

# **KAMAN** *Rotor Tips*



**KAMAN AIRCRAFT CORPORATION**  
PIONEERS IN TURBINE POWERED HELICOPTERS

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## THE COVER

May the spirit of Christmas extend throughout the year and all over the world. Cover by Donald Tisdale, Service Publications.

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# COMPOUND HELICOPTER RESEARCH

by Alan A. Whitfield  
Project Engineer

The standard UH-2 helicopter rotor system has already been flown to speeds well above 200 miles per hour. Can this system be flown at substantially higher speeds? The answer may be learned from a flight program recently proposed by Kaman Aircraft for its research Compound Helicopter—a modified UH-2 with fixed-position wings and with additional power presently supplied by one jet engine mounted on the right side of the fuselage. Based on the data obtained in the testing to date, it appears that speeds as high as 275 mph may be possible if a go-ahead is given to add a second jet engine to this research vehicle.

A flight test program, which has included qualitative flight evaluations by U. S. Army and Navy test pilots, is nearing completion at Kaman on the UH-2 "Compound." This testing, which forms a part of the continuing high-speed rotor research effort being conducted for the Army's Aviation Materiel Laboratories (formerly TRECOM), follows a program during which the effects of jet augmentation alone were evaluated in 1964. The tests with the wing indicate that the speed potential for the standard UH-2 rotor is substantially higher than the 218 mph already attained.

When the flight testing of the UH-2 jet-augmented configuration was completed last year, it was apparent from the test data that the rotor speed limits experienced could be appreciably extended by adding a

wing to further unload the rotor. In keeping with this research program's criteria of simplicity and minimum cost, it was decided to use readily available outboard wing panels from a Beech "Queen Air" for the next flight phase. The fuselage structure under the aft cabin floor was modified to allow "bolt-on" attachment of these wing panels. The fuel capacity lost by removing the UH-2 aft fuel tank was regained by using the Beech internal wing tanks. The wing attaching hardware was designed so that the wing incidence angle with respect to an aircraft waterline could be changed by ground adjustment. In order to provide a means of changing wing lift at a given flight speed, the standard UH-2 horizontal stabilizer was modified to allow pilot inflight variation of stabilizer incidence angle and, consequently, aircraft attitude.

The results obtained in 1964 with the jet-augmented UH-2 show that by adding jet-engine thrust to assist the rotor in propelling the helicopter through the air, stress loads on the rotor are reduced at a given flight speed. As a consequence, the aircraft vibration levels also decrease. The addition of the wing further assists the rotor by reducing the lift which it must provide and, in effect, makes the rotor act as if the aircraft gross weight were lower. The measured rotor stresses and aircraft vibration levels become even less for a particular flight condition.

If the auxiliary jet and wing individually, and in combination, reduce the stress levels in the rotor, what eventually limits the forward speed at which the helicopter can be flown? Of course, one item is power. But, assuming that there is sufficient total power from the General Electric T58-8B turbine engine, already in the UH-2, and GE's YJ85 jet augmentation engine, there are still physical limits which become evident. Establishing and analyzing these limits have assumed paramount importance in this research program.

As the speed envelope was expanded, a rotor limit associated with aerodynamic compressibility was encountered. As the tip speed of the advancing rotor blade approaches a Mach number of .9, rotor blade drag builds up rapidly causing an increase in rotor stress, vibration, and power required. By reducing the rotor rpm and, consequently, the tip speed, it is possible to achieve a higher flight speed. The extent to which the rotor tip speed can be reduced to alleviate compressibility effects is limited by flow separation on the retreating blade. As the angle of attack of the rotor blade, relative to the inflowing air, increases under conditions of high power and airspeed and with decreasing rotor speed, portions of the retreating blade region experience this flow separation. As a result, rotor stress levels build up, power requirements and aircraft vibration

increase and control becomes sluggish. Acceleration to a higher airspeed is no longer advisable; thus, another airspeed limit is defined.

It was possible during the jet-augmented phase of the program to establish an optimum compromise between these rotor limitations by varying rotor speed. However, the addition of the wing, with the resulting rotor unloading, assisted the rotor to such an extent that a rotor-limited airspeed could not be reached before the aircraft became power limited. Consequently, the addition of the second jet to provide the required power becomes the next logical step for further expansion of the high-speed envelope of the UH-2 rotor.

One area of investigation of immediate interest when the wing was added to the aircraft was the influence of the wing on autorotation characteristics. With the wing supporting a large portion of the aircraft weight during descent due to the increased wing angle of attack, the stabilized rotor autorotation rpm tends to fall off. Since the maintenance of sufficient rotor speed is essential for aircraft control and to cushion the landing, this area was of critical concern. Fortunately, it was found that, with the particular wing chosen in combination with the UH-2 rotor configuration, a rotor speed of approximately 90% could be established which yielded adequate autorotational handling qualities. In addition, due to the increased high angle of attack of the wing during autorotational descent, flow separation occurs over

part of the wing surface under certain flight conditions. The inherently large control power of the UH-2 rotor was found to provide ample control to overcome any erratic control tendencies associated with the variations in airflow over the wing panels during this maneuver.

In addition to investigating rotor characteristics at high airspeeds, the UH-2 Compound Research Program is providing a valuable tool for evaluating the general handling qualities of such a compound machine. One item which stands out as being of particular significance is the increased maneuvering capability of the vehicle with the wing. Normally, the load factor ("G" level) which can be developed by a helicopter during a high speed turn, or any transient accelerated maneuver, is limited by the onset of rotor blade stall. Since the wing supports more than half of the increased load developed in a maneuver, it delays rotor blade stall and allows a higher "G" load factor to be developed. This advantage becomes readily apparent to the pilot and soon he is maneuvering the Compound helicopter at high airspeeds just like he would a fixed-wing aircraft. High-speed maneuvers, involving load factors of 2.5 G's, have been executed at airspeeds above 200 mph.

The flexibility of the UH-2 Compound as a research tool was demonstrated by a series of flights conducted to further exploit the presence of the wing in high-speed maneuvers. If the wing could be

made to assume an even larger portion of the increasing load during the maneuver and thereby provide increased unloading of the rotor, the high-speed maneuver capability of the vehicle would be further enhanced. To evaluate this concept, use was made of the standard UH-2 auxiliary stabilization equipment (ASE). The electrical output signal from an accelerometer was fed to the ASE collective channel which caused an automatic reduction in collective pitch as a function of load factor. Although the final evaluation of these tests had not been completed at the time of this writing, preliminary results tend to confirm the potential value of such a system in future Compounds.

Another means of increasing the maneuverability of the vehicle at high speeds is currently being examined. Control of the wing ailerons has been integrated into the lateral cyclic control system to provide increased roll control power. Different ratios of aileron sensitivity with lateral cyclic control input are being evaluated to determine the optimum combination of rotor and aileron roll control.

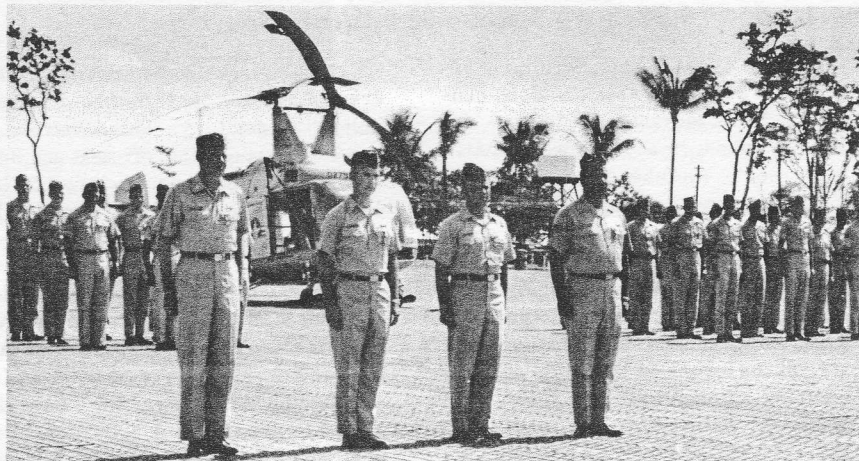
From this brief description of the Kaman high-speed flight research program, it is apparent that the UH-2 Compound is proving to be a highly versatile research vehicle for obtaining basic data on Compound helicopter characteristics. The two-and-one-half years of testing at Kaman, involving over 125 flight hours, has already made a significant contribution to the extension of rotary wing technology.



**RESEARCH VEHICLE**—Kaman "Compound Helicopter" on test flight near the company's Bloomfield, Conn., facility.



## Southeast Asia



**FOR VALOR**—HH-43 crew from the 38th ARSg are shown after receiving Silver Stars for daring rescue of downed pilot in North Vietnam. Left to right are Capt Joe E. Ballinger, Capt Bruce C. Hepp, 1stLt Walter F. Turk and SSgt Roberto Rodriguez. (USAF photo)

Hq 2AD, Tan Son Nhut Aflid, RVN—Silver Stars have been presented by Air Force four-star Gen Hunter Harris to four members of the Air Rescue Service in ceremonies here. General Harris, commander of Pacific Air Forces, presented the nation's third highest award for valor to Capt Bruce C. Hepp, Capt Joe E. Ballinger, 1stLt Walter F. Turk, and SSgt Roberto Rodriguez. Along with four other HH-43 HUSKIE helicopter crewmembers scheduled for departure from the Republic of Vietnam, the four new Silver Star winners flew deep into Communist North Vietnam to perform the dangerous rescue of a downed Air Force pilot. Air Rescue Service officials say all eight crewmembers have won the Silver Star, but the other four — Capt Stanley O. Schaetzle, A2c Richard A. Wallace, A1c William A. Robinson and A2c Marvin F. Brenaman — were to receive the award at a later date.

The official citation accompanying the Silver Stars said the mission flown by the Air Rescue Service airmen "required a flight of more than 200 miles" over hostile territory. But that was only part of the story.

On May 17, an F-105 Thunderchief jet was downed by enemy groundfire along the Song Ba river near Route 7, Northwest of Vinh. The pilot, Capt James J. Taliaferro, Jr., bailed out and landed safely in the midst of a large number of enemy troops. Captain Taliaferro landed in a dense bamboo forest on a hillside and the thick undergrowth ham-

pered enemy forces trying to reach him.

Piloted by Captain Hepp and Lieutenant Turk, two HH-43 helicopters headed for the spot. The choppers carried extra fuel drums, making possible the long flight to and from the pick-up spot. Enroute to the target area, the choppers were hindered by heavy rain and clouds. They were also forced to detour around known flak positions. At the pick-up spot, fighter aircraft flying rescue cover were busy suppressing enemy ground fire. Tracers were coming up from the ground as near as a quarter-mile from where Captain Taliaferro was hiding. Captain Hepp said he spotted the downed pilot's orange-and-white parachute and also received an electronic homing signal from Captain Taliaferro. The fighter pilot also set off a smoke flare to help the chopper crews locate him.

"The rescap fighters continued trying to suppress the ground fire with 20mm cannon as we descended to make the pick-up," Captain Hepp recalled. "As we got lower, Captain Schaetzle, Sergeant Rodriguez and Airman Wallace began answering enemy fire with their M-16 rifles."

The heaviest enemy fire, believed to be from .50-caliber machine guns and small arms, was coming from about 50 yards behind and below the hovering chopper. The second helicopter, piloted by Lieutenant Turk, descended and orbited the lead chopper. As Lieutenant Turk handled

# Air Crew Recovery

by Capt Gerry Hickman  
USAF Combat News

the controls, Captain Ballinger and Airmen Robinson and Brenaman cut loose with their M-16s at ground forces firing at them. As the fierce gunfight continued, Captain Hepp descended as low as possible.

"It was impossible to move the chopper nearer than about 20 feet from Captain Taliaferro's position," the rescue pilot said. "Our blades were clearing trees by five feet or less and undergrowth was brushing underneath us." The bamboo at the scene was almost 100 feet high.

"We ran out 100 feet of hoist cable and waited for Captain Taliaferro to reach the hoist sling so we could pull him up," Captain Hepp continued.

The downed pilot took five minutes to reach the sling, so dense was the undergrowth. But once in the sling, he was immediately hoisted aboard the hovering chopper. As Captain Taliaferro came aboard the helicopter, the rescap fighters fired a salvo of 2.75 rockets at the enemy troops who had moved in even closer, and the F-105 pilot joined the rescue crewmen in firing at the Communist Forces. Drawing his .38-caliber revolver, Captain Taliaferro began shooting at the spots where tracers were still blazing. Tracers followed the choppers as they pulled away.

Immediately following the mission, General Harris sent the following message to the 38th Air Rescue Squadron here: "My personal con-



gratulations are extended for your noteworthy pilot pick-up of 17 May 65. The professionalism displayed by all who participated in this mission, plus the outstanding teamwork by all who participated in this mission, plus the outstanding teamwork under heavy ground fire, was noted with pride. For all who participated, a well done!"

In other Vietnam missions, HH-43 personnel from ARS Det 7, 38th ARSq., Danang AB, recovered the crew of a light observation plane from heavily forested, mountainous terrain and a bomber crew from the sea.

Two HH-43F's scrambled after word was received that the observation plane had crashed into 175-foot trees and caught fire. With Army fixed-wing aircraft and armed helicopters flying cover, the HUSKIE crews began their search and soon located the downed airmen in a small wash. The pilot was hoisted to safety by one "F" and the observer by the other. Pilot of the first rescue helicopter was 1stLt Arthur J. Machado; Capt James V. Berryhill, copilot; SSgt Homer L. Ramsey, helicopter mechanic; and MSgt Lenote M. Vigare, pararescueman. Crew of the second helicopter consisted of Capt Bruce M. Purvine, pi-

## 38th Air Rescue Squadron Activated

Control of Air Rescue Service operations in Southeast Asia has been centralized with activation of the 38th Air Rescue Squadron at Tan Son Nhut Airfield, South Vietnam. LtCol Edward Kraska assumed command of the 38th on an interim basis. He formerly commanded Det 3, PARC at Tan Son Nhut, which was deactivated. According to MATS officials, the new ARS unit will supervise and control activities of all air rescue forces in the South Vietnam complex. Rescue aircraft involved in Southeast Asia operations consist of HH-43B, HH-43F and CH-3C helicopters, HC-54 Rescuemasters and HU-16 Albatross amphibians.

Air Rescue helicopters and HU-16 aircraft have already seen extensive duty in that area, recording several

spectacular recoveries of downed fliers and other U. S. personnel stranded in hostile territory. The Albatross is capable of operating off land and sea, and has so far been responsible for saving more than 10 lives through the dramatic open sea landing technique.

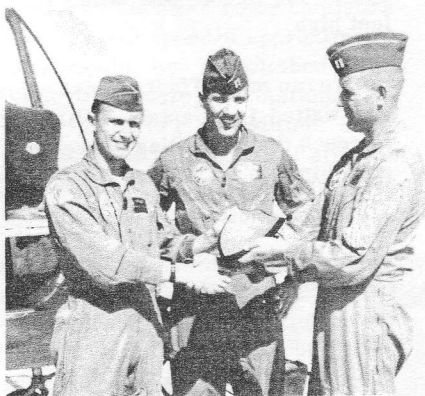
Numbers of aircraft operating under the 38th ARS will vary and are drawn from the worldwide resources of Air Rescue Service. Aircraft from as far as Wheelus AB, Libya, have been diverted to support SEA activities. Detachments assigned to the 38th and operating locations are: Nakhon Phanom Airport, Tahkli AB, Ubon Airfield, Korat Airport and Udorn Airport, all in Thailand; Bien Hoa AB and Da Nang Airport, Vietnam.

lot; Capt Floyd R. Lockhart, copilot; SSgt Larry K. Henderson, helicopter mechanic; and A2c Randolph M. Smith, pararescueman.

The crew of a bomber ejected after engine failure. Responding to the emergency, an orbiting HUSKIE piloted by Capt Floyd R. Lockhart put the FSK on the ground at the end of the runway and headed for the downed airmen. Using the new forest penetrator, the helicopter plucked the bomber pilot

from the water. The other crewman was hoisted to safety by a second HUSKIE which had responded to the call for help. With Captain Lockhart was Captain Purvine, copilot; TSgt Patrick A. Bowers, helicopter mechanic; Airman Smith, pararescueman. With Capt Thomas C. Seebo in the other HH-43F were Lieutenant Machado, copilot; Sergeant Ramsey, helicopter mechanic; and A2c William Flower.

## 1000-Hour Pilot Awards



In top photo, left, Capt Clarence C. Campbell, ARS Det 16, WARC, Williams AFB, Ariz., receives KAC's 1000-hour award from Capt Joe H. Watson, right, detachment commander. Capt Gary E. Robertson, center, also qualified recently for the award which is presented by Kaman Aircraft to pilots logging 1000 hours in helicopters produced by the company. Four out of the six pilots assigned to Detachment 16 have more than 1000 hours in the HH-43. In second photo, Capt Thomas F. Madden, right, of ARS Det 15, WARC, Luke AFB, Ariz., is congratulated by Capt Earle D. Williams, Jr., detachment commander, after completing 1000 hours in the HUSKIE. In bottom photo, Capt John H. Denham, right, commander of ARS Det 1, CARC, Glasgow AFB, Mont., is shown after logging his 1000th hour while rescuing a lost hunter. With Captain Denham are, left to right, CMSgt Gerald Forman, maintenance superintendent; A2c George W. Townsend, crew chief; and 1stLt Richard L. Cardwell, copilot. Capt Harold A. Solberg of ARS Det 5, WARC, McChord AFB, Wash., also qualified for the 1000-hour award recently. (USAF photos)





# Timely Tips

## Lead-Lag Pin Stretch (UH-2)

If a true reading is to be obtained when measuring stretch on the lead-lag pin, the combined weight of the retention and main rotor blade assembly must be supported while the measurement is taken. Prior to measuring, raise the main rotor blade and retention assembly until the droop stop is free. This information will appear in a future revision to the HMI, NAVWEPS 01-260HCA-2-5.

W. J. Wagemaker, Service Engineer

## Stow The Seats (UH-2, HH-43B, HH-43F)

When pilot and copilot seats are removed from the aircraft for any purpose they should immediately be stowed to prevent personnel from sitting on them. Any appreciable weight on the seats when not installed may cause the attaching fittings to be damaged, spread or otherwise distorted. This condition can make seat reinstallation difficult for maintenance crews or even necessitate a replacement.

R. A. Reynolds, Field Service Representative

## Aux Fuel Tanks (UH-2)

Before performing maintenance work in the fuel gaging compartment well, ALWAYS insert safety pins, P/N K604040, into the auxiliary fuel tank supports. This step is a precaution against accidental release of the aux fuel tanks and should be taken prior to removal of the fuel gaging access panel, P/N K631025, from the aft cabin floor. The release cables for the tanks are located near the top of the fuel gaging compartment well.

H. Zubkoff, Service Engineer

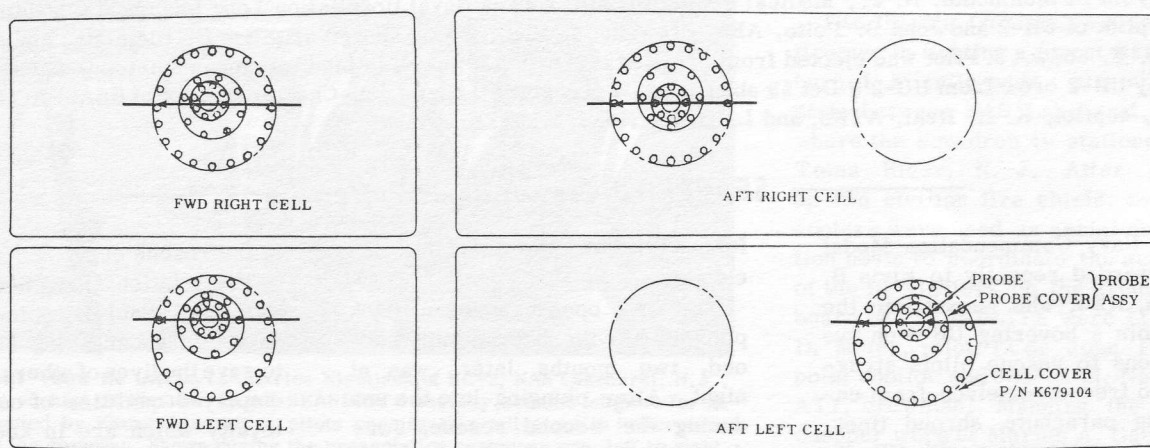
## Lateral Cyclic Control "Feel" (HH-43B)

If, during high-speed forward flight, the lateral cyclic control appears to have no "artificial feel" from 1 to 1-1/2 inches on each side of neutral, it most probably stems from the shape of the lateral cam in the azimuth assembly. The earlier, small radius cams, P/N K750537-11, did not provide complete lateral control "feel" at the cyclic stick. A change has been made in later azimuths, P/N K750502-203, which increased the radius of the cam slot and provided more lateral cyclic control "feel".

G. M. Legault, Service Engineer

## Fuel Quantity Probes (UH-2)

To preclude improper installation of fuel quantity probes, the following procedures are recommended: (1) Before removing the probe assemblies from their respective cells, identify each according to the cell location. (See drawing) Use a marking pencil or small brush and paint. (2) Mark a reference line and arrow across the top of the probe and probe cover indicating the forward direction. Upon reinstallation, this reference will ensure that the probe is properly indexed within the cell so that it will not chafe against the internal plumbing or the bottom of the cell at the sump. (3) Before removing the probe cell cover, P/N K679104, identify the cover according to the cell location. An embossed arrow or painted line on the cell cover indicates the forward direction. Ensure that the proper cover is used for the respective cell, and that the indexing reference line or arrow points forward.



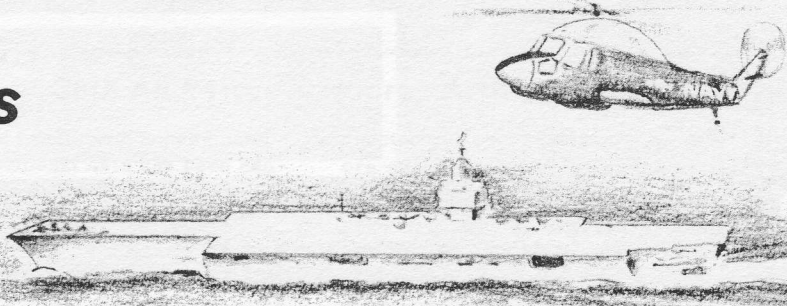
NOTE POSITION OF EACH PROBE ASSY IN RELATION TO THE CELL

H. Zubkoff, Service Engineer



# SEASPRITE

## ACTIVITIES



...UH-2 crew from NAS Whidbey Island, Wash., airlifts woman with broken leg from boat in Skagit Bay and takes her to hospital. LCdr A. O. Hanson, SEASPRITE pilot, reports stokes litter evacuation easily accomplished with new 8-foot rescue boom (fish pole) and hoist on helicopter. Other members of UH-2 crew are T. R. Sanders, ADJ3, and W. L. Ward, AN. ...UH-2 crew from HC-2's Det 62 aboard USS Independence evacuates seriously injured sailor from USS Mathews. Pre-dawn evacuation made from fantail while ship is underway and sailor taken to Hong Kong hospital. LCdr C. S. Sapp is SEASPRITE pilot, Lt(jg) J. P. Murphy, copilot; and B. Simonds, AN, crewman. In letter of appreciation afterwards, R. H. Gibson, commanding officer of Mathews, says "...This evacuation called for a delicate maneuver on the part of the helicopter crew due to the nature of the man's injury, and the lack of maneuvering space for the helicopter due to the configuration of MATHEWS. The fact that the entire mission was carried out flawlessly attests to the outstanding performance of all concerned."

...UH-2 crew from HC-2's Det 59 aboard USS Forrestal night plane guard in Mediterranean when receives message, "plane in the water." Flare sighted in distance by SEASPRITE crewmen W. A. Toth, ATN3; and J. O. Smith, ADJAN. Lt Scott Munro, pilot; and Lt(jg) J. L. Legge, copilot; hover over downed airman and he is hoisted to safety. ...During night plane guard duty, SEASPRITE crew from HC-2's Det 66 aboard USS America sights flash in vicinity of carrier and proceeds to area where two pilots ejected. Rescue hampered by bright flares and searchlights from destroyer engaged in search for survivors. One hoisted to UH-2, other taken aboard destroyer. Crewing SEASPRITE are Lt(jg) V. P. Giddings, pilot; Lt(jg) S. M. Matyas, copilot; W. V. Larime, ADJ2; H. O. Schrest, ADJ3; crewmen.

...UH-2 from HC-2's Det 42 aboard USS Franklin D. Roosevelt makes night rescue of helo crew after chopper has engine failure and autorotates to water. Entire rescue operation, from time flares are sighted until SEASPRITE lands on carrier deck, takes less than 10 minutes. Lt(jg) Paul W. Kayle, pilot of rescue helicopter; Lt Merrill A. Delange, copilot; James F. Walton, AMH1; George R. Bohlinger, ADJAN; crewmen. ...Lt Leif Elstad, flying as copilot in HC-2 SEASPRITE on practice instrument approach to NAS Lakehurst, N. J., spots jet crashing through trees near West Field after engine failure. Downed aircraft comes to halt in cloud of dust few hundred yards from end of runway. As Lt Howard Cobb, UH-2 pilot, heads for site, Howard Humphrey, ADJC, and Lt(jg) James Hitch, passenger, prepare hoist and rescue equipment. Downed pilot hoisted to hovering chopper and delivered to waiting ambulance at West Field just three minutes after crash.

...Near tragic ending to USS Shangri-la's Mediterranean cruise averted by quick work of UH-2 crew from HC-2's Det 38. Fighter pilot ejects underwater after cold catapult shot sends his aircraft off bow without sufficient flying speed. By time downed pilot struggles free of encumbering chute, SEASPRITE is at scene and hoists him to safety. Four minutes after accident, rescuee is back on deck of Shangri-la. HU-2 pilot is Lt William E. Ayward; LCdr Joseph E. L. Dugas, copilot; Charles P. Palmer, AT3, and Allan R. Wells, AD2, crewmen. ...During routine mail transfer in Mediterranean, UH-2 crew from HC-2 Det 42 aboard USS Franklin D. Roosevelt receives word two parachutes sighted approximately 60 miles from ship. SEASPRITE pilot, Lt J. C. Thorpe, heads for area and downed fliers hoisted aboard by G. W. McGuire, AMH3; and C. G. Godoski, AMS3. UH-2 returns to ship and lands after dark with only ten minutes fuel remaining. Copilot on mission is Lt(jg) D. E. Behm.

...Civilian with rivet lodged in spine after being shot with high-powered rivet gun air evacuated to hospital by HC-2 SEASPRITE from NAS Lakehurst, N. J. Night flight made from Ft Monmouth, N. J., Medical Center to Saint Albans Naval Hospital on Long Island. LCdr James M. Lang, pilot of UH-2 and John B. Pelto, AE3, crewman on flight. Also aboard are Capt G. Klein(MC) and his assistant, PFC D. E. Shaw. ...Pilot who ejected from crippled aircraft and landed in Mediterranean hoisted to safety minutes later by UH-2 crew from HC-2's Det 59 aboard USS Forrestal. Lt(jg) J. B. Chester is pilot of SEASPRITE, Lt R. W. Knight, copilot, K. H. Hehl, ATN3; and L. D. Sheridan, ADJ3; crewmen. ...

### SEASPRITE Crewman Honored

The Navy Commendation Medal was awarded recently to Elvis B. Jordan, AE3, who leaped into the sea from a hovering UH-2 on two occasions to rescue pilots struggling to free themselves from entangling parachute shroud lines. Jordan was serving with HC-2's Det 42 aboard the USS Franklin D.

Roosevelt when the incidents occurred.

The first open-sea rescue took place during the daytime; the second, two months later, was at night. After plunging into the sea during the second rescue, Jordan swam through wreckage-strewn water covered with a film of jet fuel to free the pilot and assist him

to the rescue seat.

The citation from Secretary of the Navy Paul H. Nitze said, in part, "In endangering his own life to save the lives of others, JORDAN displayed qualities of courage and loyalty which are in keeping with the highest traditions of the United States Naval Service."



## Southeast Asia

# UH-2 CREW RECEIVES DFC

ABOARD USS MIDWAY OFF VIETNAM — The three-man crew of a UH-2 from Helicopter Combat Support Squadron One (HC-1) aboard this Seventh Fleet carrier were awarded the Distinguished Flying Cross recently for heroism in aerial flight. Recipients were LCdr Weslie W. Wetzel, OIC of HC-1's Det Alfa and pilot on the mission, Lt(jg) Kent M. Vandervelde, copilot, and Charles V. Bowman, AD1, crewman. The U. S. Armed Forces sixth highest award was presented by RAdm Marshall W. White, Commander Carrier Division Seven.

On September 20, the SEASPRITE crew flew across rugged terrain amidst heavy ground fire and successfully rescued a downed Navy pilot in North Vietnam. The helo was launched from the cruiser Galveston. Two A-1 Sky-raidors from Attack Squadron 25 aboard the Midway strafed the area in an attempt to suppress enemy ground fire during the pickup. It was the first U. S. Navy sea-based helicopter combat rescue in North Vietnam. HC-1 is homebased at NAAS, Ream Field, Calif.

ABOARD USS INDEPENDENCE — The four-man crew of a C1A Cod were rescued from the China Sea by a SEASPRITE crew from Helicopter Combat Support Squadron Two's Det 62 aboard this carrier. The rescue took place after the C1A went into a violent skid and plunged off the angled deck. The UH-2 was flying plane guard at the time. Lt(jg) David C. Shelby was pilot of the rescue helicopter and LCdr Joseph E. Stophel, copilot. Crewmen were Cecil W. Watkins, AD2, and

Henry N. Sira, AM3. HC-2 is homebased at NAS Lakehurst, N.J.

ABOARD BON HOMME RICHARD — A pilot who was forced to eject from his aircraft during a night CCA approach to the carrier was hoisted to safety from the South China Sea by a UH-2 crew from HC-1's Det Echo. The downed pilot's strobe light was spotted by the helo crew and G. E. Morgan, PR3, was lowered to his assistance. Other members of the SEASPRITE crew were Lt Gail W. Edgar, pilot; Lt(jg) Truxtun A. Murdoch, copilot; and Gilbert L. Mejia, ADJ2. A seaman who fell from the deck of the giant carrier was rescued within three minutes by a Det Echo crew in a UH-2. Lt James L. Keyes was pilot of the helicopter, Jimmy W. King, AMH1, and Gary E. Frank, AE2, were crewmen.

ABOARD USS CORAL SEA — The pilot of an RF-8A Crusader who ejected from his crippled aircraft was rescued from the South China Sea soon afterward by a UH-2 crew from HC-1's Det Delta. Lt(jg) Salvatore A. Pace was pilot of the SEASPRITE and crewmen were Douglas H. Hateley, ATAN, and Steve W. Richardson, ADJ3.

ABOARD USS ORISKANY — The pilot of an A-1 Skyraider was rescued by a UH-2 crew from HC-1's Det Golf aboard the USS Oriskany after his aircraft plunged into the South China Sea 12 miles from the ship. Lt Hartley K. Phinney was pilot of the SEASPRITE, Lt(jg) James R. Welsh, copilot; J. A. Garbutt, AMS1 and M. B. Wolak, ATN3, crewmen.



**SCROLL OF HONOR**—Paul F. Whitten, KAC service representative, presents company awards for hazardous at-sea rescue of downed pilot to Lt(jg) James W. Strickler, left, and Lt(jg) Herman T. Brandon of HC-2. Other member of the SEASPRITE crew was Charles C. Fink, AMS1. (USN photo)

## HC-4 Missions

A UH-2 crew from Helicopter Combat Support Squadron Four's Det 85 aboard the USS Wright made a 190-mile flight to evacuate a seriously-ill Chief Petty Officer from the USS Compass Island. Most of the early morning flight was flown in darkness by the SEASPRITE. Lt Robert G. McCauley was pilot, Lt(jg) Roger W. Ek, copilot, and Ronald H. Andrus, AE3, crewman. Using a UHF-DF steer, the SEASPRITE pilot located the Compass Island 108 miles off Cape Henry, landed and picked up the Chief and then headed for the Portsmouth Naval Hospital. A landing was made in a ball field near the hospital.

During a mission in the Mediterranean, a SEASPRITE crew from HC-4's Det 46 aboard the USS Albany airlifted a seriously-ill sailor from the fantail of the USS Wood and took him to the Albany for an emergency operation. Lt(jg) R. T. Ribolla was pilot of the UH-2; Lt M. P. Johnson, copilot; D. J. Hasson, ADJ2; and M. E. Sonney, AM3, crewmen.

Two UH-2's from HC-4 aided local firemen in fighting a forest fire which burned a mile-wide, six-mile-long strip between NAS Lakehurst, N.J., where the squadron is stationed, and Toms River, N. J. After picking up two civilian fire chiefs, the helicopters were used as aerial observation posts to coordinate the activities of the firefighters on the ground. Aboard one SEASPRITE were Lt Myron D. Meier, pilot; LCdr John P. Walpole, copilot; and Joseph M. Nenichka, AT1, crewman. Manning the second chopper were Lt Marius A. Gache, pilot; Lt(jg) Charles E. Moorhead, copilot; and David O. Campbell, Jr., AD3; crewman.



**THIRD TO HIT 1000 IN UH-2**—Lt Charles Kiseljack of HC-2, NAS Lakehurst, N.J., recently logged his 1000th hour in the SEASPRITE thereby became eligible for an award presented by Kaman Aircraft to pilots passing this milestone in helicopters produced by the company. Shown during the presentation ceremony are, left to right, Cdr Glenn E. Kemp, commanding officer of HC-2; Lieutenant Kiseljack; William R. Murray, KAC vice president; William E. Zins, director of customer service; Paul F. Whitten, service representative. (Official USN photo)

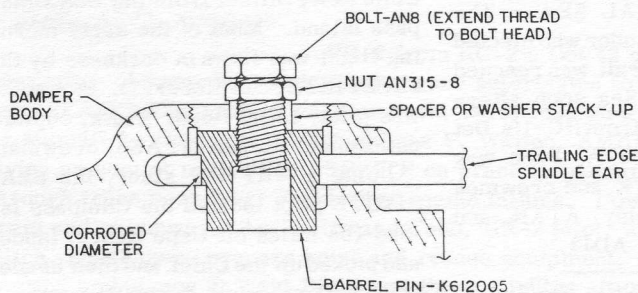


# Q's AND A's

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

**Q.** (Applies UH-2) OCCASIONALLY THE BARREL PIN, P/N K612005, IN THE MAIN ROTOR BLADE DAMPER ASSEMBLY IS DIFFICULT TO REMOVE. WHAT IS THE CAUSE AND WHAT CAN BE DONE TO AID IN REMOVING THIS PIN?

**A.** When such difficulty is encountered it is usually an indication that the mating surfaces of the barrel pin and spindle ear have seized, probably due to corrosion caused by extended exposure to salt-contaminated atmosphere. To release this seizure it is suggested that the nut and bolt specified in the drawing below be utilized as shown.



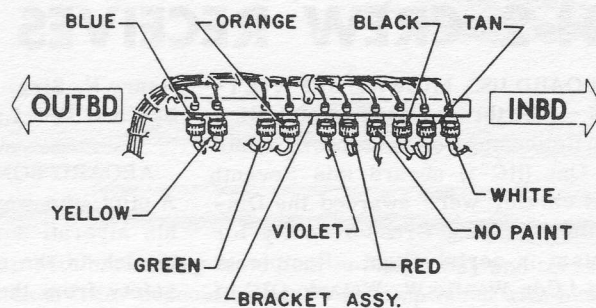
Remove barrel pin plug, P/N K612006, as outlined in HMI, NAVWEPS 01-260HCA-2-5. Install spacer or washer stackup on barrel pin. (Ensure that height of spacer or washer stackup protrudes beyond damper body face.) Install AN315-8 locknut onto AN8 bolt, and insert bolt through spacer or washer stackup. Bolt must be screwed through full depth of barrel pin threads to preclude possibility of stripping. Holding bolt, tighten locknut securely against the spacer or washer stackup. Turn bolt firmly to rotate the barrel pin within the spindle ear. Loosen and remove the locknut, bolt, spacer or washer stackup. Remove the barrel pin with tool P/N K604724-1 or -3 as outlined in the HMI.

W. J. Wagemaker, Service Engineer

**Q.** (Applies HH-43B/F) HOW MUCH PRECONE IS IN THE ROTOR BLADES AND WHAT IS ITS PURPOSE?

**A.** Four-and-one-half degrees ( $4\frac{1}{2}^\circ$ ) precone angle is "built into" the blade to prolong its life by equalizing stresses on the top and bottom. Centrifugal force tends to straighten the blade and normal flight tends to cone the blade upward — the happy medium is the  $4\frac{1}{2}^\circ$  precone angle incorporated so the blade won't have to bend to achieve it. In addition, the precone angle aids in rotor stabilization similar to "dihedral" in fixed-wing aircraft.

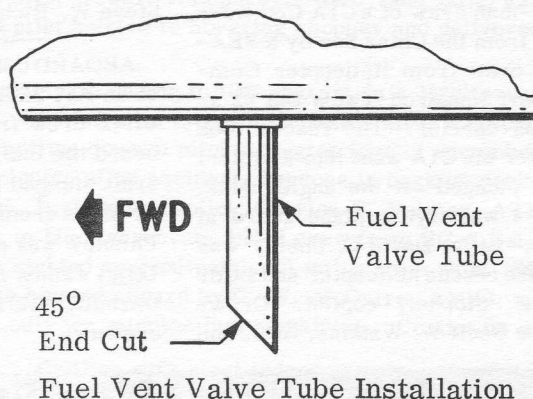
W. J. Wagemaker, Service Engineer



**Q.** (Applies UH-2) WHAT ARE THE IDENTIFICATION COLOR CODES FOR THE ELECTRICAL CONNECTORS FOUND ON THE ASE MANIFOLD? TO WHICH ASE CONTROL CHANNELS ARE THEY CONNECTED?

**A.** The electrical connectors found on the Automatic Stabilization Equipment manifold (left to right) are arranged so that the connectors from the directional channel actuator plug into the first two connectors; the connectors from the longitudinal cyclic channel actuator plug into the next two connectors; the connectors from the collective channel actuator plug into the next four connectors; and the connectors from the lateral channel actuator plug into the last two connectors. See drawing for connector color code identification.

M. Whitmore, Jr., Service Engineer



**Q.** (Applies UH-2) IS THE INSTALLATION OF THE FIVE FUEL TANK VENT VALVE TUBES CRITICAL?

**A.** Yes — the vent tubes must be installed with the external angled cut end facing forward. If not properly installed, erroneous or intermittent readings will result during forward flight only. For example: in one case where the tubes were improperly rotated, a partial vacuum was created in the fuel tank, allowing it to partially collapse. This caused fuel to be drawn upwards around the fuel quantity probes and resulted in a false reading. A bent, crushed, or twisted vent tube end may also cause a false indicator reading, depending upon the extent of the damage. This information will be included in a future revision to the HMI, NAVWEPS 01-260 HCA-2-3.

H. Zubkoff, Service Engineer



**Q.** (Applies HH-43B/F) DOES THE FIRE DETECTION ELEMENT CONTAIN WIRES? HOW DOES THE ELEMENT ENERGIZE THE FIRE-WARNING SYSTEM?

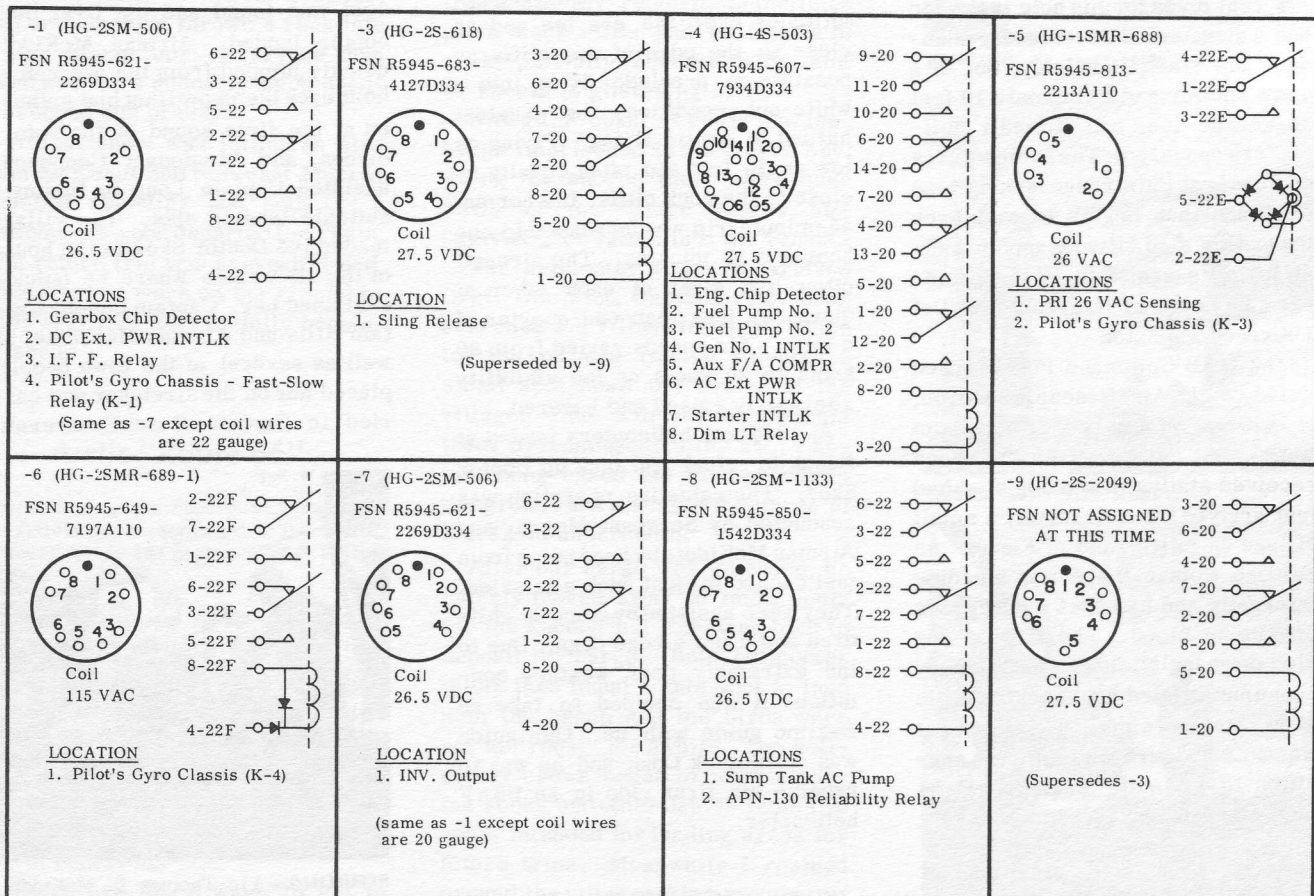
**A.** There are no wires in the fire detection element. It is composed of: (a) The inconel outer tubing which is grounded to the aircraft. (b) The 0.032 nickel center conductor which is connected to the control unit. (c) Salt-impregnated ceramic between the inner and outer conductors. When the temperature at any point in the element exceeds the designed fire-warning temperature, the salt-impregnated ceramic resistance drops sharply; this reflects a low impedance to the control unit and energizes the warning system. Upon removal of the design fire-warning temperature, the sensing element returns to its normal state and is again ready to detect an over-temperature condition.

M. Whitmore, Jr., Service Engineer

**Q.** (Applies UH-2) WHAT TYPE OF KAMAN-IDENTIFIED ELECTRICAL RELAYS ARE FOUND IN THE AIRCRAFT AND WHERE ARE THEY UTILIZED?

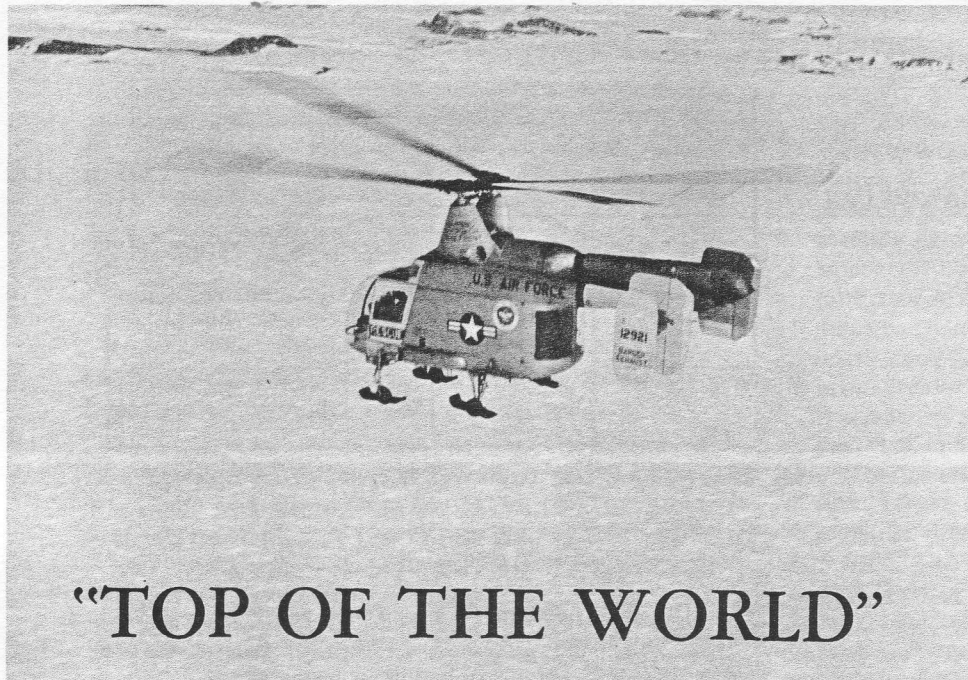
**A.** All electrical relays, P/N K383491 series, in the UH-2 are assembled (wiring pigtails and potting compound added) from relays manufactured by Hi-G Inc., (Vendor Code 02289). The chart below lists the Vendor's relay part number, Kaman's respective dash number identity, Federal Stock Number, and pin locations of the various types. The chart also identifies the specific circuits within the aircraft using these relays.

J. J. McMahon, Service Engineer



KAMAN SERVICE ENGINEERING SECTION—E. J. Polaski, Supervisor, Service Engineering, G. M. Legault, G. S. Garte, Asst. Supervisors.





## "TOP OF THE WORLD"

### Mission To Kekertat

This account concerns a mission flown by HH-43B crews from ARS Det 1, 54th ARSq., Thule AB, Greenland\* and is representative of the hazards which often face this and other Air Rescue units serving near the "Top of the World." All of the participants mentioned in the article, which was written by Capt David A. Cochenour, have been awarded Kaman Scrolls of Honor.

A seal dives for his hole in the ice and a disgruntled Greenlander abandons his stalk. Suddenly, out of a snow shower and flying only 10 feet above the ice, two HH-43B helicopters appeared. The hunter gazes curiously at the strange looking aircraft and then begins to walk back toward his sled. His disappointment at losing a seal will be overcome when he hears of the results of Det 1's rescue mission.

Thule AB Command Post notified Det 1, 54th Air Rescue Squadron, at 1805 that an emergency call from Kanak, 58 miles north, had been received stating that a dog sled had just arrived from Kekertat, a small village 35 miles East of Kanak. An Eskimo woman there was bleeding internally and had lost a dangerous amount of blood. The trip by dog sled down Inglefield Bay had already consumed twelve hours and Dr. Ole Skov, the resident physician at Kanak, considered the patient's condition to be quite serious. Det 1 launched two "copters" at 1830L.

The Air Crews consisted of: Pedro 1 — Capt Robert H. Busch, RCC; 1stLt David A. Cochenour, pilot; and Alc Thomas D. McKiddie, crew chief. Pedro 2 — Capt Henry Q. Long, Jr., RCC; Capt Leonard L. Hills, pilot; and SSgt Julius Murray, firefighter.

Since the prevailing weather conditions prevented any possibility of taking the direct over-the-icecap route to Kanak, the two helicopters were forced to fly at extremely low altitudes over the sea ice and as close to the edge of the cliffs as possible to preclude flying into a white-out condition, the greatest hazard to Arctic flying. Flying as low as 10 feet and often equally as close to the rock cliffs, the normal 45-minute trip was increased to one hour and 15 minutes. The aircraft often lost sight of each other at distances less than one-quarter of a mile. Air speeds varied from 90 knots to 20 knots as the visibility alternately raised and lowered.

At 1945 both helicopters landed at Kanak to refuel and pick up Doctor Skov. The refueling operation was conducted by Sergeant Murray and Airman McKiddie by hand pump from fuel cached for just such a mission. They were assisted by some 20 children and a few sledge dogs. Due to the extremely poor weather conditions it was decided to take an Eskimo guide with us. Our guide was Kutikitsok Odak and he was to receive his first ride in an USAF helicopter.

Refueling completed, both helicopters took off into the lowering fog for Kekertat. Departing Kanak, the weather again closed in to less than one-eighth of a mile in fog. In order to maintain visual reference, both helicopters flew as close as possible to the sheer cliffs of the bay. The sea ice close to shore was rotten and weak and it was doubtful whether it would have supported the weight of the aircraft had they been forced to land. Due to the seriousness of the patient's condition, Captain Busch elected "to press on." After awhile, visibility had increased slightly and it was possible to take a more direct route across the ice. Occasionally the guide would tap Lieutenant Cochenour on the shoulder and point in the direction he wanted to fly. Although he had no compass and no map, his route was in close agreement with the flight-planned route. Twenty-five minutes after leaving Kanak, the Harward Islands were spotted and the guide proved to be of great service in locating the tiny village of Kekertat. Captain Busch made a cautious approach to the village and looked for a safe place to land as Captain Long continued to circle overhead. A fairly level spot was found and the first helicopter landed. Airman McKiddie quickly jumped from the aircraft to hold back the crowd that had gathered at the first sound of the rotor blades, and Lieutenant Cochenour assisted Captain Long in finding a suitable landing spot. The village leader led Doctor Skov to the house of the ill woman where he quickly examined her. Captain Busch, Captain Hills and Airman McKiddie, as well as several of the town people, placed her on the stretcher and carried to Captain Busch's aircraft.



REFUELING—Alc Thomas D. McKiddie, SSgt Julius Murray and "helpers."

\* The unit designation was changed recently to ARS Det 18, EARC(MATS).





**SOCKED IN**—HUSKIES wait for clearing weather before returning to Thule.

The return flight to Kanak was accomplished in the same manner as the previous flights, with 30 minutes flying time. Upon arrival the patient was quickly taken to the hospital.

After completing the rescue portion of the mission the crews relaxed over some delicious Danish coffee and discussed the mission. It was brought to light that our capable guide, Kutikitsok Odak, was the son of the famous guide Odak-Odak who had accompanied Admiral Peary to the North Pole. Although everyone had had quite enough excitement to last for a long while, peace and quiet were not to be. As the air crews were having coffee with Inspector Sandborg, the Governor of Northern Greenland, the village fire warning system began to blow. Everyone ran outside, Det 1 personnel included, ready to fight the fire. It was soon discovered that some children, up beyond bedtime, had accidentally thrown a rock into a fire alarm box. Everyone then returned for a suddenly much needed second cup of coffee.

A light snow was falling as Airman McKiddie and Sergeant Murray finished refueling and both Det 1 helicopters soon departed for Thule. The return trip was uneventful and both aircraft were on the ground by 0100 — rescue successfully accomplished.

## Arctic "Route 66"

The following is a condensed version of an article which appeared in the Thule Times. Story and photos by SSgt Philip Schick.

Sixty-six miles south-south-east of Thule on Meteorite Island, lies Savigsivik, one of the most remote villages in the world. It is inhabited by from 50 to 80 people, depending on the time of year. I visited that village last week and returned home with impressions that I feel are worth reporting.

There are three ways to get to Savigsivik from Thule. You can go

by dog sled, most common method used; by boat during the short period that the waters of North Star and Melville Bays are open; or, by helicopter, the way we went.

Two helicopters from Det 1, 54th Air Rescue Service made the flight. Purpose of the trip was to deliver and store there, aviation fuel used by helicopters on return trips from Savigsivik when high headwinds make necessary the use of additional fuel. A second purpose was the inspection of suitable landing sites since the ice is no longer strong enough for the HH43-B's to land on.

The flight down took about an hour. It was an hour spent viewing the seemingly numberless "snowscapes" nature has painted in this frozen land. Occasionally there was nothing but an endless blanket of white from horizon to horizon. Then, the scene would change dramatically with large outcroppings of sometimes slightly reddish, sometimes pitch black cliffs and mountains of rock, partially covered with snow or sheets of glistening ice.

Along the coast, I could see icebergs imprisoned in the frozen bay. Along the shores there were huge cliffs of ice where pieces had "calved", or fallen into the fjords.

The helicopter I was in arrived first. Our pilot, Capt Henry Q. Long searched the village for a flat place to land on and finally selected a small spot near the center of the village. Like a driver backing his truck by leaning out of the cab, Captain Long eased the bird slowly to the ground and released the cargo of fuel from underneath.

After our cargo was released, he quickly moved away to make room for the second fuel-carrying bird to deposit its cargo. Both helicopter pilots then found a safe spot to land near the beach and the birds were set to "roost" for awhile. The helicopter crews began to work clearing rocks and other debris from two spots intended for landing areas for future trips. Meanwhile I roamed around the village taking pictures of whatever caught my fancy.

Pictures completed, fuel unloaded and stored and two clean landing sites constructed, we bid everyone goodbye and climbed aboard the two helicopters. Sitting in the helicopters waiting for the turbine engine to be started, I could hear what seemed like a million birds screaming in the fog-covered mountain. Soon that sound was dimmed by the screaming of the turbine and in seconds we were airborne and flying north toward Thule.



**LANDING AT METEORITE**



**HUSKIE WATCHES HUSKIE**



**OPERATION STOCKPILE**



SCARBOROUGH SHOAL

CUBI POINT

LUZON

## SEASPRITE CREWS RESCUE 48

A total of 48 crewmen from two disabled vessels were rescued recently by UH-2 crews operating in widely separated parts of the globe. One of the missions took place off the coast of Luzon in the Philippines, the other on the rocky shore near Adak, Alaska. Descriptions of the two operations are presented below.

Trapped by encircling walls of jagged coral, their lifeboats foundering or capsized in the wind-whipped waters, fourteen crewmen from a French freighter were rescued by a UH-2 crew from NAS Cubi Pt., P.I. To make what is believed to be the largest single personnel rescue at one time since the SEASPRITE joined the Fleet, Lt M. A. Belto and his crew flew 155 nautical miles to sea, remained on station for an hour and 20 minutes and returned to their home station with a scant 200 pounds of fuel remaining. Lt J. D. Hammon was copilot on the hazardous mission and K. K. Myhre, AMH2, crewman. All have been awarded Kaman Scrolls of Honor.

The last-minute "save" took place the day after the freighter went aground on Scarborough Shoal 155 miles off the Luzon coast. The ship was holed and losing fuel overboard but was not in immediate trouble. The Navy oiler Neches arrived on the scene and was later relieved by the destroyer Higbee. Due to high seas and the coral formation, evacuation could not be made by whale boat. That night, with the sea state increasing, it was feared that the freighter would be broken up by the pounding waves so the French sailors took to the lifeboats. Sixteen men were picked up by the Higbee, however, three of the lifeboats were trapped within the lagoon formed by the encircling reef. It was impossible for them to cross over the reef and equally impossible for the boats from the Higbee to get to them. Due to the heavy seas, coral, and the small size of the lagoon, an amphibious aircraft could not be used to rescue the seamen from their perilous plight—the only answer was a helo.

The SEASPRITE crew left Cubi at 1500 and on arriving at the scene at 1620 found the three lifeboats in the lagoon, one capsized and with a man clinging to it. He was hoisted to safety first. The second lifeboat was swamp-

ed and had nine men aboard; four were picked up and transferred to the Higbee, then five more were hoisted aboard the UH-2 and taken to the destroyer. The four men in the other lifeboat had rigged a sail which presented an additional hazard. Finally, however, the sail was lowered and all were taken aboard the SEASPRITE.

The entire rescue was hampered by shifting 25 to 30-knot winds which made pickup difficult and lowering the French crewmen to the pitching deck of the Higbee was described as a "touch and go" affair due to the proximity of the superstructure, wind and turbulence.



The Adak rescue operation began when a Greek freighter was driven ashore on Great Sitkin Island during a fierce storm which swept the Aleutians. The vessel had lost a propeller several days before and was being towed to Adak when the cable parted due to the heavy seas. Two UH-2's from the SAR unit at NS Adak and a HU-16 answered the call for help. Despite poor visibility, rain and 55-knot winds, the aircraft made their way to the spot where the ship was being pounded by the heavy surf sweeping against the mountainous shoreline.

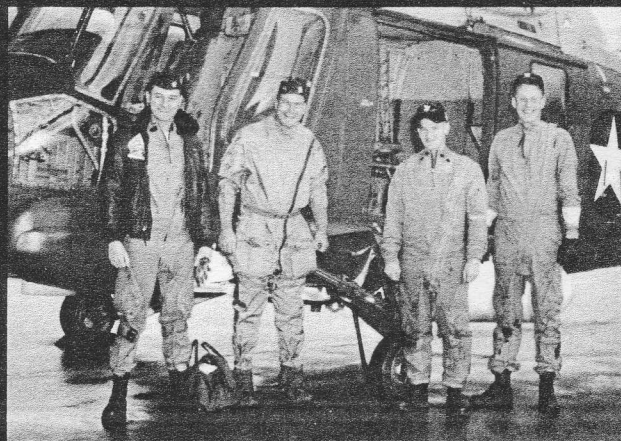
An added difficulty experienced was the language barrier. Although the helicopter was equipped with a loud hailer, none of the rescues could speak English or understand directions as to how the sling should be used. As a result some came up in "rather precarious positions."

In addition to the heartfelt thanks of the French sailors, Lieutenant Belto and his crew later received congratulatory messages from all major commands in the area, including VAdm Paul P. Blackburn, Jr., ComSeventh-Flt.

Winds were gusting to 70 knots as first one UH-2 and then the other hovered close to the ship's rigging to hoist two seriously injured crewmen from the slippery, spray-swept deck below. One of the men had a broken neck and the other multiple lacerations. With the two safely aboard, the helos headed for Adak and the hospital. The next day the UH-2's returned and evacuated 32 more Greek crewmen and also transported a Navy salvage crew to the site.

*continued on next page*





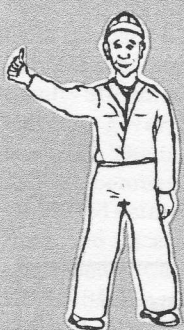
Aboard one of the helicopters participating in the hazardous rescue were, first photo, left to right, LCdr J. L. Kniely, pilot; LCdr W. M.

Krause, copilot; Lt J. G. Sever (MC), doctor; J. A. Kidwell, AMS1, plane captain, and J. D. Petty, AMS3, crewman. In second photo are crew which

manned the other SEASPRITE, Lt(jg) R. H. Hamel, pilot; Lt J. D. Howell, copilot; C. L. Knight, ADJ2, and G. S. Maherson, AE2, crewmen.

(Official USN photos)

## HELICOPTER HAND SIGNALS



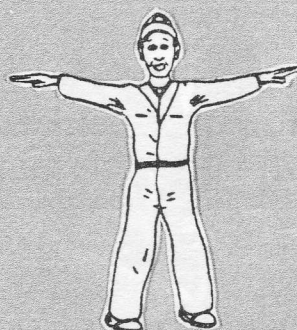
START ENGINE



ENGAGE ROTOR



TAKE OFF THAT WAY



HOVER



MOVE FORWARD



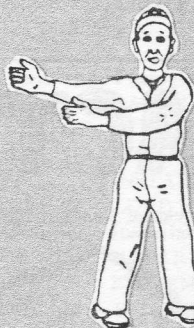
MOVE BACKWARD



MOVE UP



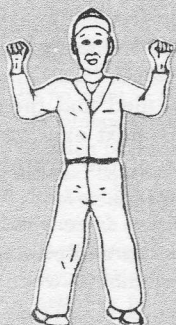
MOVE DOWN



MOVE RIGHT OR LEFT



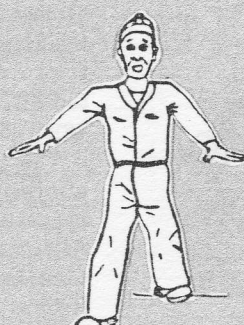
WAVE-OFF



STOP



LANDING DIRECTION



LAND



DROOP STOPS ENGAGED



CUT ENGINE





**MEN BEHIND THE MISSION**—Grouped around the sign proudly proclaiming the flight time on their two HUSKIES are maintenance personnel from ARS Det 9, EARC(MATS), Shaw AFB, S. C. Credited with keeping the "birds" in top shape are, left to right, standing, A2c Edwin J. Sherwood, A2c William E. Rubis, TSgt Richard N. Propst, MSgt Talmadge L. Gunter, A1c Haskell Browning, Jr., A2c David Bullington and A3c Clarence W. Carter. Kneeling are SSgt Ray K. Jones, SSgt Harold Bair, TSgt Donald D. Kieft and SSgt Cary W. Walton. In right photo, Airmen Rubis and Sherwood are shown following the detachment's creed that cleanliness and good maintenance go hand-in-hand. (USAF photos)



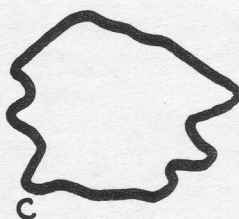
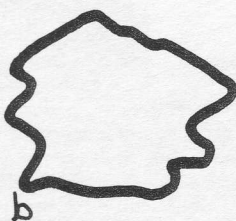
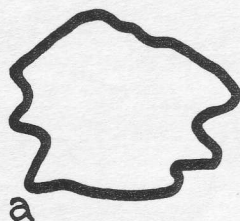
**1000 HOURS**—Checking flight data after HH-43B 60-257 passed its 1000th flight hour while on a search mission are, left to right, A1c William R. Dunbar, crew chief; Capt Fredrik M. Bergold, RCC; and Capt Charles R. Kay, copilot. All are members of ARS Det 15, WARC(MATS), Luke AFB, Ariz. (USAF photo)

### Military Airlift Command

A change in name but the mission remains the same. On 1 January 1966 — by Congressional action — the global airlift force known as MATS officially becomes MAC.

## FOD FACTS

Can you identify these potential sources of Foreign Object Damage?



See opposite page for answers.

### Classic ARS Coverage

The KC-135, its nose gear jammed, landed "long and fast" on the slick, wet runway. All eight tires blew as the giant tanker passed over the barrier and skidded sideways to a stop some 50 feet short of the end of the runway. Within seconds the HUSKIE, which had trailed the big bird down the runway on its careening skid had landed, deployed the FSK and the two airborne firefighters were in position ready for the fire which seemed almost inevitable — but, there was no fire! Apparently the rainwater on the runway had cooled the tires enough to prevent them from bursting into flame. The pilot of the KC-135 signalled that no one harmed and the HH-43B returned to its post, ready for the next emergency.

The incident — a classic example of the protection afforded by ARS units all over the world — took place recently at Kadena AB. The HUSKIE was from the 33rd ARSq, PARC(MATS), Naha AB, Okinawa and piloted by Capt James M. Crabbe. Other crewmembers were A2c Robert G. Heitger, medic; A1c Clarence M. Phelps and A1c Charles E. Delaney, firefighters.



**REASSURANCE**—The 54th ARSq and Fire Department at Goose Bay, Labrador, teamed up to provide all the protection possible after the pilot of this F-102 found the nose gear malfunctioning. A foam strip to prevent sparks was sprayed down the center of the runway by the Fire Department and then, with crash equipment standing by, the fighter came in for the hazardous landing. The two HH-43B's from the 54th intercepted the aircraft as it touched down and then followed it down the runway, ready to lower the fire suppression kits and airborne firefighters if needed. The landing was made without incident, however, and the helicopter crews returned to the task interrupted by the emergency — a search mission. Aboard the first HH-43B, "Pedro One," were Capt Keith H. Ricks, RCC; Capt Holly G. Bell, CP; A1c Gerald O. Chase, HM; A1c Edward S. Bevens, RS; A2c David F. Butler, RS; SSgt Angel Luna, MT. In "Pedro Two" were Capt Fernand M. Espiau, RCC; 1stLt James E. Sovell, CP; A3c Richard K. Geuss, HM; TSgt Edward J. Foy, RS. (USAF photo)

## Humanitarian Service Praised

Rescuemen attached to ARS Det 4, Paine Field, Wash., recently drew high praise from Snohomish County Sheriff D. E. Jennings. In a letter regarding the numerous rescues carried out by the unit's HH-43B crews in the Cascade Mountain range, Sheriff Jennings said.... "Our privilege of working with these men in common community efforts has served to increase our respect for our national government and those who serve as national leaders. The care in selection, the intensity of training, and the community orientation which this group so exemplified reflects the greatest credit on the U.S. government and its elected servants." The Sheriff specifically commended Capt R. D. McDougal, Capt K. G. King, Capt R. L. Bachman, 1stLt W. F. Austin III, SMSgt T. A. Sternad, TSgt J. E. Johnson, A1c J. M. Brennan, A2c E. H. Doucett, A3c J. W. Smith and A3c P. W. Mittelstaedt.

### answer

a) The object is a hole in a pocket through which loose articles can be lost in the vicinity of the helicopter.

b) Although this object bears a strange resemblance to the artist's portrayal of a hole in the pocket, it is actually a blob of grease or mud. Sometimes found on shoes, it holds bits of wire, cotter pins, pebbles, etc., which may be tracked near or into the aircraft.

c) A rag or handkerchief, this "readily identifiable" object has been known to bring small articles with it when brought forth from a pocket. Speaking of pockets, it's a good idea not to keep loose articles in shirt pockets and to use clips to hold pencils, pens, rulers, etc., in place. (Most of these precautions are listed in the HMI and involve safety and cleanliness when working in the fuel cell; however, they can easily be applied to FOD control.)

d) Our apologies to FOD hunters — we must confess that large shaggy dogs actually have little to do with generating foreign object damage. In any event, there'd be no point in telling a large shaggy dog about FOD but all human visitors to the flight line, especially non-aviation personnel and civilians, should be made aware of the dangers of discarding objects near turbine-powered aircraft. Also, a particularly careful inspection of the apron and aircraft after "Visitor's Day" or "Open House" is always a wise precaution — discarded lollipop sticks, tinfoil, lost articles and small objects tracked in by hundreds of feet can contaminate areas ordinarily kept in spotless condition by the more knowledgeable military hosts.

## Undersea Helper

ARS Det 5 at Suffolk County AFB, N. Y., has chalked up a commendable record of rescues with its HH-43B but recently it lost out on one by a scant 500 feet to — A SUBMARINE! Capt Charles A. Morrill and his crew scrambled after the occupants of a F101B ejected from their crippled plane and landed in the Atlantic but, as the HUSKIE arrived on the scene, they found they had been beaten to the "rescue punch" by a sub which had spotted the downed airmen and gone to their aid. The rescuees still had the chance to sample Air Force, as well as Navy, hospitality however; they were hoisted from the deck of the submarine by the helicopter and then taken ashore. With Captain Morrill were TSgt James H. Lindsey, medical technician; SSgt Herman C. Cassell, mechanic; A1c Burt M. Turner, Jr., firefighter.

## CURRENT CHANGES

		Issue Date
AFC No. 10	- Fuselage; Modification of MAIN LANDING GEAR BACK-UP STRUCTURE.	9/29/65
AFC No. 28	- EIGHT FOOT RESCUE BOOM INSTALLATION.	10/31/65
AFC No. 29	- LOUD Hailer INSTALLATION.	10/31/65
AFC No. 46	- Installation of AN/APQ-107 RADAR ALTIMETER WARNING SYSTEM.	10/29/65
AFC No. 53	- Furnishings; Modification of CARGO HOOK INSTALLATION.	10/29/65
AFC No. 72	- ELECTRICAL CAUTION LIGHTS.	10/29/65
AFC No. 75	- Fuel System; Modification of T58-GE-8B ENGINE COMBUSTOR CASING DRAIN LINE.	10/31/65
AFC No. 76	- Relocation of TORQUE SENSOR TRANSMITTER.	10/29/65
AFC No. 82	- Fuel System; FUEL TRANSFER IMPROVEMENTS.	10/29/65
AFC No. 91	- Drive System; ENGINE DRIVE SHAFT SELF-ALIGNING BEARING.	9/30/65
SEC No. 385	- Test Fixture; Modification of SERIES AND COLLECTIVE BOOST VALVE.	1/1/66
SEC No. 386	- Whirl Rig; Modification of ADAPTER, P/N K604790-1.	11/1/65

A. J. Leonaitis, Service Publications



# Huskie Happenings



...In medical evacuation of civilian with 2nd and 3rd degree burns on 70 percent of body, HH-43B crew from ARS Det 15, WARC(MATS), Luke AFB, Ariz., flies through mountain passes and over rugged mountainous terrain at 6,000 feet while medical personnel administer plasma. HUSKIE first landed at Payson hospital on 75-foot unimproved area and later makes two landings, both in areas surrounded by high voltage lines and other hazards, at hospitals in Mesa, Ariz. Capt Thomas F. Madden is pilot of helicopter; Capt Fredrik M. Bergold, copilot; Capt Rodney D. Gladhart (MC), flight surgeon; TSgt George E. Melby, medical technician; and A1c Ronald E. Levi, helicopter mechanic....In search for missing civilian, HH-43B crew from Det 15 flies through towering canyons which "peak out" 500-feet above helicopter. Continuous "S" turns made to avoid canyon walls only 200 to 300-feet apart. Man found and hoisted to safety. Forest Ranger says ground party could not cover area in less than 10 days. Capt Duane L. Smith is HH-43B pilot; Captain Madden, copilot; LtCol Randall L. Clark (MC), flight surgeon; SSgt Robert H. Cain, rescue specialist; Airman Levi, helicopter mechanic.

...HH-43B crew from Det 1, EARC (MATS), Loring AFB, Maine, called on to assist after light civilian plane hits tree near LacFrontier, Quebec. Pilot temporarily knocked unconscious in crash and passenger wanders in dense woods for four hours before reaching help. Site spotted next morning by Maine Warden Service plane after downed pilot lights flare and accidentally sets fire to spilled fuel. Blaze spreads to wreckage and rescuee crawls to safety. Ground party reaches scene but evacuation difficult because of boggy ground. Air Rescue Service notified and HH-43B takes off from Loring to make pickup. Capt Dale R. Tyree, RCC; Lt David C. Weber, copilot; SSgt Gaetano Patrone, crew chief; and TSgt Darvie B. Erwin, medical technician....Two HH-43B crews from Det 18, EARC(MATS), Thule AB, Greenland, transport survey party 66 air miles south of base to estimate problems in recovering 15-ton meteorite found in 1963.

...Despite low clouds and minimum visibility, HH-43B crew from Det 1, 54th ARSq, Thule AB, Greenland, evacuates sick Eskimo child to hospital from isolated village. Ordinary travel by dog sled impossible. HUSKIE crew consists of Capt Henry Q. Long, pilot; Capt Robert L. Gardner, copilot; SSgt Wayne E. Dondero, helicopter mechanic; and PO/2 Erik H. Lange, Danish Interpreter....During Air Force Day show in Iran, IIAF H-43 demonstrates fire suppression, flight maneuvers, and simulated rescue mission. During later part of show HUSKIE called on for actual mercy mission and transports seriously-injured paratrooper to hospital.

...HH-43B crew from ARS Det 15, WARC(MATS), Luke AFB, Ariz., makes 400-mile round trip, part of it around thunderstorm, to evacuate critically-ill Indian from reservation at bottom of Grand Canyon. Two refueling operations carried out at 6700 feet elevation. Capt Duane L. Smith, RCC; Capt Thomas F. Madden, copilot; Capt Larry Bassinger, MC, flight surgeon; A2c William E. Van Asdian, crew chief; and A1c Joseph A. Vultaggio, medical technician....HH-43B crew from 33rd Air Recovery Squadron, Naha AB, Okinawa, makes overwater night flight to Okino Jima Island 92 miles from base to evacuate Ryukyuan in immediate need of surgery. Capts Warren K. Davis and James M. Crabbe, pilots, make hour-and-15-minute flight entirely on instruments and encounter several rain squalls on way. With fuel marginal, landing made in school yard to make pickup. Patient taken to Kadena AB and waiting ambulance. Others aboard HUSKIE on mercy mission are SSgt Charles D. Severns, crew chief, and A2c Robert G. Heitger, medic. Cover during the long overwater trip flown by HU-16B.

## — Det 17 Reports —

Approximately a year ago ARS Det 17, WARC(MATS), Davis-Monthan AFB, Arizona, began operations after HH-43B crews made a record 2,619-mile ferry flight from Westover AFB, Mass., when the unit there was deactivated. The following are some of the missions engaged in and the crews who participated since that time:

Located and rescued a woman hiker lost in the Santa Catalina mountains — Capt Peter J. Kerrigan, RCC; 1stLt Frederick T. Dykes, CP; SSgt John V. Sells, HM. Located and rescued a boy scout lost in the mountains — Captain Kerrigan, RCC; Lieutenant Dykes, CP; Sergeant Sells, HM; SSgt Donald O. Burks, MT. Rescued copilot who ejected from a F4C and transported him to airport where C-47 flew him to a hospital. Capt Jerome R. Luttinger,

RCC; Captain Kerrigan, copilot; A2c Kenneth E. Wetzel, HM; Capt William L. Brawley (MC), FMO.

Evacuated an 11-year-old boy from a rugged mountain peak after he was seriously injured in a fall — Captain Luttinger, RCC; Captain Kerrigan, CP; MSgt Ambrose H. Morris, HM. Located and rescued a pilot who ejected from a stricken U2 — 1stLt John K. Forsythe, RCC; Captain Kerrigan, CP; SSgt Hector R. Gonzalez, HM. Located and rescued an Air Force Captain who became lost while hunting in the Whetstone mountains — Captain Kerrigan, RCC; Lieutenant Forsythe, CP; Airman Wetzel, HM. Located crashed Army helicopter and took crew of two to the hospital — Captain Luttinger, RCC; Lieutenant Dykes, CP; Sergeant Morris, HM; SSgt Charles R. Mays, MT; Captain Brawley, FMO.

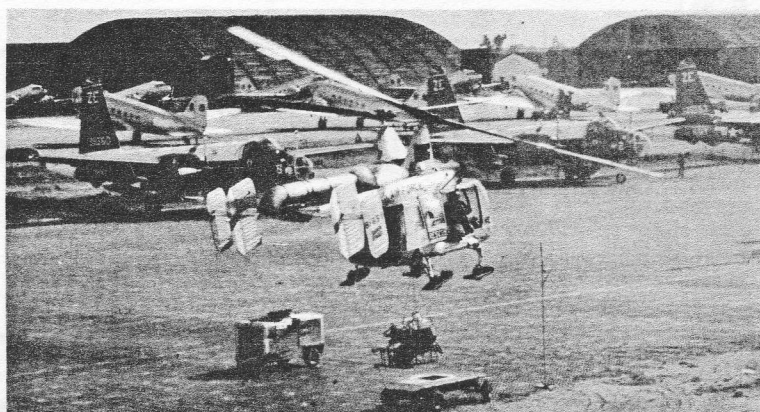




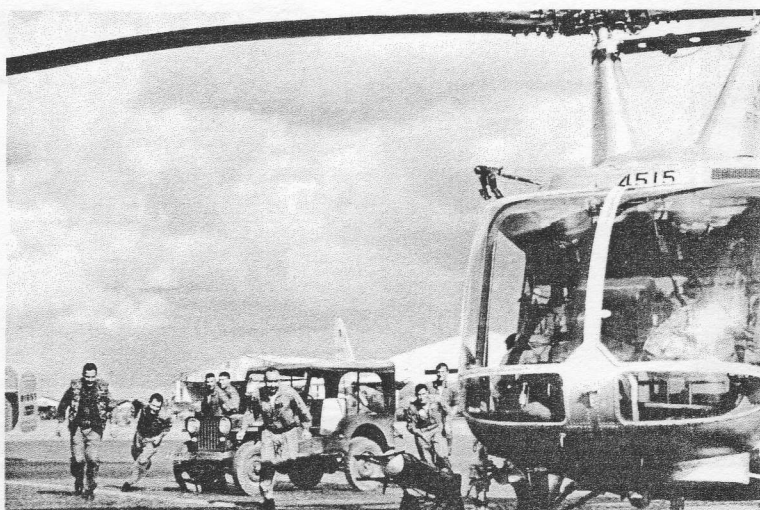
**INDIAN'S ANGELS**—Time-after-time HH-43B crews from ARS Det 15, WARC(MATS), Luke AFB, Ariz., are called on to aid Indians living in remote spots on the Supai reservation 3000 feet below the rim of the Grand Canyon. In top photo, left, medical equipment is unloaded from one of two HUSKIES which delivered 1000 pounds of material to supply a recently completed hospital. Pilots were Capt Harold D. Salem and Capt Dale L. Potter, both now on duty in South Vietnam. Crew chiefs were A1c Ronald E. Levi and William R. Dunbar. A similar mission was flown earlier by Capt Andrew Archer with Capt Duane Smith as copilot and Airman Levi as crewman. In right photo, HH-43B lifts off with seriously ill native on return leg of 400-mile flight. During the trip two refueling stops were made at altitudes up to 7000 MSL in near 100° temperatures. Capt Thomas F. Madden was pilot, Capt James H. Conley, MC, flight surgeon, Airman Levi, crew chief; and A2c Trelawny J. Bruce, medical technician. (USAF photos)



**HEARTFELT THANKS**—Mrs. Dorothea Suarsak shakes hands with Capt Clarence C. Campbell, pilot of the HH-43B which flew her to Thule AB hospital from the remote village of Savigsivik, Greenland, after she was bitten by a dog thought to be rabid. The 130-mile flight was made over the barren Greenland ice-cap in darkness and sub-zero temperatures. Others who manned the Det 1, 54th ARSq HUSKIE on the hazardous flight were Capt William Clark, copilot; A1c Thomas McKiddie, crew chief; Capt Robert Ruggeri, MC, flight surgeon; and Mr. Orla Sandborg, Danish government official who acted as interpreter. Later Mrs. Suarsak was taken to Copenhagen for further treatment. (USAF photo)

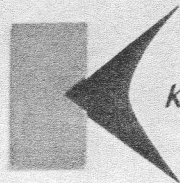


**AIR CREW RECOVERY**—HH-43 from 38th ARSq lifts off from Saigon airport with FSK to provide protection for landing aircraft. Below, Air rescuemen race toward HUSKIE at Tan Son Nhut Afd, RVN, in answer to emergency call. (USAF photos by A1c E. A. LeClair)



**TUSLOG MISSION**—A HUSKIE crew from Det 153, TUSLOG, Cigli AB, Turkey, soon located the downed pilot of a F-100 in mountainous territory 35 miles from the base. After reaching the general area of the crash, 1stLt Bobby L. Meadows, RCC, and his crew picked up locator beacon signals and sighted the survivor's smoke bomb soon afterward. A landing was made in a dry river bed and the rescuee, Capt Timothy R. Albritton, left, climbed aboard. With the Captain is SSgt Donald S. Kleiman, medic. Other HH-43B crew members were 1stLt Ronald I. Pass, copilot; A1c Thomas E. Mason, crew chief; and SSgt W. A. Moody, photographer. (USAF photo)





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