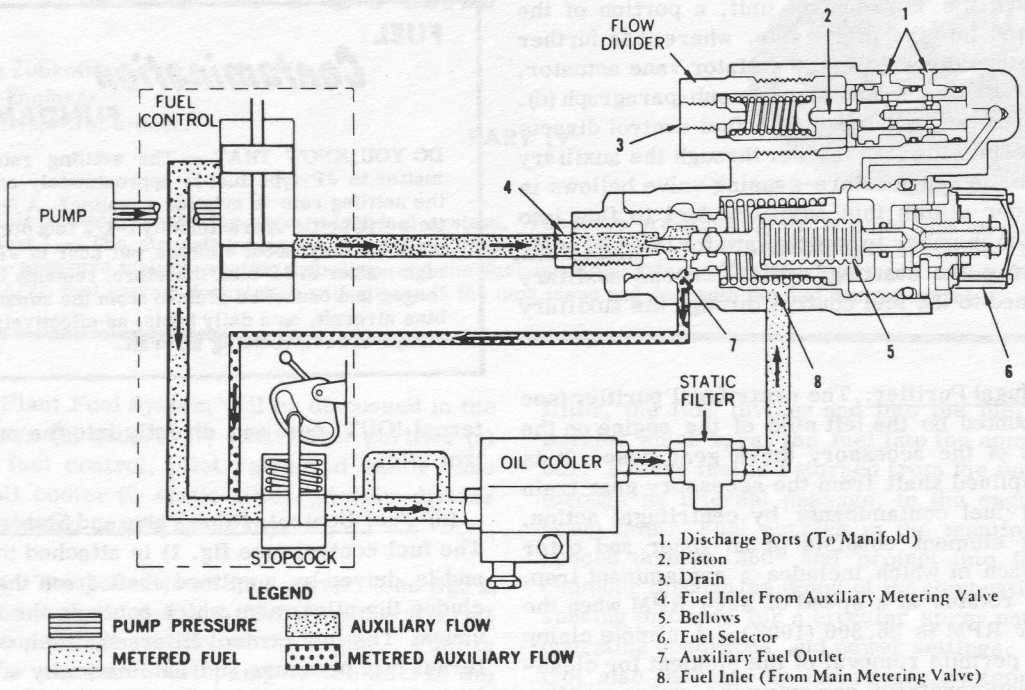


FIGURE 3 ***Flow Divider Components***

screen becomes clogged, fuel will by-pass the screen to permit limited engine operation.

The fuel control automatically modulates engine fuel flow and pressure to maintain a constant free turbine speed, thus automatically maintaining a constant helicopter rotor speed, which is selected by the pilot. In normal system operation, the fuel control senses the pilot-selected power control lever position, the gas generator speed(Ng), the power turbine RPM(Nf), the compressor discharge pressure(CDP), and the compressor inlet temperature(CIT). The governing portion of the fuel control converts these signals into mechanical motion which positions a servo to control movement of the throttle valve. The throttle valve then schedules proper fuel flow to maintain the desired engine power output.

During the starting cycle an auxiliary metering valve in the fuel control meters additional fuel to the flow divider temperature sensing valve. This provides additional fuel during the starting cycle to compensate for low fuel temperature. Excess auxiliary fuel is returned to the fuel control through the auxiliary fuel return line. As fuel temperature increases, the temperature sensing valve in the flow divider gradually closes. When it is completely closed, auxiliary fuel flow stops and all fuel flow from the fuel control unit to the flow divider is controlled by the main throttling valve, which is governed by the metering portion of the fuel control.

In the event of failure or malfunction in the main or normal system of the fuel control, an emergency manual control is provided for opening the throttle valve. This manual control overrides the metering system which normally controls the throttle valve. When the fuel switch is placed into EMERGENCY from NORMAL, the emergency actuator circuitry is energized. When the INC RPM switch is actuated, the emergency actuator opens the main throttling valve in the fuel control. In effect, this provides a direct fuel flow from the pump,

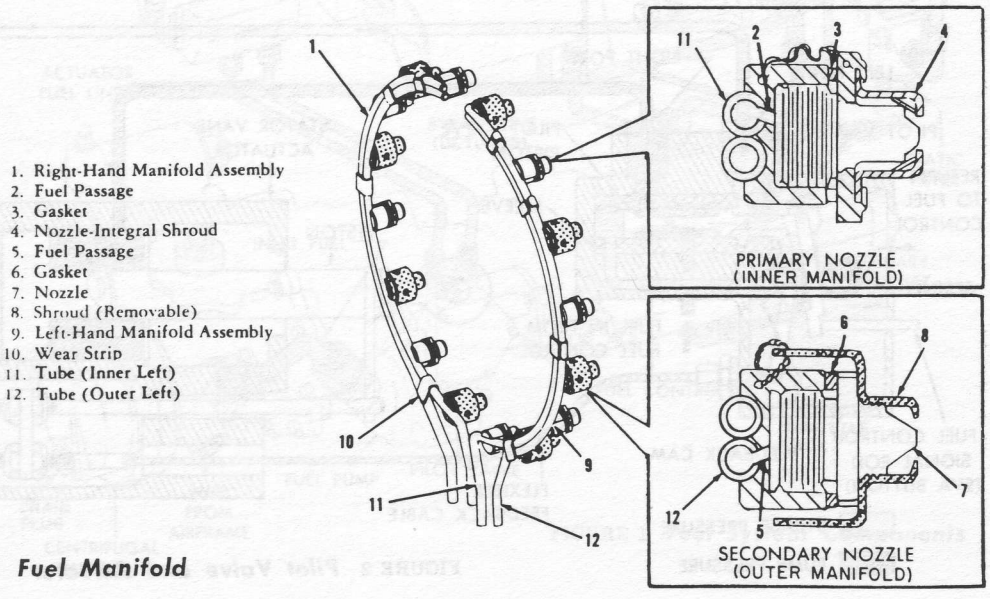


FIGURE 4 ***Fuel Manifold***

through the fuel control to the engine. Once the main throttling valve is open, power settings are controlled by the twist grip.

The fuel control also contains a relief valve which limits internal fuel pressure to 900 psi, a shutoff valve or stopcock and an overspeed governor which reacts to sudden uncontrollable over-speeds to decrease fuel flow.

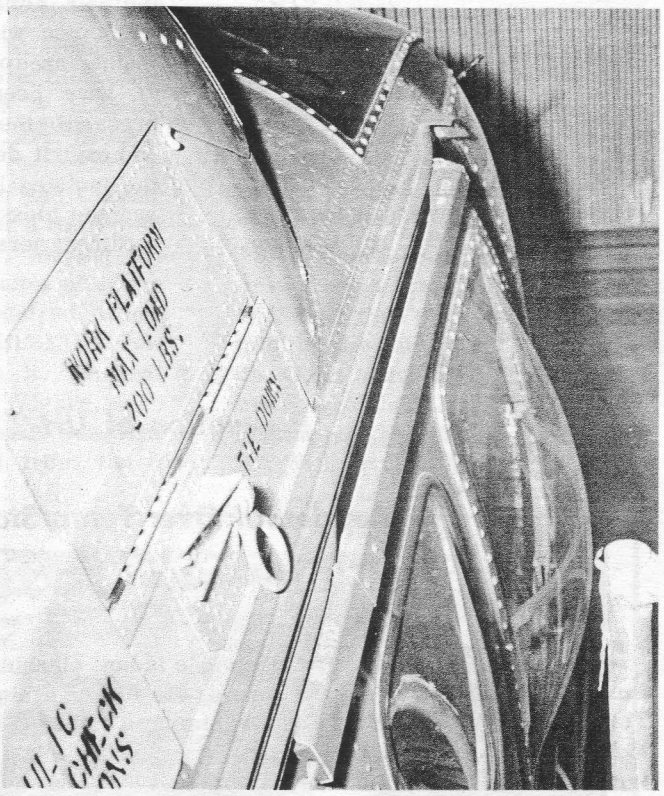
(e) Oil Cooler: The engine mounted oil cooler (see fig. 1) merely provides a path for the fuel flow. Engine oil heat dissipation is accomplished by absorption of heat from the oil by the lower temperature fuel as it flows through the respective passages in the cooler.

(f) Static Filter: The static filter (see fig. 1) is mounted up-stream from the flow divider, at the 7 o'clock position on the rear flange of the combustion case. Fuel flows from the oil cooler through the static filter and into the flow divider. Its primary purpose is to exclude contaminants from the flow divider and the fuel discharge nozzles. The static filter is a small bowl-type high pressure unit. The bowl contains a removable 40-micron micromesh pleated filter element. The filter unit head includes a spring loaded by-pass valve which opens when a pressure differential of 25 to 35 psi occurs due to a clogged filter element.

(g) Flow Divider: The temperature sensing flow divider (see fig. 1 and fig. 3 flow divider components) is mounted on the fuel manifold block which, in turn, is secured to the outer combustion chamber. It is essentially a pressure-operated unit with a fuel temperature-sensing bellows to compensate for fuel temperature variations during the starting cycle. It limits fuel flow during starts to prevent exceeding exhaust gas temperature(EGT) limitations at low compressor speeds. As RPM increases, it automatically increases fuel flow to properly support combustion. During the starting cycle, when fuel pressure into the flow divider reaches approximately 140 psi, a spring-loaded piston opens allowing fuel flow into no. 1 fuel manifold and into the combustion chamber through the 8 primary fuel discharge nozzles. At the same time, auxiliary fuel from the fuel control is directed into the temperature-sensing bellows which compensate for fuel temperature by providing the additional fuel necessary to support combustion during start. As fuel temperature increases, the temperature-sensing bellows gradually closes. When it completely closes, auxiliary fuel flow stops and all fuel flow into the fuel manifold occurs through the pressure-actuated ports in the flow divider. As RPM increases, and fuel pressure increases to approximately 185 psi, the spring-loaded piston opens farther allowing fuel flow through the no. 2 manifold discharge port and through the remaining 8 secondary nozzles into the combustion chamber. Internal fuel seepage which may occur past the piston seals is drained overboard. An external field adjustable fuel selector adjustment is provided to compensate for JP-4 or JP-5 fuel.

(h) Fuel Manifold and Nozzle Assembly: The fuel manifold and nozzle assembly (see fig. 1 and fig. 4 fuel manifold) is installed against the combustor dome with the discharge nozzles projecting into the dome. The assembly consists of two halves. Each half is composed of an inner or no. 1 tubular-type manifold, and an outer or no. 2 tubular manifold. Each half has 8 discharge nozzles. Four discharge nozzles are attached to the inner (referred to as the no. 1 fuel manifold) and 4 nozzles are attached to the outer (no. 2 fuel manifold) for a total of 8 nozzles in each half or a total of 16 nozzles for the complete assembly. The nozzles on both the inner (no. 1) manifolds are referred to as the primary nozzles. Fuel flow occurs through the primary nozzles first during the initial stage of the starting cycle. The nozzles attached to the outer (no. 2) manifolds are the secondary nozzles. After the initial phase of the starting cycle occurs and the fuel is ignited, additional fuel required to properly support combustion flows into the combustor section through the secondary nozzles. The primary and secondary nozzles have a different spray pattern and are, therefore, not interchangeable from one manifold to the other. Integral shrouds around the orifice of the primary nozzles and removable shrouds around the orifice of the secondary nozzles direct compressor discharge air about each orifice to reduce the formation of carbon residue on the nozzles. K

FOD FACTS



How good are you at finding FOD? To check yourself, study the photograph and then see the inverted answer. Only one loose object is shown which could cause foreign object damage if ingested into the engine.

The object of your search is a bolt caught in the track over the cabin door of a UH-2. From this location it could easily be drawn into the engine inlet. If, after a prolonged scrutiny, you still can't see the bolt, turn to page 17.

DET ONE RECEIVES OUTSTANDING UNIT AWARD

ARS Det 1, 54th Air Rescue Sqdn(MATS) at Thule AB, Greenland, has been awarded the Air Force Outstanding Unit Award for exceptionally meritorious service from June 1, 1963 to May 31, 1964. The award was presented to Capt James H. Black, Jr., detachment commander, by LtCol William Carlyon, 54th ARSq operations officer, Goose AB, Labrador.

The detachment was cited for the "outstanding initiative, resourcefulness and leadership displayed by personnel," and for achieving a zero aircraft and ground accident-incident rate while successfully completing many rescue and supply support missions "despite extremely adverse weather, lack of navigational aids and personal hardships." In summation, the citation said, "the singularly distinctive accomplishment of all members of the detachment reflects great credit upon themselves and the United States Air Force."

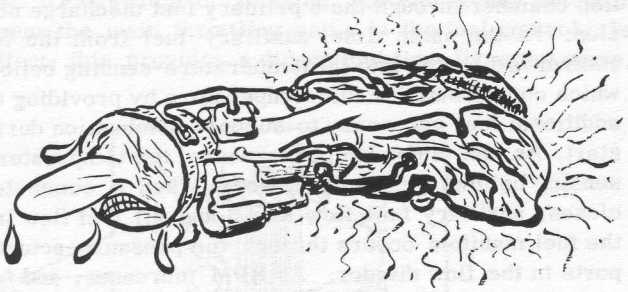
During the period covered, detachment personnel flew 314 missions in their HH-43B's, many of them over long stretches of Arctic ice, open water or the desolate Greenland ice cap. Kaman Scrolls of Honor were awarded the crew of one detachment HUSKIE for saving the life of a critically-ill child during an extremely hazardous mission.

TYPICAL MISSION—During the award period, Det 1 HH-43B crewmen flew 80,000 pounds of cargo and mail to Cape Athol a Coast Guard LORAN station 18 miles from Thule. For about 10 months of the year, helicopter is the only means of transportation to the lonely post less than 700 miles from the North Pole. Transferring mail from the HUSKIE to a trackmaster are R. H. Jones, SA, and T. Tillman, Sr., DC2, USCG. In the helicopter are, left to right, R. P. Kiddy, FA, USCG, and Capts Robert L. Gardner and Franklin L. Wilton of Det 1. (USAF photo)

In a letter nominating the detachment for the award, LtCol Ernest L. Reid, commander of the 54th ARSq, credited detachment men with a "high level of maintenance proficiency" and said "I have been consistently impressed by the high level of morale and espirit de corps. In spite of the isolated location of the base and the bleak surroundings, detachment personnel expended that 'little something extra' to complete their mission."

Representing the unit at the award presentation were Captain Black, Capts William F. Clark, Franklin L. Wilton, Robert L. Gardner, Arthur W. McCants, Jr., Clarence C. Campbell; SMSgt Ashby L. Rice, Jr., TSgts Knight C. Younkin, Grady L. Dunn; SSgts Boyd L. Buchholz, John P. Shirkey, Francis L. Lown, Wayne E. Dondero; and A1c Billy F. Brock, Roy F. Taulbee and Thomas D. McKiddie.

Prevention of UH-2 Accidental Over-Temp Starts



After a false start, or when the engine is hot, clearing runs are usually made before starting the engine again. This is accomplished by placing the "Starter Test" switch to "Test" position. Pilots vary in their procedure slightly, but generally release the "Starter Test" switch when compressor RPM (Ng) is between 12% to 18%, and then immediately go into the normal start procedure. At this point, it is important to remember to place the boost pumps switch to "ON." If this step is overlooked, an engine over-temp condition can occur for the following reason:

When the throttle is cracked during normal start, pressurized fuel in the fuel control unit will be directed into the combustion chamber. If the fuel pumps switch is "OFF," the starter will not be energized to accelerate Ng — however, the ignitor plugs will fire when the trigger is depressed. The fuel in the combustion chamber will ignite, turbine inlet temperature (T5) climbs and compressor RPM decreases. If the pilot reacts quickly enough and closes the twist grip, releases the trigger and places the "Starter Test" switch to test position, he can blow the fire out with no damage.

An in-production change which would wire the ignitors through the fuel pumps switch has been implemented to prevent an accidental over-tempt start from occurring in the manner described. Field retrofit is being considered.

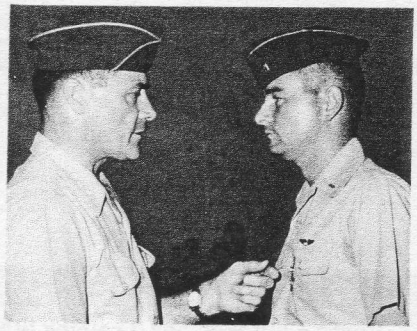
HH-43F CREWS HONORED FOR VIETNAM RESCUES

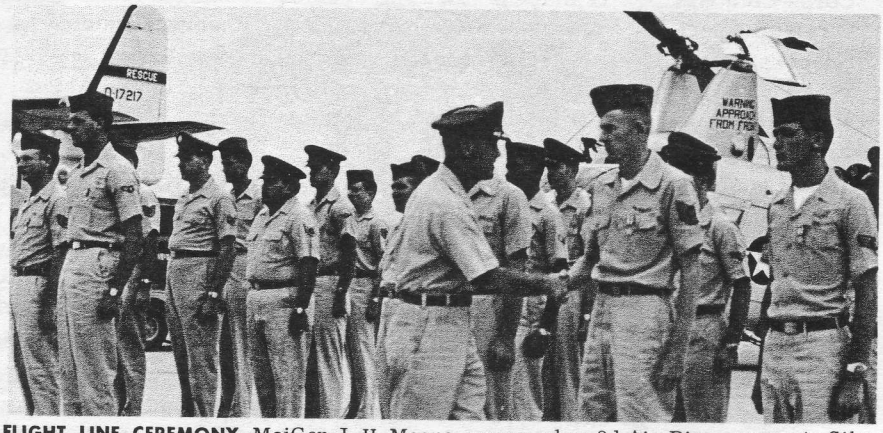
DANANG AB, VIETNAM (OI)—Amidst the whine of taxiing jets, the drone of departing transports, and the drum beat of hovering helicopters, two Det 5, PARC crews were presented Silver Stars by MajGen Joseph H. Moore, 2d Air Division commander, during a recent flightline ceremony.

The crews were involved in a daring series of rescue operations into North Vietnam following a strike mission that saw six aircraft downed by enemy fire. The first HH-43 crew, led by Maj Ronald L. Ingraham, flew rescue missions for over two and a half hours in search of downed pilots. After flying cover in North Vietnam coastal waters while another helicopter picked up the first pilot, Major Ingraham proceeded inland for the second pilot. Exposed to constant ground fire, the HUSKIE went 15 miles into enemy territory where the pilot was spotted in the jungle and lifted 100 feet to the safety of the aircraft.

The second crew, also in an HH-43 and led by 1stLt Joseph P. Phelan, had rescued a third pilot and made an approach to another chute that had been spotted. While hovering over the area in search of the downed aviator, ground fire was encountered and the craft picked up a hit in one of the rotor blades. The pararescue specialist was let down on the hoist to recover the missing pilot's equipment, after which the crew was forced to withdraw because of the steadily increasing ground fire.

Members of the two crews were: Major Ingraham, 1stLt Donald M. Welsh, SSgt Larry K. Henderson and A2c John A. Moore; Lieutenant Phelan, Capt Clyde W. Lemke, TSgt John G. Regan, Jr., and A1c Jon H. Young.





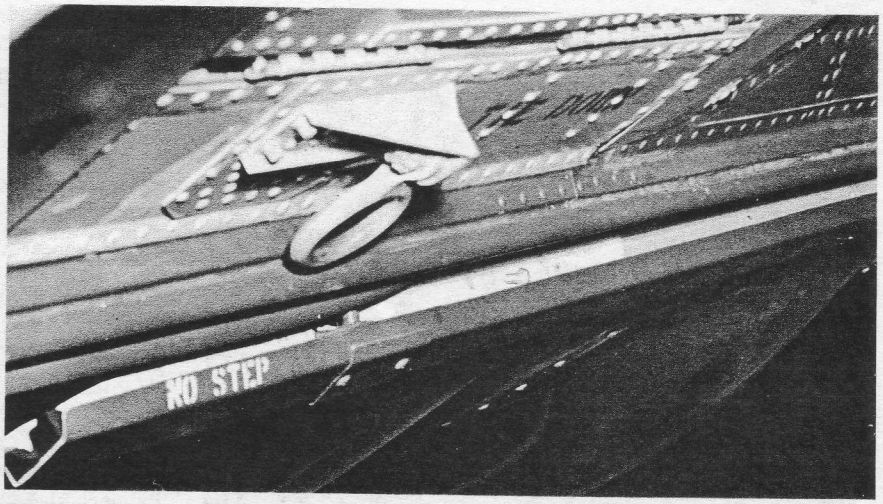
FLIGHT LINE CEREMONY–MajGen J. H. Moore, commander, 2d Air Div., presents Silver Stars to HH-43F Rescue Crew Commanders Maj R. L. Ingraham and 1stLt J. P. Phelan. In bottom photo, Col W. O. Ezell, commander, 23d Air Base Group, Danang AB, congratulates other Silver Star recipients, left to right, SSgt L. K. Henderson, A2c J. A. Moore, TSgt J. G. Regan, Jr., and A1c J. H. Young. Capt C. W. Lemke and 1stLt D. M. Welsh were also awarded Silver Stars. (USAF photos)

Lieutenant Phelan and Captain Lemke also rescued a Navy pilot a few weeks later, making the pickup within 15 minutes after the distress call was received. Other members of the HUSKIE crew were TSgt William H. Michael and MSgt Lenote M. Vigare.

Also honored recently was Capt James V. Berryhill from Det 5 who received the Air Force Commendation Medal for rescuing the pilot of a Skyraider who bailed out five miles north of Danang. While on a precautionary orbit in an HH-43F, Captain Berryhill heard the "May Day" call. Depositing the FSK, Captain Berryhill and his crew proceeded to the bailout area and, less than a minute after the pilot hit the water, made the pickup. Other members of the HUSKIE crew were Capt Jim E. Hartley, copilot, SSgt Homer L. Ramsey and A2c William J. Flower, crewmen.

FOD FACTS

The photographer wasn't in the right position so neither you nor his camera could "see" the loose bolt behind the track. It is, however, clearly shown in the photo which was taken from a slightly higher angle. Remember, BEFORE removing ladders or platforms after work has been performed on the aircraft, use these vantage points to search for loose objects which could be ingested into the engine and cause damage or in-flight failure. Rotor Tips was purposely "sneaky" on this one — but then so is FOD!



Huskie Happenings

...Two HH-43B crews from Stead AFB, Nev., rescue three marines and newspaper writer whose military helicopter crashed at 9,500-foot level on Disaster Peak near Sonora Pass, Calif. Aircraft on way from Alameda NAS to Mari Corps Cold Weather Training Station when mishap occurred. Among those rescued is LtCol John P. Flynn, USMC, survival expert and executive officer of Marine Air Reserve Training Detachment at Alameda. Despite sub-freezing temperatures, all survivors in good shape as result of following survival procedures. Manning one HUSKIE is LtCol F. M. Carney, pilot; Col A. F. Lackey, copilot; and A1c J. W. Alcorn, crewman. In other HH-43B is Capt J. F. Patterson, pilot; Capt D. J. Rensch, copilot; and SSgt C. E. Baker, crewman. Both helicopters from the 3638th Flying Training Squadron at Stead.

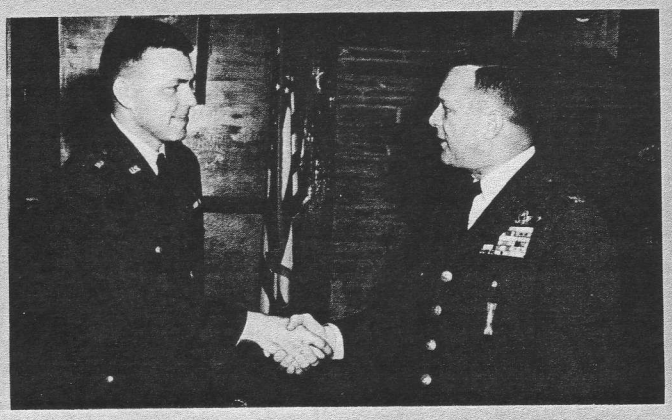
...Seriously ill USAF dependent, her husband and doctor flown to hospital in HH-43B from Det 4, 36th ARSq, PARC(MATS), Osan AB, Korea. HUSKIE pilot on hazardous night flight is 1stLt John H. Parks. Capt Charles N. McAllister is copilot; A1c Michael G. Stangel, crew chief; and Capt Samuel H. Kim (MC), doctor. Mission flown in blowing snow at altitude of 500 to 800 feet to maintain visual contact with snow-covered ground and to avoid extreme turbulence in and around mountainous terrain. ...In another night flight, Det 4 HH-43B crew makes 60-mile trip for medicine needed for extremely ill Korean boy. Pilot of HUSKIE is Lieutenant Parks, Capt Kenneth C. Franzel is copilot and A1c Joseph E. Ivansco, crew chief.

...HH-43B crew from ARS Det 14, WARC(MATS), Nellis AFB, Nev., picks up F-100 pilot who bailed out 35 miles from base after flight control failure. Entire mission takes 52 minutes from time pilot ejected. HUSKIE pilot is Capt R. H. Busch; copilot, Capt T. E. Fallows; Capt T. Little (MC), doctor; SSgt J. V. Sells, HM; and A1c G. T. Sotack, MT.

...HH-43B crew from ARS Det 8, AARC(MATS), Bitburg AB, Germany, transfers seriously injured airman from one military hospital to another. Emergency 55-minute flight made despite poor visibility, rain and 700-foot ceiling. Letter of commendation received by detachment later from Commander, 36th Tactical Hospital. Aboard HUSKIE are 1stLt Bruce K. Ware, pilot; TSgt Charles H. Spann, crew chief; Capt Fred L. Greiner, flight surgeon; and Capt Gerald Klebanoff, chief of general surgery, 36th Tactical Hospital.

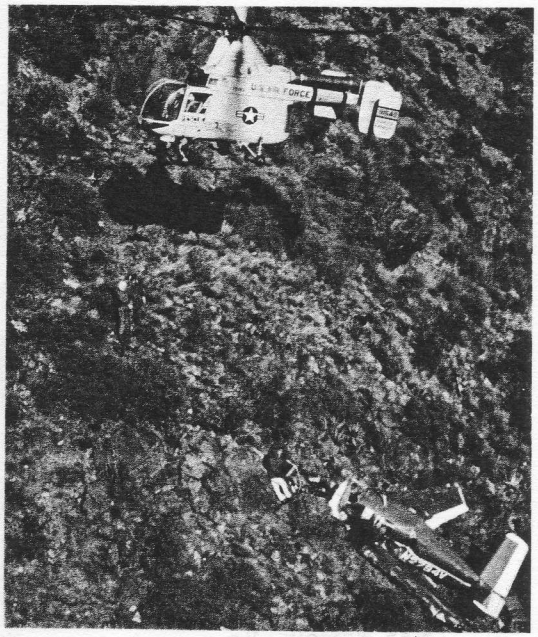
...HUSKIE crew from 31st ARSq PARC(MATS), Clark AB, P.I., on airborne alert lands to investigate reported C-130 fire. Finds no fire but discovers airman nearby. He is in shock after being seriously burned on hands in oxygen bottle explosion. Injured man flown to hospital. Capt David J. Wege, RCC; Capt Marvin L. Palmer, copilot; A1c Donald J. Glassford, TSgt James B. Moten and A1c James B. Thrasher, crewmen....Seriously injured and partially paralyzed Filipino from Balanga, Bataan, taken to Clark AB hospital by HH-43B crew from 31st ARSq. Capt Larry C. Evans, RCC; Capt David E. Allen, copilot; A1c Raymond J. Price and A1c Charles A. Sullivan, Jr., crewmen....Pilot of crashed fighter picked up in sugar cane field by HUSKIE flown by Captain Wege, RCC; and Captain Palmer. Crewmen are A1c James W. Burns, Airmen Sullivan and A1c Eugene E. Richards.

...HH-43B crews from ARS Det 10, AARC(MATS), Aviano AB, Italy, carry chaplains on periodic visits to isolated mountaintop sites....In separate night missions, HH-43B crews from the 33rd ARSq, PARC(MATS), Naha AB, Okinawa, evacuate two marines in immediate need of medical assistance. One mission flown by Capt William J. Deming, RCC; Capt Donald D. Metzinger, copilot; SSgt Donald L. Watson, medic; and TSgt Alvin C. Reed, crew chief. Manning other HUSKIE are Capt James L. Cantey, RCC; Captain Metzinger, copilot; and SSgt Charles F. James, medic. In both missions, landings made in unfamiliar areas surrounded by mountains....Two injured military men, one suffering from broken back and neck, also evacuated by HUSKIE crew from the 33rd. The pickup, made after a flight through wind-driven rain, accomplished by landing on the side of a brush-covered hill. Capt Bruce B. Duffy, RCC; Capt James M. Crabbe, copilot; SSgt Albert P. Parker, crewman; and SSgt James, medic.

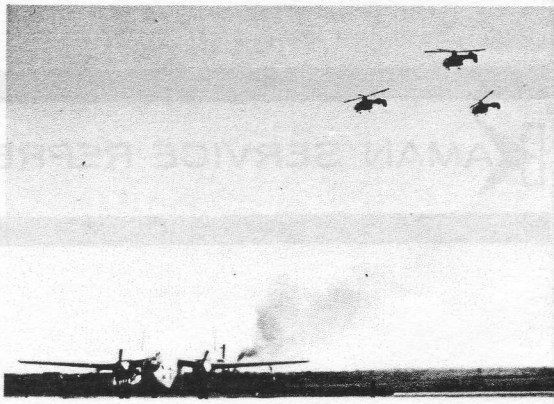


1000-Hour Pilot Awards

Capt James R. Miears of Det 2, 54th ARSq, Ernest Harmon AFB, Newfoundland, is congratulated by Col Gordon F. Goyt, 4081st wing commander, after logging his 1000th hour in an HH-43B. Captain Miears will receive the award given by KAC to pilots who reach this milestone in helicopters manufactured by the company. Others who qualified recently are: Capt David H. Pittard, 58th ARSq., AARC, Wheelus AB, Libya; Capt Bruce M. Purvine, Det 5, PARC(MATS), Danang AB, Vietnam; Capt Gary L. Alden and Capt Glynneth M. Gordon, Det 16, CARC, McConnell AFB, Kan.; Capt Ronald L. Haglund, Det Provisional One, Takhli AB, Thailand; Capt Marvin L. Palmer, 31st ARSq, Clark AB, P. I. (USAF photo)



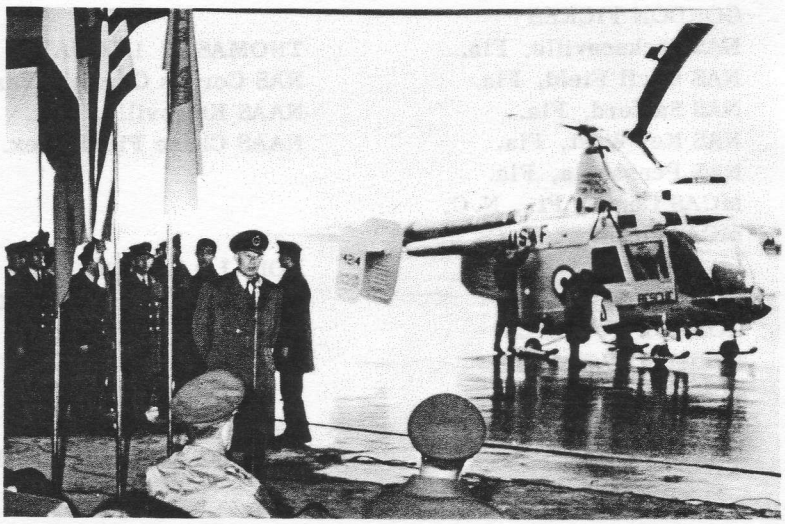
GRIM TASK–HH-43B crew from ARS Det 15, WARC, Luke AFB, Ariz., recovers bodies of two civilians who were killed when their aircraft crashed in an isolated spot in the mountains. Aboard the HUSKIE were Capt Dale L. Potter, pilot; Capt Duane L. Smith, copilot; MSgt Robert J. Hallman, crew chief; A1c Robert A. Powell, medical technician; and A1c Gerald M. Rouff, photographer. (USAF photo)



FORMATION PRACTICE–Three Moroccan Air Force HH-43B's practice for fly-by to be held at Fez in observance of annual Liberation Celebration.

WATER RESCUE— This HH-43B crew from the 58th ARSq at Wheelus AB, Libya, recently set what may be the base record for quick recovery of a pilot from the water. The HUSKIE was airborne one minute after the pilot ejected from his fighter-bomber over the Mediterranean. Within eight minutes after the alarm sounded the helo crew had picked up the rescuee, made the four-mile round trip and landed him in front of Wheelus operations. Left to right are TSgt Donald H. Holloman and A1c Charlie B. Comer, firefighters; A1c Joseph E. Bush, medical technician; TSgt Everett L. Rorabaw, crew chief; and Capt Dan L. Reeder, RCC. (USAF photo)

FLYING SAFETY AWARD— Capt E. L. Schaffer, commander of Det 3, AARC(MATS), at Toul-Rosieres AB, France, is presented the MATS Flying Safety Award for an accident-free flying record in HH-43B's during 1964. Making the presentation is Col R. L. Boardman, 10th Tac Recon Wing vice commander at Toul-Rosieres. Det 3, which has won the award for three consecutive years, flew 562 hours on training and operational missions during 1964. (USAF photo)



IMPRESSIVE CEREMONY—LtGen S. Ezazi, deputy commander of the Imperial Iranian Air Force accepts HH-43F's which IIAF received under U. S. Military Assistance Program. The presentation was made by MajGen G. S. Eckhardt, commanding general of ARMISH-MAAG on behalf of the U. S. Ambassador. The insignia is being changed on HUSKIE in background. After the ceremony, Capt J. T. Herr, USAF, gave a flying and FSK pickup demonstration. In left photo are, left to right, MSgt E. Bahadorinejad, Captain Herr, W/O H. Arzegar and MSgt A. Ghazimorad.

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