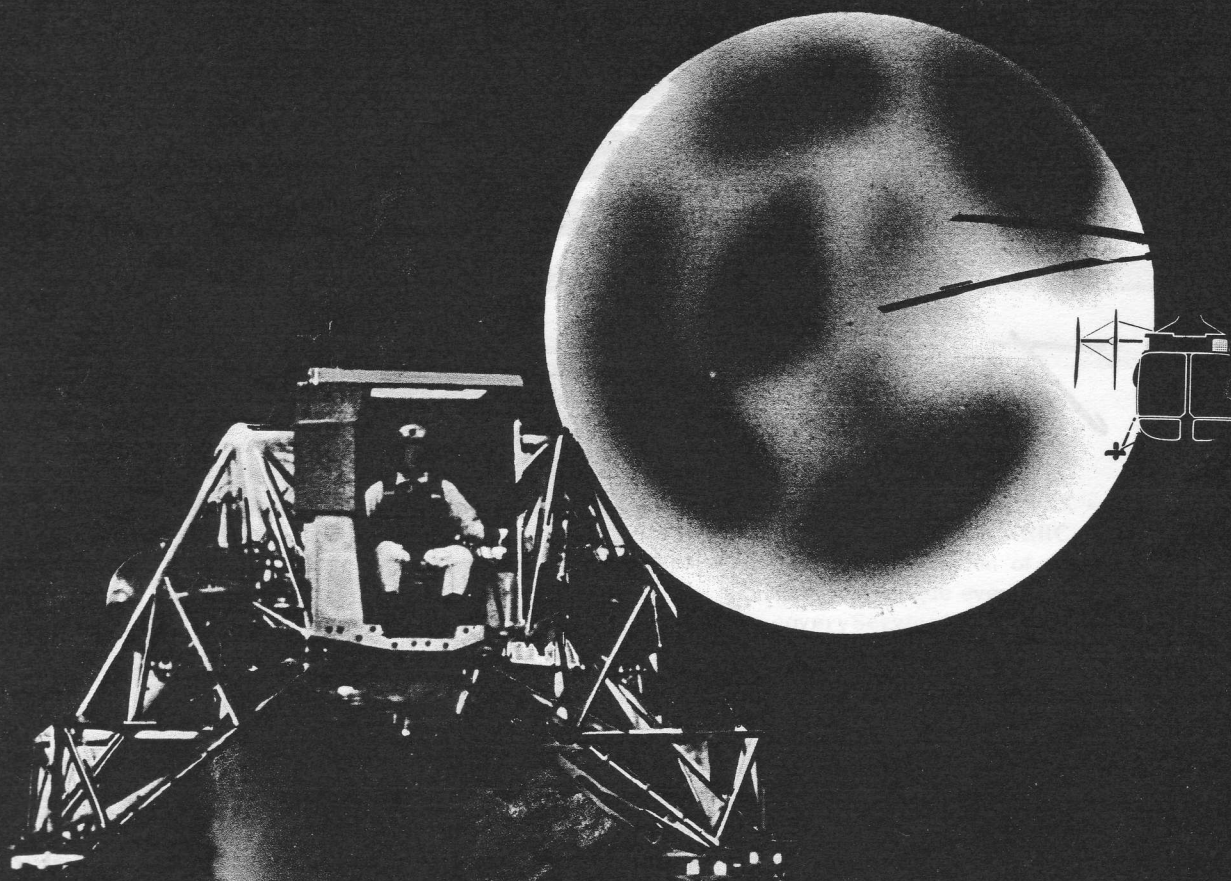


KAMAN

Rotor Tips



JANUARY - FEBRUARY, 1970

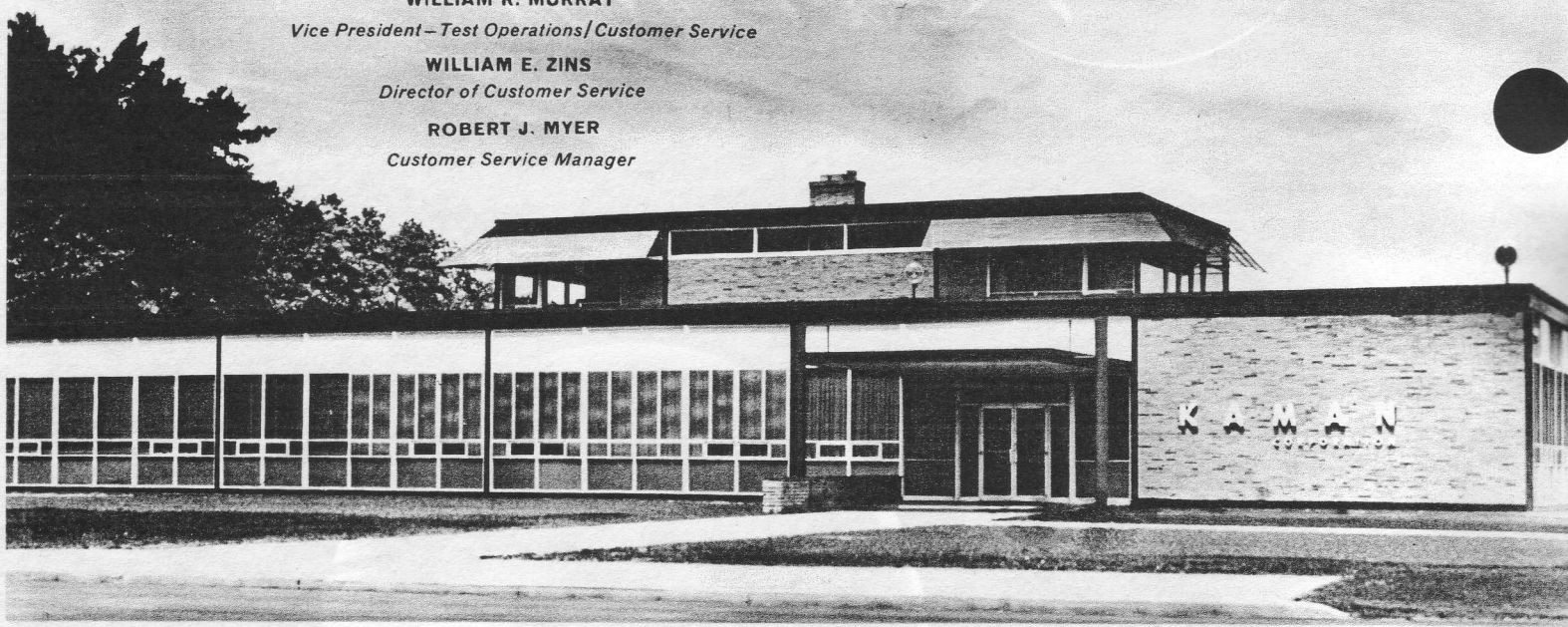
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Rotor Tips

Volume VI Number 4

ON THE COVER

Kaman's 25th Anniversary Year celebration began soon after the second moon landing. The part played by the HH-43 in the preparation for this historic event, and the preceding Apollo 11 landing, is described on the opposite page.

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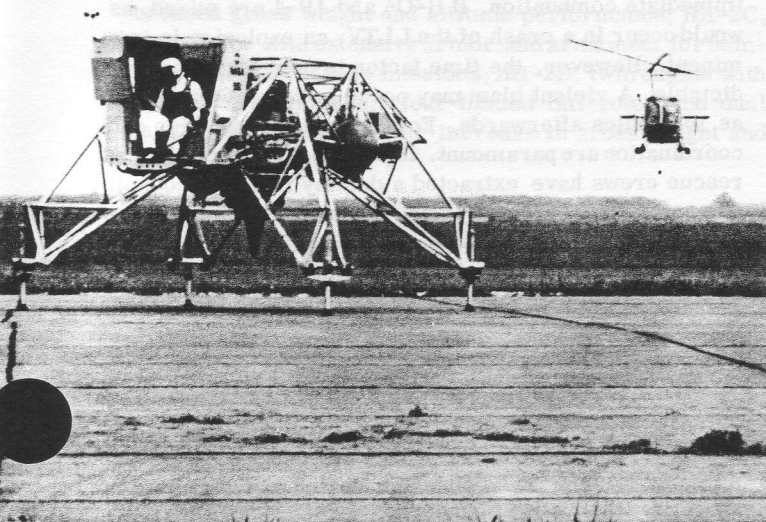
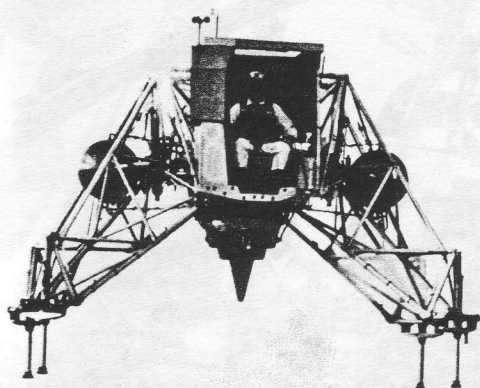
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Det 21 Supports NASA LLTV Program



READY IF NEEDED—With HH-43 "protector" in background, Astronaut Charles Conrad, Jr., Apollo 12 commander, takes off in NASA Lunar Landing Training Vehicle. The flights, made from Ellington AFB near the Spacecraft Center in Houston, play a key role in helping Apollo commanders train for the last two crucial minutes of flight in their journey to the moon. (NASA photos)



ELLINGTON AFB, TEX —The long, low frame building housing Det 21, CARRC, is an unpretentious structure, belying the mission of the men who work there. That mission, unique even for the Aerospace Rescue and Recovery Service, is to protect NASA astronauts when they fly the Lunar Landing Training Vehicle (LLTV).

The LLTV was developed by several NASA contractors to simulate the approach and landing conditions encountered during moon landings. It is made up of a framework of aluminum tubing with a vertically mounted jet engine in the center. Around the frame are mounted the fuel tanks, the attitude control thrusters, and all the wiring and plumbing. The pilot's cab (cockpit) juts out of the front, and an electronics bay is mounted on the rear. When in flight it looks like a cross between a steam callopie and a flying bedstead.

The vehicle has no wings or rotors, but relies on thrust for both lift and attitude control. The jet engine provides the lift and the mono-propellant thrusters, the attitude control. When in the lunar simulation mode, the jet engine is throttled back until it supports only 5/6 of the vehicle's weight. The pilot controls his altitude and makes the landing by using two lift rockets, thus having the same effective gravity and vehicle reaction he will encounter on the moon.

The pilot is surrounded by four fuel tanks containing 450 pounds of JP-4, for the jet engine, and 800 pounds of hydrogen peroxide (H_2O_2), for the thrusters. Should a crash ever bring these two fuels together the result would be either an intense explosion (immediately or after a delay) or, at best, a fire.



UNIQUE UNIT—Det 21 personnel—the men who protect NASA astronauts during LLTV training—are, left to right, front row: Capt N. O. Gaspar, TSgt C. Looney, SMSgt J. M. Hammer, Maj R. A. Bunton (detachment commander), SSgt R. D. Miller, SSgt B. J. Marshall, Sgt N. L. Woody, Jr., SSgt W. A. Glass, Capt P. H. Kammann. Back row, Alc H. D. Wimpey, Alc M. E. Richardson, TSgt D. W. Gooding, TSgt W. P. Tracey, Jr., Alc P. L. Parnell, Sgt D. N. Mason, Alc E. M. McKenzie, Alc B. L. Matlock, SSgt W. White, III. Not in photo: Maj M. F. Langford, Capt J. F. Patterson, SSgt J. M. Goforth, Sgt D. G. Behrends, Sgt R. D. Hindman, Alc S. M. Moreno, Alc R. O. Cohenour. (USAF photo)

Det 21 was activated at Ellington AFB last April to provide rescue support for the LLTV program. It also provides limited LBR coverage for the other base flying activities. Nearly all of the Det 21 personnel are recent SEA returnees.

On days when the astronauts' schedules call for training flights, the first pilot climbs aboard the vehicle in the calm pre-dawn winds. The fuel load permits about seven minutes of actual flying, which normally includes two or three takeoffs and landings. "Our job is to fly close enough to the LLTV to be able to get to the pilot within 10 to 15 seconds should he get into trouble, but far enough away to allow him to maneuver," said Capt Nicholas O. Gaspar, one of the rescue pilots. "We also try to stay behind the astronaut's field of vision so the chopper won't distract him from his flying."

The LLTV is usually flown below 500 feet altitude at speeds up to 50 feet per second (35 knots) so that the aerodynamics of the craft will allow the best simulation of lunar conditions. Should an astronaut, all of whom must have 100 hours in helicopters before flying the LLTV, get into trouble, a rocket ejection seat can remove him several hundred yards from the crash. The HH-43 pilot then sets down as close as possible to the astronaut and the pararescuemen get him into the chopper. A NASA flight surgeon, who often flies with the HH-43 "Pedro," is on hand for all flights of the LLTV. He has to decide if the astronaut should be flown to one of the four nearby hospitals. If the pilot is not able to eject, the prime objective of the rescue crew is to get him clear of the wreckage.

"We've seen a number of films and demonstrations of

the danger and unpredictable nature of these fuels," said Maj Robert A. Bunton, Det 21 commander, "and in conjunction with the NASA project personnel, we have come up with rescue techniques which are best for the environment and equipment."

A fire suppression kit is not used because of the peculiar characteristics of hydrogen peroxide. It produces oxygen when it decomposes, therefore foam would be ineffective. Any contact with organic material will cause immediate combustion. If H_2O_2 and JP-4 are mixed, as would occur in a crash of the LLTV, an explosion is imminent. However, the time factor is completely unpredictable. A violent blast may occur on impact or as late as 10 minutes afterwards. For this reason precision and coordination are paramount. In practice sessions, Det 21 rescue crews have extracted a dummy from the cockpit of a mock-up LLTV and placed it into the helicopter cabin with total elapsed time considerably less than one minute. The rescuemen are fully aware of the hazardous nature of such a rescue, but calculated risks are sometimes necessary.

To the discerning eye, perhaps the only indications of Det 21's special mission are the PJs' rubber gloves and the bulletinboard on which is posted a schedule of LLTV flights for the week. But if you could have watched the faces of the Det 21 rescuemen during Neil Armstrong and Buzz Aldrin's landing on the moon, seen the intensity of their expressions and the worry lines around their mouths when the astronauts began calling out warning lights appearing on the Lunar Module's computer—perhaps then you could have guessed that these were men with a special purpose, special dedication, and even a little special pride.



Modification to HH-2D Begins

Modification of the first of 31 UH-2A/B helicopters to the HH-2D configuration began recently at Kaman Aerospace Corporation's facility at Bradley Field, Conn. The HH-2D has twin GE T-58 turbine engines like the UH-2C but is distinguished by dual landing wheels, a four-bladed tail rotor and an uprated transmission that increases the gross weight capability and useful load by 1,200 pounds.

Initial production of the H-2, which is now the Navy's standard rescue and utility helicopter, began in 1959. Since that time a number of improvements have been incorporated and redesignations made including: UH-2A, single engine with advanced all-weather electronics; UH-2B, single engine configured for operation from Navy and Marine Corps Air Stations; UH-2C, twin engine with increased gross weight and altitude performance; HH-2C, twin engine with extensive armor and armament for combat search and rescue missions; HH-2D, twin engine with uprated transmission, four-bladed tail rotor and dual landing wheels for further increase in gross weight and altitude capability.

FIRST 3,000-HOUR AWARD MADE—Sen Barry Goldwater presents the first Kaman 3,000-hour pilot award plaque to Maj Bert E. Cowden, commander, Det 6, 41st ARRWg, just prior to boarding an HH-43 for a two-hour aerial tour of Okinawa. Maj Gen Oris B. Johnson, right, commander, 313th Air Division, briefed the Senator on USAF activities and pointed out military facilities on the island.

Major Cowden assumed command of Det 6, which is based at Kadena AB, in November, 1968. He had just completed a tour as commander of Det 13, 38th ARRSq, Phu Cat AB, RVN. Major Cowden is the first pilot in the U. S. Air Force to log 3,000 hours in the HH-43 and is also the first to pass the 1,000 and 2,000 hour marks in the HUSKIE. While assigned to Vietnam he flew 452 combat sorties and 350 combat hours—he was decorated with the Silver Star, two Distinguished Flying Crosses and 13 Air Medals for flying combat rescue and recovery missions. (USAF photo)

MEETS HH-2C—RAdm W. D. Hauser, USN, from the office of the Chief of Naval Operations, was taken on an orientation flight during a recent visit to Kaman Aerospace Corporation's Bloomfield, Conn., facility. With Admiral Hauser is KAC Vice President William R. Murray. The HH-2C is a twin-engine, armored helicopter with a chin-mounted minigun and waist-mounted machine guns. Combat search and rescue is its primary mission. The HH-2C will be deployed aboard many DLG's and other small vessels operating off the coast of Vietnam. Admiral Hauser was accompanied on the plant tour by Capt David L. Hughes, USN, also from the CNO office.

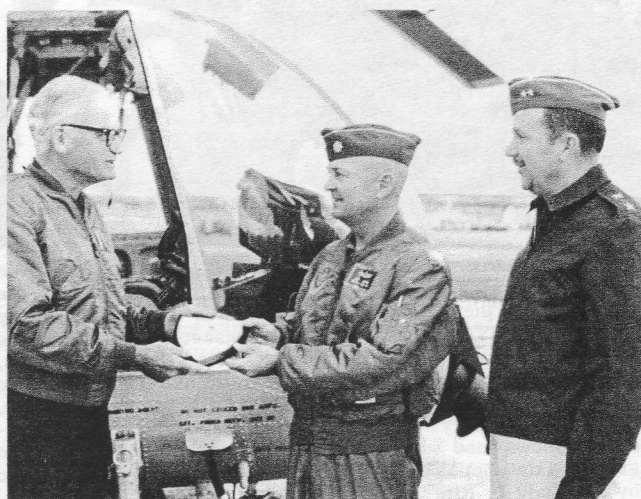
HH-43 'Quiet Helicopter' Program

Phase II of a program to achieve significant reductions in the noise level of the HH-43B HUSKIE has been started by Kaman Aerospace Corporation. The program is being conducted under a contract from the U. S. Army Aviation Materiel Laboratories (AVLABS), the Army's aviation research center at Fort Eustis, Va.

Under the new contract, Kaman will modify the rotor, drive system and powerplant of the HH-43B to attain noise reductions. The helicopter will also be flight tested at various speeds and altitudes to measure the degree of noise reduction.

By an earlier Quiet Helicopter Program contract from AVLABS, Kaman identified the various noise sources of the HH-43B and accomplished certain limited changes to the aircraft. The HH-43B modified to reduce noise was flown and compared with a standard HUSKIE to determine the reduction in noise levels. Based on the results of the first phase, Kaman has been awarded the follow-on contract to install and test additional changes to the aircraft.

The standard HH-43B is one of the most quiet helicopters in the world, due in large part to the absence of a tail rotor, a principal noise source on most helicopters. HH-43's have an intermeshing, contra-rotating rotor system that produces a gentle "swish-swish" sound in flight. The HUSKIE is deployed around the world as the U. S. Air Force's standard local base rescue helicopter. Other versions of the HH-43 are in service with five foreign countries and the U. S. Navy.



Jet-Blasted Sailor Saved By Fleet Angel

By JOC Dale L. Kite



GUARDIAN ANGEL—Almost hidden in the clouds, a UH-2B SEASPRITE from HC-2's Det 60 stands rescue guard over the attack aircraft carrier USS Saratoga. Merely a routine part of most flight operations, and almost obscured in all the activity just as it is almost obscured in the clouds of this scene, the helo receives the same awestruck appreciation as a veritable guardian angel to those in need. AN James V. D'Ambrosia, whose story is told here, is just one of many who owe their lives to the crews manning the "Fleet Angels." (Photo by PH3 Larry Dewey, USN)



HELPING HANDS—AN James V. D'Ambrosia, still weak from sickness and slight shock incurred when he was blown from the flight deck of the USS Saratoga, is assisted from the rescuing UH-2 SEASPRITE to one of the wire basket-weave stretchers used aboard Navy ships. After two days of rest and observation, D'Ambrosia made his first trip—to visit the helicopter crewmen who picked him up from the sea and to express his gratitude. (Photo by PH3 Larry Dewey, USN) In second photo, Airman D'Ambrosia shows hand which was slightly injured when he tried to grasp a safety net as he was being catapulted into the sea. (Photo by JOC Dale L. Kite, USN)

WITH THE SIXTH FLEET IN THE MEDITERRANEAN—Airman James V. D'Ambrosia found out the hard way where the members of Helicopter Combat Support Squadron Two (HC-2) earned their name "Angels of the Fleet." D'Ambrosia, wearing a flight deck headset that muffled sounds, failed to hear an F-4 Phantom jet turning up during flight operations aboard the USS Saratoga—he and the blast from the engines met on one of the carrier's elevators. Things happened so fast then that he is not positive what happened but the young airman thinks a foot hit once before he went over the side. He also grabbed for a safety net but the force which sent him over was too strong and he was ripped from his brief hand-hold and fell into the sea.

A few minutes later, D'Ambrosia was aboard one of the SEASPRITES flown by HC-2's Det 60 assigned to Saratoga. The intervening minutes, however, were a nightmare for the airman who later said he thought it was "one of those things that can't happen to me." Choppy swells made it difficult to inflate his life jacket, which he had not completely fastened, and D'Ambrosia swallowed several mouthfuls of sea water during his attempts to open it. Finally, he grasped his jacket with both hands and pulled the release that inflates the jacket—the second factor that D'Ambrosia now credits with his ultimate rescue.

Just after inflating his jacket, with his head bobbing under the tops of choppy seas for brief moments, D'Ambrosia spotted the UH-2 heading toward him. The helicopter, following the wake of the Saratoga, passed over him once and then returned along the track. Thinking that he could attract their attention, D'Ambrosia began waving as well as he could from the moving sea. Later, he was told that had he hit the water in a sweeping motion and made his own whitecaps, he would have been easier to spot. He was not in the ship's wake.



Lt Richard J. Carroll and Lt(jg) Howard F. Miller were the pilot and copilot respectively. Miller said that the purple clothing worn by D'Ambrosia made spotting him in the water difficult because it blended with the colors of the sea. All airmen on Navy aircraft carriers wear colored jerseys and jackets to identify them with their job areas. The purple worn by D'Ambrosia means he works with fuels.

Miller spotted D'Ambrosia on the return track and the helo moved toward him. As they passed overhead, Miller lost sight of the floating airman and one of the two aircrewmembers aboard then kept him in sight. The aircrewmembers, both "qualified," were Aviation Structural Mechanic Third Class (AMS3) Martin L. Lee and Aviation Electronics Technician Airman (ATAN) Peter E. Peterson. Qualified crewmembers are those who have passed rigorous survival training and are prepared to enter the water in the event rescue work required it. Once above D'Ambrosia, the helicopter hovered and the crewmembers lowered a rescue seat. According to D'Ambrosia, the placement of

the seat could not have been better. "The helo passed overhead and when I turned in the water, there it was," he recalled. Because he was not seriously injured, the pilots flew the aircraft until the end of a flight launch-and-recovery cycle and then returned to the Saratoga's flight deck. The helo was met by medical men and D'Ambrosia was taken to the ship's hospital section for a complete checkup. He had become sick during the ride, from the sea water he had swallowed and the shock of the experience, but the reminder of his harrowing experience were the bruises he had received when he hit the water.

Later a thoughtful D'Ambrosia discussed the rescue and compared it to hearing of a bad car wreck over the radio "...and you always say 'It won't happen to me.' Since it did happen to him," D'Ambrosia continued, "the other guys on the flight deck are a lot more conscious of safety measures and taking care of their safety equipment.

"I sure thought I had had it," D'Ambrosia said. And when the helo approached, "I was never so glad to see anything in my life."

Together, Together, Again, Again

By MSgt Mike Switzer

RAMSTEIN AB, GERMANY—When USAF firemen are dressed in their asbestos suits they all look alike, but when a certain two Ramstein firefighting rescuemen take off their suits, they still look alike—in fact, identical. SSgts William Hayward and Lewie Herman Hartzog, a pair of identical twins serving as airborne firefighters with Det 4, 40th ARRWg here, look so much alike that even their wives get them mixed up at times. With a grin on his face, William, the oldest of the twins by three minutes, said, "Even after all these years, Lewie and I still buy clothes alike. And when we're together with our wives and leave the room at the same time and then return, neither of our wives can tell us apart until after we've spoken a few words."

Lewie quickly commented, "After 37 years of continually being mistaken for each other, we've learned to accept it. As an example, when I meet people on the street they stop me and begin talking as though I was a good friend of theirs, when all the time they think they're talking to William. I just go along with the conversation the best I can and most of the time they never know they were talking to the wrong person."

Then William added, "We used to stop the person and tell them that they were talking to the wrong twin, but they usually wouldn't believe us and would comment, 'Oh, you're pulling my leg. You don't really have a twin.' So we've given up on trying to convince people that they are talking to the wrong person."

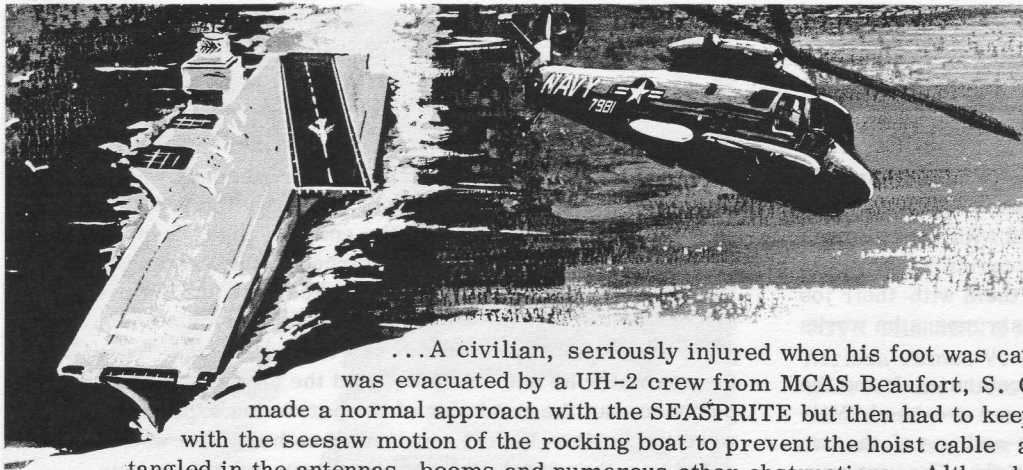
Although they started their military careers separately, with Lewie enlisting in the Army in 1950 and William entering the USAF in 1951, the twins have served together since 1953 when Lewie switched his "greens" for "blues" and joined his brother in the fire department at England AFB, La. Since then they have been fighting fires alongside each other at Thule AB, Greenland; Shaw AFB, S. C.; Tyndall AFB, Fla.; Kunsan AB, Korea; Keesler AFB, Miss.; and Ramstein AB, Germany.

Only once have they been transferred together on the same set of orders; this was from Korea to Mississippi. The rest of the time one of the twins would get his movement orders first and then the other would hustle down to the base personnel shop and pull out AF Manual 39-11 begin quoting paragraph 1015 which states, "Twins may apply to serve at the same unit or location. Approval will be based on a vacancy at the request location." And in all cases approval was obtained; however, sometimes it took as long as 90 days for one twin to follow the other to a new assignment.

The one question this writer forgot to ask the Hartzog twins was what their favorite song was. But then I'm sure it must be "Together Again."



DOUBLE TAKE—SSgts Lewie and William Hartzog, Ramstein's "rescue twins," pause for a moment before boarding the HH-43B HUSKIE for a firefighting training mission. The twins are airborne firefighters with Det 4, 40th ARRWg. For identification purposes William is on the left, er; no, on the right. (USAF photo by MSgt Mike Switzer)



SEASPRITE ACTIVITIES

...A civilian, seriously injured when his foot was caught in a winch aboard a shrimp boat, was evacuated by a UH-2 crew from MCAS Beaufort, S. C. Capt Charles W. Bowers, USMC, made a normal approach with the SEASPRITE but then had to keep the helicopter in a "type of rhythm" with the seesaw motion of the rocking boat to prevent the hoist cable and rotor blades from becoming entangled in the antennas, booms and numerous other obstructions. Although the stokes litter had to be threaded through these same obstructions, the pickup was made without incident. The injured man was taken to Beaufort where a landing was made on the hospital lawn. With Captain Bowers on the mission were SSgt Jackie E. Holley and Sgt Basil M. Heth.

...A UH-2 crew from the USS Little Rock, flagship for the Sixth Fleet, had just landed on the USS Kennedy while transferring personnel when the pilot, Lt Edward G. Moninger, Jr., was asked to assist in a search and rescue mission—an F-4 was missing in an area about 20 miles from the giant carrier. The passengers hastily disembarked, fuel was pumped into the helo, and it launched to begin the search. With Lieutenant Moninger were the copilot, Lt(jg) Robert J. Haggerton, Jr., and crewman, AE2 Wayne G. Sease. All are from HC-4's Det 47 deployed aboard the Little Rock. Within 10 minutes after takeoff a life raft with one man in it was sighted and a minute or two later he had been hoisted to the helicopter. As the survivor was made comfortable, a search was made for the pilot of the F-4 until another helo and a destroyer arrived. The HC-4 crew returned to the area later and joined others in a long, but unsuccessful search in the gathering darkness for the other downed airman. For Lieutenant Moninger and his crew it was their first rescue. Afterward they were commended by RAdm J. M. James, task force commander, for their "very professional airmanship."

...A seriously injured aircraft crash victim was taken to the hospital by a UH-2C crew from HC-2, NAS Lakehurst, N. J. Manning the rescue helicopter were Lt Stephen S. Hoxie, pilot; Lt G. A. Foss, copilot; ADJCH. E. Humphrey, AME1 Andrew Superior and AA K. M. Carlsen, crewmen. The UH-2 was one of two helos which had joined the search for a light civilian plane. After the wreckage was located near the Ocean County Airpark by another search plane, a severely burned survivor was hoisted to the UH-2C in a rescue net. He was taken to the Toms River Community Hospital. Another survivor had managed to walk to a nearby airport.

...A UH-2A crew from HC-2's Det 67 aboard the USS John F. Kennedy rescued the pilot and RIO from an RA-5C which plunged into the sea after a catapult shot. The SEASPRITE, which was flying plane guard at the time, was over the downed airmen within 30 seconds. The UH-2's "wet crewman," ADJ3 Donald K. Asada, leaped into the water to aid the survivors. After determining that one man, the RIO, was entangled in his shroud lines but in no immediate danger, Asada signaled for the shroud cutter to be lowered from the helo and then swam through the six-foot waves to the downed pilot. After aiding him into the rescue sling, Asada headed back toward the first man who by this time had cut his way through the shroud lines. The swimmer was picked up by the helo, however, when he developed a cramp in one leg. The RIO was hoisted to safety a minute later. Others manning the SEASPRITE were Lt(jg) Jack D. Ossont, pilot; LCdr Curtis B. Cutting, copilot; and ADJ2 W. Case Benham, 1st crewman.

...A sailor who fell overboard from the USS Ticonderoga was rescued a few minutes later by a UH-2C crew from HC-1's Det 7 deployed aboard the carrier. AMS2 Bruce A. Ekhoft leaped from the hovering helo and secured the survivor in the rescue sling. Both men were then hoisted to the aircraft by AMCS V. W. Ganderton. Lt D. L. Morgan was pilot of the SEASPRITE and Lt(jg) Phillip K. Newkirk was copilot. The UH-2C was on the deck with the rotor blades folded when the emergency arose but was airborne a minute or two later. The helo crew gave credit for the rapid lift-off to the help received from the "yellow shirts, blue shirts, and flight deck personnel."... The month before, a man who fell overboard from the USS Ticonderoga was rescued by another UH-2C crew. In order to assist the rescuee, SEASPRITE crewman Larry S. Harper, AN, was lowered into the rough seas with an extra life vest. The crewman managed to get the survivor into the vest, inflated it, and then—after several attempts due to the sea state—secured him in the sling. The fishpole boom was utilized to bring both men aboard. UH-2 pilots were Lt Howard C. Newman, Jr., and Lt(jg) Phillip K. Newkirk. The other crewman was AE2 Glenn M. Thiel.

...More than 200 guests attended an "open house" held by HC-4, NAS Lakehurst, N. J. The program included an explanation of the squadron's mission and operation by Cdr L. E. Perry, commanding officer; a tour of working spaces; and a film on the UH-2 SEASPRITE. A demonstration of cargo lift and rescue operations was also given by UH-2 pilots Lt Ben Nelson and Lt(jg) James Schaefer. The air show was narrated by Lt George Catello....



FLYING FOUR—Shown are eight UH-2's from HC-4, NAS Lakehurst, N. J., flying an unusual "Numeral four" formation. The flight was made as a tribute to the squadron's maintenance department which had done an outstanding job in providing helicopter availability. The SEASPRITES made two passes and then ended the afternoon flight with a nine-helicopter right echelon break over East Field. (USN photo by PH2 Roy)



25 YEARS—LCdr Willard "Shark" Cardwell of HC-4, NAS Lakehurst, N. J., prepares to board a UH-2 SEASPRITE for his last flight as a naval aviator. Lt Commander Cardwell was honored at retirement ceremonies Sept 30. He was designated a naval aviator on May 17, 1944, NAS Corpus Christi, Texas. (USN photo by PH3 J. M. Dale)

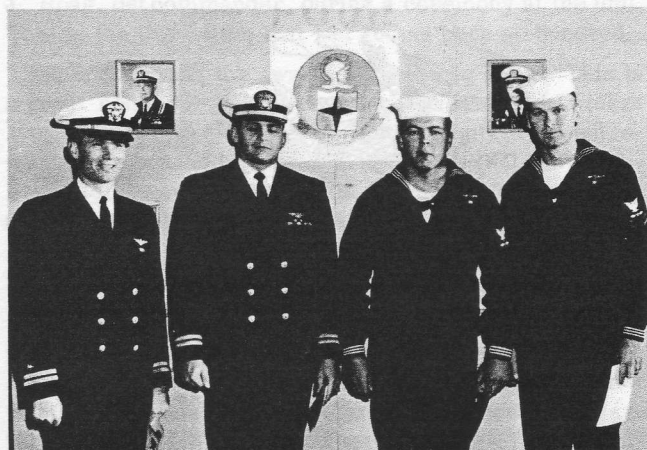
SAVED 15—Kaman Scrolls of Honor were presented recently to the crew of a UH-2 which rescued 15 persons from a Greek tanker after it had been driven ashore on Malta during a violent storm. Left to right are Lt John "Dave" Whelan, Lt Paul M. Petrucka, ADJ2 John E. Meeker and AMS2 Robert Sutton. All are from HC-4's Det 48 which was deployed aboard the USS Galveston at the time of the mishap. Once during the hazardous mission the rescue helicopter was completely covered by spray from a huge wave and later, Petty Officer Sutton was temporarily stranded on the disabled tanker but made his way to shore with the aid of a "human chain." (USN photo by PH2 P. J. Anerine)

HC-2 Receives 2nd CNO Award

Helicopter Combat Support Squadron Two, NAS Lakehurst, N. J., recently received the 1969 Chief of Naval Operations Aviation Safety Award. Cdr Henry H. Abe, commanding officer of the squadron, accepted the award on behalf of HC-2 personnel.

In making the presentation, VAdm Robert L. Townsend, commander Naval Air Forces Atlantic Fleet, congratulated the squadron and gave them a "Well Done" for HC-2's second consecutive win of the CNO Aviation Safety.

HC-2, which operates single and twin turbine SEASPRITES, amassed a total of 11,391 accident-free flight hours during fiscal year 1969, and a total of 21,815 accident-free flight hours over the last two years. HC-2 operates helicopters from both its home base at NAS Lakehurst, and from the carriers of the Atlantic Fleet.



A follow-on contract to design a full-scale flying rescue seat for wind tunnel flight testing has been awarded Kaman Aerospace Corporation by the Naval Air Development Center at Johnsville, Pa.

Kaman's design—called SAVER for Stowable Aircrew Vehicle Escape Rotoseat—is for Navy's AERCAB effort to optimize a flying rescue seat to be used by aircrews ejecting from disabled aircraft. The current contract for \$95,000 is a follow-on to an earlier contract for \$100,000 given to Kaman for concept definition and preliminary design.

Kaman's SAVER is a gyroplane with an unpowered rotor—forward thrust is provided by a small turbofan engine. The rescue seat will have stowable and telescoping blades which, together with its engine and controls, will fold into a compact pilot seat for normal use. When a pilot is forced to "punch out" due to an emergency: the entire seat ejects into the airstream; a drogue chute deploys; the folded rotor opens, extends and deploys; the engine starts; and the seat flies on as a gyroplane—all this occurs within six seconds.

Wind tunnel testing called for in the new contract will involve a full-scale SAVER without an engine. Testing in the wind tunnel will demonstrate the aerodynamic characteristics of SAVER and its capability for deploying stowed rotor blades.

Combat experience in Vietnam has shown a need to provide flying crews with a capability to remove themselves from the vicinity of a downed aircraft, so as to avoid detection and capture by the enemy. Further, a gyroplane, unlike a parachute, is not dependent on the vagaries of the wind which can blow a pilot into an unsuitable landing area.

With SAVER, a pilot could fly to and land in friendly areas, or stay airborne, communicating with helicopter rescue crews for a coordinated meeting and rescue. This would reduce pickup time and limit the enemy's ability to interfere with the rescue.

SAVER will have a range of 50 nautical miles and a speed of 100 knots. As a gyroplane, SAVER will not be able to hover. Its rotor system will spin, providing lift, from the force of passing air. Forward propulsive force will come from the turbofan. The flying seat will be capable of landing or can be jettisoned for a parachute landing, at the pilot's option. The pilot can cause the rotor system to separate from the powered seat, and then bail out from the seat. With this dual capability, the pilot can choose between methods of landing and has a safety back-up in the event of malfunction or combat damage.



Col Ritchie H. Belser, Jr., recently assumed command of Headquarters Central Aerospace Rescue and Recovery Center, Richards-Gebaur AFB, Mo. Prior to his assignment at CARRC, he served as commander of the 35th Tactical Airlift Squadron at Naha AB, Okinawa.

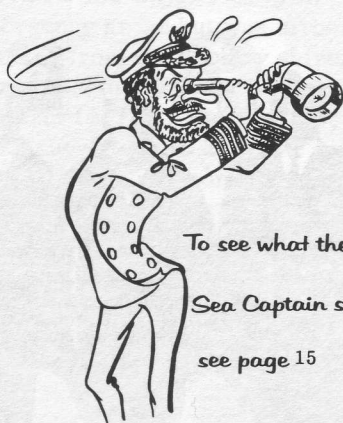
Notable among Colonel Belser's career achievements in the Air Force were his work as project officer on the first Air Force ejection seat program in 1948, and his efforts as section chief for the first cockpit standardization program in 1950. Both took place at Wright-Patterson AFB, Ohio. His later assignments included tours with the Directorate Flying Safety, Office of the USAF Inspector General, Norton AFB, Calif., and Headquarters Air Force Systems Command, Andrews AFB, Md. He also served in the office of the Deputy Chief of Staff Research and Development at Headquarters USAF.

From 1963-66, Colonel Belser served as USAF project officer for the Department of Defense Gemini Experiments Program, National Aeronautics and Space Administration (NASA) at the Manned Spacecraft Center in Houston, Texas.

A photographer's mate who was aboard a UH-2C from the USS Bon Homme Richard when the crew responded to an emergency, summed up his impressions afterward with the following comment: "If all are as well trained and perform as smoothly as this one, it will be a pleasure to fly with HC-1 Det 1 again anytime, anyplace."

The object of PH1 Jere D. Martin's praise was a SEASPRITE crew consisting of Lt(jg) R. E. Siman, Lt T. E. Payne, AN D. L. Wiczek, and ADJ3 John A. Carr. Martin was preparing to photograph flight operations when an F-8 pilot ejected from his aircraft about seven miles from the ship. The helo immediately headed for the area, and a minute or two later Lieutenant Siman brought the UH-2C to a hover over the survivor. Carr leaped into the water to assist the downed pilot who had suffered two broken arms and a broken shoulder. He was also in shock and tangled in his shroud lines. The rescue crewman removed some of the lines from around the survivor's head and body, and then dove beneath the surface of the water to cut others which pinned his legs. When the survivor was freed of the encumbrances, the two men were hoisted to the helicopter. On the way up, Carr wrapped his arms and legs around the injured man to steady him. First aid was given to the survivor on the way back to the carrier.

The photographer's mate may have had the pleasure of seeing an HC-1 rescue crew in action, but he also had the frustrating experience of not being able to record the rescue on film even though he was only a few feet away from "where the action was"—he was equipped with an aerial camera suitable only for long range work.



To see what the
Sea Captain saw,
see page 15

Hangar Dedicated To Heroic 'PJ'

Almost four years ago, A1c William H. Pitsenbarger dropped from a hovering HH-43F into the Vietnamese jungle to aid wounded soldiers in urgent need of medical attention. The 21-year-old pararescueman took the action knowing his own chances for survival were slim—the Army squad was surrounded by Viet Cong and under constant artillery and sniper fire. He did what he could for the wounded and when last seen was calmly firing at the encircling enemy.

Young "Pits" died that day in the jungle, but his story lives on. Recognition of his dedication to duty came during a Pentagon ceremony a few months later when he was posthumously awarded the Air Force Cross, the nation's second highest award for valor. At the same ceremony, his parents, Mr. and Mrs. William Pitsenbarger of Piqua, Ohio, also received their son's Airman's Medal, Purple Heart and four Air Medals. More than three years later, the Pitsenbargers were guests of honor at another ceremony that showed them once again the high regard the U. S. Air Force—and particularly the Aerospace Rescue and Recovery Service—had for their son. A new hangar erected at Craig AFB, Ala., and occupied by Det 11, EARRC, was dedicated to the young pararescueman. Attending the ceremony with the Pitsenbargers were Col Walter F. Derck, commander EARRC, and Col Clarence F. Wydner, base commander.

Near the entrance to Det 11's new alert facility is a plaque which reads: "Dedicated to the memory of William H. Pitsenbarger, Pararescueman. Killed in action on 11 April 1966 in the jungle near Binh Ba, Vietnam, while aiding wounded Army personnel. He was the first enlisted man to be awarded the Air Force Cross in Vietnam. He selflessly gave his life in the greatest tradition of the Aerospace Rescue and Recovery Service, 'That Others May Live.'" Inside the building is a large painting of Airman Pitsenbarger. It was presented by "Airman" magazine which had carried a story of the pararescueman's bravery.

The idea of dedicating the new facility to Airman Pitsenbarger was conceived by Maj Charles P. Nadler, for-



MEMORIAL FOR "PITS"—Maj William J. Deere, Det 11 commander, is shown with the plaque dedicating the alert facility to A1c William H. Pitsenbarger. The young pararescueman was very familiar with the action taking place in the second photo—an alert crew runs toward one of the detachment HH-43's in response to an aircraft emergency. Left to right are Capt Willie L. Farrow, SSgt Emmert E. Gordon and SSgt George J. Sheehan. (USAF photos)



mer commander of Det 11. He had served with the young airman and, like the other rescuemen in Det 6, 38th ARRSq, at Bien Hoa, had never forgotten "Pits" and the things he stood for.

***** Det 10 Honored For Third Time *****



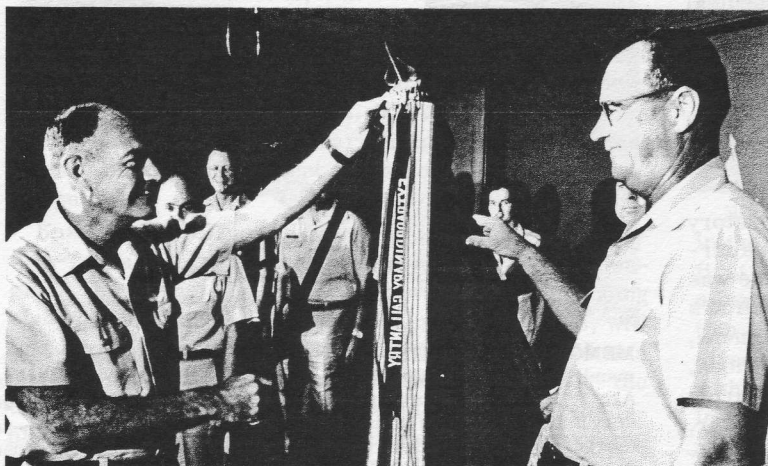
Det 10, CARRC, Laredo AFB, Texas, received the Commander's Trophy Award recently for the third quarter of 1969. Col Ritchie H. Belser, Jr., CARRC com-

mander, left, is shown presenting the trophy to Maj Stuart J. Hoag, det commander, during a ceremony at the unit. This is the third time that Det 10 has been so honored.

When accepting the award, Major Hoag said, "This is a great honor for myself and our detachment. It takes 100 percent team effort under Center eligibility requirements to meet the high standards Hq CARRC has established for the award. We're pleased to have been selected the best detachment in Central."

Consideration for presentation of the "Commander's Trophy Award" is given in the areas of operations, safety, maintenance, supply, administration, OR rates, APR and OER ratings, timeliness of reporting and so on. The award was created by Col William M. McDonald, former CARRC commander, in 1967 and is presented each quarter in recognition of outstanding detachment efforts. This is the eighth quarterly presentation of the award.

PRESIDENT HONORS 3rd ARRGp FOR RESCUE ACTIVITIES IN VIETNAM



UNIT AWARD—Gen George S. Brown, Seventh Air Force commander, left, attaches the United States Presidential Unit streamer to the guidon of the 3rd ARRGp. Col Malcolm C. Frazee, commander of all Air Force rescue forces in Southeast Asia, right, and representatives from subordinate units accept the award, approved recently by President Richard M. Nixon. Air Force rescuemen have risked their lives daily in saving the lives of more than 2,800 Allied servicemen in Southeast Asia since 1964. (USAF photo by SSgt Paul J. Harrington)

TAN SON NHUT AB, RVN—For the second time in three years, the 3rd Aerospace Rescue and Recovery Group, Military Airlift Command, has received the Presidential Unit Citation for rescue and similar operations in Southeast Asia. The 38th ARRSq, one of the squadrons in the Group, received a similar Citation in 1966 for its rescue activities.

The first award to the 3rd ARRGp was presented in 1967 for the "extraordinary gallantry" shown by personnel while carrying out rescue operations from Aug 1, 1965 to June 30, 1966. Presentation of the second award to the Group was made recently by Gen George S. Brown, commander of the 7th Air Force to Col Malcolm C. Frazee, 3rd ARRGp commander.

Recently signed by President Richard M. Nixon, the award citation gave official recognition to 3rd ARRGp aircrews and support personnel from July 1, 1967 to January 1, 1969. During this period the lives of more than 1,370 persons were saved by the Group. "The majority of these rescues were performed over enemy territory, often at sites where enemy forces had established ambushes for the unit's lightly armored, vulnerable helicopters," the citation said.

The 3rd ARRGp and its four squadrons operate five different types of special rescue helicopters, and the C-130

Hercules fixed-wing aircraft, from 22 separate operating locations in the combat zone and Thailand.

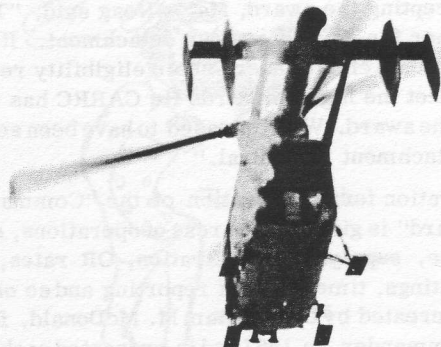
The helicopters are the HH-3 Jolly Green, the HH-43 Pedro (responsible for more saves than any other Air Force helicopter in Southeast Asia), and the HH-53 Jolly Green Giant. Modified versions of the HH-43 and HH-53 constitute the two other types of helicopters. The C-130 carries electronic surveillance and homing gear to find, identify and direct the rescue of downed airmen. It also has aerial refueling capability for the Jolly Green and Jolly Green Giant copters.

More than 2,800 people have been saved since the 3rd ARRGp was activated in Southeast Asia in 1964.

On reading some of the unit's mission summaries, former Air Force Secretary Harold Brown said, "When the history of war in the Republic of Vietnam is finally written, the story of air rescue may well become one of the most outstanding human dramas in the entire history of the Air Force."

Fulfilling the motto of the Aerospace Rescue and Recovery Service, "That Others May Live," has not come without loss, however. More than 100 members of the 3rd ARRGp have been killed, more than 25 wounded, and 20 listed missing in action.

Although taken a year ago, this photograph is still "timely" when it comes to showing the Christmas Spirit that prevails at U. S. bases in Vietnam. The following is reprinted from the "PHAN FARE," base paper at Phan Rang AB:



The only "White Christmas" in Vietnam is the honest claim of the men at Phan Rang Air Base. For a half hour starting at 1300 Christmas Day, the soft white crystals floated earthward over the Officers' Open Mess, NCO Open Mess, cantonment area and other locations where men were enjoying the Yuletide cease fire.

This nostalgic bit of Christmas Americana was provided by Det 1, 38th ARRS, at Phan Rang.

Launching an HH-43 "Pedro," the rescuemen zipped over the base, booming forth with hearty "ho, ho, ho's" through the loud-hailer, trailing traditional red and green smoke and showering startled spectators with white crystals—of soap flakes. Taking part in the flight were Maj John C. Acton, Jr., detachment commander; Capt Glen P. Walther, Sgt Daniel R. Morris, SSgt Francis L. Moran, II, A1c Gregory C. Gerlach, and Sgt Daniel T. Nungesser.



FLIGHTLINE BALLET—A U. S. Air Force flight engineer of Det 13, 38th ARRSq, Phu Cat AB, does an arm ballet on the landing pad as he "talks in" one of the squadron's HH-43 Pedro helicopters following a mission. From the time the helicopter comes into sight, upper left, until touchdown, left, the pilot is guided by the engineer. Following touchdown, the flight engineer gives the crew the thumbs up—okay sign. (USAF photo by SSgt Paul J. Harrington, 7th AF)

BIEN HOA AB (7AF)—MSgt David D. Rhody, below, a pararescue technician assigned to Det 6, 38th ARRSq here, recently received the Air Force Silver Star for his recovery of three seriously wounded personnel.

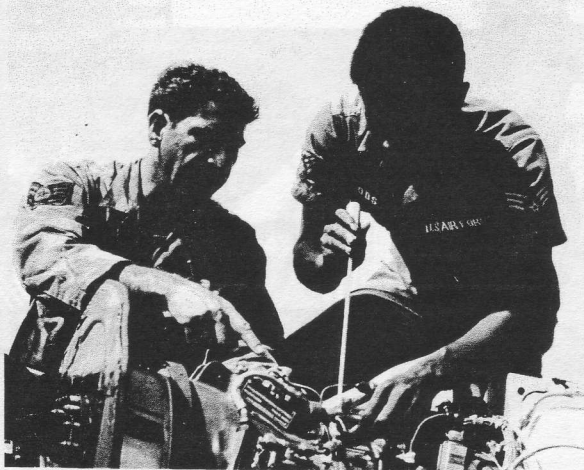
BrigGen Allison C. Brooks, ARRS commander, presented the medal which is the United States' third highest military award for heroism. It is awarded for gallantry in action.



Last year, Sergeant Rhody flew in an HH-43 Pedro to assist in the recovery of three members of a U. S. Army long range reconnaissance patrol (LRRP), 22 miles northwest of Bien Hoa City. When the Sergeant first arrived on the scene, enemy automatic weapons fire was directed toward his aircraft. The helicopter took 24 hits and was forced to return to the base for repairs. Another helicopter was exchanged for the damaged one and Sergeant Rhody was flown back to the scene. In the interim, an Army AH-1 Cobra helicopter gunship crew moved in to clear the area and a quick reaction team of eight soldiers formed a 40-yard perimeter around the LRRP soldiers for additional protection.

Sergeant Rhody was lowered into the area. While raising the first two litter patients, sporadic ground fire again erupted and he instructed the HH-43 pilot to evacuate the scene to avoid further damage to the aircraft. He remained behind for an hour to provide protection for the third wounded man. The rescue team returned with another armored helicopter to pick up the injured soldier and Rhody. On their way back out, their aircraft was pierced with five enemy bullets, but continued on to Lai Khe where the wounded were given medical attention. Sergeant Rhody escaped harm on the hazardous mission. (USAF photo by A1c John S. Gurley)

By Sgt John Keppelman
USAF (7AF) photos by A1c Louis Greene



EVERYTHING IN ITS PLACE—TSgt Thomas B. Margagliano, left, and Sgt Lawrence E. Woods install an engine compartment fire sensing element.

TUY HOA AB (7AF)—The boxy little rescue helicopter settled easily onto the pad, "talked down" by a flight engineer giving hand signals to the pilot. The pilot and engineer exchanged the "thumbs up" okay signal—a perfect check flight.

Two days before the HH-43 Pedro helicopter, packaged in kit form, arrived by C-130 Hercules transport from the United States. Highly qualified mechanics of the Air Force's Det 11, 38th ARRSq, assembled the major components of the aircraft and then adjusted the flight controls. The Pedro has twin tails and two large rotor blades that rotate together, but in opposite directions like the beaters of a mixer. Once the kit was together, 38th ARRSq pilots gave the new aircraft a rigorous test flight.

"It was a pleasure putting the aircraft together," remarked detachment maintenance line chief, TSgt Thomas B. Margagliano. "All the pieces fit perfectly. Everything went right into place."



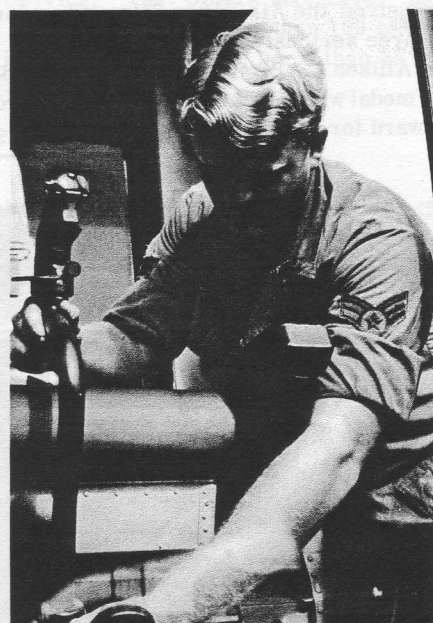
FLIGHT CONTROLS—SSgt Michael Klickovich, Jr., adjusts the HH-43 main flight control system.



TWIN ROTOR HEADS—Sgt John Dougherty lockwires lifting eye bolts on one of the HH-43 Pedro helicopter's rotor shafts.



UPTIGHT—Sgt Thomas E. McKittrick adjusts torque on the mounting bolts of the HH-43 rescue helicopter's rotor shaft and housing assembly.



CYCLIC CONTROL—Seen through the protective bubble on the front of the aircraft, Sgt Neil E. Swanson installs the HH-43's flight control stick.

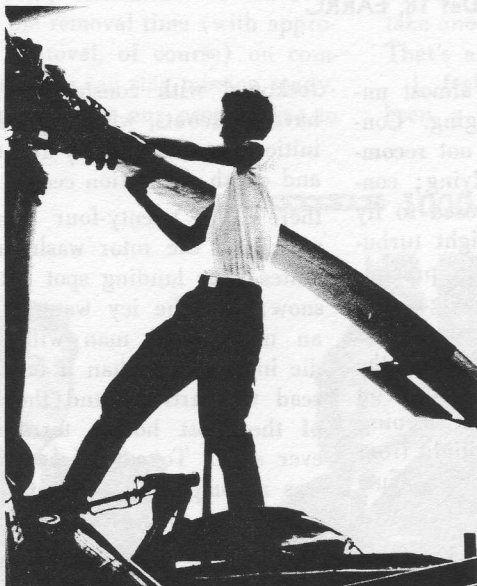
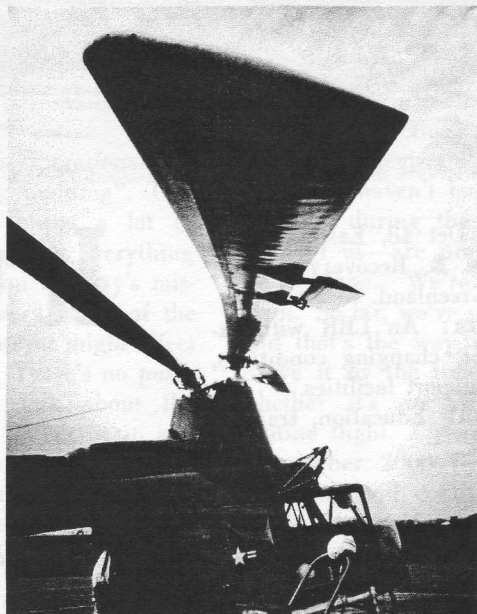


COMING IN—Sgt Roy L. Barney, a flight engineer with Det 2, 38th ARRSq, Takhli RTAFB, Thailand, directs an HH-43 Pedro helicopter back to its parking pad. The helicopter, carrying a fire suppression kit, was airborne to meet an inflight emergency on the base flight line. Crews are airborne within 60 seconds after being alerted by base operations. (USAF photo by SSgt Stewart W. Hurd, 7th AF)



MAINTENANCE—A1c Edward C. Broussard, left, and Sgt Norman C. Schultz work on the rotors of an HH-43 Pedro rescue helicopter assigned to Det 6, 38th ARRSq, Bien Hoa AB. Pedro helicopters require no engine warmup time, and can be airborne within 30 seconds after the alarm is sounded. (USAF photo by Sgt Walter S. Jensen, 7th AF)

READY TO GO—An HH-43B from Det 12, 38th ARRSq (MAC), at U-Tapao Royal Thai Navy Airfield stands ready for use in support of emergency operations. The helicopters of the unit, along with the crews, are "on call" 24 hours a day to carry out rescue and firefighting missions. (USAF photo by Sgt Richard Berger)



TAN SON NHUT AB (7AF)—BLADE CHECK—A1c Raymond R. Levesque moves the blades of an HH-43 helicopter into position for inspection. The HUSKIE's twin rotors has a span of 47 feet. HH-43's are used by Det 14, 38th ARRSq here, for fire suppression and rescue work. (USAF photo by A1c Steve Ridolphi)



PLEASE, pass it along



The Unit: Det 18, Eastern Aerospace Rescue & Recovery Center, Thule AB, Greenland.

The Problem: An LBR with extreme weather, changing conditions, and limited support facilities.

The Solution: Education, training and teamwork.

It CAN Be Done!

by Maj Charles W. Simmons
Det 18, EARRC

DETACHMENT 18 of the Eastern Aerospace Rescue and Recovery Center (MAC) recently passed another milestone when one of our three Kaman HH-43B Huskie helicopters completed 2,000 hours of accident/incident-free flying in the Arctic. The accomplishment may not seem too significant to the casual reader, or to those who haven't stopped to consider the hazards that our area presents. Let me explain.

First, we have the chill factor—the combination of cold and wind that can lower the temperature to the equivalent of a minus 70 degrees. Machines and equipment cold soak, a battery is no good after half an hour, and a man's flesh can freeze in a matter of seconds. Naturally, failure of parts and of people is much greater under such circumstances.

Secondly, the weather is almost unpredictable and ever-changing. Consider that the HH-43B is not recommended for instrument flying; consider that we're not supposed to fly in anything worse than light turbulence and light-to-moderate precipitation; consider also that navigational aids are practically non-existent, and that once we get out of range of the control tower, we're on our own. You can see there is no time for sleeping at the controls. An hour's flight from home station can hold many surprises.

Most of our operations are into remote sites, chock full of birds, debris, dogs and children, all of which seem to have an affinity for helicopters. Personal injury and Foreign Object Damage must be

reckoned with constantly. We also have whiteouts, when there's no definition between the sky and the snow and depth perception ceases to exist; there's the twenty-four hour darkness; and the rotor wash that obliterates your landing spot with blown snow; and the icy waters in which an unprotected man will generally die in less time than it takes you to read this article; and there's some of the most hostile terrain you've ever seen. To say of a mission "it was accomplished without incident", you begin to realize that this success isn't so easy to come by.

As the Safety Officer for the Detachment, I've taken a backward glance over my year's tour here to find what made it possible for us to close every flight with that phrase.

Of course, it starts with the Commander, who must lead a team of experts in many fields. He must be 100% Safety oriented (flying and ground) and render full support to his people. He must insist on check-list procedures, sound maintenance practices, training and prudent flight management. That's one point for our side.

Next is training. It's a particular problem at Thule Air Base because a year's tour barely gives a guy enough time to become a full-fledged team member before he's on his way home. Our Training Officer has been quite thorough—he has to be—covering everything from First Aid procedures, through flight operations and maneuvers, to Aerospace Rescue activities throughout the world. He has insured that all our people are prepared mentally and physically to cope with the many problems they are bound to encounter in this area. I believe, and this is a big statement, that they are as well qualified—as airmen and as aircrew members—as anyone in the Command. This helps too.

Maintenance is important, as we all know, and it has been our biggest problem. We're on the end of the supply line and everything seems to run out before it gets to us; sometimes we have to call on our sister detachments for help until we get our own parts; sometimes we have to extend the removal time (with appropriate approval, of course) on components so we can stay mission ready. It all means that our people have to



Complete with a sign boasting the accomplishment, Det 18's Huskie returns to Thule after completion of 2,000 hours of accident-free operations.

be especially competent and that they have to be dedicated to their jobs. Our OR Rate and our safety record prove both points.

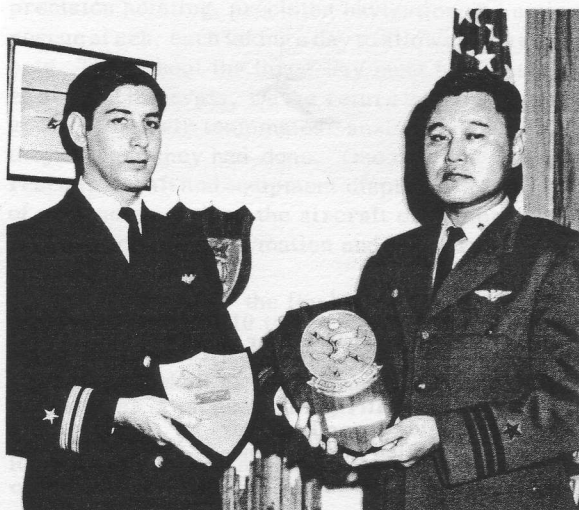
Now we come to Operations—the proof of the “flying pudding”. Our Operations Officer burns a lot of midnight oil insuring that everything will go as planned on the day's mission. He studies every phase of the flight, checking whatever might affect it. It's that simple. There's no pushing and we don't talk about the people who would rather wait and take another look at things tomorrow. That's another point for our side.

I feel our Safety program has been a success. We have tried to

keep our people fully aware of the hazards they face in the Arctic. We supplement the materials we receive with films, lectures and little gimmicks we devise. The results are good; we haven't had even a traffic violation during the past year. We—all of us—are proud of the work we've done. We're proud of our team. So far, we've won every match and that's the way we want it. We prove it by the things we do. And whether it's an air evacuation, a routine flight, a year's tour of duty, or another 2000 flying hour milestone, we will continue to say, “Of course, the mission was accomplished without incident.”



1000-Hour Pilot Awards



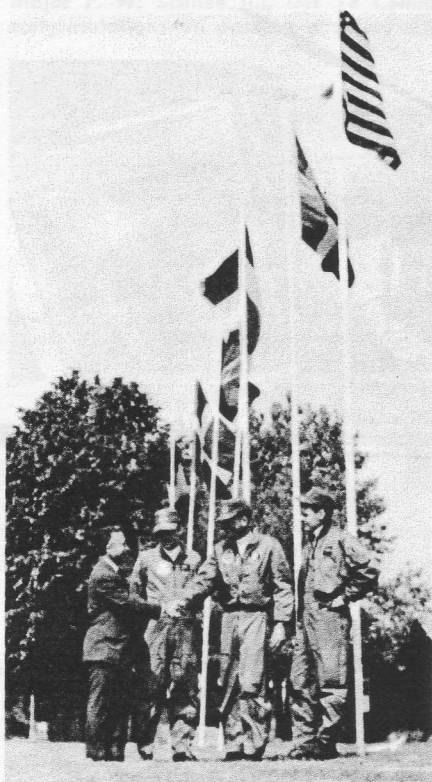
Lt Daniel Estreich, left, of HC-2, NAS Lakehurst, N. J., was recently presented a Kaman 1,000-hour plaque after logging that number of hours in a UH-2 SEASPRITE. In addition, Lieutenant Estreich received a plaque with the squadron insignia from Cdr Henry H. Abe, right, commanding officer of the squadron. UH-2 pilot Lt John P. Meyn from HC-2 also qualified for the award recently. The plaque is presented by Kaman Aerospace to pilots logging 1,000 hours in helicopters produced by the company.

HH-43 pilots who passed the 1,000 hour milestone during the last few months are: LtCol William C. Emrie, Det 16, CARRC, McConnell AFB, Kan.; and Capt Troy G. Irvin, Det 12, WARRC, George AFB, Calif. Captain Irvin was recommended for an Air Force medal and received the Kaman Scroll of Honor last year for the recovery of two fliers and an Air Force paramedic after a Navy aircraft crash-landed at the 12,500-foot level on Mt. Keawah, near Mt. Whitney, Calif. Captain Irvin also flew HH-43B rescue flights from Korat Rohal Thai AB, Thailand, TanSon Nhut AB, and Tuy Hoa AB, Vietnam.

Three other HH-43 pilots, all Iranians, recently logged 1,000 hours. They are: Capt Biuck Seyedein and 1stLt Mohammad Valinia, Imperial Iranian Air Force; and Capt Bahrán-Chanaie, Imperial Iranian Army Aviation Battalion. (USN photo by Jim Longstreet)

3rd International Helicopter

Rescue Meeting



FELLOWSHIP AND COMPETITION—The two go hand in hand at the annual meetings. In top photo, William E. Zins, Kaman director of customer service, renews his acquaintance with Maj Clyde W. Lemke, USAF team captain. Capt Peter J. Connolly is on Major Lemke's right and Maj Harold A. Solberg on his left. Below, in 100-meter race against time, "Bravo" crew runs toward HH-43. Left to right are, SSgt Gene L. Cole, Major Solberg, Captain Connolly, and SSgt David A. Anthony. A few minutes later they "rescued" a frogman at sea in a rubber dingy.



INTENT—Checking their flight course after the navigational event of the Third International Helicopter Rescue Meet are Capt Ronald Pass, left, and Capt Arthur Machado. At right is Major Lemke. No navigational aids were allowed during the prescribed flight so the event demanded considerable skill and planning. (USAF photos by Sgt Van Andel)



RESCUEMEN—Different uniforms emphasize the international aspect of the Meet. Crews from eight countries are shown listening to the initial briefing before beginning contests which will aid them later in their humanitarian work.

RAMSTEIN AB, GERMANY (40th ARRWg)—Helicopter rescue teams from eight nations converged on RAF Thorney Island in southern England recently. Purpose: to participate in the Third International Helicopter Rescue Meet hosted by the Royal Air Force, winner of last year's competition. The meet was being held, as were previous ones, to aid in improving international rescue skills and to allow aircrews to evaluate the many "tools of the trade"—proposed or already in use. Success in air-sea rescue efforts has often depended upon international cooperation. Distress signals recognize no national boundaries, as any experienced rescuer and countless survivors can readily testify.

By dusk on arrival day at Thorney Island, the 20 helicopters actually entered in the meet (seven different types) were in line on an aircraft parking strip. Crewmen, many of whom knew one another from previous meets, were visiting, reminiscing, and lightly bantering over the different machines and the various rescue techniques. Present were rescuers from the Royal Swedish Navy, the Royal Danish Air Force and Navy, the Royal Air Force and Navy, the Royal Belgium Air Force, the Federal Republic of Germany Navy, the Royal Netherlands Air Force, the French Navy and the U. S. Air Force. The USAF component was from Local Base Rescue Detachments at RAF Lakenheath, U. K., and Torrejon AB, Spain.

The competition was made up of three separate events—precision hoisting, precision navigation and a simulated rescue at sea, each taking a day to allow all teams to compete. Throughout the three-day meet helicopters whirled at exact intervals. On the return landings, crews were greeted by their teammates' anxious queries as to how they thought they had done. One day was reserved for rescue aircraft and equipment displays. Representatives of companies making the aircraft or equipment were on hand to exchange information and ideas with the men who use their products.

On the evening of the final event—the simulated rescue—scores of the 10 teams were tabulated. Emerging as the top overall team was the Royal Netherlands Air Force. On behalf of his service, the Netherlands team captain was awarded the Henri Dunant Trophy, a large crystal trophy named for the founder of the International Red Cross. The USAF team placed fifth in the overall competition.

Also presented by Lord Winterbottom, under secretary of state for defense (RAF), were trophies for the crews leading in the separate events and the top three individual crews. Winners were: the French Navy, precision hoisting; the Royal Swedish Navy, navigation; and the Royal Netherlands Air Force, simulated rescue. The top three individual crews were from the Royal Swedish Navy, the Royal Air Force and the Royal Netherlands Air Force respectively.

The Fourth International Helicopter Rescue Meet will be held in Holland, this summer. The host will be the Royal Netherlands Air Force.

USAF Contingent

ALPHA CREW

Det 7, 40th ARRWg, Torrejon AB, Spain
 Capt Ronald R. Pass (Pilot)
 Capt Arthur F. Machado (Pilot)
 TSgt Ralph A. Hohl (Hoist Operator)
 SSgt Louis R. Taylor (Crew Chief)

Helicopter

Det 12, 40th ARRWg, RAF Woodbridge, U. K.

Bravo Crew and Helicopter

Det 3, 40th ARRWg, RAF Lakenheath, U. K.
 Maj Harold A. Solberg (Pilot)
 Capt Peter J. Connelly (Pilot)
 SSgt Gene L. Cole (Hoist Operator)
 SSgt David A. Anthony (Crew Chief)

Team Captain and Assistant

Hq 40th ARRWg, Ramstein AB, Germany
 Maj Clyde W. Lemke (Project Officer)
 TSgt Harold R. Schrader (Assistant)

Judge

Det 2, 40th ARRWg, RAF Upper Heyford, U. K.
 Maj Robert D. Vespiro

Support

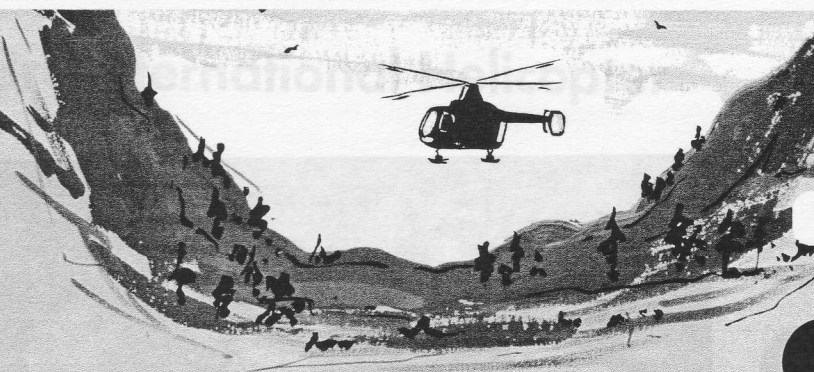
66th Tactical Reconnaissance Wing,
 RAF Upper Heyford, U. K.

SSgt Hoyd O. Sanders (Firefighter)
 Sgt Paul J. Metzner (Firefighter)

STAR Demonstration

67th Aerospace Rescue and Recovery Squadron
 Maj David K. Richardson (Aircraft Commander)

Huskie Happenings



...A 10-year-old boy, injured after a fall while hiking in the mountains 15 miles from Davis-Monthan AFB, Ariz., was evacuated by an HH-43 HUSKIE crew from Det 17, WARRC (MAC), at the base. After dodging thunderstorms in the area, Maj Edward A. DuChene flew into a canyon and located the ground rescue party. A member, injured in the search, was not picked up since he was not seriously hurt. After a second "very steep" approach, Major DuChene continued onward into the canyon and the survivor was located soon afterward. The HUSKIE pilot brought the helicopter to a 100-foot hover and then slowly descended vertically between the trees. Distance between the trees, canyon walls and rotor blades was "minimal." Capt Paul W. Becker (MC), a flight surgeon, was let down on the cable by A1c Steven N. Johnson, helicopter mechanic. Twice Johnson had to stop hoist operations while the helicopter was moved to keep the doctor clear of the trees. Once on the ground Captain Becker administered first aid to the boy and then both were hoisted to the HH-43. Major DuChene, aided by Capt James P. F. Egbert, the copilot, had hovered the helicopter in the narrow confines of the canyon for 30 minutes. The crew then carefully "extracted" the helicopter from the canyon and headed for a medical facility.

...In another Det 17 mission, two airmen who ejected from a crippled F-4 70 miles from the base, were taken aboard an HH-43 piloted by Capt Raymond M. Hanson. One downed airman was treated for a dislocated shoulder by Capt Sanford C. Barnes (MC), flight surgeon, and SSgt James A. Butler, medical technician. It was found that the second F-4 crewmember, located shortly afterward, was deceased. HH-43 copilot on the mission was Captain Egbert and TSgt James A. Nield was helicopter mechanic.

...A two-month-old baby girl who had suffered cardiac arrest was evacuated from Hahn AB, Germany, to the Wiesbaden Hospital by an HH-43B crew from Det 5, 40th ARRWg, at Hahn. The tiny patient's heartbeat had been restored at the base but the attending physician wanted her transferred to a larger hospital as quickly as possible. HUSKIE crew on the mercy flight was Maj Ralph H. Bush, pilot; Maj Robert W. Hastings, copilot; SSgt Nicholas F. Beaumonte, flight engineer; SSgt Larry J. Hutchins, medical technician; Maj David G. Alexander (MC), physician; Capt Carl L. Wetzell, (MC), anesthetist.

...An HH-43B crew from Det 16, CARRC (MAC) was already airborne when an F-105 crashed and began burning at the end of the runway at McConnell AFB. The rescue helicopter, which was responding to an emergency declared by an inbound aircraft, diverted to the crash scene and Capt Oliver E. Schmoker landed the helicopter near the flaming wreckage. As it touched down, the F-105 pilot ran through the fire and was taken to safety by crewmen who leaped from the chopper to assist. The survivor was given first aid by the HH-43 medic, Sgt Grant L. Warren, and then taken to the hospital in an ambulance. The HUSKIE took off and resumed its alert status for the original inbound emergency. Other members of the crew were Sgts William R. Analla and James A. Smith, firefighters.

...In another Det 16 mission, the alert HH-43B was dispatched with the FSK after an F-105 crashed six miles from the runway. Capt Charles W. Burridge landed the HUSKIE near the burning wreckage and the airborne firemen, Sgt Jerry A. Wood and Sergeant Smith, leaped out. Despite the danger from exploding ammunition, they began using FSK foam on the flames. County firemen who had arrived simultaneously, also fought the blaze. Meanwhile the medic, TSgt Howard D. McClellan, determined that the F-105 pilot had not survived the crash. After medical authorities arrived, the HH-43 crew returned to McConnell with the expended FSK. Sgt Brian D. Morris was helicopter mechanic on the mission...

Col Saleem Aswad recently became vice commander of the Aerospace Rescue and Recovery Service (MAC), headquartered at Scott AFB, Ill. Previously, Colonel Aswad was commander of the 40th ARRWg at Ramstein AB, Germany. He became commander of the Wing after an assignment as the deputy chief of staff for plans, Headquarters Twenty-Second Air Force (MAC), Travis AFB, Calif. Prior to that assignment, Colonel Aswad served for four

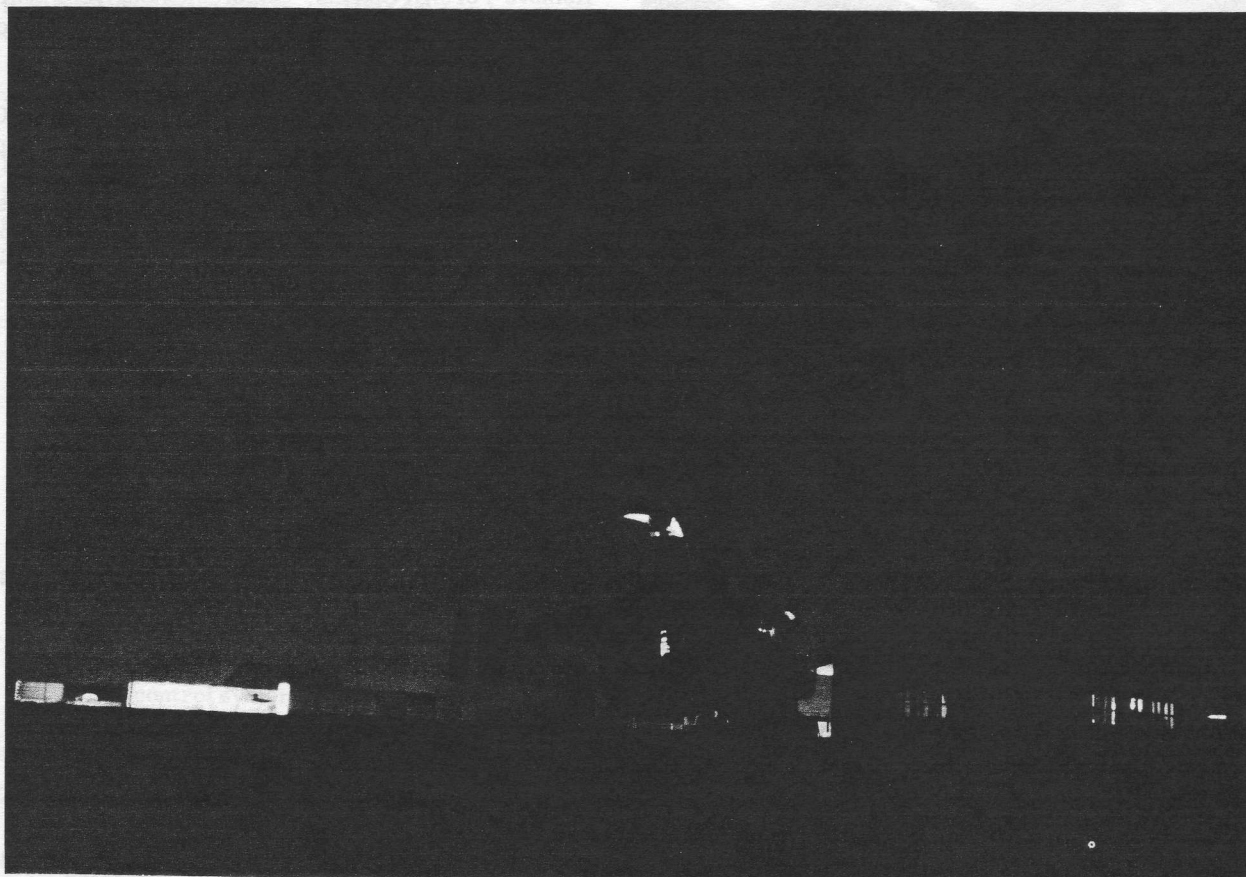
years as the director of war plans, 322d Air Division (MAC), at Chateauroux AS, France. The Colonel is a command pilot.

Command of the 40th ARRWg was assumed by Col Hiram Griffin from Headquarters Military Airlift Command, Scott AFB. Colonel Griffin had served there as assistant chief of the Safety Division, Office of the Inspector General.



HONORED—In left photo, Maj Franklin L. Chase, operations officer of Det 11, 41st ARRWg at Kunsan AB, Republic of Korea, is presented the Air Force Commendation Medal by Col Albert R. Neville, Jr., 354th Tactical Fighter Wing commander. Major Chase also received the Kaman Scroll of Honor for a mission August 13 which saved the lives of six Korean Nationals and evacuated 28 others from a critically flooded area. The Commendation Medal was for the period July 18, 1966 to June 18, 1969 when Major Chase was commander of Det 10, 40th ARRWg at Aviano AB, Italy. In right photo, MSgt Merle G. Draper, Jr., line chief with Det 11, is presented the Kaman Scroll of Honor by Colonel Neville for the life-saving flood mission August 13. (USAF photo by SSgt Charles W. Ashbaugh)

The names of two more ARRS pilots have been added to the growing list of those who have accumulated 2,000 flight hours in the HH-43 HUSKIE. Two thousand accident-free hours were logged recently by Capt Joseph T. Herr while serving with Det 9, 38th ARRSq (MAC), Pleiku AB, RVN. A similar milestone was passed by Maj Walter A. Malkiewicz of Det 6, EARRC (MAC), Andrews AFB, Md.



SUNSET RETREAT—In the dimness of night, an HH-43 Pedro rescue helicopter assigned to Det 6, 38th ARRSq, is silhouetted on the alert pad at Bien Hoa AB, RVN. Used for base rescue and recovery, the HH-43 can haul a thousand-pound fire suppression kit plus two pararescuemen to a crash scene within minutes. (USAF photo by Sgt Walter L. Jensen)

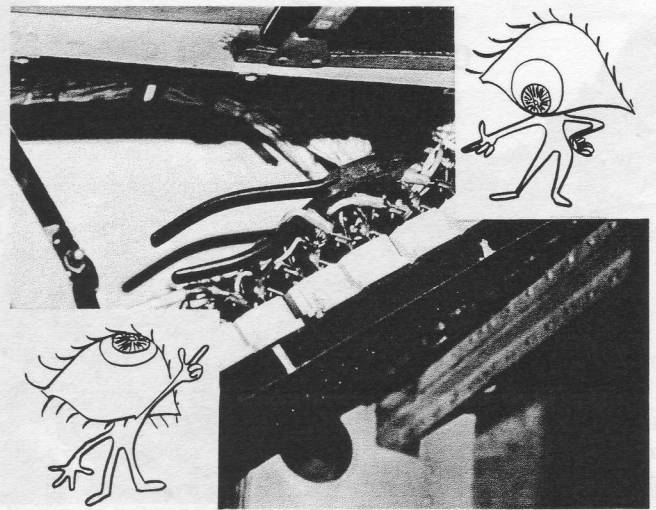
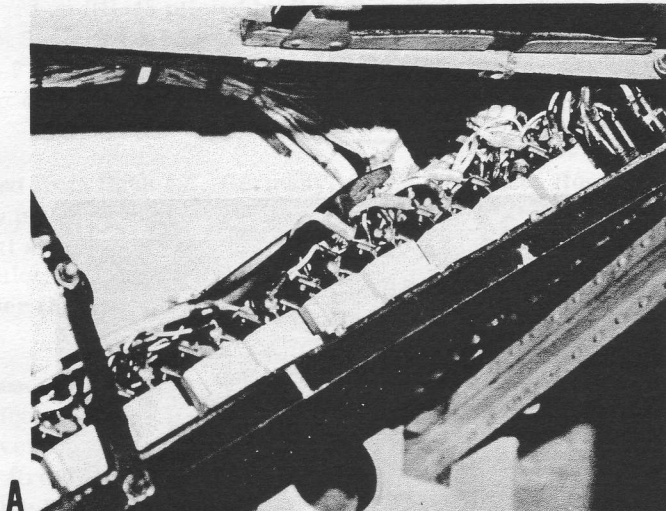
DARFO

DARFO! Detect and Remove Foreign Objects! Along with the new look in Rotor Tips, we are starting a Crusade—DARFO! Detect and Remove Foreign Objects!

For years we have heard the cry "FOD" or "Prevent FOD." Actually, FOD is after the fact. Also, FOD is usually associated with engine damage. It is damage which has occurred because of the presence of foreign materials. DARFO is a positive action. DARFO includes all aspects of safety—that piece of wire on the deck—that wiping cloth in the aft fuel cell—that oil slick waiting for an unwary foot—that—well, you name it.

As DARFO is practiced, FOD will disappear, after all, if there are no foreign objects around, FOD cannot occur. DARFO will enhance safety drives—no foreign objects results in fewer accidents to personnel and aircraft.

To launch our crusade, we chose a blatant example: Photo A shows the roof-mounted overhead fuse and circuit breaker panel in the UH-2. Look closely—detect anything?



Now take a look at Photo B (The Foreign Object has been lifted and turned toward the camera to make it more obvious.) Our guess is that an electrician utilized a wire loop to hold his tool because he needed it close-at-hand. (If it were placed on the deck, he would have to bend down each time to pick it up.) How he forgot it is anyone's guess. Perhaps his shift ended, or perhaps he was called away to other duties. Regardless of the reason, the Foreign Object was allowed to remain and the panel was closed. Fortunately, another man opened the panel and practiced DARFO!

Before closing or sealing a component, whether it be a fuse box or gear box, practice DARFO! Detect And Remove Foreign Objects. Before leaving your shift or aircraft, inform your superiors or your relief of open areas and loose materials. If we all do our part and practice DARFO, everyone will benefit.

Rotor Tips is looking for examples of D A R F O in action. When you detect a foreign object, try and get a photo of it to send to us. (Don't forget to remove that foreign object after taking the photo.) If you cannot send a photo, send us the complete location and description of your find (also, your impression of how it got there)—we will try to simulate the condition here at Kaman. We will credit the sender with the find if he desires.

* * *

Beginning with this issue of Kaman Rotor Tips, Timely Tips, Q's and A's and maintenance information of a similar nature will be grouped together. It is hoped that the establishment of this "technical section" will aid our readers who keep KRT on hand for future reference.

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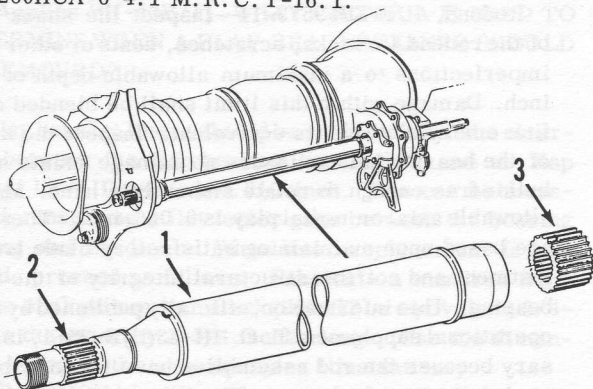
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CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, Supervisor

Timely Tips

Engine Drive Shaft Lubricant (UH-2)

The engine drive shaft, item 1 in the illustration, should be lubed/dusted with powdered Molybdenum Disulfide, conforming to Mil-M-7866. Be sure to lube the drive shaft splines (item 2) and the speed deceiver gearbox adapter (item 3). This should be accomplished at time of installation and at each calendar inspection per NAVAIR 01-260HCA-6-4.1 M. R. C. T-16.1.



R. J. Trella, Service Engineer

Functional Flight Tests (UH-2)

The following information is detailed in Section 4 of UH-2 Flight manuals. It is presented here as an aid to maintenance personnel who may not have access to a -1.

Maintenance test flights must be performed under the following conditions after the necessary ground check or test, and prior to release of the helicopter for operational flight or training flights:

1. At the completion of a calendar inspection.
2. At the completion of helicopter rework.
3. After installation or reinstallation of engine.
4. After installation or reinstallation of a rotor blade, or blades.
5. After installation or reinstallation of any major helicopter component.
6. After installation or reinstallation of any major components of the fuel system.
7. When flight control surfaces have been replaced, removed for major repairs and reinstalled or rerigged.
8. When primary control cables, rods or tubes have been replaced, rerigged or rerouted.
9. When control system components have been adjusted or replaced, and where improper adjustment or installation of such components could adversely affect flight characteristics or result in loss of control of the helicopter.
10. After accomplishment of any modifications or repairs affecting any of the foregoing.
11. When requirement for a maintenance test flight under circumstances other than those specified above is determined to be needed.

G. M. Legault, Asst. Supervisor, Service Engineering

Seized Nut And Bushing Assemblies (UH-2)

Inspection of the cotterpin on the main rotor blade folding pin nut and bushing assembly is a preflight requirement. This inspection is necessary because occasionally, due to corrosion, the bushing portion will seize in the lower blade locking arm and the cotterpin will shear when the blades are folded or unfolded. (Main rotor blades going through Overhaul at Kaman will have grease fittings installed on the lower locking arm. This addition is described on the Q and A pages in the November-December issue of Rotor Tips.) To free a seized bushing from a locking arm, remove the arm from the blade and use the following items: a 3-inch piece of steel tubing (arrow in Photo A), and an arbor press. Squirt light oil onto

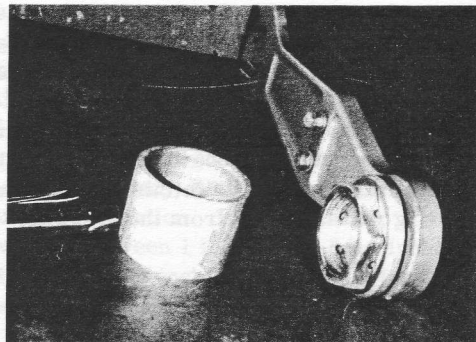


PHOTO A

the seized joint and let it soak in. Prior to pressing out the bushing, invert the locking arm and position the bushing so it is recessed into the steel tubing. Use the arbor to push the bushing out of the arm as shown in Photo B. Alternate methods of removal include using a rivet gun with a flat set and an aluminum drift. Place the drift on the end of the bushing and drive it out of the arm; if care is used, a mallet and drift may also be used as a substitute when an arbor press is not available.

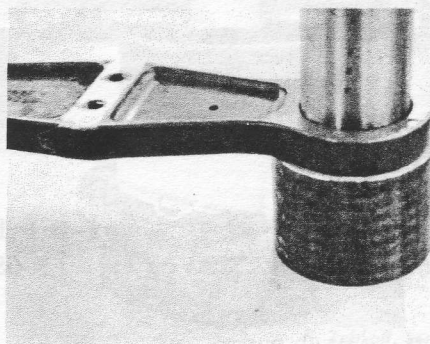


PHOTO B

W. J. Wagemaker, Service Engineer

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. (UH-2) IS IT NECESSARY TO DISASSEMBLE THE MAIN ROTOR BLADE NUT AND BUSHING ASSEMBLY?

A. Occasionally, it may become necessary to disassemble this unit due to a corroded bushing. A locking spring, held in place by a recess in the nut, holds the nut and bushing together as an assembly. To disassemble the unit, it is necessary to remove the locking spring. The spring can be removed by inserting a hook-ended wire into the rectangular slot near the end of the locking spring as shown in Photo A. Apply pressure in towards the bushing and up away from the nut to free the end of the spring from the recess. Slide the wire under the spring (Photo B) and turn the nut counterclockwise to completely force the spring from the recess. With this accomplished, the nut and spring will fall away from the bushing.



PHOTO A

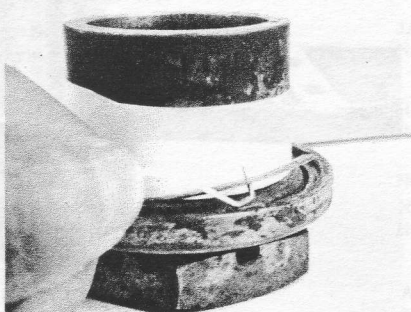


PHOTO B

W. J. Wagemaker, Service Engineer

Q. (Applies HH-43) KACARB BEARINGS ARE INSTALLED IN THE NEW AZIMUTH-TO-HUB CONTROL RODS. WHAT INSPECTION CRITERIA SHOULD BE USED?

A. Control rods, P/N K759572-11 and rodends, P/N K759573-11, should be inspected in accordance with the following criteria: Rod, P/N K759572-11—Inspect for damage such as nicks, scratches, dents or other surface imperfections. Defects to a maximum depth of 0.015-inch, found in all but critical areas (reduced diameter end sections and threads) of rod should be blended out with fine emery cloth in the longitudinal direction. Blending should be smooth with no sharp marks. Smooth bends up to a maximum of 0.25-inch in any one foot (12 inches) over the entire length of the rod are acceptable. Do not attempt to mechanically straighten rod.

Rodend, P/N K759573-11—Inspect the shank portion of the rodend for nicks, scratches, dents or other surface imperfections to a maximum allowable depth of 0.015-inch. Damage within this limit shall be blended out with fine emery cloth or its equivalent. Inspect the surfaces of the bearing ball to insure no damage exists and that ball is free enough to rotate smoothly by hand. Maximum allowable axial or radial play is 0.006-inch. These limits are based upon maintaining satisfactory blade track adjustment and not the structural integrity of the KAcarb bearing. This information, officially published by interim operational supplement T. O. 1H-43(H)B-2S-1, is necessary because the rod assemblies have recently been introduced into the system. The information contained in T. O. 1H-43(H)B-2 details the inspection criteria for rods, P/N K759546-1 (paragraph 2-322, sub paragraph a); and rodends, P/N K101024-13 (paragraph 2-322, sub paragraph b).

W. J. Wagemaker, Service Engineer

Have you ever jumped to a conclusion while trying to perform a logical trouble shooting or testing sequence? Here is an account of a scientific test which, it has been rumored, occurred at a Naval facility "somewhere on the East coast."

TEST #1

Preparation: Removed the front two legs from grasshopper and placed it on a table top.

Test: Gave the verbal command: Crawl!

Result: Grasshopper crawled.

TEST #2

Preparation: Removed second set of front legs from same grasshopper and replaced it on table top.

Test: Gave the verbal command: Crawl!

Result: Grasshopper crawled.

TEST #3

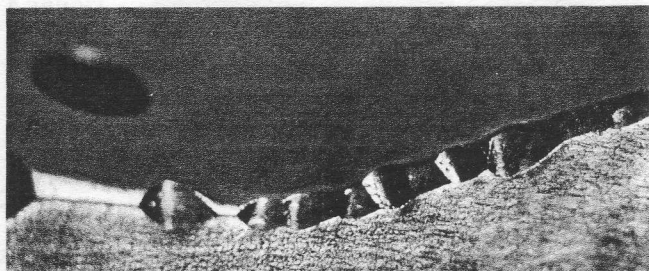
Preparation: Removed the back legs from same grasshopper, leaving it no legs, and replaced grasshopper on table top.

Test: Gave the verbal command: Crawl!

Result: Grasshopper did not crawl.

CONCLUSION: It has been determined beyond all doubt by a series of tests using exacting scientific methods that a grasshopper, with all its legs removed... can no longer hear!

CAN YOU GUESS WHAT THIS IS AND WHAT HAPPENED TO IT? TURN TO PAGE 27 FOR THE ANSWER.

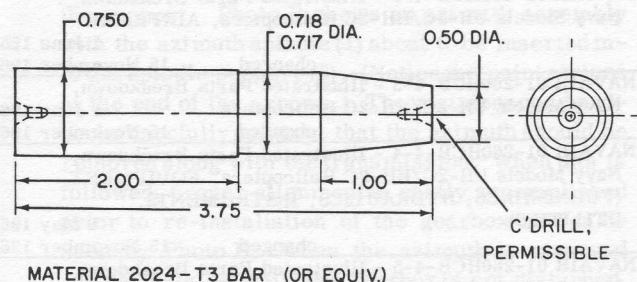


Q. (Applies HH-43B/F) WHAT CRITERIA IS USED TO DETERMINE WHEN A FLAP BRACKET LINER SHOULD BE REMOVED?

A. Flap bracket liners should be replaced when the clearance between the flap bearing housing OD and the flap bracket liner ID exceeds 0.010-inch. This can be measured by inserting a flat feeler gage between the bearing housing and the liner. When liner replacement is required, proceed as follows: Fabricate a mandrel from a piece of aluminum bar stock (2024T3 or equivalent) 3/4-inch in diameter by 3-3/4 inches long. (Use the dimensions listed on the accompanying illustration.)

LINER REMOVAL: Heat the mandrel until slightly beyond the temperature at which 50-50 solder readily melts. Immediately insert the mandrel into the outboard flap bracket liner (from either side), butting the shoulder of the mandrel against the liner end. Allow approximately 2 minutes to elapse and then center a deep 13/16-inch socket wrench against the opposite side of the bracket. Use a 6-inch C-clamp to force the mandrel against the liner end. This will push the liner out of the bracket and into the deep socket wrench. As soon as the liner clears the bracket, remove the mandrel and C-clamp, then clean the bracket bore with a clean cloth. (Be sure to remove adhesive from the bore.)

LINER REPLACEMENT: Coat the new liner and bracket bore with A6 or Epon U1 (Armstrong Products Co. and Shell Chemical Corp., respectively). Apply a layer of cheesecloth, conforming to CCC-C-440, to the OD of the liner. Press the liner into the bracket bore with a C-clamp and two wooden blocks; trim off excess cheesecloth. Also, clean excess adhesive from the liner ends and the flap bracket. Allow a minimum of 24 hours (at 70° F) for the adhesive to cure. For further information, refer to T.O. 1H-43(H)B-2.



W. J. Wagemaker, Service Engineer

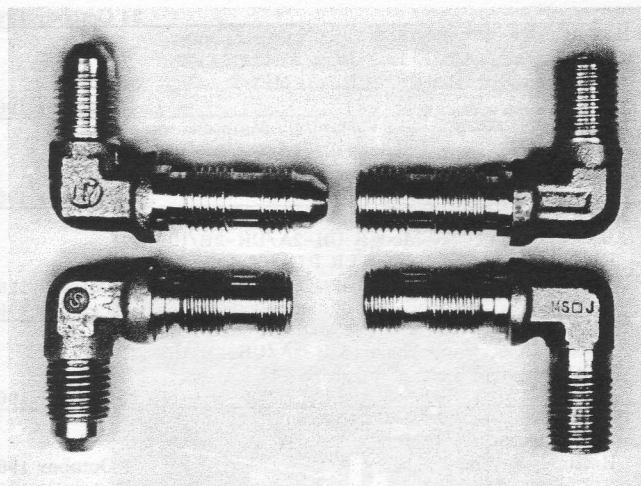
KAMAN SERVICE ENGINEERING SECTION - R. L. Bassett, Supervisor; G. M. Legault, Asst. Supervisor

Q. (Applies UH-2) IS THE BATTERY START SYSTEM INTERCHANGEABLE BETWEEN THE UH-2A, UH-2B AND UH-2C HELICOPTERS?

A. Partially. The valves are the same but the lines of fittings are different. The UH-2A/B has fuel lines with flareless connector fittings at the fuel control, where as the UH-2C has flared connector fittings. Consequently, the fittings at the fuel control must be compatible (flareless on the A/B and flared on the UH-2C). In addition, these fittings (on all models) are special because the leg which is inserted into the fuel control is shorter than the standard fittings from which they are made. At a quick glance, the special elbow resembles a standard AN or MS elbow, however, if a standard elbow is threaded into the control, it can extend through the housing and interfere with internal moving parts of the control—the result will be fuel control failure. The Photo shows four fittings; as can be seen, the 2C special elbow is readily discernable because only one leg is flared. (The flareless end is attached to the fuel control.) On the UH-2A and UH-2B special fitting, notice that one leg is two threads shorter than the standard fitting from which it was made; therefore, the part number is the only method of determining the correct fitting. The correct installation procedure is to select the designated elbow by part number, thread it into the opening up to the last outer thread and, while holding the elbow in position, tighten the nut. An acceptable substitute which can be used on the UH-2C is a special elbow made by the Parker-Hannifin Corp., Mfg Code, 45681, P/N 4C50X-S, FSN 9C4730-851-3423. After engine change or fuel control change, carefully check the manual (emergency) fuel control rack for complete extension and retraction. In most cases, the rack extension will be between 1 inch and 1-5/16 inches. If extension is less than 1 inch, internal interference should be suspected.

Standard
AN833-4S

Standard
MS21908-4S



Special; UH-2C
K679720-11

Special; UH-2A/B
GE37B200243P101

H. Zubkoff, Service Engineer

Permanent Mounting Provision for the UH-2 K604621 Rod and Strut Fixture

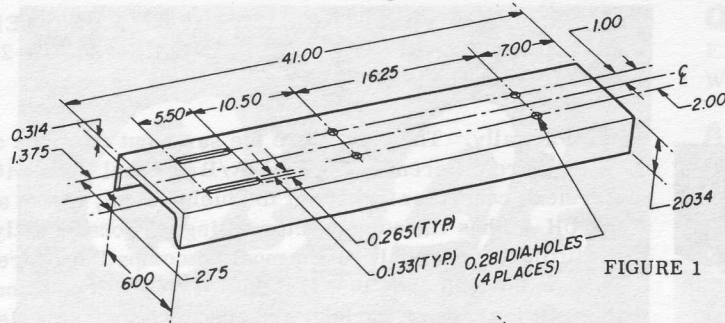


FIGURE 1

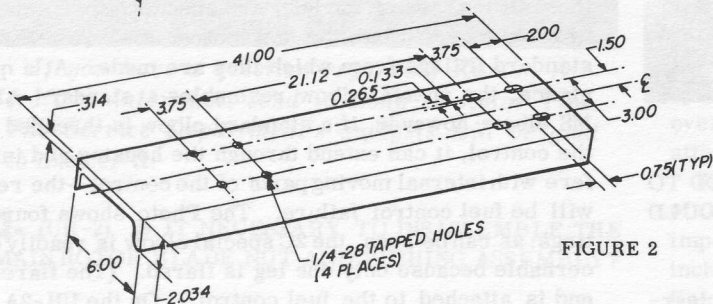


FIGURE 2

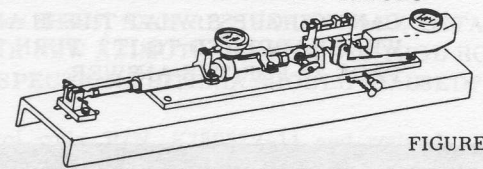


FIGURE 3

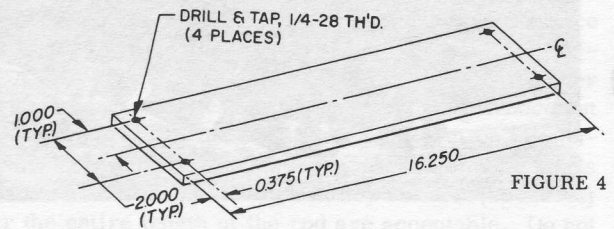


FIGURE 4

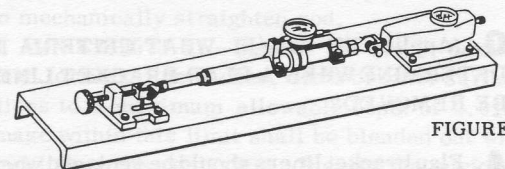


FIGURE 5

Figures 1 and 2 depict permanent mounting bases for the K604621-101 and -201 rod and strut fixtures which eliminate the need for bolting or clamping them to a bench. The dimensions shown in figure 1 are required to fabricate a base for the -101 fixture. The slots provided allow installation of either the K654012 cyclic and directional trim strut or the K652170 collective force rod without unbolting and moving the fixture. Dimensions required to fabricate a similar base for use with the -201 fixture are provided in figure 2. Both bases are to be fabricated from 6061-T6 aluminum channel.

1. Fixture Mounting Instructions-K604621-101 (Figure 3)

- Drill and tap the existing fixture base plate as shown in figure 4. (b) Secure the fixture base plate with four AN4-6A bolts and four AN960-416 washers. Bolt heads must be down. (c) Secure the clevis por-

tion of the fixture to the slots provided in the channel with two 1/4-20 by 1-1/4-inch long carriage bolts. The bolts must be installed so that the square portion directly under the bolt head engages the slot of the fixture. Secure the bolts with two AN960-416 washers and two AN335-4 nuts. By loosening the nuts, the clevis end of the fixture may be moved in or out, accommodating either the force rod or trim strut.

2. Fixture Mounting Instructions-K604621-201 (Figure 5)

- Mount the screw jack portion of the fixture to the channel using four AN4-7A bolts and four AN960-416 washers. (b) Using four 1/4-20 by 1-1/4-inch long carriage bolts, four AN960-416 washers, and four AN335-4 nuts, secure the force gage mounting plate to the channel. The square portion of the carriage bolt should be engaged in the channel slot.

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 164, Part I - Power Plant and Related Systems, REPLACEMENT OF ENGINE FUEL AND OIL SHUTOFF VALVES	24 October 1969
H-2 Airframe Change 165 - UH-2C Helicopter, INSTALLATION OF TAT 102K ARMAMENT SYSTEM AND RELATED EQUIPMENT	12 November 1969
NAVAIR 01-260HCA-2-1 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, GENERAL INFORMATION	1 September 1969
NAVAIR 01-260HCA-2-4 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C Helicopters, POWER PLANT AND RELATED SYSTEMS	1 October 1967
	changed 15 December 1969
NAVAIR 01-260HCA-2-4.1 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, TRANSMISSION SYSTEM	15 September 1969
NAVAIR 01-260HCA-2-4.2 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, ROTORS	1 October 1967
	changed 1 August 1969
NAVAIR 01-260HCA-2-5.1 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C Helicopters, INSTRUMENTS	1 October 1967
	changed 15 December 1969
NAVAIR 01-260HCA-2-6 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, ELECTRICAL SYSTEM	1 October 1967
	changed 1 September 1969
NAVAIR 01-260HCA-2-7 - Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C Helicopters, RADIO AND RADAR SYSTEMS	1 October 1967
	changed 15 December 1969
NAVAIR 01-260HCB-1B - NATOPS PILOT'S POCKET CHECKLIST, Navy Model UH-2C Helicopter	15 September 1969
NAVAIR 01-260HCB-1C - NATOPS AIRCREWMAN'S POCKET CHECKLIST, Navy Model UH-2C Helicopter	15 September 1969
NAVAIR 01-260HCB-4-1 - Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C Helicopters, NUMERICAL INDEX AND REFERENCE DESIGNATION INDEX	15 November 1969
NAVAIR 01-260HCB-4-2 - Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C Helicopters, AIRFRAME	1 June 1967
	changed 15 November 1969
NAVAIR 01-260HCB-4-3 - Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C Helicopters	1 June 1967
	changed 15 November 1969
NAVAIR 01-260HCB-4-4 - Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C Helicopters, EQUIPMENT (FURNISHINGS, HYDRAULICS, INSTRUMENTS, UTILITIES)	1 May 1969
	changed 15 November 1969
NAVAIR 01-260HCB-4-5 - Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C Helicopters, POWER PLANT AND RELATED SYSTEMS	1 May 1969
	changed 15 November 1969

R. H. Chapdelaine, Supervisor, Service Publications

Azimuth Bar- UH-2

by W. J. Wagemaker, Service Engineer

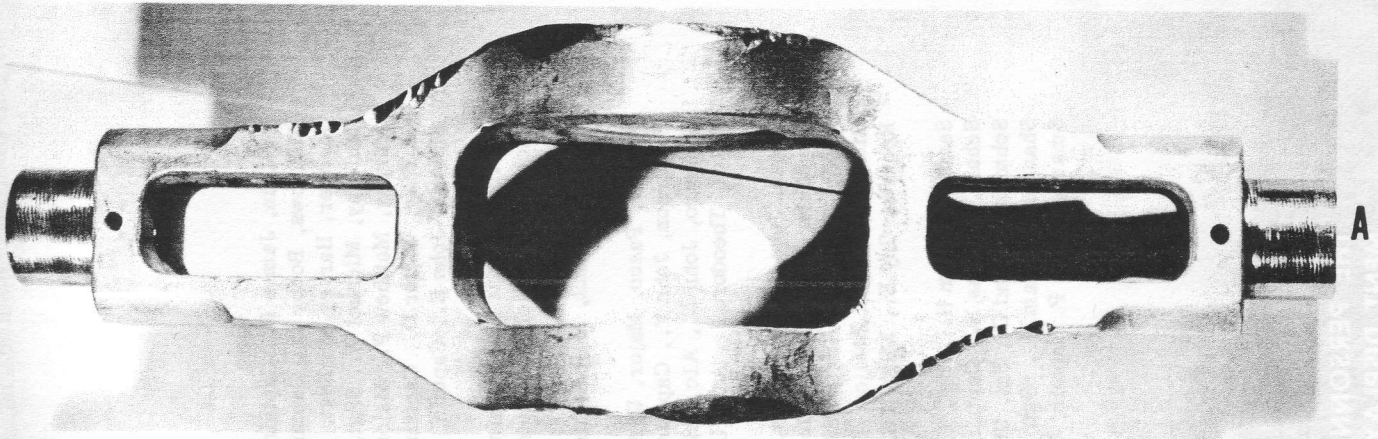
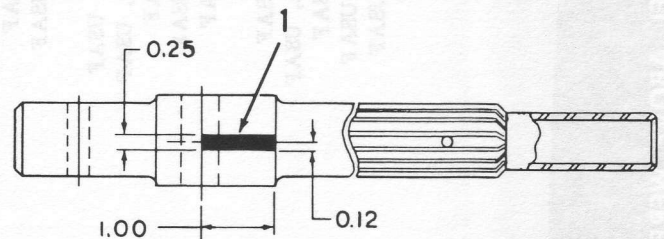
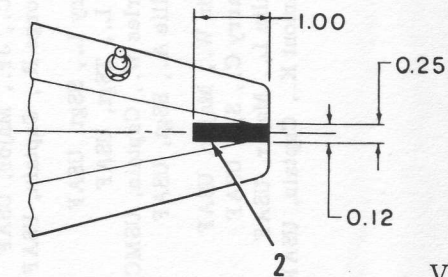


Photo A shows the full view of a K660041 azimuth bar which was recently returned to Kaman. Since overhaul, this bar had accrued 182.2 hours of service. A subsequent investigation resulted in the following conclusions:

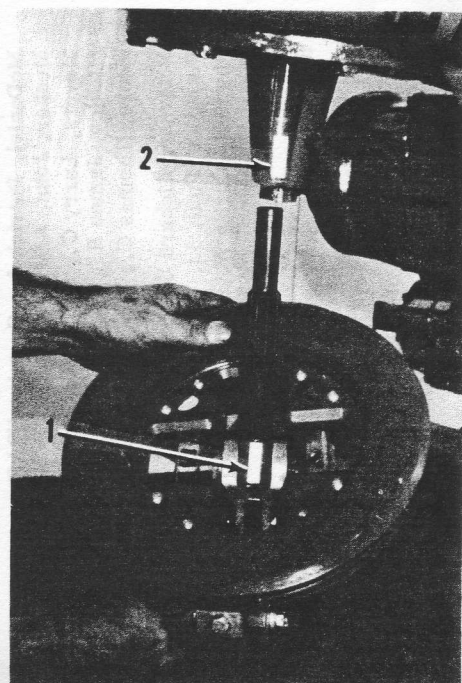
The bar shows heavy peening damage along two opposite edges. The azimuth saddle also shows impact damage and scratches on the edges and corners of the lugs located adjacent to the azimuth bar. Distortion of the azimuth spindle roll-pin, which engages the master spline tooth space in the azimuth support, is fairly conclusive evidence that the crewman given the job of installing the azimuth assembly was not familiar with this installation. Because the roll-pin in the spindle was not aligned with the slot located within the spindle support, full spindle insertion could not be accomplished. The damage indicates the mechanic tried to force the spindle into the support, apparently with the aid of a ball-peen hammer. Actually, when the spindle roll-pin is properly aligned with the slot inside the spindle support, the spindle will slide effortlessly into position within the support. If the parts don't mate, and interference is encountered, **DO NOT USE FORCE**. Instead, withdraw the spindle and re-align the roll-pin with the slot. A recent Kaman drawing change will aid in obtaining correct alignment. The change adds a 1/4-inch wide by 1-inch long white paint stripe on both the azimuth spindle and the spindle support. Detachments may add these stripes by noting the dimensions shown in Views 1 and 2. (Use paint color No. 17875, in accordance with Mil-L-17875.) The stripe on the spindle (item 1) is in line with the roll-pin; the stripe on the spindle support (2) is in line with the master spline located inside the support. Photo B shows an azimuth assembly with the azimuth spindle (1) about to be inserted into the spindle support (2). (Notice the paint stripes at the end of the arrows.) The maintenance handbooks carefully point out that the azimuth should be removed along with the transmission. When this is followed, proper alignment is easily accomplished prior to re-installation of the gearbox as can be seen by Photo B. When the azimuth is removed and re-installed while the gearbox is not disturbed, the spindle must still be properly aligned before full insertion can be accomplished. When in doubt, check the handbook.



VIEW 1



VIEW 2



B

SCROLL OF HONOR

1969

McLain, James E., Captain, USAF
Meadows, Bobby L., Captain, USAF
Meltzer, Harvey A., SSgt, USAF
Mulvany, Michael W., SSgt, USAF
Murphy, Matthew P., Major, USAF
Murphy, Walter D., Captain, USAF
Murray, John E., Captain, USAF

Neville, Ernest L., Captain, USAF
Nicholson, Daniel A., Captain, USAF

Ozcan, Mahmut, Major (Turkish)

Parker, Pasco, Major, USAF
Patterson, John F., Captain, USAF
Pinheiro, John L., Alc, USAF
Polys, Theodore J., Alc, USAF

Regan, John G., Jr., MSGt, USAF
Reynolds, Timothy M., Alc, USAF
Rhody, David D., TSgt, USAF
Ritter, Wayne L., Major, USAF
Roberts, Guy E., MSGt, USAF

Sands, William H., TSgt, USAF
Scharf, Thomas R., Captain, USAF
Schmidt, Roland C., Sgt, USAF
Shannon, William H., SSgt, USAF
Smariga, John P. Captain, USAF

Soderboom, Charles F., SSgt, USAF
Sokol, William D., Lt(jg), USN
Stiefken, Richard C., Alc, USAF
Strayer, Jay M., Major, USAF

Tarantino, James E., Alc, USAF
Thabes, Rudd, Lt, USNR

Veltre, Eugene R., SSgt, USAF

Welch, Robert T, AN, USN
Weller, Lawrence H., Sgt, USAF
Wells, Terry M., Alc, USAF
White, Robert A., Captain, USAF
Wilsbach, Ronald K., Lt(jg), USNR
Wohnick, Charles T., Captain, USAF
Wood, Wendell B., Captain, USAF

Additional awards made in 1969

Acton, John C., Jr., Major, USAF
Andrews, George R., Captain, USAF

Bailey, Jeffery L., SSgt, USAF
Ball, Gordon L., TSgt, USAF
Bowers, Charles W., Captain, USMC
Burchett, Willie A., SSgt, USAF

Capper, Calvin W., Major, USAF
Chalmers, Harry C., Sgt, USAF
Chase, Franklin L., Major, USAF
Churchill, Lamont K., Captain, USAF

Dillmann, Edward C., Captain, USAF
Draper, Merle G., TSgt, USAF
DuChene, Edward A., Major, USAF
Egbert, James P. F., Captain, USAF

Gloeger, Matthew P., Captain, USAF

Henderson, William D., Captain, USAF
Hogan, Walter E., Captain, USAF

Johnson, Steven N., Alc, USAF

Kiefl Michael C., Captain, USAF

Luke, Randy L., Sgt, USAF
Luna, Arthur, Sgt, USAF

McAfee, James L., Captain, USAF
McColl, William, Captain, USAF
McDaniel, Patrick J., Captain, USAF
Meeker, John, ADJ2, USN

Meyers, Larry C., Sgt, USAF
Micklon, James R., SSgt, USAF
Moore, Thomas C., SSgt, USAF

Peterson, Richard U., SSgt, USAF
Petrucka, Paul, Lt, USN
Phythian, Curtis W., SSgt, USAF
Potter, Dale L., Captain, USAF

Ratliff, John C., Alc, USAF

KAMAN AEROSPACE CORPORATION

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