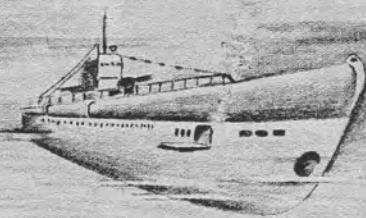


BAG

KAMAN

Rotor Tips



**CHARLES H. KAMAN**

*President—Kaman Corporation*

**JACK G. ANDERSON**

*President—Kaman Aerospace Corporation*

**WILLIAM R. MURRAY**

*Vice President—Test Operations/Customer Service*

**WILLIAM E. ZINS**

*Director of Customer Service*

**ROBERT J. MYER**

*Customer Service Manager*



# Rotor Tips

Volume VI Number 11

## ON THE COVER

Anti-ship missile defense and anti-submarine warfare are the primary missions of the SH-2D, chosen for the Navy's Light Airborne Multi-Purpose System (LAMPS). Secondary roles for the Kaman helicopter will be rescue and utility work. Cover by E. M. Enders, Service Publications.

**EVERETT F. HOFFMAN**

*Editor*

**JOHN P. SERIGNESE**

*Assistant Editor (Technical)*

**BARBARA R. THOMPSON**

*Editorial Assistant*

*Rotor Tips is published by the Customer Service Department, Kaman Aerospace Corporation, Bloomfield, Conn. 06002. The material presented is for informational purposes only and is not to be construed as authority for making changes in aircraft or equipment. This publication DOES NOT in any way supersede operational or maintenance directives set by the Armed Services.*

## FEATURES

H-2's Log 300,000 Hours . . . . .	3
SAVER Readied For Manned Flight . . . . .	10
Airborne Fireman Flies To Work . . . . .	11
LAMPS . . . . .	13
HH-43's Serve Again At McChord . . . . .	15
Navy Makes Friends In Italy . . . . .	21

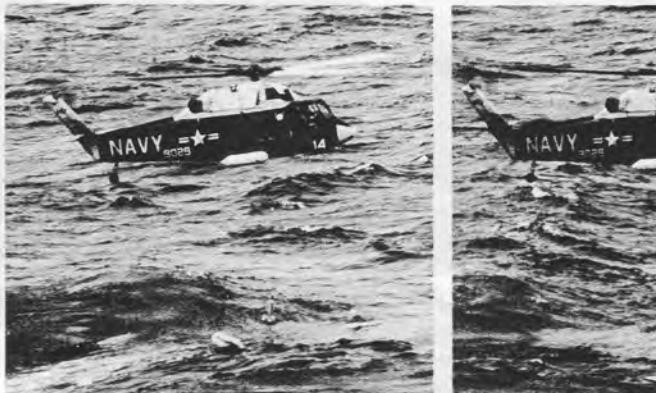
## DEPARTMENTS

SEASPRITE Activities . . . . .	12
Southeast Asia . . . . .	1
HUSKIE Happenings . . . . .	14
Technical Section . . . . .	24
Kaman Service Representatives . . . . .	29



*CREWS RESCUE MORE THAN 400 PILOTS, CREWMEN*

## H-2'S LOG 300,000 HOURS



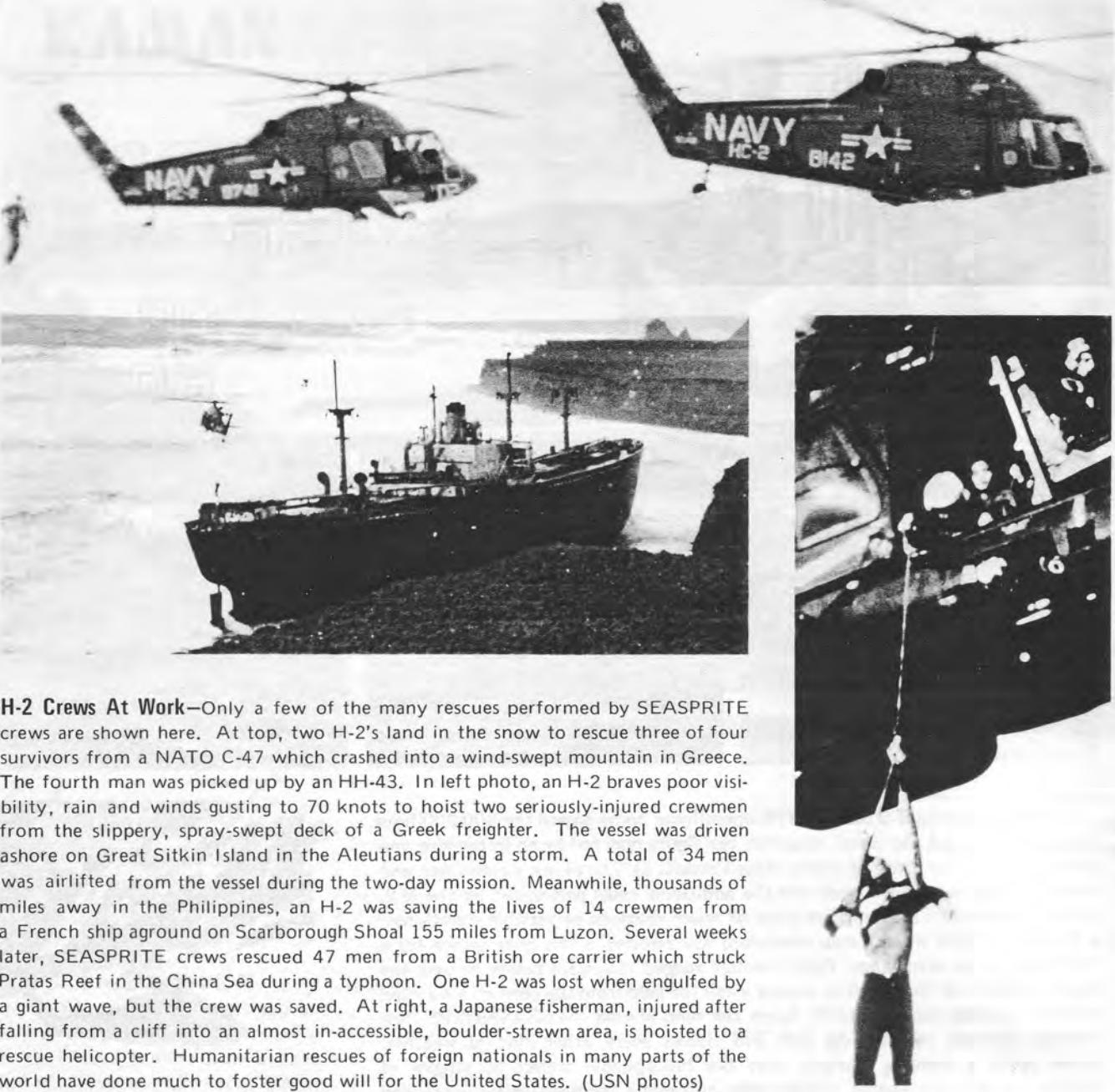
Steadily-mounting H-2 SEASPRITE operational hours passed the 300,000-hour mark recently. To the casual observer, the figure may not be an impressive one when compared to those of many other aircraft, BUT to pilots, aircrewmen and others familiar with SAR work and the additional tasks performed by the H-2, 300,000 represents a cumulative total of many missions of variable durations—a 10-minute flight when a man overboard was rescued, a two-hour search for a lost child, or an even longer flight through rugged mountain passes or over the lonely vastness of the ocean to answer a call for help from the crew of a downed aircraft. During those 300,000 hours the men aboard the SEASPRITES flew missions through storms, fog, rain and almost every other kind of weather. Some spent a seeming eternity over the inhospitable waters or jungles of Vietnam where the enemy waited with automatic weapons, radar-controlled guns and surface-to-air missiles. One H-2 pilot who braved this network of death to rescue two downed pilots at night received the Nation's highest award—the Medal of Honor.

To the professional, hours logged are a matter of interest and milestones like the one just passed by the H-2 should be noted, but it's what was accomplished during that period that actually counts.

While the H-2 has been on duty with the Navy, it is conservatively estimated that 1500 persons have been rescued, evacuated or similarly aided by the helicopter rescue crews. The figure does not include the many others, like flood victims, who received food, medical supplies or other assistance from SEASPRITE crews. The lives of more than 600 military personnel, including well over 400 pilots and

**PHOTOS:** Medal of Honor is presented to H-2 pilot Lt Clyde E. Lassen by then President Lyndon B. Johnson. In a typical plane guard rescue, a SEASPRITE picks up a downed pilot. An H-2 from a land-based SAR unit evacuates a seriously-injured woman from a mountain ledge. Exhausted but alive, a sailor who was rescued from the sea by a SEASPRITE is helped by his companions after return to carrier flight deck. (USN photos)





**H-2 Crews At Work**—Only a few of the many rescues performed by SEASPRITE crews are shown here. At top, two H-2's land in the snow to rescue three of four survivors from a NATO C-47 which crashed into a wind-swept mountain in Greece. The fourth man was picked up by an HH-43. In left photo, an H-2 braves poor visibility, rain and winds gusting to 70 knots to hoist two seriously-injured crewmen from the slippery, spray-swept deck of a Greek freighter. The vessel was driven ashore on Great Sitkin Island in the Aleutians during a storm. A total of 34 men was airlifted from the vessel during the two-day mission. Meanwhile, thousands of miles away in the Philippines, an H-2 was saving the lives of 14 crewmen from a French ship aground on Scarborough Shoal 155 miles from Luzon. Several weeks later, SEASPRITE crews rescued 47 men from a British ore carrier which struck Pratas Reef in the China Sea during a typhoon. One H-2 was lost when engulfed by a giant wave, but the crew was saved. At right, a Japanese fisherman, injured after falling from a cliff into an almost in-accessible, boulder-strewn area, is hoisted to a rescue helicopter. Humanitarian rescues of foreign nationals in many parts of the world have done much to foster good will for the United States. (USN photos)

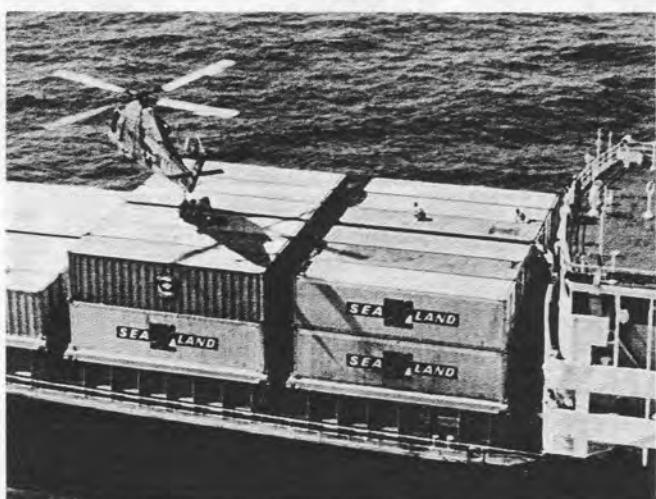
crewmen, have been saved by H-2's. Almost 50 others rescued were ship's personnel, plucked from the sea after they were swept or fell overboard during flight preparation or refueling operations.

Emphasis has been placed on "conservative" because the figures presented here are based on reports submitted as part of the Kaman Award Program. Informal information from other rescue data sources, indicates that a significant number of rescue missions have not been reported for one reason or another.

From the humanitarian aspect it is, of course, impossible to put a price on the lives of those saved by the H-2 crews. Judging by the cost of training alone, however, it can be estimated that SEASPRITE rescues of military personnel represent a saving of \$200 million or more dollars. The expense of training one Naval pilot to fly today's highly-sophisticated aircraft is close to \$500,000. The government has perhaps \$27,000 invested in an aircrewman or other enlisted man who has attended specialized service or other schools. Add to this the additional training which a senior pilot or petty officer has received during his years in service, plus the experience and additional knowledge gained during that time.



**Heroic Mission Portrayed**—An artist was commissioned by Kaman Aerospace to depict the hazardous night mission for which H-2 pilot Lt Clyde E. Lassen received the Medal of Honor. The H-2 pilot and his crew landed three times while under enemy fire in order to rescue two downed F-4 pilots. The SEASPRITE copilot, Lt(jg) Clarence L. Cook, was awarded the Navy Cross and Silver Stars were presented to the crewmen, AE2 Bruce B. Dallas and ADJ3 Donald West.



**Life-Saving Flights**—In top photos, an H-2 heads toward the USS Forrestal after the carrier caught fire. Explosions aboard the ship repeatedly rocked the helicopter as it began picking up survivors who had been blown overboard or jumped from the burning ship. An H-2 lands in the snow to rescue the crew of a Marine aircraft which crashed in the mountains. Middle photos, a seriously-burned seaman is taken from the SS Afoundia, 130 miles from Puerto Rico, by a SEASPRITE crew. Photograph taken under combat conditions shows typical South China Sea rescue being carried out by SEASPRITE crew. Bottom photos are representative of the many award ceremonies in which H-2 crew members have been honored for rescue missions in the combat area. At left, RAdm Edward C. Outlaw presents the Distinguished Flying Cross to Lt Louis E. Thomassy and the Navy Commendation Medal with Combat "V" to PRC George R. Gowen. At right, AT1 (AC) Anthony C. Hanson is presented the Navy Cross by RAdm C. A. Karaberis. (USN photos)

Obviously, it is also impossible to place a monetary value on the morale factor in which the H-2 operation plays such an important part. Ship's personnel in general, and aircrews in particular, are very much aware that if they find themselves in the sea, the "Fleet Angels" are ever alert to rescue them. No where has this morale factor been more evident than in operations in Southeast Asia where a total of 127 Navy and Marine pilots and 31 aircrewmen were saved by the H-2's while operating under combat conditions. Not only Navy and Marine aircrews, but those from other services and countries know of the selfless dedication shown by H-2 crews in rescuing downed airmen from the Gulf of Tonkin and the Vietnamese jungles.

While rescue and medevacs have played a prominent part

during the 300,000 hours logged by the SEASPRITES, the many utilitarian tasks carried out by the helicopter crews cannot be overlooked. The helicopters have engaged in vertical replenishment operations which included everything from ammunition to ice cream. Mail delivery and similar but highly important tasks are performed daily. Also commonplace is personnel transfer which includes, as routine, flights for sea-going chaplains holding services on several ships every Sunday. Transportation of personnel also included many high-ranking officers and other "VIP's" as well as white hatted liberty parties and USO shows.

The men who operate the SEASPRITE and its equipment have chalked up a proud record during fleet operations to date. The photographs shown here are representative of their numerous accomplishments.





**Versatility**—When not rescuing people, H-2 crews have put the helicopter to a great many other uses. Some of the usual—and unusual are shown on these pages. All involve use of the rescue hoist or helicopter's cargo hook. During the 300,000 hours accumulated by the SEASPRITES, thousands of personnel have been transferred from ship to ship, ship to shore or vice-versa. Such a transfer is shown in the top left photo, opposite page. Below it, a Marine takes an unusual way to leave the helicopter and rappels to the carrier deck.

Perhaps one of the most unusual passengers ever carried on an H-2 hoist is the "witch" shown in the bottom photo. The spooky fly-by was part of the entertainment at a Naval Air Station. SEASPRITE rescue activities don't stop with people, as shown in the middle photograph. The airlift method was used after the horse became mired in the mud. The SEASPRITE was also called upon for other work involving animals. In top right photo, an H-2 airlifts a caribou to the top of Mount Katahdin in Maine. Twenty-four animals, brought down by truck from Canada as part of a restocking program, were airlifted on the final stage of the trip.

In the next photograph H-2 crews transport a large World

War II water barrel which had been converted into an emergency shelter for Alaskan out-doorsmen. Bottom right, dressed in G. I. fatigues, ubiquitous Martha Raye is lowered from a SEASPRITE to a carrier deck.

On this page, top left, an H-2 crewman is sworn in during an unusual reenlistment ceremony. In photograph below, SEASPRITE delivers one of the most important things in the life of any serviceman—MAIL. At right are shown typical vertical replenishment operations. Top photo is unusual, however, in that it is believed to be the first airlift of its kind in the Pacific. For approximately six hours, three H-2's shuttled between the aircraft carriers USS Ticonderoga and USS Constellation. A total of 241 persons and over 30,000 pounds of cargo were transferred during 75 sorties which were interrupted only by sporadic air operations from the carriers.

During a recent two-month period, a detachment deployed aboard the USS LaSalle amassed a total of 134 flight hours, transported 628 passengers (which included three medevacs and nine emergency leave cases) and lifted 18,649 pounds of mail cargo. H-2 crews also made 351 shipboard safe landings and 150 hoist transfers. Overall helicopter availability was 90 percent. (USN photos)



**Many Landings, Many Vessels**—While performing their numerous duties, H-2 crews have made thousands of landings on aircraft carriers, guided missile frigates, amphibious transports and many other type vessels. For medevacs, SEASPRITES have hovered over numerous craft ranging from small fishing vessels to submarines. In left bottom

photo, H-2 crews bring aid to flood victims in the friendly neighboring country of Mexico. The Navy frequently engages in such goodwill activities. On right, a SEASPRITE proves much less friendly with another "neighbor," in the Mediterranean, and blocks a Russian helicopter from taking photographs of the Sixth Fleet. (USN photos)



**Team Effort**—SEASPRITE crews have teamed up with the members of the other Services to carry out missions. At left, H-2 and H-43 crews are shown after saving two Marines who parachuted from their crippled F-4 into the South China Sea. Simultaneous hoist pickups were made. A year earlier, a SEASPRITE and HUSKIE rescued the occupants of a civilian plane which crashed in a swamp. H-2 crews have also worked closely with the Coast Guard, not only on rescues, but during arctic and antarctic cruises. The Coast Guard icebreaker Edisto and a SEASPRITE are shown during a typical channel-clearing operation. The helicopter flies reconnaissance for the ship. (USN photos)



**Survivors**—Representative of the more than 1500 persons saved or otherwise aided by H-2 crews are: Top row, left to right, a sailor blown over the side of a carrier by a jet blast (see other USN photo on page three); a three-year-old lost boy, found asleep a few feet away from a deep lagoon; a Marine pilot rescued after his A-4 "Skyhawk" plunged into the sea. Bottom row, a Navy crewman and pilot saved after they ejected over water from a crippled A-3. A Greek fisherman, whose craft was reported overdue, located and airlifted from a small island. (USN photos)

## SAVER AERCAB BEING READIED FOR MANNED FLIGHT

By Justin Barzda, Program Manager



**SAVER**—Soon to be manned

Experimental feasibility demonstration of the Kaman SAVER\* (Stowable Aircrew Vehicle Escape Rotoseat\*) Aercab (advance escape/rescue capability) is entering a new phase—manned flight in the autogyro mode—following successful wind tunnel test demonstration.

Aercab, as a possible successor to the ejection seat for combat aircraft, is being designed to provide independent controllable flight for 30 minutes after ejection to minimize capture of a crewman by enemy in combat environs, improve chances for safe rescue and reduce hazards to the rescue team. Several Aercab candidate concepts, including SAVER, are being evaluated by the U. S. Navy and Air Force in funded programs. Eventually, one will be selected for development to operational status.

SAVER has completed initial feasibility demonstration tests successfully. These were conducted in the 40 x 80-foot wind tunnel at NASA Ames Research Center, Moffett Field, Calif., last fall. The tests included dynamic deployments and decelerator mode runs of the rotor alone, extraction of the rotor from its behind-the-seat stowage and deployment on the seat/airframe, transition from the post ejection configuration to the autogyro mode, and steady state operation of SAVER in the autogyro mode. The rotor was tested at wind tunnel speeds up to 180 knots, deployments performed at 160 knots, and SAVER operated in the autogyro mode to 110 knots.

\*Registered with MAA for exclusive use

Aerodynamic and stability data for stability and control analysis were obtained in subsequent wind tunnel tests in the Navy Ships Research and Development Center's 8 x 10-foot facility at Carderock, Md. Test data and results indicate that SAVER should meet or exceed theoretical performance estimates.

Autogyro mode flights with a manned, powered flight test vehicle are planned next. The model used in the full-scale wind tunnel is being modified and man-rated for this phase. Manual flight controls, a small turbofan engine, landing gear for takeoff and landings, and flight test instrumentation will be installed. The rotor will be qualified for flight by ground mobile truck tests. Fifty mile per hour endurance runs on a speedway oval are being planned. Target date for first flight is autumn of 1971.

SAVER is a compact autogyro which folds and stows in the aircraft cockpit to serve as the crewman's seat during normal operation. In an emergency, SAVER ejects with the crewman and automatically converts to the flight vehicle. All events from the ejection through conversion and autogyro flight will be automatic. The crewman has to only pull the ejection initiator control. In flight, he may override the automatic flight control if he so desires.

SAVER is designed to provide 30 minutes of flight at 100 knots cruise at 3000 feet altitude. Sea level rate-of-climb will be 940 feet per minute. At the end of flight, the crewman will be separated from SAVER and brought down by parachute. An alternate mode of parachute escape/recovery is incorporated for low altitude, low velocity escapes, thereby retaining current aircraft escape/recovery capabilities. The parachute mode recovery is also automatic.

The distinguishing feature of SAVER is its stowable, deployable rotor lift system. The rotor can be deployed over a wide range of speeds and altitudes, has a precise positive deployment/spin-up cycle with modulated build up of deceleration/lift force, is an efficient lift system, and is difficult to spot visually from the ground.

SAVER is being investigated and evaluated under a contract from the U. S. Naval Air Development Center, Warminster, Pa.

### Det 14 Saves Life Of Vietnam Pilot's Wife

It was after midnight when the wing commander at Vance AFB, Okla., received an urgent telephone call from Reverend Galloway in the town of Jet. The tiny community was isolated by a severe snowstorm which had swept across the northwestern part of the state, blocking roads with 15-foot drifts...Mrs. Pam Quinn, wife of W. O. Marvin Quinn, an Army Cobra pilot serving in Vietnam, was in labor...Jet had no physician and the nearest hospital was 20 miles away...Would the Air Force help?

In response, Maj Robert C. Collom and his crew from Det 14, 43rd ARRSq, took off from the base shortly after 1 a.m. and headed their HH-43 toward the snow-covered town 26 miles away. Other members of the HUSKIE crew were the copilot, Capt Robert E. Karaffa, crew chief, SSgt Maurice W. Willner, and a flight surgeon, LtCol Charles P. Kirkland (MC).

It was considered too dangerous to attempt a night landing in the fresh snow near Mrs. Quinn's home, so Major

Collom elected to land in a football field a half-mile away. Meanwhile, the woman had been placed in a pickup truck by her neighbors and a tractor was used to drag the vehicle through the snowdrifts to the field. The rescue helicopter landed without incident and Mrs. Quinn was placed aboard.

As the HH-43 headed through the wintry sky toward Vance, LtColonel Kirkland did all he could to help relieve the woman's suffering—she was in advanced labor and due to deliver at any time. The baby did not arrive, however, until the patient was safely in the hospital, then, 37 minutes later, seven-and-a-half pound Staci Quinn was born.

Afterward, the flight surgeon said that, in view of the abnormal presentation obstructing delivery, toxemia, and other complications in labor and delivery—and the absence of skilled medical personnel and facilities at Jet—Mrs. Quinn and/or her child had both been in grave danger of death. This mission was definitely a "save," LtColonel Kirkland said.

## AIRBORNE FIREMAN FLIES TO 'WORK' IN HH-43

Story by SSgt Roger A. Crescentini

USAF photo by SSgt Randy Kersey

UBON RTAFB, Thailand—Everybody knows that most firemen ride big, red fire trucks, don rubber boots and rain coats and wield hooks and axes atop long ladders to rescue fire disaster victims from second-story windows.

At Ubon, there are a few additional duties for firemen attached to Det 3, 38th ARRSq. Sgt Fred L. Jessee, on a rotational assignment from the fire protection branch of the 8th Civil Engineering Squadron, flies to his work. The nine-year service veteran lists his main duty with the detachment as maintaining the 1,000-pound fire suppression kit lifted by the unit's HH-43B helicopters. The kit, or "bottle," as it is called by the unit members, is filled with five gallons of fire foam and more than 50 gallons of water. Sergeant Jessee must see to it that the equipment is in constant readiness, but most importantly, that he is primed to handle any situation.

"You have to know an awful lot about the different types of aircraft in use by the wing," he said, "and the ordnance they normally carry."

"Each type of ordnance has a different time factor involved until detonation when it is engulfed in fire...knowing how long you have before a bomb goes off can mean the difference in saving an aircrew member and getting into a big mess."

Once a fireman or other rescuer reaches the cockpit of a downed aircraft, he must know how to release or pry off the canopy to get to the crew members. He must also know what switches inside control environmental systems, such as the oxygen supply, and also know where the master and "safe" switches are in the aircraft.

During an emergency, Pedro members "scramble" into action. Sergeant Jessee and another fireman, plus medical technicians and other rescue specialists speedily board their alert aircraft, hook up to a fire suppression kit, and head toward the crash site. Many times, the chopper is in the air, hovering over the base in full readiness, "just in case."

According to Sergeant Jessee, its always better to just "take a ride and come back..."

(A mission in which Sergeant Jessee participated is described in the right column.)



Sergeant Jessee With FSK

Disregarding detonating ordnance in the immediate area, an HH-43 crew landed in a rice paddy and picked up the survivor of a fighter crash. The mission began only 13 minutes earlier at Ubon RTAFB, Thailand, when the Pedro crew from Det 3, 38th ARRSq (MAC), scrambled in the early morning darkness.

As the helicopter was waiting for a position report from the battle-damaged aircraft which had declared an emergency, it plunged to the ground eight miles from the base. Capt John M. Higbie immediately headed the HH-43 toward the red glow which lit the sky to the northeast of the airfield.

Halfway to the crash site radio contact was established with the downed "backseater," but locating the survivor was difficult. At an altitude of 200 feet the ground could not be seen since there was no reflected light because of the overcast, and the floodlights were not effective due to the haze. Through vectoring by the survivor, his position was estimated and Captain Higbie decided to land in a nearby rice paddy that had been spotted with the landing light. The pickup was then made without incident despite the nearby explosions. Afterward, the HH-43 conducted a search for the missing "frontseater" until low fuel made it necessary to return to base.

Others manning the Pedro were Capt Samuel L. Ferguson, copilot; SSgt Richard C. Fonner, helicopter mechanic; Sgt Jack W. Demler, medical technician; SSgt Blake C. Dow and Sgt Fred L. Jessee, firefighters.

### Major Vurbuff Logs 3000 Hours



Maj Theodore C. Vurbuff recently became the second pilot in the U. S. Air Force to log 3,000 hours in an HH-43 HUSKIE. The Major, a pilot attached to Det 10, 43rd ARRSq, Laredo AFB, Texas, passed the career milestone on March 9th. He will be presented a "3000-hour" plaque by Kaman Aerospace in recognition of his accomplishment. Major Vurbuff qualified in the HH-43 in 1959 and was among the first USAF pilots to do so.

Major Vurbuff is shown at the controls of "Pedro 01," a Det 10 HH-43B, 15 days after he hit the 3,000 hour mark. It was a routine flight except for one thing—the helicopter (58-1846) logged its 3,000th hour that day.

Recipient of the first 3,000-hour plaque was Maj Bert E. Cowden. Pilots logging 1,000 hours and 3,000 hours in Kaman produced helicopters are awarded plaques by the company. "Special" 2,000-hour plaques were presented to the first Air Force and first Navy pilot to log that number of hours. Major Cowden received one plaque while Lt Charles Kisieljack, an H-2 pilot, was awarded the other. The third, and last 2,000-hour award will be presented to the first Marine pilot to hit the magic number.



## SEASPRITE ACTIVITIES

### HC-2 Rescues Small Boy

A nine-year-old boy who "slipped into the rescue sling like he'd been trained," was hoisted from a stranded boat to an HH-2D from HC-2, NAS Lakehurst, N. J. Young Larry Coots was spotted by the SEASPRITE crew after a five-minute search which began when a local resident saw the small craft in Barnegat Bay and realized it was in trouble. He called police and then HC-2. The squadron, and HC-4, both had helicopters operating in the area. They began an immediate search.

The small boy's adventure began when he and two young companions went for a boat ride. The craft became stranded near a buoy in Glen Cove. The boys with Larry jumped over the side and swam to the safety of a nearby island.

Manning the HH-2D were Lt(jg) Steve Kornacki and Lt Larry E. Crume, pilots; and ATN3 Kenneth Jones and ADJ3 David Dicataldo, aircrewmen. They said afterward the boy had no trouble getting into the sling and the hoisting operation was carried out without incident. Larry's primary concern, they said, was whether he was "in trouble" and "how much is the helicopter ride going to cost."

### Man Overboard Rescued By Det 67

A sailor who fell overboard was rescued soon afterward by an HH-2D crew from HC-2's Det 67 which is deployed aboard the USS J. F. Kennedy. Manning the SEASPRITE were Lt(jg) M. J. Casella, pilot; LCdr D. T. McCloskey, copilot; ADJ3 J. H. Helfenbein, 1st crewman; ADJ3 L. E. Stark, second crewman.

### Det 41 Saves Italian Infant

An infant, seriously-ill with bronchial pneumonia, was evacuated from the Italian island of Ponza by a UH-2 crew from HC-4's Det 41 deployed aboard the USS Springfield.

Lt Louis Campana and his crew responded after the

Sixth Fleet received a plea for assistance from Lt A. Lisetti, commander of the Formia Carabinieri Company. He was on a tour of the Carabinieri station on Ponza, off the western coast of Italy, when he was informed of the baby's serious illness.

The SEASPRITE landed on a city street, picked up the tiny patient and its parents and delivered them to a waiting ambulance on the Italian mainland 36 miles away. Flying copilot on the mission was Lt(jg) Joe Kavale and AE1 Ron Andrus was crewman.

### Det 42 Joins In Man Overboard Search

An HH-2D crew from Det 42 aboard the USS F. D. Roosevelt responded as soon as word was received that a man had fallen overboard. LCdr William A. Stennett and his crew were seven miles from the carrier and transferring personnel to a destroyer at the time. The man in the sling was immediately hoisted back aboard the SEASPRITE and the rescue helicopter headed at maximum speed for the scene of the emergency. The crew rigged for rescue on the way and AMCS August J. Lange, second crewman, prepared to enter the water if necessary.

The helicopter joined the plane guard destroyer in the area and began a "creeping line" search, based on the wake and course of the carrier. It extended about a mile on either side of the ship's wake and five miles astern of the ship. Soon afterward, two more destroyers began a line-abreast search down the wake of the carrier.

The HH-2D continued flying a pattern over the area until low on fuel, then returned to the carrier, refueled, and began searching again through rain showers and gathering darkness. Finally, the SEASPRITE returned to the Roosevelt.

Despite the all-out effort of the H-2 and destroyer crews, no trace of the man was found during the three-hour search.



**Honored By KAC**—Kaman Awards for life-saving rescues were presented recently to six members of H-2 crews from HC-2, NAS Lakehurst, N. J. Left to right are, LCdr L. B. Beck, Lt(jg) K. A. Sorensen, Lt(jg) T. W. Black, Lt W. D. Sokel, Cdr D. J. Hoyes, squadron commander; Mr. Ed Noe, KAC technical representative; Lt D. E. Heiter, and AMS3 J. E. Cook. (USN photo by PH2 C. Perisse)

# LAMPS



**HH-2D Displayed For Pentagon**—RAdm Ralph Weymouth, director of Navy Program Planning, inspects an HH-2D from HC-4 during recent display at the Pentagon Heliport. On hand to answer questions for the Admiral and his staff during the day-long event were HC-4 pilots LCdr Robert Breitenbach, facing camera, and Lt John Wright, foreground ADJ2 William Griffith was crewman of the HH-2D. The admiral and his staff members asked a series of questions, all relating to the helicopter's mission as a LAMPS (Light Airborne Multi-Purpose System) vehicle. When modified for this purpose, the HH-2D designation is changed to SH-2D. Kaman Aerospace recently received a contract to modify 10 of its HH-2D's into SH-2D LAMPS helicopters. Because of the importance of LAMPS and the air vehicle to be used with it, the HH-2D was sent to Washington and made available for orientation and indoctrination flights of Naval officers and other personnel concerned with the program. An article regarding the first LAMPS detachment to operate with the Atlantic Fleet appears below. (USN photo by Lt R. J. Haggerton)

## HC-4's FIRST LAMPS DETACHMENT RETURNS TO LAKEHURST

**LAKEHURST, N. J.**—The first of HC-4's LAMPS (Light Airborne Multi-Purpose System) detachments to operate with the U. S. Atlantic Fleet recently returned to the Naval Air Station, Lakehurst, N. J., after a three week period of at-sea trials aboard the USS BELKNAP (DLG-26).

Det 26 was tasked with proving the LAMPS theory of ASW (Anti-Submarine Warfare) tactics. The 19-man, two-plane detachment did just that. Flying both day and night, Det 26 paved the way for the deployment of future LAMPS-configured helicopter detachments. The officer-in-charge, veteran pilot Lt Dave Sage, was backed up by four officers and 14 enlisted men, representing some of the most talented and experienced men in the squadron. Assisting detachment personnel were numerous engineers from NADC Warminster, Pa., a technical representative attached to Kaman Aerospace Corporation, and representatives from several electronic companies.

The air vehicle for the trial sessions was the HH-2D, manufactured by Kaman. Introduced to the Fleet last fall, the twin-engine "SEASPRITES" were equipped with the latest sophisticated ASW gear. In this configuration, the helicopter expands the localization, classification and destruction capabilities of its parent ship to a considerable distance. DLG-class guided missile frigates will initially carry the SH-2D aircraft. Present plans call for LAMPS-configured helicopters to be eventually deployed aboard numerous other ships of the Fleet.

HC-4 has traditionally been responsible for a wide variety of missions and has acquired an enviable reputation for outstanding service to the Fleet. As the first of the squadron's LAMPS detachments, Det 26's performance was likewise "outstanding." Working and operating conditions were demanding. Flying from the small flight deck of a des-

troyer for extended periods is a challenge to the most seasoned pilots and crewmen. Det 26's participation in these ASW operations was rewarded with a great deal of success and much praise from the operational commander. The crew derived a great deal of personal satisfaction from the successful accomplishment of their mission.

Cdr E. W. Hille, commanding officer of HC-4 at the time, commenting on Det 26's performance stated, "I knew the entire crew was well prepared and very capable, but the great degree of success was even more than I had expected. It is a source of pride for the entire command."

LCdr Thomas E. Gillen, a UH-2 pilot from HC-2, NAS Lakehurst, N. J., was honored by the Spanish Government recently for rescuing the crew of a Spanish Air Force plane which ditched at sea last year. The Order of Aeronautical Merit, Second Class, was presented to LtCommander Gillen by the commanding officer of HC-2, Cdr Donald J. Hoyes. The medal, second highest aviation award, is normally awarded only to generals of the Spanish Government and other high-ranking dignitaries of ambassadorial rank or higher.

LtCommander Gillen and his crew were attached to HC-2's Det 38 and deployed aboard the USS Shangri-la when the rescue mission occurred. The SEASPRITE was vectored to the crash scene by an airborne early warning aircraft, and picked up four men from a rubber life raft. ADJ3 S. E. Lebreton leaped from the UH-2 to aid a fifth survivor, floating face down in the water. Other members of the helicopter crew were Lt(jg) James Beaird and AME2 J. O. Osburn.

# HUSKIE HAPPENINGS



Colonel Ferrato

Colonel Gordon

## CHANGE OF COMMAND

### FOR 42nd ARRSQ



Colonel Potter

Col Theodore P. Ferrato, commander of the 42nd ARRSq, Hamilton AFB, Calif., was decorated recently with the Bronze Star for meritorious service while serving as Air Force liaison officer on the staff of the Commander Seventh Fleet in connection with combat operations. He was presented the Navy's honor by Col L. N. Gordon, 39th ARRWg commander, during ceremonies at the Wing Commander's Conference at Richards-Gebaur AFB, Mo.

Colonel Ferrato, who recently succeeded Col Thomas K. Potter, Jr., as commander of the 42nd ARRSq, was responsible for liaison with Air Force commands in the Western Pacific area from July 1968 to May 1970.

The citation accompanying the award, read in part, "In this capacity, he kept the Commander Seventh Fleet informed of U. S. Air Force plans and operational situations. Additionally, in his role as Assistant Plans Officer, he reviewed all U. S. Air Force plans and kept them current, and was responsible for search and rescue, escape and evasion, and air logistics matters."

Prior to his Southeast Asia tour, Colonel Ferrato was Assistant Director of Operations at Andrews AFB, Md.

---

Col Thomas K. Potter, Jr., for more than 2-1/2 years commander of the 42nd ARRSq and its predecessor, the Western Aerospace Rescue and Recovery Center, retired at Hamilton AFB, March 1, 1971.

In a brief retreat ceremony attended by family, friends and Air Force associates, Colonel Potter was presented a second Oak Leaf Cluster to the Legion of Merit by Col Saleem Aswad, ARRS vice commander. Among the distinguished guests attending the ceremony were Colonel Gordon, Col Lee A. Sarter, Jr., commander, 4661 Air Base Group, Hamilton AFB, and Colonel Ferrato.

During Colonel Potter's tenure, the 42nd ARRSq, its

Western Rescue Coordination Center and its 10 helicopter detachments were responsible for some 650 civil and military search and rescue missions throughout the western states, resulting in 112 lives saved and 1936 distressed persons assisted.

In his 28 years of Army Air Corps and U. S. Air Force service, Colonel Potter has held assignments with the British Royal Air Force, Headquarters USAF, the Southeast Asia Treaty Organization in Bangkok, Thailand, the Joint Chiefs of Staff and headquarters and operating units of the Military Airlift Command. A command pilot with 4600 flying hours, he holds the Legion of Merit with two Oak Leaf Clusters; the Air Force Commendation Medal with Oak Leaf Cluster, and three Air Force Outstanding Unit Awards, along with World War II campaign medals.

### Det 15 MAST Mission Saves Two

Det 15 of the 42nd ARRSq at Luke AFB, Ariz. was credited with two saves in a MAST (Military Assistance for Safety in Traffic) mission recently.

A detachment HH-43 was scrambled to the site of an auto accident on Highway 80, 40 miles west of Gila Bend at 3 p.m. There were five injured persons at the accident scene, including two who needed medical attention as quickly as possible. The helicopter took the seriously injured victims to the Good Samaritan Hospital at Phoenix, where a doctor stated that if they had not been airlifted to the hospital, they probably would not have survived.

The helicopter flew to the hospital in 50 minutes, about one half the time it would have taken an ambulance. Members of the Arizona Highway Patrol stayed with the three less seriously injured victims until they were transported to the hospital by ambulance. Crewmembers from Det 15 were Maj Ralph L. Gaede, Maj Donald J. Waterman, SSgt Jessie C. Spruill and TSgt Gregory F. Sutherland.

## HH-43's SERVE AGAIN AT MCCHORD



**HH-43's Return—HH-43F HUSKIE**  
helicopters from McChord's newest  
flying unit, Det 7, 42nd ARRSq,  
make their first landing at McChord  
AFB after arriving from George  
AFB, Calif. (USAF photos by  
Sgt Carl Reed)

MCCHORD AFB, Wash.—Two small but versatile helicopters landed here March 31 marking the return of a Military Airlift Command Aerospace Rescue and Recovery Service (ARRS) detachment after a two-year absence.

Det 7, 42nd ARRSq, flying two HH-43F HUSKIES, will provide rescue and firefighting capability in response to aircraft emergencies. The HUSKIES left George AFB, Calif., March 26 and whirled up the West Coast to their new home in 14.1 flying hours.

The unit's prime mission will be supporting the 318th Fighter Interceptor Squadron's jet engined F-106 Delta Darts assigned here, and transient fighters. It will also be available to perform public service search and rescue work in the Pacific Northwest area.

Flying in the lead bird was a crew on loan from the 42nd ARRSq, George AFB. Crew members were: Capt Douglas A. Brosveen, pilot; Capt Howard A. Randall, copilot; SSgt Edwin Simonson, helicopter mechanic. Bringing in the second helicopter was the McChord detachment's first crew: Capt John S. Bouchard, pilot; Capt William R. Patterson, copilot; and MSgt Einar P. Moen, mechanic.

Det 7 will be eventually staffed by four officers and 11 enlisted men, Captain Patterson said. A normal crew on local crash missions is two pilots, two firemen and a medical technician. When searching for lost persons, the captain added, a crew chief replaces the need for two firefighters.

"We intend to become fully operational," Captain Bouchard said, "as soon as we fully train the McChord firemen and med techs who will be accompanying us on missions."

Carrying its five man crew, the HH-43 can deliver a 1,000 pound fire-suppression kit to a crash scene within minutes. The kit, attached to a cargo hook under the cabin, is automatically released at touchdown near the crash. As the rescue team exits the HUSKIE, the pilot maneuvers the helicopter in a hover above the flames. Its powerful rotor downwash fans back the flames to open a path for the team's entry to and exit from the aircraft. Foam from the fire-suppression kit is used to keep the path open and prevent flashback flames. The rotor's downwash also supplies life-giving fresh air to the rescue team and crash victims.

Det 7 is one of 120 ARRS units on nearly 100 bases around the world. Since ARRS's origin in March 1946, it has saved the lives of more than 22,000 in combat, accidents and civil disasters.

The detachment's camouflaged twin rotor HH-43s are 25 feet long and 12 feet 7 inches high. Its rotor diameter of 47 feet helps to whip up the helicopter to a regulated top speed of 105 knots.



Det 7 has the dual distinction of being the northern-most detachment in the United States and the only U. S. detachment currently having two F-model HUSKIES. The F-model has a more powerful engine than the HH-43B models.

HH-43s were last used at McChord in April 1969. They were then assigned to Det 5, Western Air Rescue and Recovery Center (since redesignated the 42nd ARRSq).

### Consolidation Saves Quarter Million

Det 13, 40th ARRWg, Spangdahlem AB, Germany, was officially deactivated on 15 October 1970. The deactivation came about as a result of Operation Cold Crow, the LBR consolidation test which determined that it was more feasible to have one three-helicopter LBR unit located at Bitburg, rather than separate LBR units at both Bitburg and Spangdahlem. Thus, Det 8 at Bitburg AB now uses three HH-43 HUSKIES to provide LBR coverage at both bases.

First year savings realized by consolidating the two units is expected to be over \$366,000. The savings comes from the reduction of one HH-43, associated equipment, one maintenance superintendent, one aircraft mechanic, one jet engine mechanic, and one administrative clerk. The additional HH-43 was transferred to Det 18, 42nd ARRSq, Webb AFB, Texas.

The history of Det 13 began when it was the LBR unit within the 67th ARRSq at Moron AB, Spain, during 1966-69. The unit was officially designated Det 13 on March 7, 1969, and then relocated from Moron to Spangdahlem during June of the same year. (*continued on page 20*)

### 2000 HOURS

The name of Maj John H. Denham has been added to the growing list of pilots who have logged 2,000 hours in the HH-43. Major Denham is attached to Det 4, 40th ARRWg, Ramstein AB, Germany.

# Southeast Asia



## A MIGHTY LITTLE BIRD WITH A MIGHTY BIG JOB

PHAN RANG AB, Republic of Vietnam (7AF)—The aircraft is small in size compared to the giant C-5 Galaxy or C-141 Starlifter transports of the U. S. Air Force. It does not compare to the F-4 Phantom jet fighter in speed or range and unlike the F-111 it carries no sophisticated weapons systems.

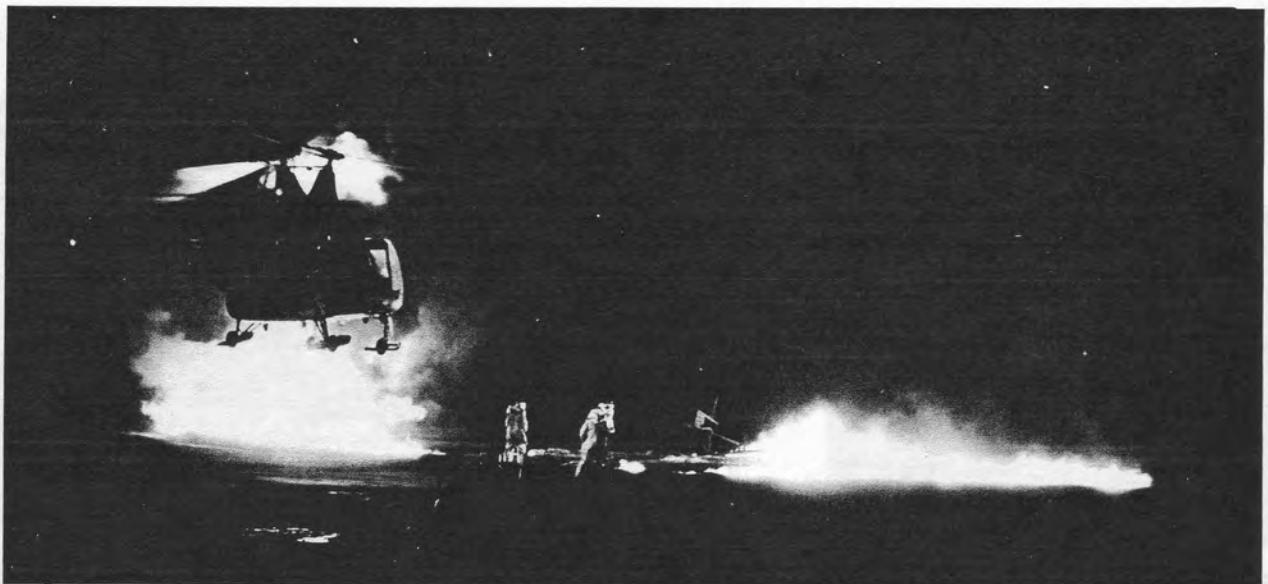
It has a simple name—Pedro—it's a helicopter and its mission is to save lives. It is flown by the aircrews of Det 1, 38th ARRSq here, who are on alert 24 hours daily, ready to scramble their twin-rotor life-saver to respond to any trouble call from a disabled aircraft or one that has an unsafe condition.

Capt Mike H. Nelson is a Pedro aircraft commander and a veteran of both base and regional aircrew rescue missions. He said "We may receive our scramble call from the Phan Rang AB, near Saigon. From the initial call we can plan our mission's needs and be airborne in a very short time and, depending on the mission requirements, we may or may not be needed. But if it is decided that we are needed in the rescue, we'll be there, and we'll use any system at our disposal to help."

Primarily commissioned as an airborne firefighter, Pedro, a Kaman HH-43 HUSKIE helicopter, doubles its role in Southeast Asia as an evacuation and rescue helicopter. The specially modified Pedros on duty here have increased range and speed and use a 200-foot cable for rescuing downed airmen from tropical jungles. The helicopter will airlift a team of two aerial firefighters and a medic to the scene of an aircraft crash. The firemen use a fire suppression kit which is slung underneath the aircraft. The kit includes a foam dispenser capable of discharging 850 pounds of foam, enough to clear a path for the evacuation of a downed crew, with the aid of the downwash from the helicopter's twin rotor blades.

**Fire Suppression Mission**—Day and night photographs show HH-43 delivering fire suppression kit to simulated crash scene and its use by aerial firefighters as described in the text. (USAF photos by Amn Randy W. Day. Top photo page 11 by Sgt Edward T. Rollins)







**Training**—In top left photo, HH-43 crew uses a rescue basket during a practice mission. The device may be used for land or sea pickups and also as an auxiliary stretcher. In right photos, Det 1 crew practices hookups with simulated fire suppression kit; HH-43 "Pedro" takes aboard a simulated survivor. (USAF photos by Amn Randy W. Day)

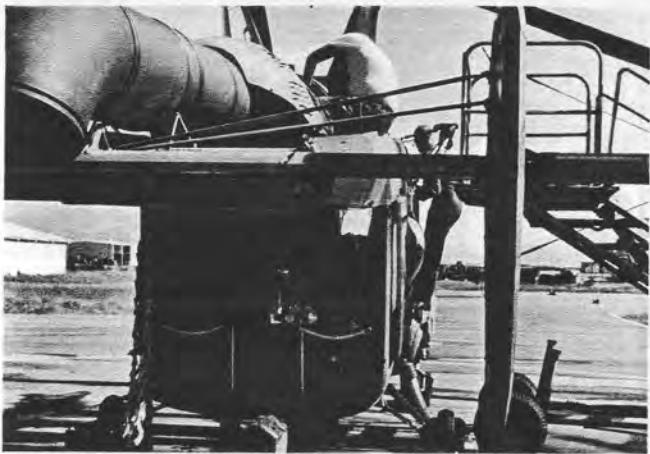
The detachment has the assigned task of evacuating airmen downed in the Phan Rang area. To do this the helicopter flight mechanic doubles as the hoist operator, who, with the aid of the jungle penetrator seat or an evacuation basket, can place a medical technician on the ground to assist any injured personnel and extract the crew and the medical man to speed them to the nearest medical facility.

The Pedro may not be huge, sleek or lightning fast, but to a downed crewmember, it is one of the most beautiful sights in the world. As Captain Nelson stated, "If we are needed, we will be there. After all, the Aerospace Rescue and Recovery Service's motto is, "That Others May Live."

*(Photos continued on next page)*



**More Training**—During practice rescue mission, Sgt Garrett A. Somes, far left, an HH-43 flight engineer, scans the terrain below for any sign of the "survivor." In next photo, Sgt Larry K. Fisher readies the forest penetrator seat used to extract downed personnel from the thick Vietnamese jungle. In photo above, Capt Mike H. Nelson gently maneuvers the twin-rotored helicopter over the "rescuee." (USAF photos by Amn Randy W. Day)



**There Would Be No Rescues**—Without these and similar efforts, rescue operations would soon be halted or seriously curtailed. Behind every rescue is maintenance and other routine work which must be done by ground and flight crews alike. In top left photo, mechanics wash rotor blades preparatory to waxing them. Top right, Sgt Larry K. Fisher, flight engineer, washes down bubble on HH-43 to ensure that the pilots have clear visibility. In other photos, left and right, mechanics perform maintenance work on Pedro and aerial firefighters clean and ready fire suppression kit for next mission. Firemen are SSgt Roy A. Rivera, left, and SSgt Charles A. Hunt, both from the 35th Civil Engineering Squadron and assigned to Det 1. (USAF photos by Amn Randy W. Day)

#### EIGHT COMBAT SAVES ON DET 9 MISSION

Eight combat saves were chalked up by an HH-43 crew from Det 9, 38th ARRSq (MAC), recently after a night mission during which two landings were made in jungle clearings obscured by haze and smoke from burning rice fields.

For Maj Bobby S. Lay and his crew the mission began with an emergency call to their base at Nakhon Phanom AB, Thailand—an AC-119 was coming in with one engine shut down and low on fuel. Pedro launched to intercept the crippled aircraft but while it was 10 miles from the base nine crewmembers bailed out. The HH-43 escorted the AC-119 to a safe landing at Nakhon Phanom and then returned to the bailout area.

An Army O-1 which was orbiting the area aided Pedro in locating the survivors, two of whom were injured. As they hovered overhead the HH-43 pilots could hear multiple beepers and simultaneous voice transmissions from the survivors. Major Lay landed in the clearing and three crewmembers were picked up and airlifted to an ambulance. Five more were taken aboard after the second landing in the smoke-obscured, night-shrouded clearing. The ninth survivor was picked up by another helicopter.

Others aboard the HH-43 who shared in the hazardous

mission were Capt Howard E. Casey, the copilot, and Sgt Talmadge W. Parker, crewman.

#### Patient Alive Due To Medevac

"The patient is alive, well and able to talk about his ride in a Pedro"....thus ended another Det 9 report after a medevac during which the patient stopped breathing for the fifth time.

The Pedro crew responded after a night call was received for assistance from an Army camp 45 miles from Nakhon Phanom AB. A soldier there had stopped breathing and was unconscious. Aboard the HH-43 were Capt Oliver E. Schmoker, pilot; Capt George H. Hopkins, copilot; SSgt Alvin A. Malone, helicopter mechanic; and SSgt Charles E. Vickers, medical technician.

As the patient was placed aboard the rescue helicopter, medics at the camp told the HH-43 crew that the soldier had stopped breathing four times before they arrived. Five minutes from the base Sergeant Vickers immediately began administering artificial respiration when the man's breathing stopped for the fifth time. The medic continued his life-saving efforts until the patient was delivered to the ambulance crew which was standing by with oxygen equipment.

## NEW COMMANDER



LtCol John F. Ward, a senior pilot with more than 18 years service in the U. S. Air Force, is the new commander of the 38th ARRSq, Tan Son Nhut AB. In his new capacity, the Colonel is responsible for directing local base rescue at all major air bases in Southeast Asia. The previous commander of the 38th was LtCol Donald E. Jensen. LtColonel Ward, who was graduated from the University of Florida in

1952, was also a distinguished graduate, Air Force ROTC. He entered active duty in July the same year and was project officer, Air Research and Development Command, Eglin AFB, Fla., from 1952 to 1956. The Colonel received pilot training from Aug 56 - Sep 57 and was a C-54 pilot, Air Force Eastern Test Range, Patrick AFB, Fla., from Sep 57 - Jul 59. He was squadron administration officer, Wheelus AB, Libya, Jul 59 - Jul 62 and AFSC Command Post Duty Officer, Andrews AFB, Jul 62 - Jul 64. From Jan 66 until Dec 67, LtColonel Ward was chief, Range Aircraft Branch, Aircraft Operations Division, Air Force Eastern Test Range. He was attached to Det 12, 42nd ARRSq, George AFB as a helicopter pilot from Apr 68 - Jul 69 and then was commander of the LBR detachment from Jul 69 - Sep 70.

*HUSKIE Happenings - continued from page 14*

### Det 25 Sergeants Save Paratrooper

A critically-injured Army paratrooper who technically "died twice" was delivered to the hospital alive thanks to the "outstanding competence and extraordinary efforts" of two HH-43 crewmen, Sgt Thompson Hall, III, and SSgt David A. Darden. Pilots on the life-or-death flight were Capt James E. Miller and Maj James R. Murtha.

The mission began when Det 25, 44th ARRSq, Eglin AFB, Fla., received a medevac request from the Test Center Reserve, an auxiliary landing field 15 miles from Eglin. A paratrooper had deployed his reserve chute after his main chute "streamed." Then his foot became entangled in the main chute, causing him to land head first.

The paratrooper, who was unconscious when the Det 25 HUSKIE arrived, was immediately placed aboard for the return trip. On the way, the patient stopped breathing so Sergeant Hall, aided by Sergeant Darden, applied "ambu-bag" and closed chest massage to successfully restore respiration. Halfway back to Eglin, the paratrooper again stopped breathing and again the sergeants were able to restore normal respiration.

Upon arrival at Eglin, the patient started convulsing but Sergeants Hall and Darden immediately took proper corrective measures.

Afterward, hospital authorities said the patient would not have been alive had it not been for the "outstanding" efforts of the two sergeants from the ARRS unit.

In a similar medevac, Sergeant Hall was again called upon to aid a patient who stopped breathing. The sergeant was a member of an HH-43B crew which scrambled after Det

### Det 7 Medevacs Wounded Sailor From Tossing LCM

A. U. S. sailor suffering from shrapnel wounds was evacuated to the hospital by an HH-43 Pedro crew from Det 7, 38th ARRSq, Da Nang AB. In order to make the hoist pickup from the rolling, pitching LCM, Capt Alvine J. Machtmes held the Pedro in position for 10 minutes while MSgt William T. Walker, a helicopter mechanic, lowered and retrieved the litter. Three-foot swells, gusting winds, and the narrowness of the deck made the transfer difficult, but it was accomplished without incident.

Once the evacuee was aboard, Sgt Wallace H. Long, a medical technician, checked the field dressings on the patient and then made him as comfortable as possible. Flying copilot on the mission was 1stLt John A. Hall.

A larger rescue helicopter was originally scheduled to make the medevac while Pedro flew cover. The HH-43 was called on, however, when rotor downwash from the other helicopter was found to be excessive due to the small size of the LCM.

### Det 6 Night Flight Saves Life

An Air Force sergeant whose life was threatened when a chicken bone lodged in his throat, was medevaced by an HH-43 crew from Det 6, 38th ARRSq, Bien Hoa AB. Manning the Pedro which responded to the emergency were Capt Robert J. Franklin, pilot; Maj Elmer Funderburk, Jr., copilot; Sgt Earl W. Wright and SSgt Earl W. Jarvi, crewmen. The night flight from Bien Hoa to the hospital at Long Binh Army Base was made without incident.

25 received a call from the Eglin AFB Reserve, 25 miles west of the base. An officer participating in Army Ranger training had collapsed and stopped breathing after a march through a swamp.

LtCol James J. Fetzer landed the HUSKIE in a small clearing which was dotted with small trees and surrounded by 30-foot pines. Sergeant Hall and Capt Richard L. Oliver placed the ranger on board and then the sergeant used a portable oxygen bottle to restore the patient's breathing. On the return flight Sergeant Hall and Captain Oliver waged a successful fight to keep their patient alive and he was delivered into the hands of personnel from the USAF Hospital at Eglin. Copilot on the flight was Maj Leonard N. Buck.

In a third mission, an HH-43 crew from the detachment landed at night in a swamp to evacuate an Army Ranger from the Eglin AFB reserve. He had developed symptoms of appendicitis. The pickup and delivery to the hospital were made without incident. Major Murtha was pilot and Major Buck, copilot, on the mission. Crewmen were SSgt Clinton D. Godown and Sgt Terry L. Goodson.

### Det 5 Medevacs Airman

An airman, seriously injured in an automobile accident, was evacuated from Hahn AB, Germany, to the Wiesbaden USAF Hospital by an HH-43 crew from Det 5, 40th ARRWg. The unit is stationed at Hahn AB. Manning the HUSKIE were LtCol Robert W. Hastings, pilot; Maj Robert J. Bennett, copilot; SSgt Arthur L. Wood, helicopter mechanic; SSgt Frank D. Argentieri, medical technician; and Capt Eugene E. Kercher (MC), flight surgeon.

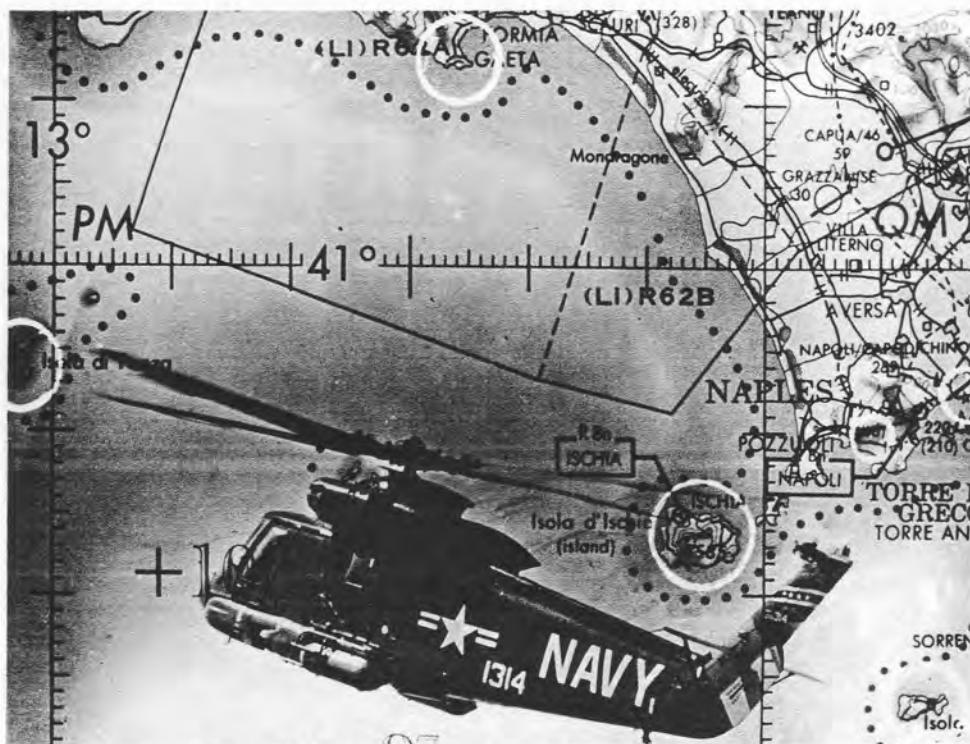


Chart Of Naples Area Depicting Rescue Pick-up Points.

"Mercy missions are more frequent in our helicopter crews than in any other type of Navy squadron. No matter who they are, an Italian National or Russian pilot, if they are in need of help, our helicopter crew will go," says ADR-1 Troy Sherrill, a Naval Air Facility search and rescue (SAR) aircrewman. The NAF-based helicopters and crews have flown 14 mercy missions for critically-ill persons in 1970 and six already this year.

The Naval Air Facility's principal mission is to provide support to the operating forces of the Sixth Fleet and NATO. However, it is the policy of the Navy in Naples to carry out mercy missions to save Italian lives when requested by the Italian Air Force. In addition to providing sea-air rescue for the Sixth Fleet, the helicopters are also configured with a VIP cabin to provide transportation for distinguished visitors to various U. S. Navy and NATO commands in the Naples area.

NAF came into being as an Air Facility in 1956. As an aviation site, however, its beginnings precede that date by more than a 150 years—in 1812 the site of what is now Capodichino Airport and NAF was used for the launching of gas-filled balloons. In 1853, the area became a military

parade ground called Campo di Marte and in 1907, a military hippodrome. The first conventional aircraft were seen in 1917 during World War I. From that time on Capodichino the name of the airport area became a permanent site for aviation activities.

In 1950 a small detachment of Navy men from Air Transport Squadron 24 (VR-24), based at Port Lyautey, Morocco, moved to Naples. From this humble beginning with one hangar, NAF has grown into the complex of structures existing today.

The Naval Air Facility, commanded by Captain Russell E. Blalack, recognizes that it has a responsibility to the community in which it lives. In fulfilling this responsibility a wide range of assistance and cooperation is given to its Italian neighbors. The Navy in Naples is proud to be friends and demonstrates this through various community interest activities. The accompanying photo-stories recount some of the incidents in which the Naval Air Facility rescue helicopter teams played a part in overcoming emergencies and assisting when its facilities were necessary to accomplish a specific task.

**Procedure On Emergency Rescue—ADR1 Sherrill** explains emergency rescue procedures to a mixed American/Italian firecrew team based at NAF, Naples, Italy. (USN photos)



## NAVY MAKES FRIENDS IN ITALY

By Lt F. L. Aeilts  
Public Affairs Officer,  
NAF Naples, Italy



**Rocky Helicopter Pad**—NAF-based UH-2C comes in for a landing on the Alitalia pad, island of Capri. Note the rock walls, boulder strewn slope and sheer cliff in the foreground. (USN photo)



**Medevac**—Solicitous crewmen remove stretcher from SEA-SPRITE after evacuation of Italian woman from the island of Ponza. Carrying her 10th child and in the seventh month of pregnancy, the woman was in critical condition with peritonitis. Lt C. L. Cook and his crew attempted to make the pickup shortly after midnight but were forced to return to base by severe turbulence, heavy rain and poor visibility. The second attempt, after dawn, was successful. A landing was made on a narrow quay despite high winds and the woman was taken aboard for the flight to medical assistance. With Lieutenant Cook were Lt B. A. Cuddeback, copilot; ADR1 J. Bailey, aircrewman, HMC J. W. MacIntyre, medical corpsman, and 1st AV. Alfredo Disanto, a medical corpsman from the Italian Air Force. (USN photo)

(continued on next page)

**Fishermen Rescued**—Hovering in winds gusting to 46 knots, a UH-2C from NAF Naples rescues five Neapolitan fishermen stranded on an isolated jetty two miles from Castel dell'Ovo in the Bay of Naples. The helicopter was assisted in its mission by a T-34B from the Navy Naples Flying Club and piloted by Lt Fred L. Aeilts. The fishermen were lifted out of the wind and spray on a hoist operated by ADR2 P. N. Sullivan. Lt(jg) Carl E. Carden was copilot on the mission. AC1 Richard H. Kratz, crewman aboard the T34B, took photos of the entire rescue. It was the sixth rescue mission completed this year by American Navy pilots based at NAF, Naples. During 1970, the helicopter at USNAF flew 14 mercy flights. (USN photo by "Rich" Kratz)





**Rescue Crew Support Team**—Behind the success of every mission are the efforts of maintenance and other ground crew members who aid in keeping the helicopter "rescue ready." In top left photo, ADR2 Sullivan, left, and AMS1 Harlan are shown working on the UH-2C. In right photo, left to right, Mr. Norman Myers, Kaman Aerospace service representative; AE2 Donald J. Yeater and AE3 Frank E. Reed test a UH-2C electric throttle actuator with a bench test set. At left, members of the NAF Naples unit check one of the turbine engines on the SEASPRITE. (USN photos by Warren A. Poole)



#### 1000-HOUR PILOTS

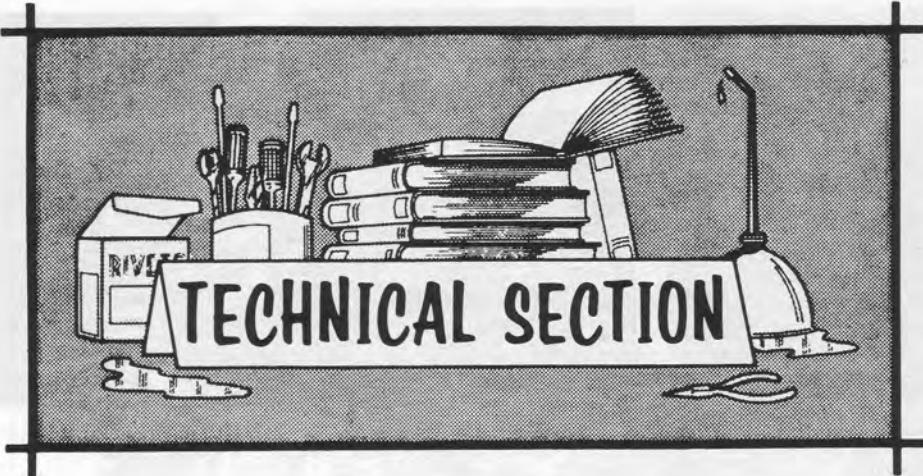


Eleven pilots were recently awarded plaques by Kaman Aerospace after each logged 1,000 hours in helicopters produced by the company. One pilot, Capt Mohammad S. Hejazi, is flying HH-43's as a member of the Imperial Iranian Air Force.

In right photo, Lt Michael A. Graham, HC-4, NAS Lakehurst, N. J., displays the plaque he received. With him are Cdr E. W. Hille, left, squadron commander, and Mr. Ed Noe, Kaman technical representative.

In left photo, LtCdr H. T. Buckley, former officer-in-charge of the CVT SAR det at NAS Pensacola, Fla., is shown with his award. Others are, left to right, Cdr C. N. Osborne, commanding officer of HT-8, Mr. Homer Helm, Kaman technical representative, and AMCS T. W. Williams, leading chief from the SAR det.

Other recipients are: HH-43 — Maj Juan H. Migia and Maj Carroll L. Wright, Det 4, 40th ARRWg, Ramstein AB, Germany; Maj Stanley O. Schaetzle, 38th ARRSq, Tan Son Nhut AB, RVN. H-2 — Lt S. F. Milner and Lt John W. Hyde, HC-5, NAS Imperial Beach, Calif.; Lt Douglas D. Wassmer, HC-7, NAS Cubi Point, RP; Lt Christopher M. Reddington and Lt Stephen S. Hoxie, HC-2, NAS Lakehurst. (USN photos)



## Table of Contents

Rescue Winch Rollers . . . . .	24
Vibration Absorber Weights . . . . .	25
Engine V-Band Couplings . . . . .	26
H-2 Sliding Door Hardware . . . . .	28
Directional Crank, P/N K653071-1 . . . . .	29
Service Reps . . . . .	29
Current Changes . . . . .	30
Q's & A's . . . . .	30
DARFO . . . . .	31

### RESCUE WINCH ROLLER INSPECTION

H-2

NAVAIR 01-260HCA-6 specifies inspection of visible areas of the rescue winch for "nicks, cracks, corrosion and obvious damage." (See item 13, Card DS 28-19, Section 11, Part 1.) The next scheduled change to the -6 will include a

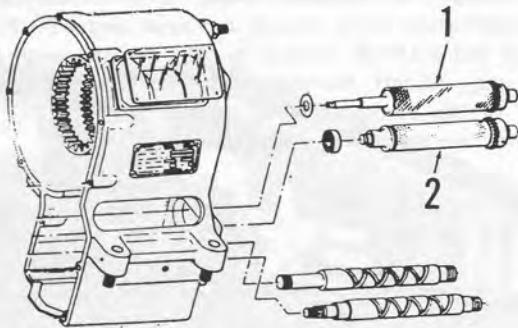


Illustration 1

*W. Wagemaker, Service Engineer*  
specific inspection for the driving and driven roller assemblies, items 1 and 2 in the accompanying Illustration. The reason for this addition is vividly pointed out in Photo 1. These rollers were removed from hoists on aircraft which returned to Kaman for induction into the MOD program. Hoist operation with worn or damaged rollers will cause the hoist cable to foul on the drum and eventually fail. If maintenance personnel were aware of the condition of these rollers they would have been replaced immediately; however, since the inspection is usually accomplished by illuminating the area with the beam of a flashlight while the hoist cable is static, the damage went unnoticed. THIS TYPE OF AN INSPECTION IS INADEQUATE.

The rollers should be inspected while they are turning (as cable is being reeled in or out) because one side may look acceptable while the other side is in poor condition. For example, Photo 2 shows the opposite side of the rollers shown in Photo 1. Inspecting the rollers at the same time the cable is reeled out or in will assure maintenance personnel of an adequate inspection.

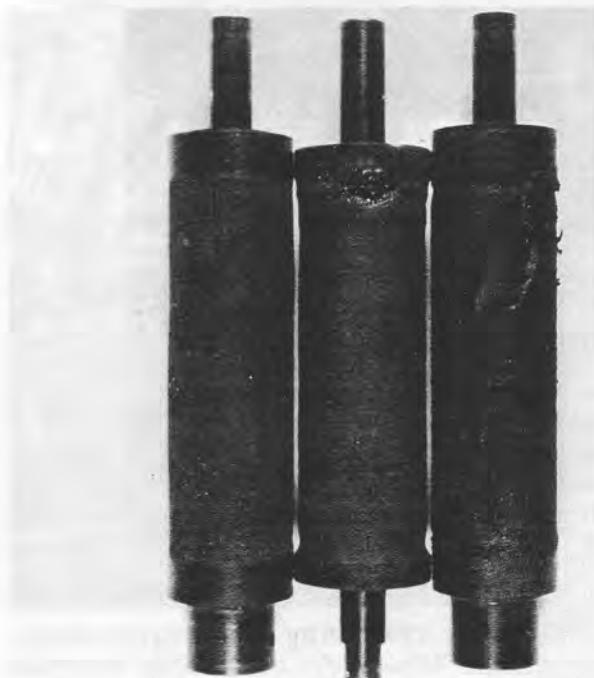


Photo 1

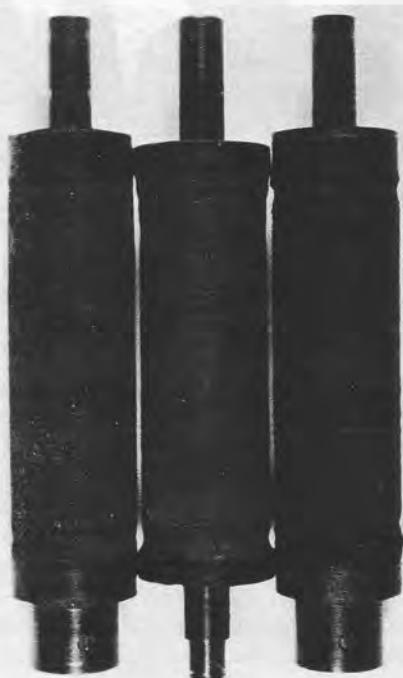


Photo 2

## TECHNICAL SECTION

Inspection may be accomplished by pointing the beam of a flashlight past the level wind rollers. On single engine aircraft, roller assemblies shown in Photo 3, it is necessary to wait for the bumper assembly to move away from the winch. With roller assemblies on twin engine aircraft, shown in Photo 4, inspection may be accomplished immediately upon cable movement. (The arrows point to only one of the two roller assemblies. Be sure to inspect both rollers.)

The rollers are available as assemblies for the 200-foot hoist as follows:

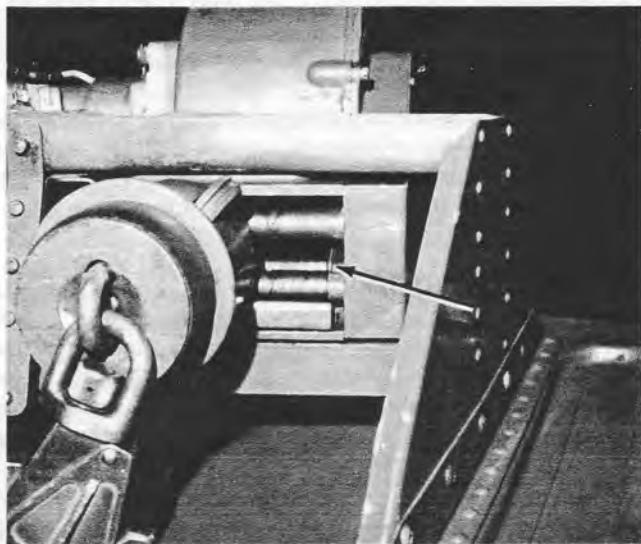


Photo 3

Tension Roller Assembly, Driver P/N WB3026, FSN RM 1680-986-9404BH2X

Tension Roller Assembly, Driven P/N WB3027, FSN RM1680-997-6767BH2X.

Rollers for the 100-foot hoist, P/N WA2480 (Driven) and WB2484 (Driver), are Source Coded "AO" and consequently are procurable at overhaul/rework facilities. A Source Code Change now in process will enable field level maintenance personnel to obtain the 100-foot roller assemblies. The information presented here will be incorporated into applicable handbooks by the next regularly scheduled Change.

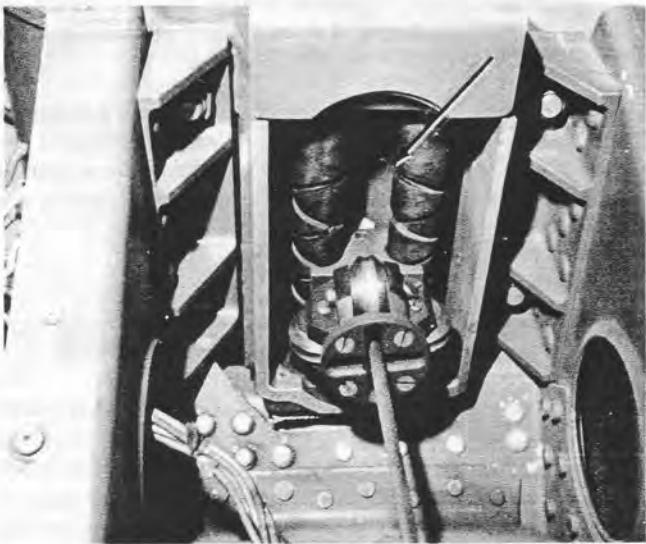


Photo 4

### VIBRATION ABSORBER WEIGHT MAINTENANCE

H-2

"CAUTION—ADJUST BALLAST FOR DIFFERENT BATTERY WEIGHT." Installation of different weight batteries without accomplishing a corresponding ballast weight adjustment can induce an extremely annoying 4-per-rev vibration. It is recommended that the above CAUTION be

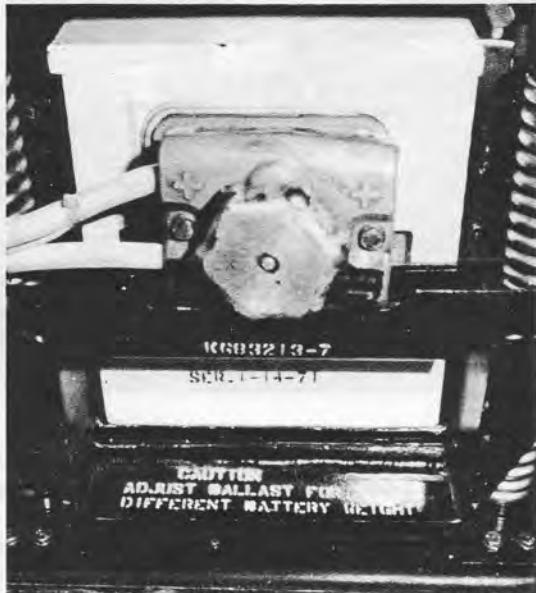


Photo A

*H. Zubkoff, Service Engineer*

stenciled on the front of the battery vibration absorber support assembly as shown in Photo A and Illustration 1. A change to the Interior Markings Drawing, K686702, has been initiated and the stencilling will be accomplished at Kaman during future PAR/MOD of aircraft. To assist Fleet personnel, stencils may be obtained from local Kaman Reps or fabricated locally. When replacement batteries vary by 0.5-pound or more, ballast adjustments MUST be made in order to maintain the same (or nearly the same) total vibration absorber weight. For complete instructions relative to the battery vibration absorber see the March-April, 1970 issue of Kaman Rotor Tips and applicable handbooks.

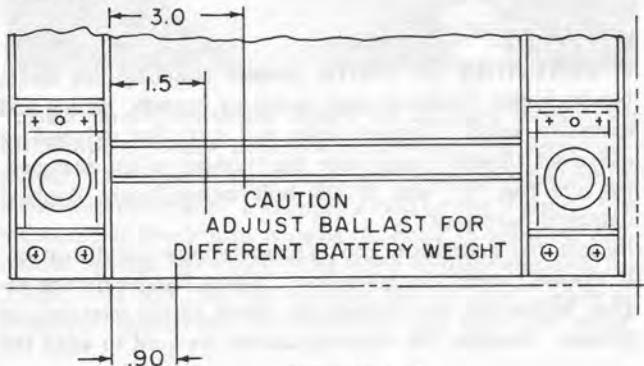


Illustration 1

## TECHNICAL SECTION

### H-2 ENGINE V-BAND COUPLING INSTALLATION

By G. Baltzley,  
Engine Mechanic, PAR/MOD

V-band couplings or clamps are designed and stressed to facilitate attachment of two flanged parts to each other. In the H-2, V-bands secure the engine bellmouth to the engine front frame and the engine tailpipe to the exhaust cone. The coupling serves the same purpose as a ring of bolts around the circumference to secure the components to each other. Failure of one nut or bolt in this type of installation would probably go unnoticed for several flights; failure of the coupling could jeopardize aircraft safety. Considering the foregoing information, proper coupling condition and installation becomes very important. The following checklist is offered as an aid to fast, efficient installation:

**1. PART NUMBER.** Use of the correct coupling is imperative. Each coupling has its part number stamped on it and is designed to a specific set of requirements for a specific location. Part Numbers and Federal Stock Numbers are:

*Bellmouth coupling*

P/N D 3402-1157S, FSN 9Z5340-813-3746

*Exhaust coupling*

P/N 3001-51P01, FSN RM5340-06808956EQ1X



The Photo shows the V-band used to secure an H-2 engine bellmouth. The V-band utilized on the engine exhaust is also of the two-bolt type but it is of a heavier construction. The two or one bolt type V-bands can be installed by following the instructions detailed here. One bolt vee bands are usually found on small diameter installations.

**2. CONDITION OF PARTS.** Inspect couplings for nicks, bends, kinks, cracks at spot welds or corners, galling and excessive wear. Inspect bolts and nuts for stripped or stretched threads, make sure the bushing is not damaged. Be sure the "T" end of the bolt moves freely. Replace damaged hardware.

Inspect the bellmouth and exhaust tailpipe for distortion. If evident, reject the assembly. Inspect flanges on the engine, bellmouth, and tailpipe for dents, nicks, scratches, or gouges. Because the coupling cannot be used to align the

parts, the bellmouth and tailpipe should butt against the engine without any evidence of uneven contact. Attempting to force alignment with couplings will result in failure of the coupling and possible damage to the engine.

**3. SPECIAL TORQUE VALUES.** The correct torque is stamped on some couplings, most often however, it will be necessary to refer to the Maintenance Manual for the special torque value. Actually, two special torque values are provided for each coupling in order to make allowances for run-on torque and seating of the coupling.

For example:

Exhaust coupling locknuts should be tightened to 50-60 pound-inches initially. Then, both locknuts should be backed off and re-tightened to 35-45 pound-inches. The locknuts on the bellmouth coupling should be tightened to 30-35 pound-inches initially, then backed off and re-tightened to 20-25 pound-inches.

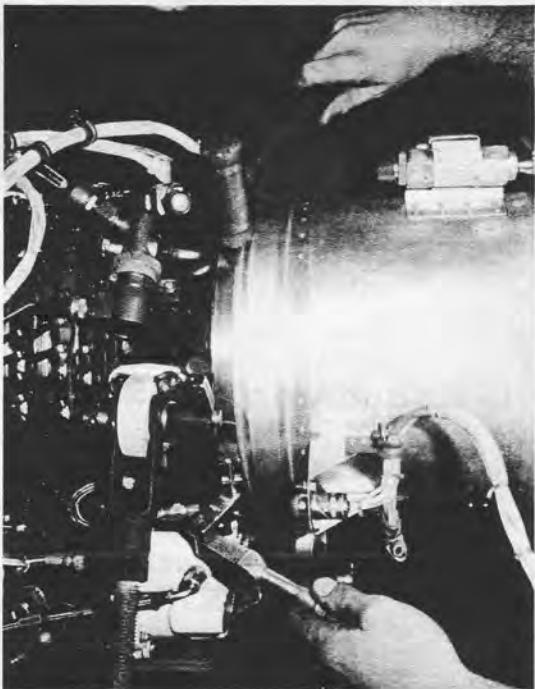


"More Vee-band couplings are damaged because of over-torque." The T-bolt shown in the Photo is an example of what occurs when too much torque is applied. This coupling, acceptable in all other respects, must be rejected because of an installation error.

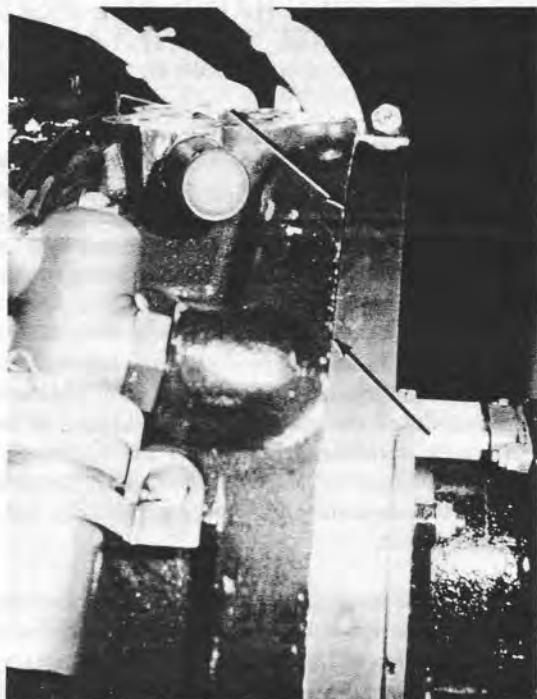
## TECHNICAL SECTION

**4. INSTALLATION.** Installation of couplings onto the bellmouth and exhaust tailpipe are almost identical. The main difference is the special torque values. The bellmouth is installed while the engine is horizontal and under no circumstances should the coupling support the bellmouth assembly until installation has been completed. If necessary, have another mechanic ready to support the weight. To install the bellmouth, proceed as follows:

Back-off both locknuts as far as possible. Lubricate the coupling pressure surfaces with oil, MIL-L-23699 (or spray on Rust Lick). Place the coupling on the engine and butt the bellmouth against the inlet. Support the bellmouth while positioning the coupling over the mating flanges (engine and bellmouth). Do not twist or stress the coupling by bending or stretching; it should fit into place snugly but easily. When properly positioned, engage the swing bolt (T-bolt) to hold coupling in place. Check the circumference to be sure the coupling has engaged the flanges and the bushings and locknuts are properly seated. Tighten the locknuts alternately while tapping on the coupling with a non-metallic mallet. Be sure to tap around the full circumference while tightening the two locknuts. The most critical part of the installation is the torque applied to the locknut. Remember, first apply the run-on torque, back-off, then apply the final torque. The tailpipe is installed following the same procedures as those specified for the bellmouth.



Tap lightly around the full circumference with a non-metallic mallet while alternately tightening the two lock-nuts—the process of properly setting the coupling. This will allow even, secure holding power.



When it has been determined that the correct part is available and it is physically acceptable, try a preliminary fit. Place the selected coupling on the engine inlet and position it over the flange. Be sure the coupling is not "hung-up" on the engine. Photo above shows a coupling in place. Note the slight gap at the upper arrow but no gap evident at the lower arrow. This coupling just fits into position.



"Under no circumstances should the coupling support the bellmouth assembly until the installation has been completed." Damage to the V-band will result if the bellmouth is allowed to "droop" and apply a load on the V-band. The mechanic in the Photo is using his body to press the bellmouth against the engine inlet while initially engaging the T-bolt. He will then gently move the bellmouth while alternately tightening first one nut and then the other.

# TECHNICAL SECTION

## H-2 SLIDING DOOR HARDWARE INSPECTION

Part II of IAB 182 makes the following Daily Inspection mandatory:

- Visually inspect lower brackets for cracks. (The arrows in Photo A point to areas which should be inspected.)
- Check all 3 sliding doors at OPEN, CLOSED, and at 3 equally-spaced positions between, to insure that the lower rollers will not become disengaged from the tracks when the roller arms are manually depressed.

**NOTE:** Proper roller engagement requires that the lower roller arms shall be adjusted so that a minimum of approximately  $\frac{1}{2}$  of the roller height will always be engaged by the track with the arm held in the maximum down position. In order to determine this, push down on the roller arm to overcome the spring and visually determine roller engagement.

To facilitate the inspection, IAB 182 recommends that the fairings over the lower bracket assemblies be removed and remain off the aircraft. *The importance of complying with the Bulletin cannot be over-emphasized.* If the fairings are left off the aircraft, and the preceding inspection is performed daily, any roller which does not remain engaged in the track will easily be detected. Once detected, proper roller engagement can be readily achieved by bracket adjustment or shimming the roller arm. A cutaway view of roller engagement is shown in Illustration 1. For further information, refer to NAVAIR 01-260HCA-2-2.

The removed fairings may be retained in the squadron stores if subsequent re-installation is anticipated, or they may be disposed of at the discretion of the Operating Activity. Kaman recommends permanent removal together with removal of the stand-off brackets presently riveted to the pilot/rescue and copilot doors. (Arrow, Photo B).

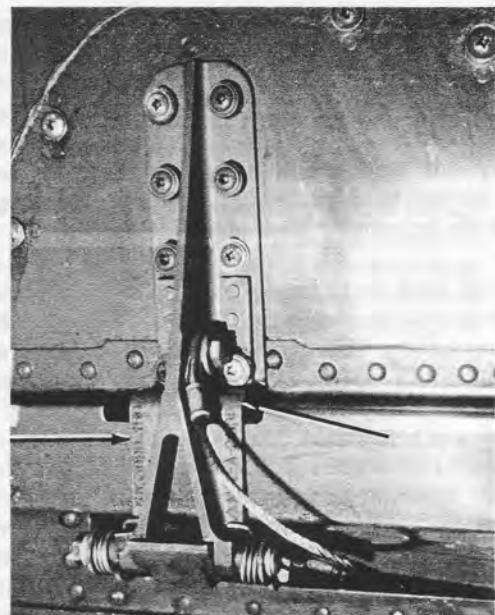
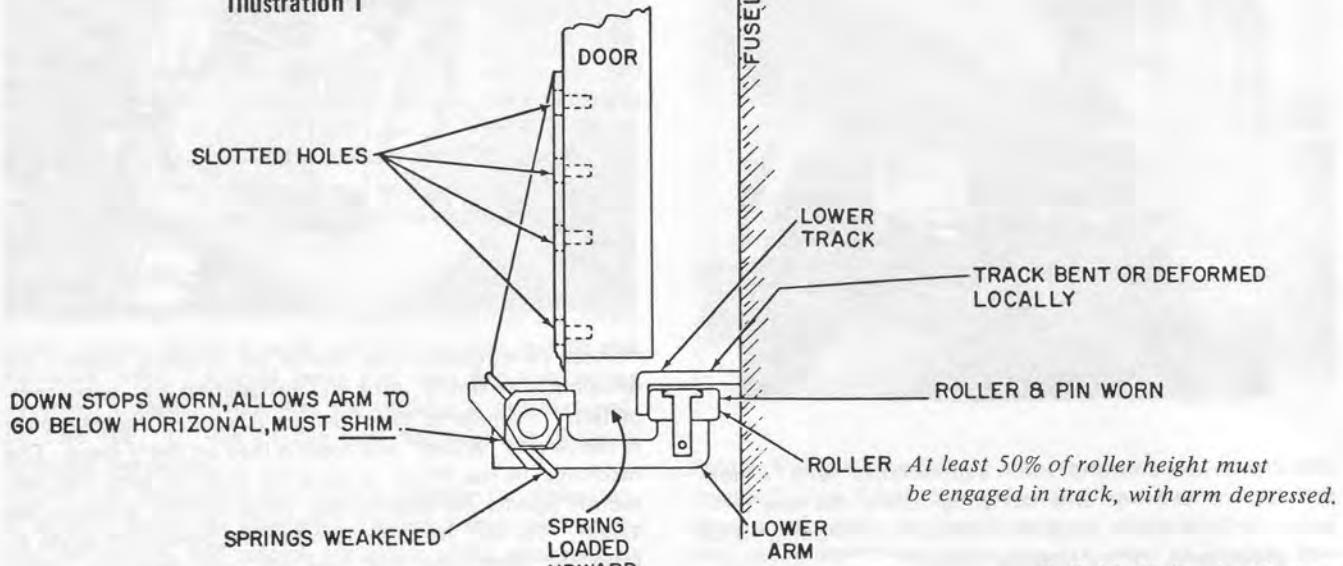


Photo A



Photo B

Illustration 1



H. Zubkoff, Service Engineer

## TECHNICAL SECTION

### H-2 IMPROPER INSTALLATION OF DIRECTIONAL CRANK (P/N K653071-1)

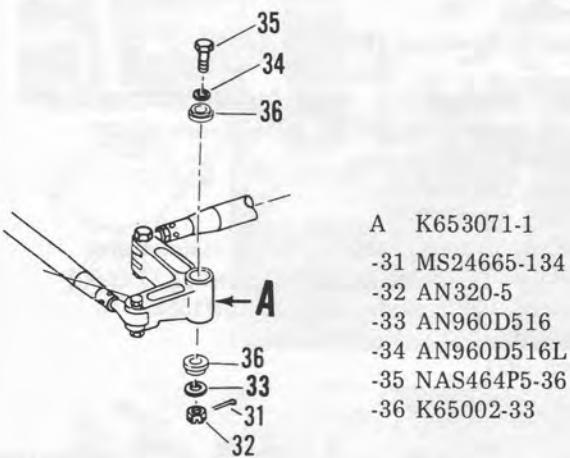
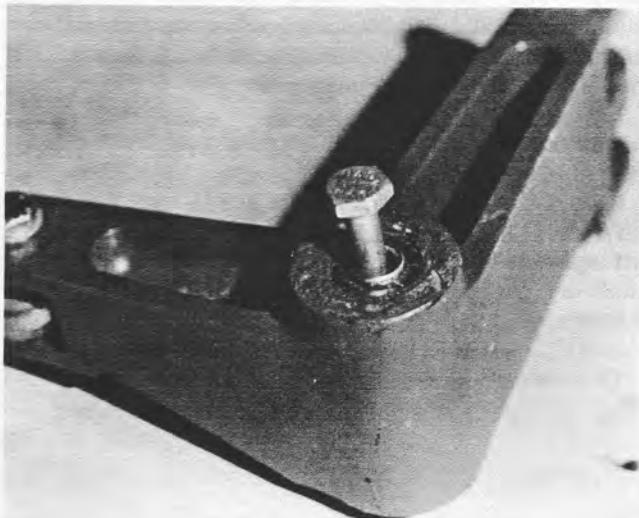
A recent memo which originated at Kaman's PAR/MOD facility reads as follows: "Aircraft BuNo.... was flown in for modification to a HH-2D configuration. At preliminary inspection during teardown for Mod Program, the directional crank located at Station 52.30, WL 56.75, BL 26.75, K653071-1), was found to be installed with a 1/4-inch bolt (NAS464P4-36) instead of the required 5/16-inch NAS464P5 bolt."

The preceding quote is of particular interest for several reasons. First, the crank shown in the Photo is a major link in the flight control system. As such, it is pertinent to the safety of the aircraft and its personnel. Second, because of this incorrectly installed bolt, the crank and bolt

By J. D. Harter, PAR/MOD Mechanic

were scrapped and structural supports had to be reworked. Third, it shows that some installations are not thoroughly inspected upon completion of an assembly operation. Slips of this nature can be costly and catastrophic.

The item shown here also graphically illustrates why unauthorized part substitutions should never be allowed. Figure 46, index 42 in NAVAIR 01-260HCA-4-1 and Figure 4, index 35 in NAVAIR 01-260HCB-4-3 both call out an NAS464P5-36 bolt. Obviously the diameter of the bolt which was installed was too small, and yet someone actually installed it. Fortunately, the loads imparted did not shear the bolt when the aircraft was flown.



CRANK INSTALLATION

### KAMAN SERVICE REPRESENTATIVES

ROBERT C. BELISLE  
HORACE F. FIELD  
NAS Cubi Point, P. I.

JACK L. KING  
NORMAN M. MYERS  
NAF Naples, Italy

DONALD P. ALEXANDER  
WILFRED L. MAGNAN  
Iran

DAVID RUSH  
NARF, Quonset Pt., R. I.

MICHAEL T. FIASCHETTI  
AWRS  
WILLIAM C. BARR  
DONALD BONSALL  
GERALD A. BOUTIN  
DONALD R. DELANEY  
JOSEPH PELUSO  
JAMES SHERLOCK  
Home Office

HOMER C. HELM  
NAS Pensacola, Fla.

DONALD T. LOCKRIDGE  
WILLIAM G. WELLS  
NAS Imperial Beach, Calif.

EDWARD F. NOE  
NAS Lakehurst, N. J.

CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, Supervisor

# CURRENT CHANGES

This list reflects the latest changes to the manual. Consult applicable "A" page for prior changes.

H-2 Airframe Change 160, Part I, Amend 1 -  
Equipment, INSTALLATION OF 200-FOOT  
RESCUE HOIST IN UH-2C/HH-2C/HH-2D  
Helicopters  
31 August 1971

NAVAIR 03-5CE-148 - Manual, Overhaul Instructions,  
QUADRANT HOUSING ASSEMBLY, P/N K673802-7,  
-103, -105, -107  
1 February 1971

NAVAIR 01-260HCA-2-1 - Manual, Maintenance  
Instructions, Navy Models UH-2A/UH-2B/UH-2C/  
HH-2C/HH-2D Helicopters, GENERAL INFORMATION  
1 December 1969  
changed 15 January 1971

NAVAIR 03-5CGP-2 - Illustrated Parts Breakdown,  
FUEL CONTROL ACTUATOR ASSEMBLY,  
P/N K67386-1  
1 March 1971

NAVAIR 01-260HCB-4-7 - Illustrated Parts Breakdown,  
ROTORS, Navy Models UH-2C/HH-2C/HH-2D  
Helicopters  
1 June 1967  
changed 15 February 1971

NAVAIR 03-5CGS-1 - Manual, Overhaul Instructions  
ROTARY ACTUATOR ASSEMBLY, P/N R4152-11  
15 March 1971

NAVAIR 01-260HCB-4-9 - Illustrated Parts Breakdown,  
SPECIAL SUPPORT EQUIPMENT, Navy Models UH-2C/  
HH-2C/HH-2D Helicopters  
1 June 1967  
changed 15 November 1970

NAVAIR 03-95D-9 - Manual, Overhaul Instructions,  
MAIN AND ACCESSORY GEARBOX SYSTEM,  
Navy Model UH-2A/UH-2B Helicopters  
15 October 1965  
changed 1 March 1971

NAVAIR 01-260HCB-6 - PERIODIC MAINTENANCE  
REQUIREMENTS MANUAL, Navy Models UH-2C/  
HH-2C/HH-2D Helicopters  
1 October 1970

NAVAIR 03-95D-10 - Manual, Overhaul Instructions,  
DRIVE SHAFT AND COUPLING SYSTEM, Navy  
Models UH-2A/UH-2B Helicopters  
1 March 1971

NAVAIR 03-15DG-1 - Manual, Depot Maintenance  
Manual with Illustrated Parts Breakdown, AXIVANE  
FAN ASSEMBLY, Model AVR130-75D1598,  
P/N 500702-3301  
1 March 1971

NAVAIR 03-95D-24 - Manual, Overhaul Instructions,  
COMBINING GEARBOX ASSEMBLY,  
P/N K674702-3  
1 April 1971

NAVAIR 03-95D-30 - Manual, Overhaul Instructions,  
MAIN GEARBOX ASSEMBLY, P/N K671802-1  
15 November 1970

R. H. Chapdelaine, Supervisor, Service Publications

## QUESTIONS & ANSWERS

**Q.** (Applies H-2) IS IN-SERVICE TIME ON A COMPONENT ZEROED WHEN IT IS OVERHAULED?

**Q.** (Applies H-2) TO WHAT TORQUE SHOULD THE NAS464P4A10 BOLT BE TIGHTENED?

**A.** No. In-service time is not zeroed when a component is overhauled. For example, consider a component which has a service life of 1000 hours and a Time Between Overhaul (TBO) of 250 hours. At the first overhaul, the TSO (Time Since Overhaul) and the accumulated service time are identical: 250 hours. After overhaul, however, the TSO is zeroed and again begins to accumulate to the 250-hour mark; the service time (sometimes referred to as Time Since New) does not zero. When the second overhaul is accomplished, the hard card will indicate 500 hours (in "Since New" column) and the "Since Overhauled" column will again indicate zero. This procedure continues until the life use reaches the 1000 hour mark and the component is retired. Components which have an unlimited life use can be overhauled and re-used until damage precludes re-use. If these components are subject to overhaul, the same rule applies: in-service times always accumulate while TSO times, after overhaul, are zeroed.

**A.** The NAS464P4A10 bolt should be tightened to 38-53 pound-inches. The bolt is located at the inboard end of the main rotor blade retention folding lock handle as shown in Photo A. For further information, refer to applicable handbooks.

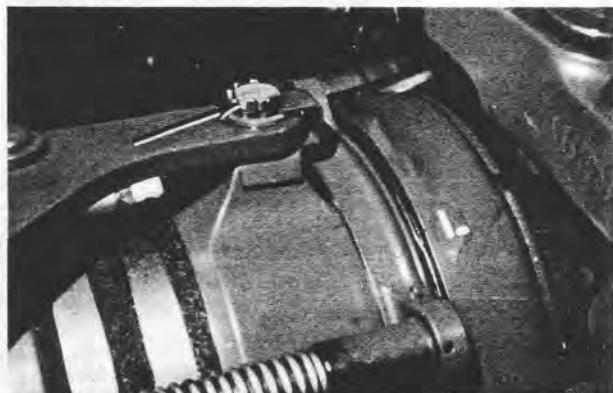


Photo A

W. Wagemaker, Service Engineer

W. Wagemaker, Service Engineer



DARFO! Detect And Remove Foreign Objects before FOD (Foreign Object Damage) can occur.

As KRT continues to present actual examples of DARFO in action, a trend appears to be emerging: first, most errant objects seem to be tools; second, most potential missiles can be seen only by giants, or standard size men who are perched atop a high point on the helo. The overhead view Detects more Foreign Objects than any other angle, so...be careful to give a horizon-to-horizon visual check before leaving a high point on the aircraft or work stand.

If a mechanic had taken that one last look around, the example of DARFO in action presented here would not have occurred.

Start with Photo A and see if you can locate and name the weapon before our eyeballers show it to you. For those unfamiliar with the rotor area, the last Photo shows what it should look like.



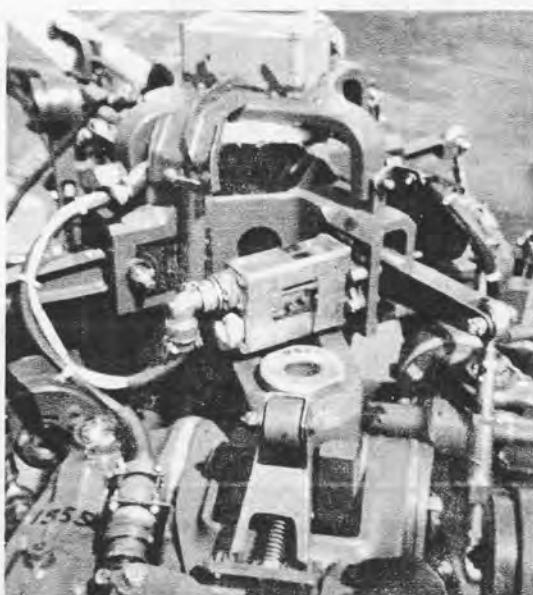
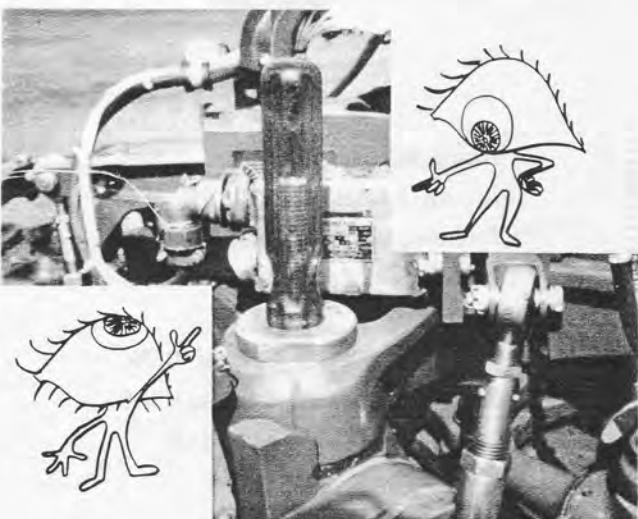
Photo A - H-2 Rotor Head

*Rotor Tips* is looking for examples of DARFO in action. When you detect a foreign object, try and get a photo of it to send to us. 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.



Photo B - Different Angle-Overhead View



This tool, a 14-inch screwdriver, just would not fit into the mech's pocket so he tucked it into the lead-lag pin. The handle of the tool was NOT painted with a bright or fluorescent paint, otherwise, it might have been discovered sooner (perhaps by the owner). Nevertheless, there is no excuse for "stuffing" a tool into a crevice or opening just because it happens to be handy.

**KAMAN AEROSPACE CORPORATION**



**1970**

Afsahi, M., Captain, IIA  
Ahearn, Robert W., Lt, USN  
Andrews, George, Captain, USAF  
Azarkhs, M., Captain, IIA

Backstrom, Hartley A., LCdr, USN  
Barksdale, David W., Captain, USAF  
Beson, Gary N., Captain, USAF  
Bland, John, Captain, USAF  
Bonner, Jerald A., Lt, USN  
Buckley, H. T., LCdr, USN  
Butler, Jack V., Captain, USAF

Christian, Dennis H., Lt, USN  
Cline, William E., Major, USAF

DuChene, Edward A., Major, USAF  
Duncan, Lloyd L., Lt, USN

Gates, Herbert G., Major, USAF  
Ghanaie, Bahran, Captain, IIAA  
Gsand, William L., Lt, III, USN

Hanks, William L., Lt, USN  
Hanson, Raymond M., Captain, USAF

Hiscock, Merrill C., Captain, USAF  
Hitch, James H., Lt, USN  
Hoormand, P., Captain, IIA  
Houser, G. Clifford, Lt, USAF

Longnecker, D. E., Major, USAF  
Lorren, Lonnie D., Lt, USN

Matyas, Carl E., Lt, USN  
McComsey, James T., Captain, USAF  
Murtha, James R., Captain, USAF

Nelson, Bruce E., Lt, USN

Olson, Philip C., LCdr, USN  
Olson, Thomas L., Lt, USNR

Reeves, Robert R., Major, USAF

Valinia, Mohammad, 1stLt, IIAF

**1971**

Hejazi, Mohammad, Captain, IIAF  
Hoxie, Stephen F., Lt, USN  
Hyde, John W., Lt, USN  
Graham, Michael A., Lt, USN  
Kammann, Philip H., Captain, USAF  
Kauffman, Lawrence B., LCdr, USN

Miglia, Juan H., Major, USAF  
Milner, S. F., Lt, USN

Olsen, P. C., LCdr, USN  
Reardon, John R., LCdr, USN  
Reddington, Christopher M., Lt, USN  
Schaetzle, Stanley O., Major, USAF  
Wassmer, Douglas D., Lt, USN  
Wendt, E. E., Lt, USN  
Wojack, Ronald P., Captain, USAF  
Wright, Carroll L., Major, USAF

SHOWN IS THE PLAQUE AWARDED TO PILOTS WHO HAVE LOGGED 1000 OR MORE HOURS IN HELICOPTERS PRODUCED BY KAMAN AEROSPACE CORPORATION. A PARTIAL LISTING, IN ALPHABETICAL ORDER, OF THE MORE THAN 350 RECIPIENTS IS ALSO PRESENTED.