

**KAMAN**

# *Rotor Tips*



JANUARY-FEBRUARY, 1965



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## ON THE COVER

Artist's conception of Kaman twin-engine K-700 flying through adverse weather to carry out mountain rescue mission.

## FEATURES

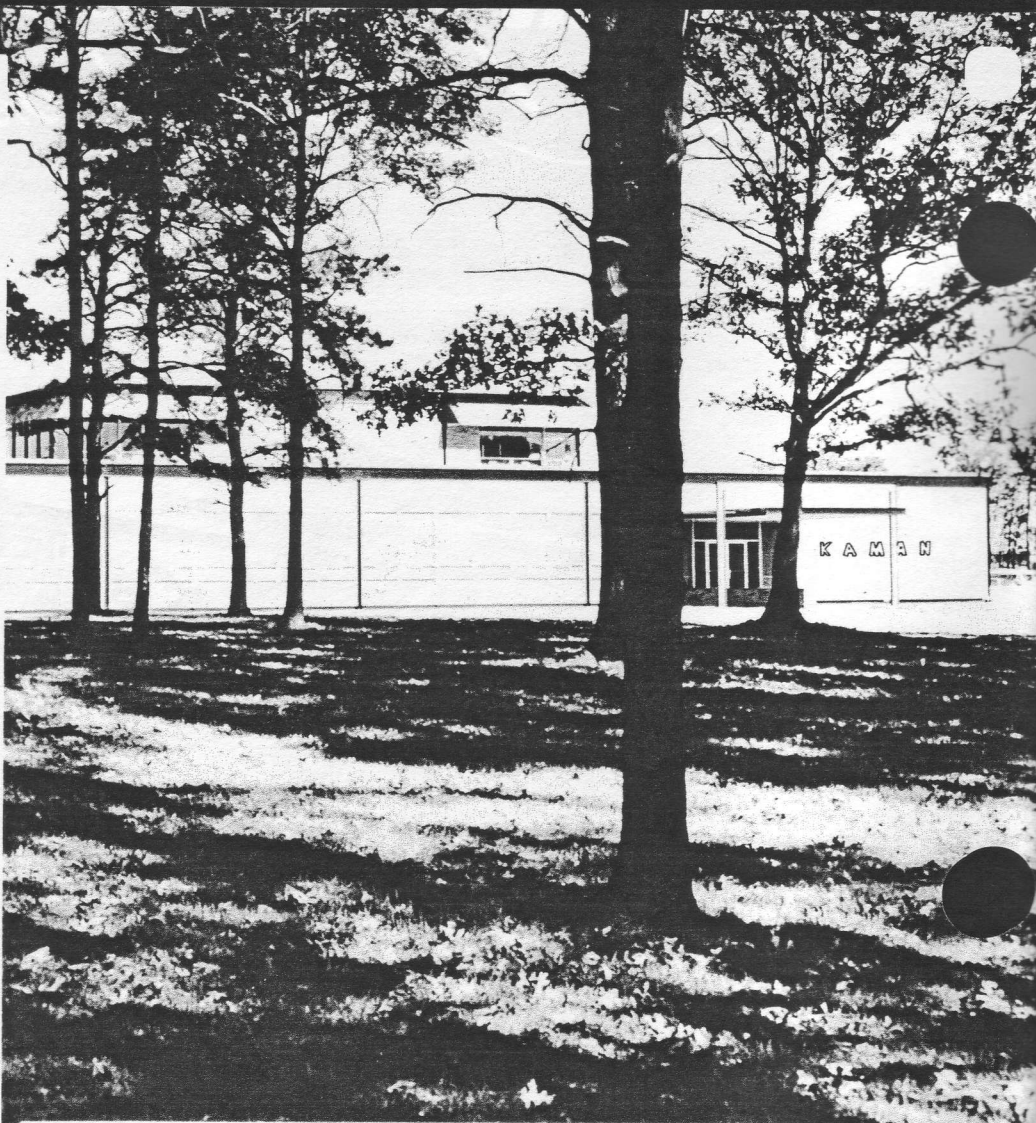
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# HAPPINESS IS A HELICOPTER

introducing the..... K-700

By William H. Weaver  
Assistant To Vice President  
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Any pilot or aircrewman who has ever been rescued by helicopter from the thick jungles of Vietnam, from the dark waters of the Gulf of Tonkin, or from any other threatening situation, will agree that "happiness is a helicopter." No one, to our knowledge, has put this theme to music, but there are nevertheless, songs of praise sung to the helicopter every day. We like to believe that no one hears more of these songs than people at Kaman, where we have received thousands of written reports of successful rescue missions performed by aircrews of the United States Air Force, Navy, and Marines, using Kaman products. Well known by now is the outstanding record of the HH-43 in Southeast Asia, and throughout the world—a record of high performance, excellent operational availability, best safety record of any helicopter, high maneuverability, unexcelled autorotational characteristics, and ease of maintenance. All of the features which made this record possible, plus many new features, are incorporated in Kaman's new K-700 twin-engine, all-weather helicopter. The K-700, a growth version of the H-43 is ready to write another verse to the song "happiness is a helicopter."

Incorporating many state-of-the-art advances developed during recent years, the K-700 retains all the proven key dynamic components of its H-43 predecessor, while expanding in size, payload and range capability. It also adds the advantages of twin engine reliability, all-weather performance, improved stability and control, reduced vibration, an integrated fire fighting system, self-sealing fuel tanks, a new improved cockpit and a dual instrument panel layout.

## Airframe

Perhaps the most striking K-700 airframe improvement is the streamlining of the tail assembly into a single high-slung tail boom and single vertical stabilizer, well away from the rotor downwash. This streamlined configuration is responsible for a corresponding improvement in performance, stability, and general flying qualities and handling characteristics. The cabin fuselage is also enlarged, while still retaining a rear opening door. There are provisions for a lightweight armor installation which includes bullet resistant glass for the windshield.

## Engines

For mission reliability, the K-700 incorporates two gas turbine engines, with a combined rating of 1800 shaft horsepower. Since less than 1200 SHP are required to accomplish normal rescue missions, this twin installation is a "flat rated" propulsion system with more than 600 SHP reserve, thus providing a substantial power safety margin, outstanding hot day/altitude performance and excellent single engine operation.

## All Weather Equipment

To give the K-700 a full instrument flying capability, a dual instrument panel is provided with the latest state-of-the-art instrumentation.

## Blades

The K-700 rotor blades reflect incorporation of the results of an HH-43 product improvement program which was completed in 1968 and is now being implemented in operational aircraft. These rotor blades are of a composite nature in which the basic structural materials are fiberglass and Scotch-ply with internal wooden stabilization elements. The blade finish includes a highly erosion resistant estane boot over the inboard leading edge with stainless steel covering the outboard leading edge of the blade. On the K-700, fiberglass rather than fabric, is used as the blade cover.

## Cabin Configuration

The passenger cabin of the K-700 can be equipped with two seats and four fully deployed stretchers, with sufficient space for a medic to perform duties on the stretcher patients in flight. The use of auxiliary troop seats allows as many as 12 troops to be carried in the aft cabin. Clean, symmetrical cabin lines and a rear opening door allow every inch of the 248 cubic foot cabin to be used in the cargo-carrying configuration.

## Rescue Equipment and Firefighting System

Rescue equipment on the K-700 consists of a 250 watt loud hailer; a 600 pound capacity personnel hoist, with a 250 foot cable, incorporating a variable speed cable control from 0 to 250 feet per minute; an external 3000 pound cargo hook; a 360° azimuth search light; and finally an in-flight operable light water fire suppression system with a 100 gallon capacity.

\*\*\*\*\*

In conclusion, we wish to echo the refrain once more, that to thousands of distressed people all over the world, happiness has been a helicopter. To thousands more in the future, there is a good likelihood that "happiness will be the K-700!"

# K-700





## INTERNATIONAL HELICOPTER RESCUE MEET

*Story courtesy of Capt. David H. Duggan,  
Hq., Atlantic ARRC(MAC)*

*USAF photos by MSgt. Fraser*

**F**inal plans for the Third International Helicopter Rescue Meet haven't been formally announced yet, but rescuemen from the United States and Europe are already looking forward to the event. Not only does the annual three-day Meet afford a chance for friendly competition but, more important, it allows an exchange of ideas and the opportunity to evaluate rescue techniques and equipment used by the various countries. It will be held in England this year and hosted by the Royal Air Force.

The Second International Helicopter Rescue Meet, held at Aalborg AS, Denmark, last June, was a highly competitive, nip and tuck event. Finally emerging as the winner was the Royal Air Force, United Kingdom. The U S Air Force was a close (only 51 points behind) second. Represented by two HH-43B crews of the Atlantic Aerospace Rescue and Recovery Center (Atl ARRC), MAC, the American helicopter rescuemen had been in fifth place at the end of the first day but then picked up an impressive number of points in the following competitions. Scores of the three lead teams were: RAF, 5597; USAF, 5546; and the Royal Belgium Air Force, 5505. The HH-43B teams scored the highest in two of the three events in the competition. The British RAF Bravo team took the indi-

vidual team prize, a gold medal. (The Royal Air Force had placed 10th in the 1967 Meet.) Silver and bronze awards for second and third place crews went to the British Royal Navy and the USAF Alpha Team.

Hosted by the Royal Danish Air Force, 12 helicopter rescue teams representing seven nations competed. All teams were composed of two crews, each with its own helicopter. In the running were air-sea rescue teams from the Air Forces of Belgium, Netherlands, Sweden, United Kingdom, United States, and Denmark; as well as the Navies of Belgium, Germany, Netherlands, Sweden, Denmark, and the United Kingdom. The Meet was made up of three events—navigational, scramble and winching—each taking a day for all crews to complete. For each event a team started out with 2,000 points; penalty points were subtracted from this to arrive at a final score.

The navigational flight, made in marginal weather, required rescue helicopter crews to fly an exacting course, without navigational aids, over both land and water at a specified altitude. Points were assessed on the basis of seconds of deviation.

**PROUD MOMENT**—Bronze medals were given to the American "Alpha" crew for placing third of 24 crews entered. From the left are Maj Robert D. Vespico, MajGen J. Brodersen, RDAF, who made the presentations, Capt Delford G. Britton, and SSgt Kendale R. Higgs, all from Atl ARRC Det 2, Upper Heyford AB, England.







**GETTING READY**—Map of Denmark is studied by USAF Bravo crew and SSgt Donald W. Bertsch, right. Crew members are, left to right, Sgt Thomas C. Moore, Capt Wendell B. Wood and Maj Franklin L. Chase. A moment later Maj Clyde W. Lemke, the team captain, arrived with sealed instructions for the navigation event. Below, Major Lemke briefs LtCol Frederick H. Rohde representing the U. S. Embassy in Copenhagen. Despite finding three ships at the overwater control point, the USAF Alpha crew chose the right vessel. Three other crews were not so fortunate and selected one of the two curious fishing boats that had come to see why helicopters kept flying over the area.



While the USAF team led in the winching event, points lost the first day when a helicopter ran into a North Sea fog bank just prior to intercepting a check point, spelled the difference between first and second place. Six other crews completely missed this check point. The USAF crew had no trouble in flying over it but was penalized for being slightly off track. During the scramble event the crews ran a 100 meter race, flew another prescribed course and rescued a frogman from a raft, all under pre-calculated conditions and time limitations. The American crews' times, figured as being when the last crewman had touched the aircraft, were 16 and one-half seconds and 17 and one-half seconds. The final event, winching, required that the helicopter rescuemen lower a 45 pound weight to a 10-inch bull's-eye 30 feet below; points subtracted for each centimeter off the center of the bull's-eye and each second taken to complete the event from a check point 50 meters ahead of the target. The Atlantic Rescue men led in this event. The American Bravo team scored a total of 953 points, a record for the day. The team's only penalization was for time—22 and 25 seconds were taken during its two winning attempts. The Bravo crew was composed of Maj Franklin L. Chase, Capt Wendell B. Wood and Sgt Thomas C. Moore, all from Det 10, Aviano AB, Italy. SSgt Donald W. Bertsch from Det 12, Woodbridge AB, England, was crew chief.

Members of the Atl ARRC Alpha crew, which carried the bronze medal away for placing third of 24 crews entered, were Maj Robert D. Vespico, Capt Delford G. Britton and SSgt Kendale R. Higgs. SSgt Jay H. Hughes was crew chief. All are from Det 2, Upper Heyford AB, England. Supporting the teams' efforts were TSgt George



**WINCHING CONTEST**—An HH-43 HUSKIE heads for the winching target during the last day of the Meet. Each second taken from the time the dangling weight passed the control posts in the background cost a point as did each centimeter the bucket was off the center of the bulls-eye. Time, height, altitude and distance were all factors in the winching. The judge waits for the split second when the bucket touches down to punch his stop watch. In the bottom photo, judges huddle over the released bucket.





**ARRS CREWS IN ACTION**—During scramble event, Alpha crew prepares to race to their HH-43, 100 meters away. The crew's time was recorded when the last man touched the helicopter. In second photo, Capt Delford G. Britton and SSgt Kendale R. Higgs have just touched the helicopter. The third member of the team, Maj Robert D. Vespico (not yet in sight), made the run in 17 and one-half seconds despite a pulled leg muscle. A few minutes later the Alpha crew "rescued" a frogman from a rubber dingy, a 43-second maneuver timed from a control ship. The 23-nautical-mile flight pattern time was checked against a pre-computed flight time and excess time was penalized one point per second. In fourth photo, Maj Clyde W. Lemke, gives "thumbs up" signal as the Bravo crew prepares to take off.

N. Edwards, medical technician; SSgt Roger L. Miller and Sgt Irvin R. Gresham, firefighters. They are attached to the 66th Tactical Reconnaissance Wing at Upper Heyford. Team Chief for the American effort was Maj Clyde W. Lemke, Hq Atl ARRC, Ramstein AB, Germany.

U. S. Coast Guard Captain Herman S. McNatt, served as chief judge of the Meet; LtCol William Kelly, U. S. Army aviation liaison officer to 4th Allied Tactical Air Force, was one of the members of the international judging staff. American military observers were LtCol Frederick H. Rohde, USAF, representing the U. S. Embassy in Copenhagen; and Maj John McKone, USAF, of Hq

USAFE, representing the USAFE Operations Staff.

The First International Helicopter Rescue Meet was organized and hosted by the Belgium Air Force in August 1967; winner of the Meet and the Henri Dunant Trophy was the Royal Danish Air Force. This trophy, a large crystal cup, is named for the founder of the International Red Cross to reflect the humanitarian nature of air-sea rescue. Each year the names of the winning team's country, service and unit are inscribed on one of the trophy's faces. There is room for seven inscriptions, then the rescue unit or service with the largest number of wins to its credit will permanently keep the trophy.



Shown above is an artist's conception of a Kaman HH-2C search and rescue Navy gunship saving a downed airman in Southeast Asia. The HH-2C is a basic UH-2C SEASPRITE fitted with a 7.62mm minigun in a chin-mounted turret, waist-mounted machine guns, armor and other features. The Navy, which has rescued many pilots and crewmen from the Gulf of Tonkin while under enemy fire, has ordered 12 UH-2C's retrofitted to HH-2C's. In top right photo, Jack C. Goodwin, assistant chief test pilot at Kaman, aims through the gunsight used when firing the minigun turret. The turret, shown in the bottom photo, is capable of firing 4,000 rounds a minute.





# Timely Tips

## **Directional Trim Forces (UH-2)**

With boost in OFF position, it takes less force to move the left rudder pedal than it takes to move the right rudder pedal. The same is true of the trim system; less trim force is required to move the left pedal than to move the right. The reason for this difference is as follows: In the right pedal direction, the trim strut force is not great enough to overcome the combination of system friction force, plus the stabilizing force produced by the counter-weights on the tail rotor blades. The difference is more pronounced in the UH-2C because the higher operating RPM generates more stabilizing force. However, trim force is sufficient to maintain any pedal trim setting.

*W. J. Wagemaker, Service Engineer*

## **Airframe Change #138 (UH-2)**

Step e (1) of the Detailed Instructions portion of AFC 138 (Page 6) directs: "Install a 58261-1 adapter in both the inlet and outlet ports of the filter assembly." Experience has shown that fuel may leak past the adapter pipe threads unless Teflon tape (manufactured by Permacel LePage, Inc., New Brunswick, N. J.) is applied to the threads prior to installing the adapter. The tape should be discarded and new tape used each time the adapters are removed and reinstalled. (Adapter removal is necessary in order to service the inflight refueling filter.)

*Herman Zubkoff, Service Engineer*

## **Airspeed System (HH-43; UH-2)**

Sometimes the airspeed indicating system is taken for granted, so when an expected indicated airspeed (IAS) isn't reached, the engine is blamed. Before accusing any component or expending time on trouble shooting, check the airspeed system for security. A loose fitting anywhere in the system will necessarily cause faulty readings, usually lower than actual speed. A case in point is the helicopter that could only reach an apparent top speed of 80 knots IAS—and this with the engine topped! After spending some time looking for the engine problem, someone realized that an incorrect airspeed indication caused by system leakage could also be the culprit. A check for items that might have loosened, included the pitot system where the connector on the copilot's airspeed indicator was found loose. This again points out that periodic checking, particularly shortly after performing maintenance actions, could save time later and ensure correct IAS.

*J. J. McMahon, Service Engineer*

## **Countersunk Washer Position (UH-2)**

During removal of components from UH-2's prior to PAR induction, several tail rotor gearboxes were discovered with countersunk washers improperly installed under the 12-point boltheads. As a result, an item discussing countersunk washer position appeared on page 10 of the November-December, 1968 issue of Kaman Rotor Tips. Further investigation has brought to light another area where countersunk washers are not properly used: main landing gear wheel assemblies. The washer **MUST** be installed with the countersunk side toward the bolthead; any other position is **UNSAFE**. Countersunk washers are only used on high-strength bolts which have a fillet radius under the bolthead. Prior to installing a countersunk washer and bolt, slide the washer up the bolt to the boltheads—**THE WASHER MUST MAKE FULL CONTACT WITH THE BOLTHEAD**. The necessity for this cannot be overstressed.

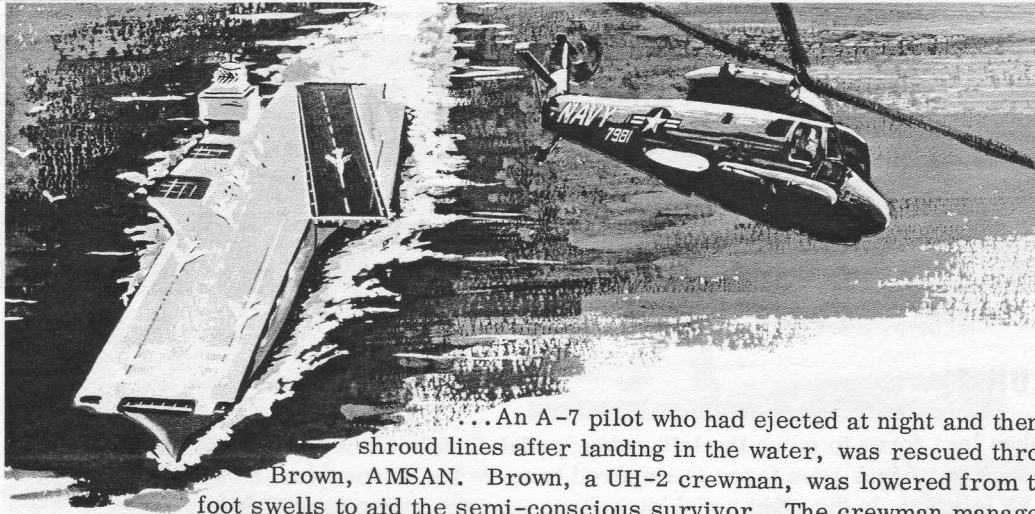
*Herman Zubkoff, Service Engineer*

## **Presetting Control Rod Lengths (UH-2)**

Presetting the shoestring rods and tracking turnbuckles prior to installation does not automatically eliminate the need for making tracking adjustments after installation. Presetting is helpful because it eliminates the requirement for using the Lag Angle Rigging Spacer, P/N K604718-1, and the L-Crank Rigging Lock, P/N K604705-3. Also, by presetting the lengths, blade installation and tracking procedures are speeded up. Because the lengths are identical at installation, a closer initial blade track should result. Another helpful feature is that a maximum amount of adjustment is available on all rods. However, presetting is only a short cut, not a cure all.

*W. J. Wagemaker, Service Engineer*





## SEASPRITE ACTIVITIES

... An A-7 pilot who had ejected at night and then became entangled in his chute and shroud lines after landing in the water, was rescued through the valiant efforts of Robert F. Brown, AMSAN. Brown, a UH-2 crewman, was lowered from the helicopter and swam through six foot swells to aid the semi-conscious survivor. The crewman managed to remove some of the entangling lines but was forced to dive underwater to free the survivor's legs. Each time he did so, the survivor began to sink beneath the surface. Finally, Brown put the pilot's head on his shoulder, waved the helo away, and then treaded water until another swimmer arrived from a destroyer's whaleboat. Both the UH-2 crewman and the man he had kept afloat were taken to the destroyer. Later, the UH-2 took two doctors to the vessel to tend the seriously-injured rescuee and picked up Brown. Pilot of the SEASPRITE was LCdr Jess M. Harris; copilot, Lt(jg) Alan W. Jacka; 1st crewman, Clinton J. Pennisi, AMSAN. All are attached to HC-1's Det 65 deployed aboard the USS Enterprise.

... In another Det 65 mission, a UH-2 plane guard crew responded immediately when an A-3 struck the water after being catapulted. As Lt(jg) Harlan W. Woodward held the SEASPRITE in a hover over a survivor who had appeared on the surface, crewman James A. Zils, AMH2, was lowered into the water by AN Stephen B. Griffith. Zils cleared away debris and placed the rescuee in a sling. Both were then hoisted to the helo. Lieutenant Jacka was copilot of the SEASPRITE. ... The navigator of an F-4 which crashed at sea was rescued by a UH-2 SEASPRITE crew from HC-1's Det 61 deployed aboard the USS Ranger. AMH2 D. W. Escher was lowered into the water to aid the rescuee and both were hoisted to the helo without incident. The survivor, Lt W. R. Logue, said afterward that the rescue was handled "in a very professional manner in a minimum amount of time." UH-2 pilot was Lt D. L. Jackson; copilot, Lt(jg) T. H. Epting; first crewman, L. G. Fults, PR3. ... Five minutes after ejecting from a crippled F-4, the pilot and navigator had been rescued from the Mediterranean by a UH-2 crew from HC-2's Det 62 deployed aboard the USS Independence. Members of the SEASPRITE rescue team were: Lt W. K. Abernathy, pilot; Lt(jg) G. R. Boyles, copilot; ATN2 W. R. Kosli and AMS3 G. L. Closson, aircrewmen. ... The pilot of an F-8H who ejected at night after a ramp strike was rescued soon afterward by a UH-2 crew from HC-2's Det 38 deployed aboard the USS Shangri-la. As Lt(jg) Gene Strocco slowed to a hover, he was temporarily blinded when the rescuee lit an emergency flare. Using the UH-2 loud hailer, Lt Richard S. Monahan, the copilot, told the survivor to discard the flare. ADJ2 R. M. Reed and ADJAN W. J. Harper, aircrewmen, rigged the fishpole boom and the rescue was made using the downed pilot as the only visual reference outside the aircraft.

... A pilot who ejected from an A-4C and landed in a pine-studded swamp 15 miles from NAS Cecil Field, Fla., was picked up by a UH-2 SEASPRITE crew from the SAR Unit at the field. LCdr Coll E. Robertson was pilot of the helo and AMS3 Orville C. Stewart was crewman. Also aboard was Lt Joseph V. Arigo (MC), a doctor. ... A seriously-ill Marine recruit was airlifted from MCAS Beaufort, S. C., to the Charleston Naval Hospital by a UH-2 crew from the SAR Unit at the air station. Capt John E. Luby, Jr., was pilot of the SEASPRITE, Sgt R. L. Shaughnessy was copilot, and Sgt M. E. Brossett, crewman. Also aboard the helicopter were a doctor, corpsman and chaplain. ... In another SAR mercy mission, at night, a woman in critical condition with a brain concussion was taken from Beaufort to the naval hospital at Charleston. The UH-2 crew encountered high winds on the 84 NM round-trip flight. Capt Hurston Hall was pilot of the SEASPRITE and crewmen were SSgt J. E. Holley and SSgt A. R. McCann. Also aboard were LCdr R. J. Magenheimer (MC), a doctor, and HM3 C. Wood, a corpsman.

... A UH-2 crew flying plane guard for the USS America rescued a slightly-injured A-7B pilot a few minutes after he ejected and landed in the water. SEASPRITE crewman Peter C. Carroll, AN, was lowered on the rescue seat and swam underwater to free the survivor from his entangling chute. Afterward, Lt(jg) L. D. Lorren, pilot of the rescue helicopter, commended Carroll and Charles F. Virgin, AN, the other crewman, for their performance during the rescue. Lieutenant Lorren also complimented Lt G. C. Houser, Jr., the copilot, for the manner in which he handled communications and directed the operations. The crew is attached to HC-2's Det 66 deployed aboard the America.

... A UH-2C crew from HC-1's Det 63, rescued an F-4 navigator who "punched out" when the aircraft almost struck the water after being catapulted from the deck of the USS Kitty Hawk. The pilot of the fixed-wing aircraft managed to recover and gained sufficient altitude to prevent a crash. Lt(jg) T. D. O'Neill, copilot of the SEASPRITE, used the loud hailer three times to advise the survivor to rid himself of his chute if possible. AT1 R. E. Morris, UH-2C crewman, went into the water and freed the survivor from entangling shroud lines. Morris reported afterward that the first crewman, PR3 R. A. Osbeck, did an "outstanding job operating the hoist and getting us aboard." Pilot of the rescue helicopter was Lt V. C. Secades. ...





## Hazardous Mission Flown By HC-4

Two UH-2B crews from HC-4, NAS Lakehurst, N. J., participated in a mercy mission involving two, 225-nautical-mile overwater flights in poor weather—one flight was at night. The helicopters launched after a civilian worker became seriously ill aboard the newly-commissioned USS New Orleans (LPH-11) on sea trials 150 miles from shore. Piloting one UH-2 were LCdr Ray Avila and Lt William Dayton. Crewmen were AT1 Tony Amarosa and ADR1 Richard Mastriano. The escort helo was piloted by Lt Paul Lien with Lt Frank Peirce and ADJ2 Larry Odham as crew. PH2 Charles Perisse was also aboard.

After an 80-minute flight over the 42-degree water, the helos established radio contact with the ship. It was requested that they return to shore for refueling and a doctor—the patient was now in a "very serious condition." On shore the UH-2's were refueled and then departed with the same crewmen aboard. The lead helo was piloted by Lt Commander Avila and Lieutenant Peirce. Also on board was Capt John Gordon (MC), NAS Lakehurst senior medical officer. Piloting the second SEASPRITE were Lt Earl Gregory and Lt(jg) David Sage. After flying an hour, at night and under instrument conditions, the UH-2's landed on the ship. The patient was examined and placed aboard one of the HC-4 helos for a flight to the hospital at Fort Dix. Headlights on Army vehicles were used to light the hospital helo pad, which was surrounded by telephone and power lines. The landing was made without incident.

**HONORED BY KAMAN**—Cdr R. G. Burkemper, second from left, commanding officer of HC-4, NAS Lakehurst, N. J., recently presented Kaman Mission Awards to three pilots in the squadron. Receiving awards for mercy missions flown in the UH-2 SEASPRITE were Lt's William G. Dayton, Bruce Nelson and Earl A. Gregory. Lieutenants Dayton and Gregory and ADJ1 William L. Gallagher were members of a SAR helo crew which launched on four separate missions concerned with the crash of a Navy ASW aircraft, and two accidents involving surfers caught in a strong undertow off the New Jersey Coast. Lieutenant Nelson was pilot of a UH-2 from HC-4's Det 36 in Vietnam. The mission is described on Page 12. (USN photo)

## HC-1 Crewman Braves Sea Snake

"AN Peterson, the swimmer, did a particularly commendable job in an extremely difficult and hazardous situation. He managed to free the survivor after struggling for almost 12 minutes, all of this time in rotor wash, with heavy fuel fumes present, and the knowledge that there was a sea snake in the near vicinity." The commendation came from Lt(jg) A. H. Sandt, Jr., pilot of a UH-2C which rescued one of two survivors after an F-4 nosed over and plunged into the water during night operations from the USS Constellation. Another survivor was picked up by a plane guard destroyer.

The sea snake, a large one, was discovered as Lieutenant Sandt hovered the UH-2 at 20 feet over the rescuee. The snake then disappeared, apparently frightened away by the lights on the SEASPRITE. UH-2 crewman L. R. Peterson, AN, was lowered into the water to help the survivor who was entangled in his shroud lines and having difficulty staying afloat. The airman tried valiantly to free the downed pilot but was unable to do so. Finally the survivor was hoisted partially out of the water by the other crewman, ADR2 W. J. Patrick. The chute started billowing but collapsed when Peterson slashed the shroud lines. Both men were then brought aboard the helo without further incident.

Lieutenant Sandt also had praise for Petty Officer Patrick, commending him for "an excellent job in directing me in my hover and also in running the hoist." Copilot on the mission was Lt(jg) C. F. Jamison. All are attached to HC-1's Det 64 aboard the Constellation.

## Stub-Wing UH-2C Tested At Kaman

A UH-2C twin-engine helicopter, modified with stub wings for increased fuel capacity and for carrying a wide range of offensive external stores, was flight tested by Kaman Aircraft recently for the U. S. Navy. Kaman evaluated flying characteristics of the stub wings and their loads on the UH-2 airframe. A UH-2C "bailed" from the Navy was used for this research and development program which showed the external stores installation is structurally capable of carrying torpedoes, depth charges, rocket pods, minigun pods, machine gun pods, grenade launchers and auxiliary fuel tanks.

As a weapons platform for machine guns and grenade launchers, the UH-2 airframe proved itself to be extremely stable in flight tests several years ago for the U. S. Army. Point target accuracy was demonstrated on an assortment of missions at differing speeds.

With fuel stored in the wings and in two 60-gallon drop tanks, the UH-2C has a range of 434 miles, about 27 per cent more than a standard "twin" with auxiliary tanks. Flight endurance would be 4.7 hours, also 27 per cent



**MODIFIED TWIN**—UH-2C with range-increasing stub wings is shown on the line prior to testing torpedo-carrying capability. Other offensive weapons were also installed on the helicopter during Kaman stub-wing evaluation.

better than a standard UH-2C. Figures are based on a mission at 5,000 feet altitude, standard day temperatures and include a 10 per cent fuel reserve.

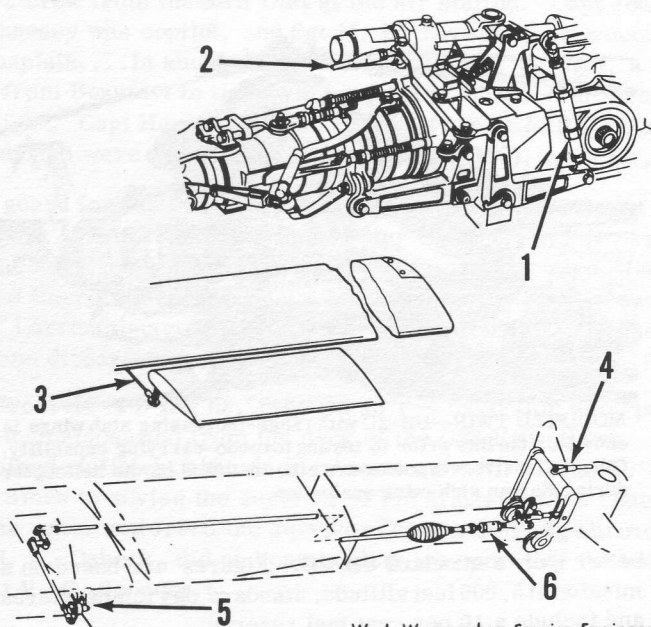


# Q's AND A's

*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 HH-43; UH-2) WHY IS IT IMPORTANT TO INSURE ADEQUATE 'ROD END ROLL' WHEN ADJUSTING/INSTALLING CONTROL RODS?

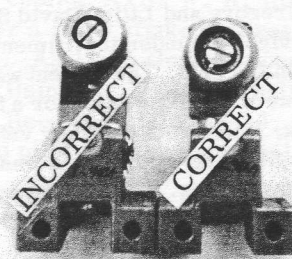
**A** On any rotary or fixed-wing aircraft, improper alignment of control rod end bearings with clevises on control rod tubes, links and turnbuckles can cause interference which will result in control binding as well as abrasion of the parts. In rotor systems, this interference will most probably induce "out-of-track" conditions due to the restricted control movement. Some of the areas to be considered (refer to the illustrations) are: UH-2—vertical link or turnbuckle assy (1); main rotor control rod or shoestring rod (2); and the flap control rod (3). HH-43B/F hub-to-blade rod (4); flap control rod (5); and tracking turnbuckle (6). In order to prevent this, mechanics should always check for rotational "rod roll" after making a component change or linkage adjustment. As the controls are moved from stop to stop through the full travel positions, gently rotate each control rod back and forth to make certain that clearances exist in all attitudes. The "rod roll" test is simple and only takes a minute or two, but will prevent maintenance problems which could be complex and time consuming. It is also important to insure no side load on the rod end bearings when tightening the jam nuts. Align the rod ends square with the thru bolts and hold in this position while the jam nut is secured.



W. J. Wagemaker, Service Engineer

**Q.** (Applies UH-2A/B/C) WHEN INSTALLING SLIDING DOOR UPPER ROLLER BRACKETS, WHAT PRECAUTION SHOULD BE OBSERVED?

**A.** Before installing a door assembly, check that the bearing housings, P/N K633084-11, are properly assembled. Aircraft returning to Kaman for overhaul have been found with excessive wear on the door tracks. This wear was due to incorrect installation of the upper door roller assemblies. (The housings are essentially rollers into which a bearing is installed.) These housings retain the doors in the upper tracks and serve as rollers on which the doors move fore and aft. The accompanying photo shows two brackets with housings and bearings installed. Notice the one marked incorrect; the housing appears to have a smaller ID than the correctly assembled housing. Actually, both housings are identical, with small holes on one side and larger holes on the opposite side; the error was one of installing the housing in reverse. This will cause the bearing to bind and the housing to slide rather than roll. The end result will be inadequate door retention, premature wear of the door tracks, and possible failure of the housings. Always remember the smaller ID must be placed toward the roller support bracket (the retainer under the slotted bolt-head should be visible). When pressure is applied against the door, the correctly installed retainer will prevent the bearing from pulling out or cocking. It will also reduce track wear and allow easier door movement.



D. L. Brown, Foreman, Quality Assurance

**Q.** (Applies HH-43) WHEN RIGGING THE AZIMUTH, ARE BOTH AZIMUTH-TO-HUB RODS ADJUSTED TO THE SAME LENGTH?

**A.** Yes, both azimuth-to-hub rods are adjusted to the same length but only after the azimuth flatness and toe-in have been rigged. This procedure is required because the initial length of the rod selected to measure the azimuth run-out may not be proper once the azimuth has been rigged. The correct sequence, therefore, is to:

- (1) Select one rod; align the marks on the L-crank rig fixture body and plunger by adjusting the lower rod end.
- (2) Rig the azimuth for flatness and toe-in.
- (3) Position the azimuth bar EXACTLY FORE AND AFT.

(4) Adjust both rods until alignment marks on the L-crank fixture are in-line.

This sequence assures equal length rods and in addition, correctly positions the L-cranks.

W. J. Wagemaker, Service Engineer



**Q.** (Applies UH-2) WHY IS RUST-LICK 606 USED ON AIRCRAFT ENGINES WHICH HAVE BEEN OPERATED OVER OR NEAR SALT WATER?

**A.** According to the manufacturer, Rust-Lick 606 is a rust preventive compound formulated from petroleum derivatives and a petroleum solvent. It, therefore, functions both as a rust preventive and a solvent-type compound. If an engine is washed with fresh water to remove salt deposits and then sprayed with Rust-Lick, the 606 will retard corrosion even if some areas have a salt brine residue. Also, it is claimed that Rust-Lick 606 will absorb the moisture from the salt brine and pass it off into the atmosphere, retarding the corrosive effect of the salt solution. A short time after the Rust-Lick application a thorough fresh water rinse will easily remove the compound and the softened salt residue. It is emphasized, however, that an initial fresh water wash of engines is necessary as the primary means of cleaning compressors. Some points to remember when washing an engine are:

1. Before washing, use a dampened cloth and wipe as much of the engine exterior and interior as can be reached.
2. Spray fresh water to dissolve and flush out salt deposits and loose foreign deposits such as carbon.
3. Always run the engine for a dryout cycle after a water-wash.
4. Always allow an engine to cool before applying Rust-Lick; otherwise it may be baked onto the compressor blades and vanes.
5. When using Rust-Lick to soften deposits, allow sufficient time for it to work but do not exceed the recommended period of several hours (overnight). Rust-Lick tends to congeal or harden after exposure to the air for extended periods of time.
6. Do not start the engine until Rust-Lick has been thoroughly washed out with clean fresh water.

H. Zubkoff, Service Engineer

**Q.** (Applies HH-43B/F) ARE DECAIS AVAILABLE FOR USE WITH SUBSTITUTE OIL, MIL-L-23699 (NATO 0-156)?

**A.** Yes. The decals are available and can be requisitioned in accordance with AFR6-4. (Refer to the Timely-Tips page of the November-December 1968 issue of Rotor Tips for further information concerning AFR6-4.) The part numbers for the substitute decals are: P/N 59712A (engine) and P/N 59713A (transmission). A handbook Change (#5, dated 16 May 1968) to T. O. 1H-43(H)-1, authorized use of the substitute oil. It was discovered that the Mil-L-7808 oil would sometimes create an unusual amount of foam. As a result, excessive oil pressure fluctuations were sometimes noted by the pilots. Whenever foam creates severe oil pressure fluctuations, the substitute oil and appropriate decals may be used. (Place the decals near the engine and transmission oil tank scuppers.) Remember, it is mandatory to identify the oil in use. The decals which should be used with Mil-L-7808 oil are: KSD8115-209A for the engine tank and KSD8115-201A for the transmission oil tank. This information will appear in a future Change to T. O. 1H-43(H)-1.

R. J. Trella, Service Engineer

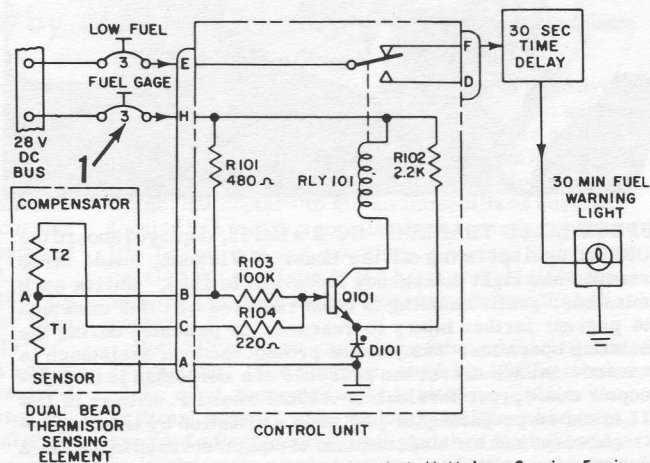
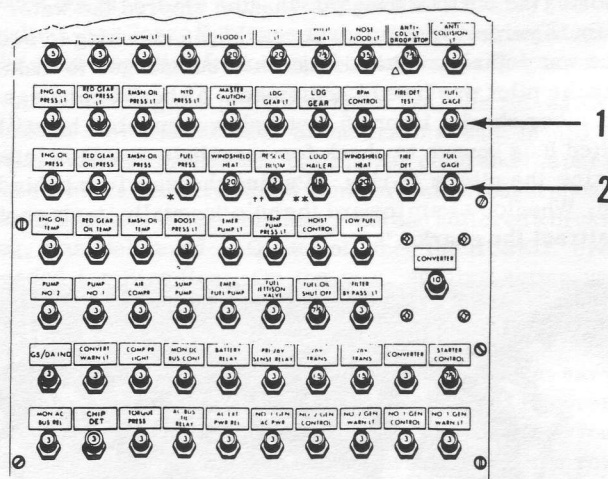
**Q.** (Applies HH-43F) WHAT IS THE PRIMARY FUEL FOR THE T-53-L-11 SERIES ENGINE?

**A.** Both JP-4 and JP-5 aircraft fuels are designated as primary fuels for the -11 engine. These fuels may be used exclusively or intermixed without making fuel control adjustments or any other modification. When intermixing fuels, the records should reflect the lowest grade in use. It is recommended that JP-5 fuel not be used when the outside air temperature (OAT) is below +10°F (-12.2°C). T. O. 1H-43(H) F-1 contains a complete listing of acceptable fuels including commercial, military, interchangeables, alternates, and emergency types.

H. Zubkoff, Service Engineer

**Q.** (Applies UH-2) WHAT ARE THE FUNCTIONS OF THE TWO FUEL GAGE CIRCUIT BREAKERS (CB) ON THE OVERHEAD FUSE AND CIRCUIT BREAKER PANEL?

**A.** The function of each circuit breaker is as follows: The aft CB (1, in the illustration) supplies 28-volt DC power to operate the 30-minute fuel warning light. The forward CB (2) supplies 26-volt AC to energize the fuel quantity system. Pulling the aft CB de-energizes relay RLY 101 (shown in the accompanying schematic). Thirty seconds later, the low fuel warning light will illuminate. Pulling the forward CB will de-energize the fuel quantity system.



J. J. McMahon, Service Engineer





A combination of raw courage and split second timing was responsible for saving the life of a pilot who ejected from his crippled F-8 and landed in shark-infested waters. When the UH-2C from HC-1's Det 31, USS Bon Homme Richard, arrived in the area, the survivor's chute was still in the air. SEASPRITE crewman David L. Wheaton, AN, was standing by the door ready to enter the water to assist the rescuee when he saw a large shark approximately 150 yards away. As the downed pilot entered the water, the shark changed direction and headed toward him. Ignoring the obvious danger, Wheaton entered the water, swam 10 yards to the survivor and began checking to see if he was injured. The airman then submerged to make sure the pilot was free of equipment. As he did so he saw two other sharks 10 or 15 feet below them, but he still waited long enough to check for parachute straps before seizing the pilot's D-ring. Pulling the survivor behind him, Wheaton swam toward the helo "casually, trying not to attract the sharks."



**SPECIALIZED TRAINING**—HC-2's Det 11, deployed aboard the USS Intrepid operating off the coast of Vietnam, made three rescues and eight emergency medevacs in 1968. During such missions, gentle handling is often required by UH-2 crewmen to prevent further injury to rescuees or patients, during the hoisting operation. Many times prompt medical assistance is needed—in such cases, the presence of a corpsman in the helicopter could prove invaluable. ADR2 Edward P. Kilfara of Det 11 is shown preparing for just such a situation by teaching Intrepid corpsmen the fundamentals of equipment used in the UH-2 during rescue and/or medevac conditions. (USN photo)

# Southeast Asia

**WHO ELSE?**—Wearing Army fatigues and combat boots, comedienne Martha Raye is lowered from a UH-2 SEA-SPRITE onto the deck of the USS Coral Sea. Manning the helicopter, from HC-1's Det 43 deployed aboard the carrier, are Lt R. M. Redmond, and ADJ3 F. Frost. Earlier Miss Raye had entertained USS Hancock personnel. Thousands of sailors aboard the Coral Sea crammed into a hangar bay to see Miss Raye sing and clown her way through a show. In a television interview conducted by the ship's Public Affairs Office, Miss Raye said she was entertaining in Vietnam to prove that American women are proud of their men in the war and that, "It was the little she could do for America." An Army nurse assigned to Special Forces, Martha Raye bears the rank of lieutenant colonel and is a Green Beret. (USN photo courtesy USS Coral Sea Public Affairs Office)

Wheaton said he had given the ready signal when he grabbed the D-ring and the helo had begun its approach. "It was a matter of seconds before they were over me and I had the hook in my hand, even though it seemed like hours considering the circumstances," Wheaton said. He and the man he had rescued from almost certain death were then expeditiously hoisted to the UH-2C and taken aboard.

Afterward, Wheaton praised Lt(jg) L. M. Eiland, Jr., pilot of the SEASPRITE, and Lt(jg) W. E. Bentley, copilot, for an "outstanding flying job" during the rescue, and the other crewman, William B. Light, ADJ2, for the manner in which he handled the hoisting operation at a time when delay could have been fatal.

The UH-2C crewman attributed his own successful efforts to HN2 Eugene W. Bliss, presently stationed at NAF China Lake, Calif., but formerly unit training instructor of Paramedic Rescue Team #1, NAS Cubi Point, RP. (See Kaman Rotor Tips, March-April, 1968.)

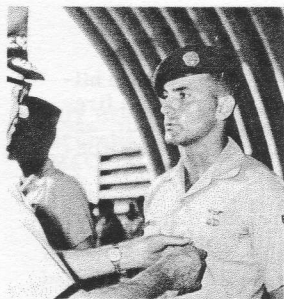
"Had it not been for his efforts," Wheaton said, "I'm sure the time element would have been the maximum instead of the minimum, which in this case could have led to consequences I don't wish to think of...."

In another Det 31 rescue, a pilot who ejected from an A-4 was plucked from the sea by a UH-2C consisting of Lt N. S. Sugermeyer, aircraft commander, Lt(jg) R. E. Siman, copilot; AN F. G. Mitchell and Petty Officer Light, crewmen.

The crew of the "Gray Ghost," a UH-2B helicopter assigned to HC-4's Vietnam-based Det 36, recently went to the aid of an RVN patrol boat which was burning and sinking after striking a rock. An emergency call was received aboard the amphibious force command ship USS Eldorado about noon and three minutes later the Gray Ghost was launched with Lt Bruce E. Nelson aboard as pilot, Lt Dave A. R. Trace as copilot and ADR2 Philip S. Schoonover as rescue aircrewman. The HC-4 helo lowered damage control personnel, and rescue and fire fighting gear, to the deck of the small converted PGM. While Vietnamese and U. S. personnel fought to keep the small craft afloat, the SEASPRITE stood by to evacuate personnel if necessary. Two and a half hours later the emergency was over and the HC-4 helo returned the men and gear to the Eldorado while the Vietnam navy boat slowly headed for port.

*Continued on page 21*





Silver

Star

Presentation...



24

Hours

Later..

Capt Harvey B. Bell, HH-43 copilot, shows on map where two downed Army fliers were rescued the day after Pararescueman Ingulli, left, received the Silver Star. 1st Lt John F. Kolar, RCC, is on the right; SSgt James P. Baldwin, standing. (USAF photo)

BIEN HOA (7AF)—A1c Charles R. Ingulli, Jr., likes to celebrate in a big way. He recently received the Silver Star for "gallantry in action" from the USAF Chief of Staff, Gen John P. McConnell. Less than 24 hours later he celebrated by adding two more "combat saves" to his record.

During a ceremony at Bien Hoa, Ingulli, a PJ (pararescueman) with Det 6, 38th ARRSq, was awarded the Nation's fourth highest decoration for valor. The award was made for Ingulli's rescue of a seriously injured Air Force pilot last February. The day after receiving his award, Ingulli was on alert with three other members of an HH-43 HUSKIE rescue helicopter crew at Bien Hoa—1st Lt John F. Kolar, RCC; Capt Harvey B. Bell, copilot; and SSgt James P. Baldwin, flight engineer—when the alarm was sounded and they scrambled. An Army observation helicopter had been downed by enemy fire in the jungles 45 miles from Bien Hoa. At the crash site, Ingulli was lowered 125 feet through the dense, triple-canopied jungle growth. Below, an Army pilot lay pinned under the wreckage.

"As I went down on the penetrator, I fed out 200 feet of nylon rope I would need to unpin the trapped man," Ingulli said. "As I hit the ground I saw another survivor walking around in a daze." The PJ made the dazed man lie down and then quickly tied the rope to the helicopter wreckage. He then called for Lieutenant Kolar to lift with the HUSKIE. Clearing trees by a scant five feet, the HH-43 strained upward, trying to lift the wreckage off the injured pilot.

"Things started looking pretty bad as the chopper couldn't get that little extra budge I needed," Ingulli said, "then an Army patrol arrived on the scene and we got the man out." With the soldiers and Ingulli pushing and the chopper pulling—the "tug of life" was won.

Sergeant Baldwin lowered a Stokes litter to the ground and the injured pilot was hoisted to the helicopter. As this was being done, the pararescueman informed Lieutenant Kolar that the Army man's condition was so grave that minutes could mean the difference between life and death. Ingulli requested that he and the less seriously injured survivor be left behind so as to get the pilot to a hospital as quickly as possible. Reluctantly, Lieutenant Kolar agreed. He broke the hover he had held the HH-43 in for 45 minutes and headed for the Medevac hospital at Quan Loi. Ten minutes later the HUSKIE landed near the medical facility. Meanwhile, the 10-man Army patrol back at the crash site had set up a perimeter defense.

"When the chopper left it looked like a long night ahead for the rest of us on the ground," Ingulli recalled. "As it got dark we could hear strange noises around us and were positive there were enemy elements nearby. As we waited, Air Force fighters were working over positions in the area and dirt from their bombs was falling on us."

After leaving the patient at Quan Loi, the HH-43 flew through the darkness back to the crash scene. Ingulli lit a flare to guide the HUSKIE to its hover point and the pararescueman and injured crew member were brought aboard the helicopter. The Army man, who had suffered a broken leg, was delivered to Quan Loi, then the HUSKIE crew headed for Bien Hoa. On the way, evasive action was taken to avoid enemy fire. From start to finish, the mission had taken exactly three hours and 30 minutes.

The rescues were the 1398th and 1399th combat saves made by units of the 3d Aerospace Rescue and Recovery Group in Southeast Asia. For Ingulli, who had made four of those saves, it was the second eventful day in a row.

## 51 Combat Saves Made by 3rd ARRGp 'PJ'



Sgt Steve M. Northern

DA NANG AIR BASE, RVN (7AF)—At age 21 Air Force Sgt Steve M. Northern has completed his Vietnam tour. Barely of voting age, Sergeant Northern has recorded more "combat saves" than any other person in aviation history—51. The all-time record was established by Northern during two consecutive Southeast Asia tours as a pararescueman (PJ) with the 3d Aerospace Rescue and Recovery Group of the Military Airlift Command (MAC).

Northern came to Southeast Asia in July 1966. He was first assigned to Det 6, 38th ARRSq, at Bien Hoa AB where he served as a PJ aboard HH-43 "Pedro" rescue helicopters. He was wounded in action less than two months after his arrival and awarded the Purple Heart. Enemy bullets couldn't stop the then 19-year-old youth, however, and he went on to become one of the most highly decorated pararescuemen in the Nation's history.

Sergeant Northern received the first of two Silver Stars for "gallantry in action" for an heroic action on July 15, 1967. His second Silver Star as a PJ came for an action on Aug 23, 1967, when he volunteered to be lowered from his HH-3 "Jolly Green Giant" helicopter "to aid an immobilized survivor located in a position completely surrounded by hostile troops and gun positions. Airman Northern carried the survivor to the hoist and shielded him with his own body as they were brought into the helicopter..."

Both Silver Stars came for action while with the 37th ARRSq. Like Northern, the 37th ARRSq is one of the most decorated units in history. Earlier the sergeant served with the 38th ARRSq which was awarded a Presidential Distinguished Unit Citation in 1966 for its combat rescue activities. At that time more than 300 individual awards had been made

Continued on next page



**TAKHLI RTAFB (MAC)**—Smoke billows from blazing jet fuel while firemen, using a fire suppression kit, extinguish the flames. An HH-43B HUSKIE rescue helicopter from Det 2, 38th ARRS (MAC), hovers behind the firefighters. The rotor blades supply a blast of cool air that protects the firemen. In an actual emergency this procedure is used to rescue trapped crewmembers from the burning aircraft. (USAF photo by A1c Robert W. Hollis)

At the risk of their own lives, an HH-43 crew from Det 9, 38th ARRSq, Pleiku AB, rescued LtCol John Rivers, pilot of an F-100 which had crashed on the base and was in imminent danger of exploding. Capt James G. Ellis, III, pilot of the HUSKIE, took off with the fire suppression kit and followed the stricken aircraft down the runway as the pilot attempted to land. The F-100 slammed through the barrier and then went off the runway.

Captain Ellis set the FSK down in a rice paddy in front of the wreckage and the airborne firefighters, Sgts Henry Michalski, Jr., and Robert W. Colclough, Jr., leaped to the ground and ran to the suppression kit. At the same time copilot Capt Derry A. Adamson, ignoring the fact that he was not dressed in protective clothing, ran toward the F-100. He had seen that the engine on the fighter was still running and wanted to get the pilot out before ingested FOD caused the engine to explode. Two members of the base transit alert had blown the canopy and were releasing the pilot's lap belt as Captain Adamson climbed the side of the aircraft and straddled the cockpit. Seeing that the ejection handles were full down, he stood over the seat in order to get the pilot out as quickly as possible. He was joined by Sergeant Michalski who straddled the front of the cockpit. The rescuemen heard and felt secondary explosions as they lifted the survivor out, but disregarded

ed them. They lowered the injured pilot to Sergeant Colclough and other firemen; then, as Captain Adamson helped carry the colonel to safety, Sergeant Michalski stopcocked the throttle to lessen the danger to others in the area.

Throughout the operation, Captain Ellis hovered the HH-43 in a position to render instant assistance in the event of a fire or explosion. By so doing, he exposed himself to the "hot guns" in the downed aircraft as well as the danger from an explosion. Afterward, as the barely conscious F-100 pilot was taken to the hospital, he was given first aid by Captain Adamson.

In a midnight mercy flight, an HH-43 crew from Det 8, 38th ARRSq, Cam Ranh Bay AB, evacuated a Vietnamese woman in childbirth to the hospital. To make the pickup, Capt Peter J. Connelly landed on a small dirt road while the patient was brought from a boat which had transported her across the bay. Other members of the HUSKIE crew were Capt John P. Smariga, copilot; Sgt Gary P. Bryant, pararescueman; Sgt Jon A. Knox, flight engineer.

On another Det 8 mission, a seriously-injured U. S. soldier was evacuated by an HH-43 crew consisting of LtCol Flavious F. Drake, pilot; Capt Peter W. Gissing, copilot; A1c Donald H. Goodlett, pararescueman; A1c Wilber L. Jeffcoat, flight engineer. On the flight to the hospital, the airmen administered first aid, applied splints to the patient's broken legs and treated him for shock.

*Continued from preceding page*

to members of the squadron. Sergeant Northern received two Kaman Scrolls of Honor for HH-43 rescue missions while flying with Det 6 and was honored again by Kaman with a third Scroll while serving with Det 7, 38th ARRSq, based at Da Nang. Two of the rescues were made at night and all were made while flying over hostile territory.

While at Da Nang, Northern flew more than 240 missions with the HH-3. He flew an average of 45 combat missions a month, many deep into enemy territory and as far north as the Haiphong area of North Vietnam. During his off-duty days, Northern volunteered to fly HH-43 rescue missions with Det 7. He is one of the few pararescuemen who flew missions interchangeably in both the HH-43 and HH-3 helicopters. At other times Northern participated in Medical Civic Action Patrol flights, offering medical aid to local Vietnamese villagers.

Sergeant Northern completed his final two combat saves off Tiger Island, North Vietnam, on Oct 20, 1968. Ironically, Northern's last save was a fellow PJ, A1c Robert Cassidy. Cassidy and three other crew members were rescued in a dramatic action when their helicopter was destroyed by enemy fire while attempting to rescue two Marine Corps F-4 crewmen from the Gulf of Tonkin.

Northern plans to attend El Camino Junior College, Torrence, Calif., in February. Asked how he felt about leaving the Air Force and Southeast Asia, the soft-spoken, dark-haired, six-foot one-inch, 175-pound PJ said: "I'll miss it!"

In a night "life or death" medevac mission, an HH-43 crew from Det 7, 38th ARRSq at Da Nang AB transported two seriously wounded combat casualties from a hospital at China Beach to the base for C-141 airlifting out of the country. The first casualty was in a bulky foster frame litter which elevated him so he could be rotated. He required an attending physician to be with him at all times. Afterward, Det 7 received a letter from LtCol Paul R. Hanson, 22nd Casualty Staging Flight Commander, which thanked them for their efforts, and said that both men were so seriously injured the flights were truly of a "life or death" nature. Pilot of the HUSKIE was Capt Robert S. Henderson and Capt John E. Murray was copilot. Crewmen were TSgt William S. Sands and A1c Donald H. Goodlett.

In another Det 7 life or death medevac mission, Maj Keaver Holley, III, and his crew airlifted a seriously ill patient from the Naval support activity hospital at the Marble Mountain Army Air Field to Da Nang. The flight was across an insecure zone but the HUSKIE did not come under fire. With Major Holley was the copilot, Capt Henry E. Hooke and a crewman, Sgt Edward A. Deshae.



**TUY HOA (7AF)**—HH-43 helicopter crews from Det 11, 38th ARRSq (MAC), at Tuy Hoa AB have rescued many downed airmen from both land and sea. The efficient and professional manner in which these rescues were carried out is based on the numerous practice and training exercises, like those shown on the right, conducted by the detachment. Using a mountain climber's rappelling technique, A1c Steven R. Tuttle, pararescuer, lowers himself by rope from a hovering HUSKIE. Sgt Richard Rodas is hoisted from a life raft in the South China Sea. A1c Ian T. Burr hits the ocean after jumping from an HH-43. (USAF photos)



**TAN SON NHUT AB (7AF)**—Rescuemen from Det 14, 38th ARRSq, at this base are shown in front of one of the detachment's HH-43's. First row, left to right, are Sgt Russell K. Dunning, Sgt Gerald J. Wiersma, Sgt Gary W. Wilcek, CMSgt William E. Johnson, SSgt Donald J. Nason, SSgt Ermon L. Russell (377th CES), Sgt Richard W. Peterson, SSgt Jerry L. Ball (377 CES). Second row, TSgt Kenneth H. Hogan, Capt Peter J. Kerrigan, Capt Henry L. Pierce, Capt Lawrence E. Bielstein, Maj Donald L. Jordon, detachment commander; Maj Robert B. Vaughan, A1c Michael L. Kaufman and SSgt William R. Gladish. Rotor Tips welcomes group photographs of personnel who fly and maintain Kaman helicopters. (USAF photo)

**—DA NANG (7AF)**—"To me, performing a mercy mission is more gratifying than anything else." With these words SSgt William P. Owens explains why he enjoys his job. Owens is an HH-43 flight engineer with Det 7, 38th ARRS (MAC) at Da Nang AB. The detachment's function is aircrew recovery and aircraft fire fighting. HH-43 HUSKIE helicopters are used by the detachment for these missions. When scrambled for a fire suppression mission, it is the flight engineer's task to prepare the unique fire suppression kit which is slung beneath the HUSKIE. With the special 1,200-pound kit and the downwash from the chopper's blades, it is possible to suppress fire long enough for firefighters to rescue the crew members.

Owens and the other flight engineers have the responsibility of making sure the detachment's HH-43's are always ready to fly. Therefore, immediately after completing a mission, the flight engineer readies the aircraft for its next "scramble." He performs any needed maintenance and refuels the helicopter. As an integral member of the helicopter flight crew, the flight engineer goes along whenever the helicopter is scrambled. On aircrew recovery missions he operates the hoist to raise downed pilots and works with the pilot and copilot to guarantee a smooth operation. During search missions he acts as a scanner for downed aircrew members.

Earlier this year, Owens was decorated for a difficult night pickup. It was especially hazardous because it was over water and there are no established training procedures for such an operation. He was awarded the Dis-



**DA NANG (7AF)**—SSgt William P. Owens performs a pre-flight inspection on an HH-43 assigned to Det 7. In right photo, a detachment HUSKIE takes off in answer to an emergency. (USAF photos)



tinguished Flying Cross for his part in the save. Major Keaver Holley III, detachment commander, says of Owens: "You can always count on him to come through in an emergency... and this goes for all my flight engineers."

Det 7 has two helicopters, with one ready for action at all times. A complete crew—pilot, copilot, pararescuer, two firemen and flight engineer—is on duty 24 hours a day, ready to go. Within two minutes after notification of an emergency, the aircrew is airborne and on the way.

With the exception of a few support missions and aeromedical evacuation flights, every mission flown by the small unit is a scramble, making speed one of the primary qualities necessary for an H-43 flight engineer.

# KACARB

## BEARINGS

By George D. Eveland  
Senior Applications Engineer

It is always gratifying to aircraft manufacturers to be able to offer a change which provides a sizable reduction in maintenance effort. Navy mechanics who are assigned the job of lubricating rod ends and link assemblies on UH-2 main rotor blade retentions can look forward to elimination of this daily requirement. During 1968, Kaman delivered production quantities of KAcarb self-lubricating, non-corroding bearings for use as indicated in the table accompanying this article. These bearings are now appearing on newly overhauled retentions and also can be requisitioned from Supply for installation at organizational level.

With the exception of the gray-colored ball, KAcarb bearings look exactly like the bearings they replace. To aid in recognition, rod ends have the words "NO LUBE" on the housing while the links are identified by white paint markings. The flap horn is also marked in white when KAcarb bearings are installed.

How do KAcarb bearings lubricate themselves and why don't they corrode? Several years ago Kaman engineers began the research necessary to develop a bearing with these features plus the capability to provide long life in many kinds of adverse environments. Imaginative selection of materials and development of manufacturing techniques resulted in the patented KAcarb bearing. The material selected for the ball core was titanium which is unchallenged by any other structural metal in its resistance to corrosion. The spherical surface of the ball is coated with a ceramic material and is precision-polished to an ultra-fine finish which promotes long bearing life. In fact, the sapphire-hard coating cannot pit or corrode. The material used for the liners (outer race) is a special carbon-graphite composition manufactured to KA-

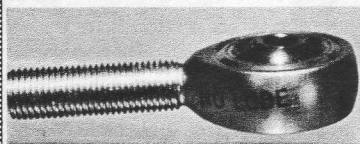
carb specifications and machined to provide a precise fit around the ball. This carbon-graphite material has a superior load-carrying capability, is chemically stable and an excellent permanent, dry lubricant. This last characteristic is the key to the self-lubricating feature of KAcarb bearings. When these components are assembled in a stainless steel housing, the product is a bearing which outlasts other self-lubricating bearings in the moisture-laden, corrosive atmosphere where the UH-2 is operated.

KAcarb bearings require no periodic maintenance. If, as may occasionally happen, excess dirt or salt builds up around the bearings, simply wash them off with fresh water or Inhibisol. One of the reasons that KAcarb bearings are ideal for the Navy environment is that they are not harmed by water, fresh or sea. Compliance with the "NO LUBE" callout will reduce the need for cleaning since oil and grease tend to gather dirt and dust around bearings.

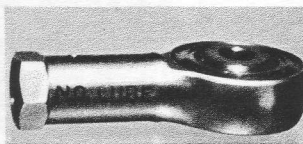
Additional advantages of the KAcarb concept will be realized through the release of a new KAcarb bearing configuration which has been developed using the same successful material and manufacturing technology. This bearing is interchangeable with many sizes including KP8A, KP6A, KP4 and DPP4 types used as crank pivot bearings on UH-2 retentions. Test results have been outstanding and it is expected that production will begin this year.

Helicopters have been notorious for their ability to devour bearings so it was logical that they would serve as the spring-board for the KAcarb concept. Today these bearings are operating on Army and Navy helicopters throughout the world. Based on the success experienced with KAcarb bearings in helicopters, many more aerospace and industrial applications are now being evaluated. In addition to long life and improved maintenance characteristics, KAcarb bearings offer high temperature capability above 600°F as well as a saving in weight.

Recognizing the potential of this new product, Kaman Corporation established the KAcarb Products Division to consolidate continued development, manufacture and marketing of the bearing. Now located in a new production facility, KAcarb Products is equipped to meet the rapidly expanding demand for the maintenance-free KAcarb bearing.



1



2



3



4



5

	KAcarb Bearing Part No.	Federal Stock No.	Supersedes Part No.	Location on UH-2
1	K659607-1	RM1615-058-1142BH6X	K659441-1	Turnbuckle Assy. K659270-1 "Shoestring" Rod K659108-3
2	K659608-11	RM3120-058-1475BH6X	FR4, FR4R, FR4MR	Azimuth-To-Hub Control Rod K659027-5
3	K659610-11	RM3120-058-1474BH6X	K101056-15	"Figure 8" K659212-103(was-7) Links K659212-105(was-101)
4	K615220-11	RM3120-059-8269BH6X	K615111-11 -13	Flap Horn
5	K659609-11	RM3120-058-1472BH6X	K101066-13	"Dogbone" Links K659167-5(was-3)

For further information concerning KAcarb bearings, refer to Interim Airframe Bulletin #140.



# REMOVAL OF SHEARED BOLTS FROM BLIND HOLES (COMBINING GEARBOX)

By M. E. Mills, Mechanic,  
Transmission Room

Four of the bolts which secure the two halves of the combining gearbox are located immediately above the mounting pads (2 bolts above each pad). Recently, reports have been received which indicate some of these bolts are shearing about three threads from the grip end. (Usually, the boltheads will remain in the bolt hole; check bolt security by hand.) If a bolt has sheared, there is no cause for great concern because the gearbox case-halves are held together by the adjacent mounting pad bolts. This additional security would allow gearbox operation to the completion of its TBO period even with one bolt broken on either or both sides. However, if some oil leakage is evident, the bolt(s) should be replaced as soon as it is practical. Naturally, if a considerable amount of oil is leaking and the sheared portion of the bolt cannot be removed, the gearbox must be returned to overhaul. The bolts are threaded into blind holes and care should be exercised when removing the broken piece to avoid damaging the threads or housing.

Three methods used to remove bolts are described below. Although they deal with the combining gearbox bolt, P/N NAS625H56, the procedures can be utilized to remove the broken end of a sheared bolt from any deep, blind bolt hole.

**METHOD 1.** Reinstall the broken bolt, less washers, into the housing. Apply slight inward pressure on the bolthead while rotating counter-clockwise. (The jagged edges of the fracture will often engage and facilitate removal.)

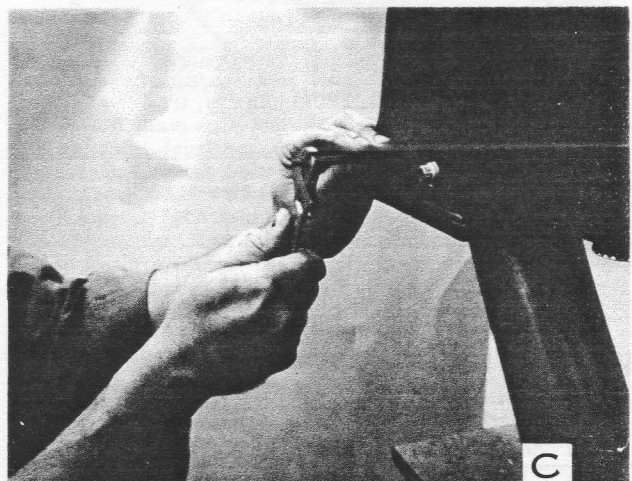
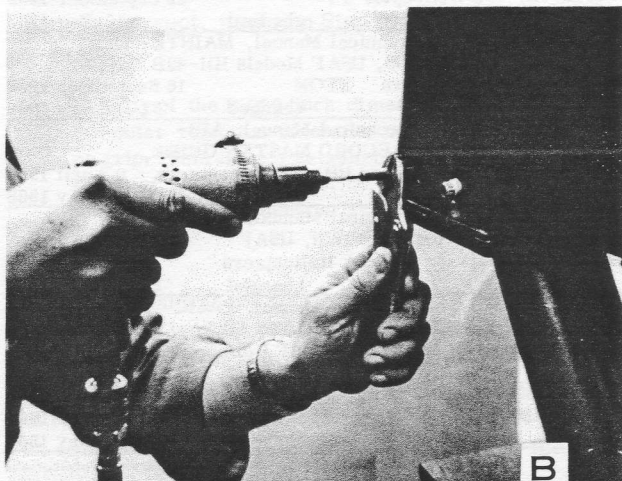
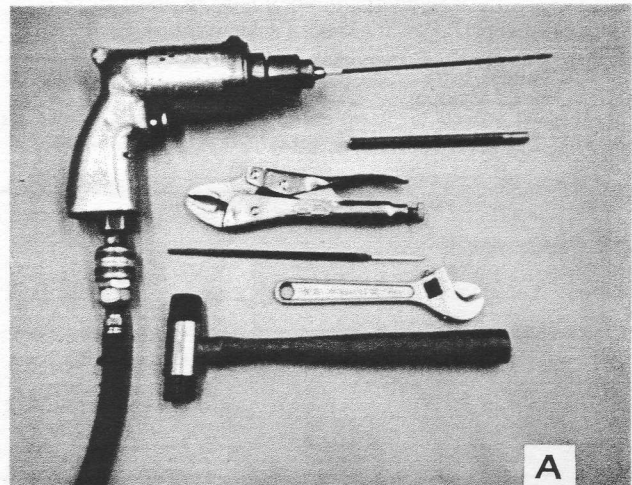
**METHOD 2.** Insert a wooden dowel (5/16-inch diameter preferred) into the bolt hole and bottom out against the broken bolt with a light mallet tap. Maintain inward pressure on the dowel and rotate counter-clockwise.

**METHOD 3.** This method drills a hole in the sheared bolt to remove any existing torque and allows removal of the broken piece without damaging the threaded part of the bolt hole. Photo A shows the required tools. From top to bottom are: A drill motor with a No. 30 extension drill, 7-1/4 inches long; a 5/16-inch diameter drill rod, 5-1/2 to 6 inches long; a pair of vise-grip type pliers; a rattail file; an adjustable wrench; and a small mallet. If the gearbox is installed in the helicopter, a right angle

drive attachment will also be required. The drill rod has been pre-drilled with a No. 30 drill in order to provide a drill bushing for the drill extension. Proceed as follows:

1. Insert the drill bushing into the bolt hole.
2. Lock the pliers onto the drill bushing in order to prevent the bushing from spinning with the drill.
3. Lubricate the drill extension with beeswax or grease and insert into the drill bushing.
4. Apply slight but steady pressure and drill into the broken bolt as shown in Photo B. Drill approximately 3/16-inch into the sheared bolt; do not drill beyond a total depth of 4-1/2 inches from the case surface or the drill will enter the other case-half. (Notice the marker (tape) on the drill—a lock-out may be substituted.) Remove the drill.
5. Insert the rattail end of the file and gently tap it into the just-drilled hole with the mallet. Use the adjustable wrench to turn the file counter-clockwise and remove the sheared portion of the bolt as shown in Photo C.

A change and gearbox rework, which will be incorporated during overhaul, will remove the cap bolts and substitute through-bolts and nut assemblies.



# HH-43 CREWS RESCUE 68 KOREANS

Sixty-eight flood victims were rescued during a two-day period by HH-43B crews from Det 4, PARRC, Taegu AB, Korea. Fifteen sorties in heavy rain were flown by the rescuemen as they plucked civilians from islands, roof tops and waist-deep water. The eight inches of water which fell in two days, sent rivers over their banks and also caused a dam to burst, endangering some sections of Yong Ch'on, a heavily populated city.

Fifty-three persons were rescued from one place, primarily through the efforts of SSgt John F. Tobey, a para-rescue technician. The sergeant was in an HH-43 piloted by Capt Charles E. Mayes and Paul R. Schildgen. SSgt Robert E. Crites was flight engineer. As Captain Mayes hovered the helicopter near a group of houses, Sergeant Tobey fought his way through four-foot-deep water toward the civilians stranded there. Once he was swept 30 feet before he could regain his footing. The sergeant carried flood victims to the chopper until it was full and then it took them to a safe area. Time-after-time Sergeant Tobey made the perilous trip until all 53 persons had been taken to safety. Due to the age of the flood victims, or their excitement, it had been decided not to attempt to hoist them from the roofs where they had taken refuge.

Earlier, Captain Mayes held the HUSKIE in a low hover, with water brushing the gear, while Sergeant Tobey leaned out and pulled two men to safety from a flood-swollen river. A few minutes later the sergeant went into the river to assist an elderly man from his stilted hut. Captain Schildgen hoisted both men to the helo. Soon afterward, Sergeant Tobey went into the water again, to test the depth, then guided the aircraft to a landing in about a foot of water. Eight people were loaded on the aircraft and the

HH-43 made another trip to an army compound to off-load the rescuees and obtain information on other endangered areas.

Meanwhile, another HH-43 making a low-level search elsewhere was forced to return to base when a flap was damaged. Aboard were Capt Darvan E. Cook, RCC; Lt Alan D. York, the copilot; and Sgts David R. Berrio and Duane D. Hackney, pararescue specialists.

Afterward, Captain Mayes and his crew continued the search. With them were the base commander, district chief of police and the province governor. Again Captain Mayes held the HH-43 in a hover as Sergeant Tobey waded through chest-high water to carry three civilians to the helicopter from their flooded home. The next morning an HH-43 piloted by Lieutenant York rescued another civilian from a small island. He was hoisted to the helicopter by TSgt Franklin E. Stursa, helicopter mechanic. Also aboard was Sergeant Berrio. Unable to find any other flood victims and with the water beginning to recede, the HUSKIE crews returned to base.

SCOTT AFB, Ill. — Lt Col Robert J. Kavanagh, Chief of Safety for Headquarters Aerospace Rescue and Recovery Service, recently received the third through seventh Oak Leaf clusters to the Air Medal. Brig Gen Allison C. Brooks, ARRS commander, presented the medals.

Colonel Kavanagh earned the medals during his year as commander of Det 6, 38th ARRS, Bien Hoa AB, RVN. He logged 250 hours flying an HH-43 HUSKIE. He and his crew accounted for three men saved under combat conditions. Colonel Kavanagh also earned his second Distinguished Flying Cross and second Air Force Commendation Medal while in Vietnam.

## CURRENT CHANGES

This list reflects the latest changes to the handbooks. Consult applicable "A" page for changes issued prior to those listed below.

	Issue Date
H-2 Airframe Change 43, Amend 2 - Electrical System, INSTALLATION OF ROTOR OVERSPEED RECORDER, P/N K683246-5	15 October 1968
H-2 Airframe Change 115 - Airframe, INSTALLATION OF A READILY REPLACEABLE ELECTRONIC COMPARTMENT CURTAIN ASSEMBLY	20 November 1968
H-2 Airframe Change 136 - TAIL ROTOR, Improved Bearings and Seals	15 September 1968
NAVAIR 01-260HCA-1 - NATOPS FLIGHT MANUAL, Navy Models UH-2A/UH-2B Helicopters	15 March 1968
	changed 1 November 1968
NAVAIR 01-260HCA-2-3 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, EQUIPMENT (FURNISHINGS, HYDRAULICS, UTILITIES)	1 October 1967
	changed 1 October 1968
NAVAIR 03-10A-24 - Illustrated Parts Breakdown, FUEL FILTER ASSEMBLY, P/N 52-2889-013, -033	1 November 1968
NAVAIR 03-25KAM-1 - Manual, Overhaul Instructions, MAIN LANDING GEAR SYSTEM, Navy Models UH-2A/UH-2B/UH-2C Helicopters	15 September 1965
	changed 15 October 1968
NAVAIR 03-40KAM-1 - Manual, Overhaul Instructions, FLIGHT CONTROL SYSTEM, Navy Models UH-2A/UH-2B/UH-2C Helicopters	15 November 1965
	changed 15 October 1968

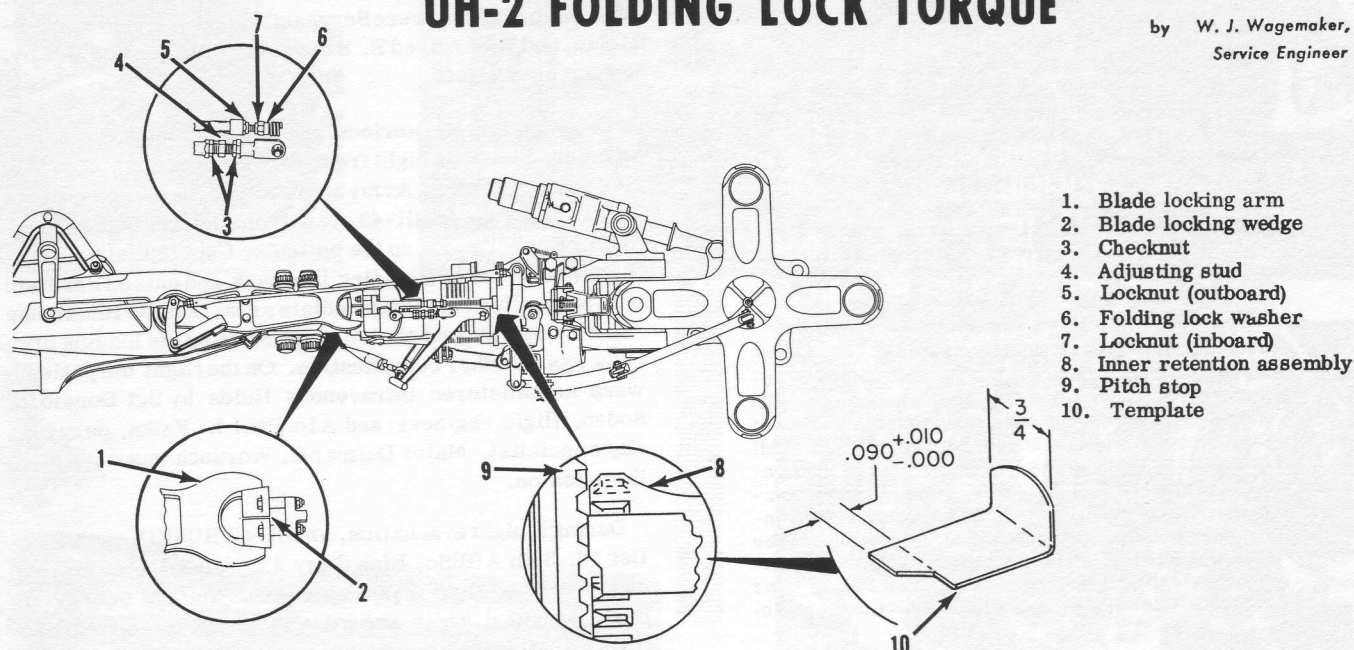
	Issue Date
NAVAIR 05-20KK-1 - Overhaul Instructions With Parts Breakdown, ACCELEROMETER ASSEMBLY, P/N GAH2388-1	15 November 1968
NAVAIR 05-45RA-2 - Illustrated Parts Breakdown, AUTOMATIC STABILIZATION EQUIPMENT AMPLIFIER, P/N 9616-10-04, K687703-1	1 December 1964
	changed 15 November 1968
Support Equipment Change 868 - MODIFICATION OF ASE SENSOR UNIT BENCH TEST SET, P/N K604609-2	1 November 1968
T. O. 1H-43(H)B-1 - FLIGHT MANUAL, USAF Series HH-43B Helicopter	22 September 1966
	changed 16 May 1968
T. O. 1H-43(H)B-2 - Technical Manual, MAINTENANCE INSTRUCTIONS, USAF Models HH-43B and HH-43F Helicopters	16 September 1966
	changed 31 January 1968
T. O. 1H-43(H)B-21 - Technical Manual, AIRCRAFT INVENTORY RECORD MASTER GUIDE, USAF Series, HH-43B and HH-43F Helicopters	9 April 1964
	changed 16 May 1968
T. O. 1H-43(H)B-4 - Technical Manual, ILLUSTRATED PARTS BREAKDOWN, USAF Models HH-43B and HH-43F Helicopters	16 March 1964
	changed 23 January 1968
T. O. 1H-43(H)B-5 - Technical Manual, BASIC WEIGHT CHECKLIST AND LOADING DATA, USAF Series, HH-43B and HH-43F Helicopters	3 April 1964
	changed 8 April 1968
T. O. 1H-43(H)F-1 - FLIGHT MANUAL, USAF Series HH-43F Helicopter	22 September 1966
	changed 16 May 1968

R. H. Chapdelaine, Supervisor, Service Publications



# UH-2 FOLDING LOCK TORQUE

by W. J. Wagemaker,  
Service Engineer



Proper folding lock torque is important in order to provide the required blade-to-retention stiffness during flight. Improper adjustment of the folding lock mechanism leads to vibration and eventual damage to the wedge and guide assembly on the retention. A fast checking method and complete adjusting procedures are outlined below.

## Part I - CHECKING PITCH LOCK RING CLEARANCE:

A simple template (10) can be made for checking the retention pitch stop ring clearance (see items 8 and 9). Proper clearance ( $0.090+0.010-0.000$ ) is required to ensure that the pitch stop ring is not bottomed on the inner retention. A bottomed condition could result in a false torque indication when adjusting the studs (4). For complete folding lock adjusting procedures, refer to Part II.

## Part II - ADJUSTING:

a. With the main rotor blades unfolded, raise the tip of the blade to remove the blade static droop and equalize the load on upper and lower locking wedges.

b. Using template (10) check the full circumference dimension between the inboard splined face of the pitch stop ring assembly (9) and the outboard edge of the crown of the exposed splines on the inner retention assembly (8). This dimension ( $0.090+0.010-0.000$ ) is required in order to prevent a bottomed-out condition which will cause a false torque indication when adjusting the studs (4). If the clearance is not correct, perform Step c. If the clearance is correct, perform Step d.

### NOTE

Validity of the 0.090-inch dimension is contingent on full outer retention extension on the inner retention or grip. This is best established after rotor turn-up. If initial adjustment must be made prior to turn-up, the 0.090-inch dimension should be rechecked after turn-up.

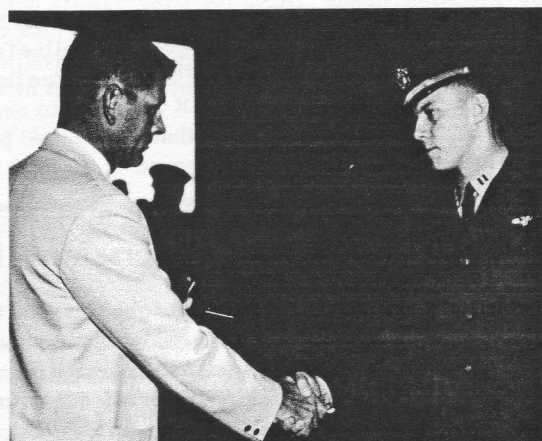
c. To establish the position of the pitch ring (9), loosen the outboard locknut (5). Place the template (10) between the pitch stop ring splines and the outboard edge of the crown of the inner retention splines (see enlarged view of items 8 and 9). Adjust the folding lockbolt washer (6) on each of the three folding lock struts until the correct dimension is obtained.

d. To establish the folding lock torque, first loosen the adjusting stud locknuts (3) on both adjusting studs. (4) Increase folding handle torque by lengthening the studs (4). Adjust the studs (4) until the torque reaches 50-60 pound-inches. Tighten the locknuts (3) to 95-110-pound torque. Cycle the locking handle 10 times. (Cycle consists of withdrawing wedges from blade locking arm.)

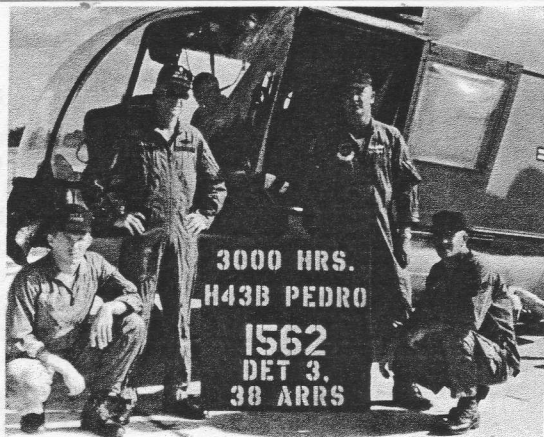
e. Repeat Step d until the torque on the adjusting studs (4) stabilizes at 50-60-pound-inches.

f. Recheck for pitch stop clearance in accordance with Step b. If the dimension has changed, repeat Steps c and d.

## 1000-Hour Pilot Awards



Lt William A. Wendt, a UH-2 pilot from HC-7, NAS Atsugi, Japan, is presented a 1000-hour plaque by Jack L. King, Kaman senior service representative. The plaque is awarded by Kaman Aircraft to pilots logging 1000 hours in helicopters produced by the company. Two other members of the squadron who recently received similar awards are LCdr James W. Jowers and Lt Ronald B. Lewis. Other pilots who qualified for the plaque are: HH-43 HUSKIE—Capt Charles W. Burridge, Det 16, CARRC(MAC), McConnell AFB, Kan.; Maj Hoyt B. Hurt and Capt George L. Nowell, Jr., Det 9, EARRC(MAC), Shaw AFB, S. C.; and Maj Edward L. Gilliam, Det 16, WARRC (MAC), Williams AFB, Ariz. UH-2 SEASPRITE—Lt Dixon J. Anderson, Operations Division, NAS, Fallon, Nev. (USN photo)



**3000 HOURS**—HH-43 number 59-1562, assigned to Det 3, 38th ARRSq, Ubon AB, Thailand, recently accumulated its 3000th flight hour. Posing with the sign announcing the event is the crew which was aboard the helicopter when the 3000th hour was logged. Left to right are, Sgt George W. Tefferteller, flight engineer; Maj Robert C. Collom, detachment commander; Capt Bobby L. Meadows, rescue crew commander; and Sgt Philip E. White, crew chief. The HH-43 HUSKIE is also often referred to affectionately, especially in Southeast Asia, as "Pedro," the radio call letters of the helicopter. (USAF photo)

Two HH-43 crews from Det 3, 38th ARRSq, Ubon Afl, Thailand, teamed up to rescue 1st Lt Peter R. Nash, USAF, copilot of an F-4D which crashed at night five miles from the airfield. After considerable searching over the dark terrain, the downed aircraft was located by a HUSKIE crew consisting of Capt Arthur C. Plunkett, pilot; Capt Nicholas O. Gaspar, copilot; Sgt William C. Murphy, medical technician; and Sgt Glenn A. Todd, flight engineer. The second HH-43 picked up Lieutenant Nash and the first returned to base for refueling. Manning the pickup helicopter were Maj Robert C. Collom, RCC; Capt Rolland C. Urie, RCCP; SSgt Igor E. Ivanoff, flight engineer; and Capt Vernon P. Wagner, flight medical officer. The pilot of the F-4D, who had not survived the crash, was located afterward by the rescuers.

A Det 3 crew scrambled after two RTAF T-28's were involved in a mid-air collision and crashed five miles from the base. Major Collom landed the HUSKIE near the flaming wreckage of one plane and the FSK was used to extinguish the fire. It was determined that the downed pilot had not survived the crash. The second T-28 pilot was

then located near the other aircraft involved in the collision. He had bailed out and suffered minor injuries. With Major Collom were Sergeant Murphy, medical technician; and SSgt Alfred E. Ellis and Sgt Booker T. McCoy, rescue specialists.

Two Vietnamese, seriously injured in a mine explosion, were evacuated at night from Providence Hospital in Tuy Hoa to the 91st U. S. Army Medical Evacuation Hospital at Phu Hiep AF by an HH-43 crew from Det 11, 38th ARRSq, at Tuy Hoa. To pick up the patients, Capt Daniel A. Nicholson had to make a landing in a dark and unfamiliar field with power lines in the immediate area. Many Vietnamese "scurrying" around the helicopter during the loading process was a further complication. On the flight the patients were administered intravenous fluids by Sgt Donald L. Soden, flight engineer; and A1c Paul E. Fatka, pararescue specialist. Major Delmar G. Worsech was copilot on the mission.

During a night evacuation, an HH-43 HUSKIE crew from Det 10, 38th ARRSq, Binh Thuy AB, landed in a darkened, tree-lined field to pick up a sailor who had been seriously wounded while aboard a Navy River Patrol Boat (PBR). Another sailor, killed in the same action, was also placed aboard the helicopter. During the landing and takeoff, light enemy fire was directed at the HUSKIE. On the flight to the hospital, TSgt Dudley R. Peckinpugh, the HH-43 paramedic, applied multiple pressure bandages to the sailor's wounds. He had been hit in both legs by shrapnel. Capt John L. Debevec was pilot of the HH-43 and LtCol Roland E. Speckman was copilot. The flight engineer was A1c James E. Tarantino.

In another Det 10 mission, Capt Thomas D. Precious and his HH-43 crew flew through heavy rain showers and then landed in a flooded rice paddy to pick up the four-man crew of a Navy Seawolf helicopter that had gone down in hostile territory. Cover for the rescue helicopter was flown by another Seawolf and additional cover was provided by several PBR's. The downed crewmembers made their way through the two-foot-deep water to the HH-43 and climbed aboard. They were uninjured but covered with leeches. Colonel Speckman was copilot of the HUSKIE, SSgt Gordon L. Browning, flight engineer, and Sgt Lonnie G. Conner, pararescueman.

## That Others May Be Clothed and Made Well

At the headquarters of the 3rd Aerospace Rescue and Recovery Group at Tan Son Nhut AB, Saigon, the normal daily efforts of the men are to assist in rescuing downed airmen throughout Southeast Asia. Their off-duty efforts are also concerned with humanitarian service—helping the Co-Nhi-Vein Viet Hoa Orphanage in every way possible. Det 11, 38th ARRSq, continued its program of civic actions as an HH-43 helicopter crew recently distributed 500 pounds of clothing to Vietnamese in hamlets near Tuy Hoa AB. The clothing, which was gathered in the United States by families of Det 11 personnel, boosted the total distributed by the rescue unit to more than 1000 pounds. Aboard the helicopter were Maj George S. Mangum, detachment commander; Capt Daniel A. Nicholson, and A1c Robert Brooks.

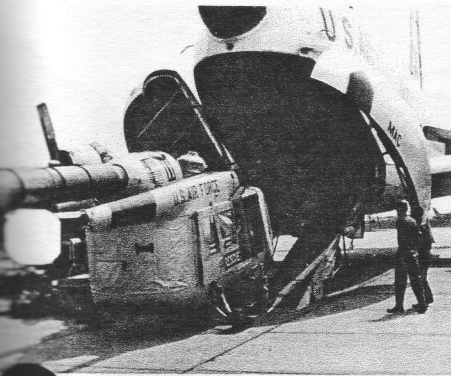
Det 11 personnel are also engaged in medical civic action program (MEDCAP) projects throughout the province.

Four times a week, HH-43 crews fly medical teams to 10 different sites where Air Force doctors, dentists and medical technicians treat Vietnamese for a multitude of ailments.

"When we first started making the MEDCAP trips, the people would run away and hide when we started to land," Major Mangum said, "now they know who we are and why we are here and they come running out to meet us."

Another facet of the HUSKIE crews' outstanding record of service to the local residents is the medical evacuation flights bringing injured and sick Vietnamese out of remote, often hostile territory. The HH-43 has flown children to the Tuy Hoa dispensary for corrective surgery; Vietnamese civilians wounded in land mine and booby trap explosions to hospitals; anybody, anyplace, anytime help was needed!





LAKENHEATH AB, England—One of the high spots in Det 3's activities during 1968 was deployment of the entire unit from this base to Bodø AB, Norway. All personnel and equipment from the AARRC detachment was airlifted to the Norwegian base, located 40 miles north of the arctic circle, in support of the NATO exercise, "Polar Express."

Within five working hours after arrival, the first HH-43B HUSKIE was test flown and released for alert duty by Maj Thomas C. Seebo, detachment commander.

During the exercise, the detachment augmented the Norwegian helicopter rescue squadron and at the same time added strength to the Bodø AB fire department. In addition to rescue alert coverage, and local base rescue (LBR) scrambles, several familiarization/support flights were made. Included were trips to Bardafoss Air Station,

140 miles north of Bodø, and flights "in and around" the local fjords and mountains.

Shown in the photographs are: The loading of an HH-43 aboard a C-124 for the flight to Norway; reassembly at Bodø AB; orientation and cross-training with Norwegian rescue personnel. SSgt Gene L. Cole is explaining the rescue seat to two Norwegian rescue frogmen—the equivalent of ARRS pararescuemen. Practice firefighting with a fire department from the Norwegian Air Force. The last photo, taken at Lakenheath, shows another aspect of Det 3 activities. As part of a community relations program, Major Seebo explains how the HUSKIE and fire suppression kit are used for LBR. Eager listeners are a group of "Bobbies"—London Metropolitan police—who recently visited the base. Major Seebo has more than 2335 hours in HH-43B/F helicopters. (USAF photos)

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Continued from page 12

In another Det 36 mission, the Gray Ghost had just landed on the ship at the end of the day's flight operations when two sailors were struck and injured by a davit cable as an LCVP was being hoisted aboard the vessel. The medical officer requested that they be airlifted to a medical facility at Da Nang. The flight to the hospital was a short one—10 miles—but it was made at night while flying at 200 feet under a 300-foot ceiling. Visibility was only a quarter of a mile. The return to the ship was made under the same hazardous conditions but ended with a safe landing despite the darkness, bad weather and six-foot swells which caused the ship to pitch in an unpredictable manner. UH-2 crew on the mercy flight were Lieutenant Trace, pilot; Lt Barry R. Geise, copilot; ADJ2 Richard T. Simons and ADJ3 James J. McDowell, crewmen.

A routine personnel transfer and guard mail flight suddenly turned into a rescue mission for a UH-2 crew from

HC-2's Det 11 deployed aboard the USS Intrepid. Lt(jg) C. M. Reddington and his crew were returning to the Intrepid when they received word that a man was overboard on the port side of the ship. SEASPRITE aircrewman C. E. Wilson, AN, spotted the man in the water and R. D. Angel, ATN2, was lowered to aid the rescuee onto the seat. Both men were then hoisted to the helo. Copilot on the mission was Lt R. L. Bennett, aircraft commander.

A UH-2 crew from HC-7's Det 100 launched from the USS R. K. Turner at night after an A-7 pilot ejected and landed in the water five miles from the Vietnamese coast. Aided by the downed pilot's wingman, the SEASPRITE crew quickly located the survivor and the pickup was made without incident. UH-2 crewman R. R. Lavigne, AMS2, went into the water to aid the downed pilot. Other members of the helicopter crew were Lt W. L. Berry, pilot; Lt(jg) J. P. Brennan, copilot; and ADJ3 T. J. Levasseur, crewman.



# Huskie Happenings



... Forty-three campers, stranded in 1000-foot-deep Palo Dura Canyon State Park by rising flood waters, were evacuated by HH-43B's from Det 13, WARRC, Reese AFB, Texas. Due to the surrounding trees and close proximity of the canyon wall, remote area approaches were necessary to make landings in a small clearing near the campers. The first day nine people were airlifted out by the HUSKIE crews. Aboard one helicopter were Maj John J. Elliff, the pilot; Sgt Edward W. Mann, flight engineer; and Sgt John A. Civic, medic. Manning the second HH-43 were Capt Glenn T. Passey, pilot; SSgt Thomas C. Story, flight engineer; and TSgt Howard L. Mott, medic. The helicopters then delivered food, drinking water and dry equipment to those remaining behind. The second helicopter returned to Reese while Major Elliff and his crew remained overnight at nearby Amarillo AFB. When the river continued to rise the next day due to severe thunderstorms, Major Elliff and his crew evacuated 34 women and children, then flew in additional food and water for the men who stayed behind with their equipment.

... Two paratroopers, one believed to have suffered a broken back and the other with a brain concussion, were evacuated by an HH-43 crew from Det 8, Yokota AB, Japan, after a 100-mile night flight to and from Camp Patton. Due to the lack of navigational aids, wind and blackness, difficulty was experienced in locating the camp until the waiting ground party lit a flare. 1stLt John R. Bland, Jr., landed at the unprepared, unlighted site and the patients were placed aboard the HUSKIE. Others in the crew were Capt Ismau S. Momii, copilot; TSgt Jackson H. Kilgore, crew chief; Capt N. H. Gray, flight surgeon and Sgt C. W. Phythian, paramedic. ... A U. S. soldier who had been crushed beneath a heavy duty vehicle was evacuated from a construction site at 4232 feet in a mountainous area by an HH-43B crew from Det 10, Atl ARRC, Aviano AB, Italy. Part of the flight was made through fog and haze but visibility was good at the pickup site. Capt Jack D. Peak was pilot of the HUSKIE and Capt George R. Andrews was copilot. Others aboard were Capt Raphael A. Cox (MC), a doctor; Sgt James W. Otwell, flight engineer; and Sgt Alan L. Suit, medical technician.

... An HH-43 crew from Det 16, CARRC, McConnell AFB, Kan., responded after a light civilian aircraft crashed and burned on a nearby airfield. The rescuemen used the fire suppression kit to aid civilian personnel in extinguishing the fire and then returned to base. Maj Richard A. Smith was pilot of the HUSKIE and Capt Charles W. Burridge was copilot. Crewmen were TSgt Raymond J. Champagne, medic; SSgt Melvin C. Smith and Sgt James G. Felts, firefighters. ... In another Det 16 mission, an HH-43 crew scrambled when an F-105 crashed on takeoff. The FSK was released and the firemen deployed to initiate a rescue. Because of exploding munitions, however, the firemen were recalled by Major Smith. At the same time the downed pilot's chute was sighted in a nearby field. The HUSKIE picked up the survivor, delivered him to a flight surgeon on the alert pad and then returned to the crash scene where the Suppression Kit was used to extinguish the fire. With Major Smith were Sergeant Smith, A1c Billy D. Grace, and A1c Steve A. Hillyer.

... An F-100 pilot who was forced to eject 36 miles from Nellis AFB, Nev., was picked up by an HH-43 crew from Det 14, WARRC, stationed at the base. Manning the HUSKIE were Capt Gary E. Robertson, pilot; Capt Walter F. Turk, copilot; Col F. A. Stone (MC), flight surgeon; MSgt George E. Melby, medical technician; and SSgt Juan T. San Nicolas, crew chief.

... An HH-43B crew from Det 16, WARRC, at Williams AFB, Ariz., landed on a 6000-foot-high plateau to aid two pilots who had ejected from a T-38 while more than 100 miles from the base. Before being evacuated, one survivor was given emergency first aid and a splint applied to his broken leg. Maj Walter C. McMeen was pilot of the HUSKIE; TSgt Conrad L. Neft, flight engineer; and Capt Donald E. Larmee (MC), flight surgeon.

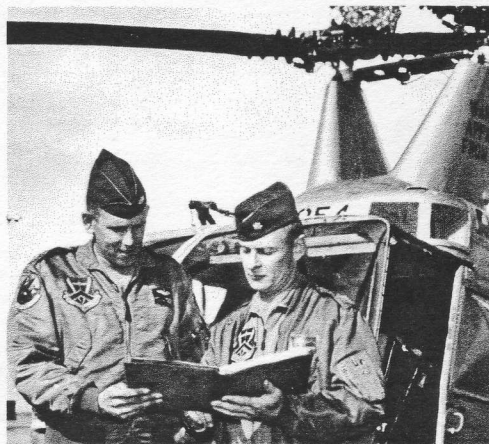
... Two pilots, injured after they ejected from their F-4C, were rescued from a heavily wooded area by an HH-43B from Det 14, EARRC, (MAC), MacDill AFB, Fla. The helicopter crew was on alert tour at Avon Park Bomb Range when the incident occurred. One of the downed pilots was entangled in 70-foot trees so Sgts Jerry R. Evans and Cleveland L. Bishop, firefighters, went to his assistance after Capt Thomas F. Madden "squeezed" the HUSKIE into a small area. Rotor clearance was only 10 feet from the surrounding trees. Ten minutes later the second survivor was located and Captain Madden again hovered the HH-43 while TSgt Larry K. Henderson, flight engineer, lowered the sling through the trees to raise the injured man. First aid was administered during the return trip to the Avon Park Airfield. Other members of the helicopter crew were Capt Billy C. Marcontell, copilot; and SSgt Terrance C. Henry, medical technician.





**2000 HOURS**—Maj Richard A. Smith receives congratulations from Capt Oliver E. Schmoker after logging his 2000th hour in the HH-43 HUSKIE. Major Smith, commander of Det 16, CARRC, McConnell AFB, Kan., went over the 2000-hour mark while on an emergency scramble. The Major has been flying the HH-43 since July 1960 and is one of the few pilots who logged time in all three HUSKIE models—the HH-43A, HH-43B and the HH-43F.

**4000 HOURS**—The Air Training Command has proudly reported that, on 19 Nov, 1968, helicopter 58-1854 became the first HH-43B HUSKIE to log 4000 flying hours in the United States Air Force. This was achieved by "Shep 54," the aircraft's local designation, at Sheppard AFB, Texas, while on a routine training flight. Maj Charles R. Carpenter, right, the H-43 flight commander, was the pilot on the flight, with Maj James E. Lamoreaux, left, as the copilot. Shep 54 was originally accepted by the Air Force from Kaman Aircraft on Jan 26, 1960. The aircraft went directly to Stead AFB, Nev., for use by ATC in the helicopter training program. It has continued with the program after moving from Stead to Sheppard.



Pictured in front of Shep 54 are personnel from the 3750th Consolidated Maintenance Squadron at Sheppard. They are charged with the flight line maintenance required to keep Shep 54, and other HH-43's like it, in a ready condition to meet the flying training mission. Front row, left to right are Sgt William Ingram, Sgt Richard O. LaPensee (crew chief for 854), Sgt Donald C. Scatena, A1c Earl R. Siders, SSgt Larry E. Hawkins, and SSgt Franklin Teamer. Second row, SSgt Jacob P. Cox, A1c Ronald V. Woodward, A1c Thomas D. Downs, SSgt Charles H. Burnett, Sgt Kenneth A. Green, and A1c Douglas L. Williams. TSgt Glenn O. Durham, shift chief on the HH-43 flight line is in extreme left rear. (USAF photo)



## RCC Praises Medic For 'Exceptional Performance'

A staff sergeant who collapsed at a deep space tracking station and apparently died, is alive today due to the efforts of SSgt Felix H. Havis and the other members of an HH-43 crew from Det 25, EARRC(MAC), Eglin AFB, Fla.

Capt Roland J. Page, RCC, flew the 17 miles to the site at the HUSKIE's maximum speed but while still four minutes away, the crew was told that the victim had no pulse and was not breathing. A hurried landing was made in a confined area near the site and Sergeant Havis, a medical technician, ran to the man and quickly examined him—the patient had turned purple, had no pulse and was not breathing. The Sergeant applied oxygen through a resuscitator and began heart massage but there was no re-

sponse. As the helicopter sped toward the hospital Sergeant Havis continued to work on his patient and suddenly, when only a few minutes from the helipad, the patient began to breathe without help. The men from Det 25 then knew that they had won their race with death.

Captain Page said afterward, "Enough cannot be said for Staff Sergeant Havis. It was he alone who really saved the life of this man. He performed in an exceptional manner and should receive the credit due him for a fine performance."

Other members of the crew were SSgt Clinton H. Go-down, flight engineer; and Sgt Herbert M. Groth, rescue specialist.



# SCROLL OF HONOR

1967

Osborne, Robert L., Captain, USAF  
 Owens, William P., A1C, USAF  
 Page, Roland J., 1/Lt, USAF  
 Palmer, Daniel M., SSgt, USAF  
 Parker, Edward H., Captain, USAF  
 Parks, James L., A1C, USAF  
 Patterson, James C., SSgt, USAF  
 Pearson, Jerard J., Sgt, USAF  
 Perez, Andres B., A1C, USAF  
 Perez, Benny S., A1C, USAF  
 Perkins, Hubert R., SSgt, USAF  
 Pfannenstiel, Robert J., A2C, USAF  
 Pharis, Wade J., LCdr, USN  
 Pickering, Harold, Major, USAF  
 Pike, Hugh A., SSgt, USAF  
 Porter, Richard E., 1/Lt, USAF  
 Porter, Richard W., Cpl, USMC  
 Porter, Roger A., Sgt, USAF  
 Precious, Thomas D., Captain, USAF  
 Price, Russell W., A1C, USAF  
 Prosser, Clarence E., SSgt, USAF  
 Purvine, Bruce M., Major, USAF  
 Quiroz, Felipe A., A1C, USAF

Randolph, John F., Captain, USAF  
 Reed, Alvin C., TSgt, USAF  
 Reeves, Robert R., Captain, USAF  
 Renten, William A., SSgt, USAF  
 Rice, Charles L., Captain, USAF  
 Rich, Charles T., A2C, USAF  
 Ricks, Keith H., Captain, USAF  
 Rigby, Michael J., ATN2, USN  
 Robertson, Gary E., Captain, USAF  
 Robertson, Lewis B., AMS2, USN  
 Roper, Peter F., A1C, USAF  
 Roses, John W., SSgt, USAF  
 Rosler, Michael J., A2C, USAF  
 Ross, Clyde R., TSgt, USAF  
 Russell, G. D., AMH2, USN  
 Salmans, Larry D., Captain, USAF  
 Salisbury, Allen E., AN, USN  
 Sams, Donald D., Captain, USAF  
 Schimonsky, William L., A1C, USAF  
 Schroeder, Ted, Captain, USAF  
 Schwake, Gary L., ADJ3, USN  
 Sehorn, William T., 1/Lt, USAF  
 Severns, Charles D., TSgt, USAF  
 Shea, William P., Captain, USAF  
 Sholes, Ronald K., Sgt, USAF  
 Simonson, Edwin L., A1C, USAF  
 Sloat, Robert A., Sgt, USAF

Smith, Delmer R., TSgt, USAF  
 Smith, John A., A1C, USAF  
 Smith, Richard A., Major, USAF  
 Smith, Terry L., Lt(jg), USN  
 Snell, George C., SSgt, USAF  
 Solberg, Harold A., Captain, USAF  
 Sorter, Richard I., Sgt, USAF  
 Souza, James, SSgt, USAF  
 Sovell, James E., Captain, USAF  
 Spriggle, Martin L., SSgt, USAF  
 Stanfield, Melvin, TSgt, USAF  
 Stemple, John H., SSgt, USAF  
 Stone, Charles H., SSgt, USAF  
 Swartz, Paul L., ADJAN, USN  
 Tam, Guy, Captain, USAF  
 Taylor, Vernon D., SSgt, USAF  
 Teasley, Albert E., SSgt, USAF  
 Tevis, James, A1C, USAF  
 Thorpe, Edward L., A1C, USAF  
 Tobey, John F., A1C, USAF  
 Tolleisen, Albert E., Captain, USAF  
 Touchette, Bernard L., SSgt, USAF  
 Treutel, Terrence A., A1C, USAF  
 Turner, Gerald B., Captain, USAF  
 Turner, Robert G., SSgt, USAF  
 VanAllen, Richard L., Captain, USAF  
 VanMeter, Donald E., Captain, USAF

## KAMAN AIRCRAFT

THE PERSONNEL ABOVE WERE HONORED FOR THEIR SKILL, COURAGE AND JUDGEMENT DISPLAYED WHILE PARTICIPATING IN RESCUE OR MERCY MISSIONS PERFORMED UNDER ADVERSE OR HAZARDOUS CONDITIONS WHILE FLYING IN KAMAN HELICOPTERS.