

KAMAN

Rotor Tips



NOVEMBER-DECEMBER, 1970

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Rotor Tips

Volume VI Number 8

ON THE COVER

Season's Greetings on this, the 25th Anniversary Year of Kaman Aerospace. Cover by E. M. Enders, Service Publications.

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FEATURES

Anniversary Letter From Jack G. Anderson	3
25th Anniversary Section	4 - 11
HC-7 Mans HH-2C's on Sea Rescue Duty	12
1000-Hour Pilot Awards	15
The Spartan Angels	22
MAST Program	26
Myrtle Beach	27

DEPARTMENTS

SEASPRITE Activities	16
Southeast Asia	18
HUSKIE Happenings	
Technical Section	32 - 39
Kaman Service Representatives	37



Jack G. Anderson



OLD WINDSOR RD., BLOOMFIELD, CONN. 06002
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December, 1970

Dear Readers,

Americans place great value on anniversaries. The dates of our birth, our graduation from school, our wedding, and so on—these are important to us personally. So are the commemorative dates in the histories of our country, state, community and family.

We do not know why this trait—this inclination toward rumination and reminiscence—should be so evident among Americans as a people. Perhaps it is because America is still a relatively young country in the world's community and our national heritage is still evolving. We are, justifiably, a proud and sentimental people—drawing strength from our experiences and looking forward with optimism and unbridled energy to new challenges.

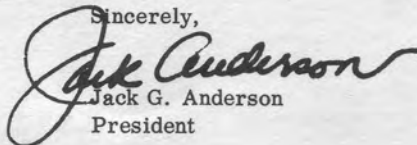
As we have the rudiments of our national tradition, so too do we have the beginnings of our Company's heritage. Kaman Aerospace—formerly Kaman Aircraft—will observe its 25th anniversary on December 12th of this year with ceremonies befitting the occasion. No such observance would be complete, however, without a few words of gratitude to our customers and others who made possible the company's steady progress during the last quarter of a century.

We build good products at Kaman, but it is the men who fly and maintain our helicopters who have contributed heavily to the success of the company. The rescue record which appears on page 31 speaks for itself, but it does not even begin to reveal the dedication and devotion to duty shown by U. S. Air Force, Navy, Marine and other military crews that have manned Kaman helicopters over the years. To these men who have used our product so well, please accept our sincerest thanks.

The marking of this quarter century is a significant and meaningful milestone in the relative young life of this Company. These 25 years provided valuable and treasured experiences from which we can derive knowledge and confidence to face the future. They provide a solid foundation upon which we can continue to build.

During this 25th anniversary observance, it is appropriate to point out that Kaman Rotor Tips is observing its 10th anniversary this year as the official voice of our Company's Customer Service Department. We commend Rotor Tips for its continuing excellence in serving our customers and its important contribution to our company functions.

Sincerely,


Jack G. Anderson
President

A
KAMAN
CORPORATION



KAMAN COMMEMORATES



Charles H. Kaman

Kaman Aircraft—now Kaman Corporation—was founded 25 years ago on the twelfth of December.

The beginnings were not auspicious. Charles H. Kaman, founder, had little in the way of capital, facilities, employees, or other things expected of a helicopter firm. He did have one enormous asset—faith in his own designs, a driving ambition to see them developed, and friends. With their encouragement, Mr. Kaman left the security of a job and promising career with another aircraft firm to strike out on his own. The next years were rough ones for a small company.

Money was a constant problem, but Kaman's design concepts were successful. The first Kaman helicopter, an inter-

meshing rotor aircraft designated the K-125, made its first flight in January 1947. Things continued "touch and go" for the struggling firm but by 1949 the K-190 and the K-225 were certified by the Civil and Aeronautics Administration for commercial use.

The company's first production helicopters were operated as crop dusters from Maine to Florida that summer. They took in \$25,000, enough to keep the growing company alive, but even more important, the job they did proved the ruggedness and practicability of the Kaman helicopter.

In the latter part of 1949 the company received a contract for two K-225 helicopters to be evaluated by the U. S. Navy; the Coast Guard also purchased a 225 for the same purpose.

Largely as a result of these tests, a \$2 million Navy production contract was signed and the young firm really "began rolling". With the outbreak of the Korean War in 1950 the Navy awarded Kaman a \$26 million contract for military helicopters, and the following year the company showed its first profit, \$27,000 on sales of \$4,800,000.



SEALITE, top photograph, is latest addition to the Kaman family of helicopters. The aircraft was designed for the Navy LAMPS program. In "early day's" photograph at left, a K-125 approaches cameraman during filming of a short movie depicting the adventures of a Pilgrim who "comes back to New England after 300 years." Mr. Kaman, hand up-raised, and his wife Helen are at right. The film was produced by a Hartford area movie maker.

25TH YEAR



Under the Navy contracts Kaman Aircraft designed, developed and produced the HTK-1 training helicopter and also produced the HOK-1 observation and utility helicopter in quantity. HTK-1's were in production until the end of 1953. The HOK's started in production in 1952 and were delivered to the Marine Corps.

During December, 1957, production started on HUK-1 Navy utility helicopters which are similar to Marine HOK-1's. Both had twin intermeshing rotors and were powered by Pratt and Whitney Aircraft R-1340 piston engines.

The same year, as the result of winning an Air Force competition for a local crash rescue helicopter, Kaman Aircraft was awarded an Air Force contract to produce H-43A and H-43B helicopters. Both are twin intermeshing rotor helicopters. The "A's" had P&WA R-1340 piston engines
(continued on page 25)



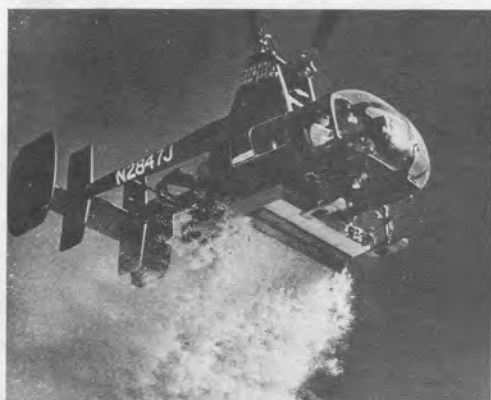
K-225, top photograph, is shown during crop dusting activities which proved the aircraft's ruggedness and ease of maintenance. In middle photo, Mr. Kaman is shown with first K-225 to be delivered to the Navy. Helicopter pilot is William R. Murray, now Vice President - Test and Development/Customer Service. Robert L. Martin, now Vice President - Operations, is passenger. In third photo, Mrs Mabel E. Kaman, mother of the firm's founder, is shown aboard a K-190.



KAMAN AIRCRAFT 'FAMILY'



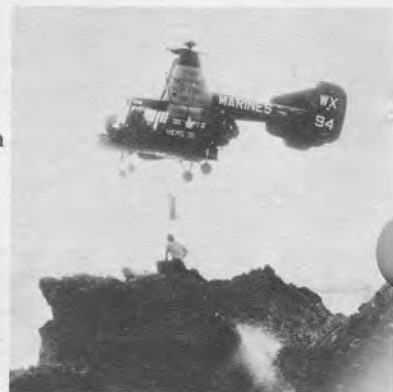
HTK—Kaman's first volume production helicopter achieved its greatest fame as a test bed for aviation milestones, in December 1951 as the first U.S. turbine powered helicopter, in September 1953 as the world's first drone helicopter, in July 1957 as the world's first pilotless helicopter (shown here on the USS Mitscher) and in 1958 as the world's first electrically powered helicopter, again as a drone. Some 29 piston-powered HTKs were produced for the U.S. Navy as training helicopters from 1952 to 1955.



HH-43A—The last of Kaman's piston-powered helicopters, and the first Kaman aircraft in quantity service with the U.S. Air Force, the H-43A made its first flight in 1958. Some 18 aircraft were produced to a design that closely resembled the HOKs and HUKs. Although they were retired in 1961, many are in use with commercial operators along with some HOKs and HUKs. In the above photo, taken in Arizona in 1967, an H-43A drops 250 gallons of water on a fire. The aircraft hovers over a nearby body of water to refill the bucket.

UH-2C—The Super Charley. First flight for the UH-2 with twin turbines was in February 1966. First deliveries were in 1967 with nearly 60 aircraft delivered to date. With a twin-engine capability, the retrofitted UH-2 significantly increased its gross weight capability and became the only operational helicopter capable of performing its complete mission with one engine out. Used largely in a plane guard mission with aircraft carriers. UH-2C's are a familiar sight to most carrier pilots.

HOK/HUK—These two Kaman synchropters were nearly identical. For the U.S. Marine Corps, 81 were produced between 1953 and 1958 for use as observation helicopters, and for the U.S. Navy, 24 were produced between 1957 and 1959 for utility use. Both models continued in service until 1964 when they were retired in favor of turbine-powered helicopters. In 1958 photo, right, rescue of two lifeguards off Laguna Beach, Calif., is made by a USMC HOK.



UH-2A/B—The first of the SEASPRITES made its maiden flight in July 1959, and entered production in 1959. In 1963 the B model went into production. In all, 190 UH-2A/B aircraft were produced for the U.S. Navy and Marine Corps. Although designated as a utility helicopter, the H-2 series has compiled an enviable record as a rescue aircraft, being credited with more than 1300 saves including some particularly hazardous ones near Hanoi.

QH-43G—Although few have ever heard of the QH-43G (also designed K-137), it has been in service for five years with the U.S. Navy performing a formerly classified mission. The photo at right is the first Kaman has published of the QH-43G. This drone helicopter was used as a high altitude antenna support vehicle operating from the USS Wright. Except for its drone capability, the QH-43G is essentially an H-43F.





HH-2C—Now operational with the U. S. Navy for search and rescue missions from destroyers and frigates. Heavily armored to protect crew and critical aircraft areas, the HH-2C is armed with a chin-mounted and waist-mounted machine guns. Additionally, it differs from the UH-2C by having an uprated transmission, dual landing wheels and a four-bladed tail rotor. HH-2C's are being deployed from DLGs that operate near the Vietnamese coast, and their primary mission is to rescue downed Navy pilots. Suppressive fire capability and armor protection make the HH-2C more effective for the mission than the UH-2A that it replaces.



HH-2D—The latest model of the H-2 SEASPRITES. Some 65 single turbine H-2's are currently going through Kaman's modification line for uprating and conversion to the twin turbine HH-2D configuration. D models have dual wheels, an uprated transmission and four-bladed tail rotor. In Fleet operation since January 1970, the HH-2D was recently selected by Navy to perform the LAMPS (see SEALITE description below) mission on an interim basis. They will provide warning and protection from hostile sea force threats.



SEALITE—This new, lighter version of the UH-2C boasts most all of its Navy-proven components, characteristics and capabilities. Kaman is proposing this twin-engine helicopter for the Navy LAMPS (Light Airborne Multi-Purpose System) mission that would be flown from destroyers. Because of the difference in sizes and deck strength between many existing destroyers and those planned for the future Navy, Kaman has a two-step answer to LAMPS. The first is the HH-2D as an "interim LAMPS" vehicle for use on existing destroyers, and the second would be the SEALITE, for the new destroyers; SEALITE is being designed for 8,000 pound gross weight capability.



HH-43B/F—The HUSKIE (alias Pedro), Kaman's first production turbine powered helo, the U.S. Air Force's first turbine powered helo, setter of eight world records, and the rescueingest helicopter in the world, made its first flight in late 1958, and was initially delivered in 1959. Since then, more than 4400 persons have been rescued in all corners of the globe by HUSKIES in service of air forces of the U.S., Thailand, Morocco, Columbia, Pakistan, Iran (and the Iranian Army) and Burma. More than 240 HUSKIES have been built. A more powerful turbine engine distinguishes the F model from the B model. It is the world's most quiet helicopter, and has established enviable records for high availability and low accident rates.



K-700—Kaman's newest synchropter design is being developed as a rescue vehicle for the U.S. Air Force and as a medical evacuation vehicle for civilian purposes. While retaining many proven features of its predecessor synchropter designs, the K-700 offers improved speed, range and payload. Twin engine reliability and dual instrumentation are standard on the K-700.



In 1955, Kaman Aircraft established an award program to honor aircrews which had flown rescue or mercy missions in helicopters produced by the company. The program was based on official or semi-official reports made after each mission. At first, there were few awards, but each year the number increased as more and more rescues were made by Marine HOK's and Navy HUK's. Later, Air Force crews received similar recognition as HH-43A's began local base rescue coverage. As other Kaman helicopters—HH-43B, UH-2A/B, HH-43F, UH-2C—joined the Services and were utilized on a world-wide basis, the number of awards increased proportionately. Since that first award in 1955, Kaman has received literally thousands of reports from Air Force, Navy and Marine helicopter crews. Written in the terse, unemotional language of professional airmen, these reports reveal a continuing story of humanitarian service that should be a source of pride for every Kaman employee. Nowhere is this service more apparent than in Vietnam where Kaman helicopters have been rescuing downed airmen, evacuating wounded and carrying out numerous other missions since 1964.

UH-2 PILOT AWARDED MEDAL OF HONOR

Last year Lt Clyde E. Lassen, USN, a 27-year-old pilot from Helicopter Combat Support Squadron Seven, was invited to visit Kaman and see where the UH-2 SEASPRITE was produced. The first Navy helicopter pilot of the Vietnam war to receive the



In top left USN photo, a survivor is returned to the safety of carrier flight deck after rescue by Navy HUK-1. Middle photograph, a swimmer is saved from possible drowning by a Marine HOK-1. At left, USAF photo shows HH-43A crew receiving Scrolls of Honor after their prompt action saved a crash-landed KC-97 from destruction by fire.



In USAF photograph at top, two ARRS HH-43's team up with the base fire department at Goose Bay Labrador, to provide all possible protection for a pilot landing an F-102 with a malfunctioning nose gear. In USN photo at left, a UH-2 SEASPRITE crew is rescuing a pilot whose plane left the angled deck of the USS Hancock and plunged into the angry sea. Less than three minutes later he had been returned to the carrier.

Medal of Honor, Lieutenant Lassen had received the Nation's highest award for a mission flown in a UH-2. During the flight the helicopter was the target of bullets, flak and missiles, struck a tree while flying in total darkness, and landed three times in rice paddies while under enemy fire before two downed F-4 pilots were picked up.

In another mission, a UH-2 took hit after hit as it ran a gauntlet of enemy fire but the wounded pilot managed to fly the battle-damaged SEASPRITE back to the ship. Afterward, 41 holes from bullets or shell fire were counted—15 of them were in the rotor blades. During a third mission, attempts to rescue a Navy pilot downed in North Vietnam were thwarted

by an overhanging cliff. The airman had "punched-out" of his F-4 after it was crippled by gunfire and was hiding on the side of a steeply banked concave ridge covered with a dense, 30-foot-high canopy of entwined branches. Even though he was only a few feet away from the SEASPRITE, it was almost impossible to properly position the helicopter so the forest penetrator—another Kaman-produced device—could be lowered. The UH-2 pilot moved the helicopter slowly beneath the overhanging ridge and used the rotor blades to cut his way through the small trees until the SEASPRITE was over the survivor and he could be hoisted aboard. "The timber cutting with the rotor blades did not affect the performance of the bird at all," the rescue pilot reported later.



The USN photo of this "king-sized" sign was taken at HC-5, NAS Imperial Beach, Calif., in 1969. It clearly portrays the squadron's pride in its mission and the UH-2C.



Lt Clyde E. Lassen, Medal of Honor winner, in cockpit, is shown with member's of HC-7's Det 104. At machine gun is AE2 Bruce B. Dallas, one of his crewmen on the perilous rescue flight described on the preceding pages. Supporting the sign and holding rifles are ADJ3 Donald West, left, and Lt(jg) Clarence L. Cook, the other two members of the crew.(USN photo) In photograph below, a UH-2 crewman gives "thumbs up" signal as the rescue helicopter takes off from a DLG and heads for enemy territory.

As Navy UH-2 SEASPRITES daily launch from the tiny decks of guided missile frigates off the Vietnamese coast, another part of a vast rescue network is functioning inland. Playing a vital role in the operation are Air Force HH-43B's and HH-43F's operating from air bases in Vietnam and Thailand.

VITAL RESCUE ROLE PLAYED BY HH-43's IN RVN

Assigned to the 11 detachments in the 38th Aerospace Rescue and Recovery Squadron, 3rd ARRGp, the Kaman-produced aircraft have, according to the Air Force, rescued more than half of all downed airmen saved by helicopters in Southeast Asia. Many of the rescues were made under heavy enemy fire and both the 38th ARRSq and 3rd ARRGp have received Presidential Unit Citations for "gallantry in action."



Carrying a fire suppression kit, an HH-43 from the 38th ARRSq was the first to arrive over an A-1E Skyraider that belied in at Da Nang AB, Vietnam. In addition to furnishing such local base rescue coverage, the "Pedro" helicopter crews have chalked up an impressive record of combat saves.(USAF photo)



While officially designated the HUSKIE, in Southeast Asia the HH-43 is called "Pedro"—the name used during radio communications. To hundreds of rescued pilots and thousands of wounded, Pedro is a true hero. Veteran Air Force sergeants, not notorious for being soft-hearted, have been known to refer to the HH-43 as "our proud little bird," and one detachment in the 38th Aerospace Rescue and Recovery Squadron even awarded a Purple Heart to their HH-43 after it "distinguished itself while taking damage, abrasions and big dents" during an enemy ground attack at Cam Ranh Bay.

The Kaman helicopter has been in Vietnam since December 1, 1964, and during the early days of the war was the only helicopter available to the ARRS for rescue work. Although designed for local base rescue, the HH-43's flew far into North Vietnam. To extend the range, Air Force crewmen loaded extra 50-gallon drums aboard and then later handpumped the fuel into the tanks. The air defense system of



An HH-43 crew from the 38th ARRSq prepares to medevac a wounded 1st Air Cavalryman from the dense jungle near the Cambodian border. (Wide World photo)

North Vietnam has been described by veteran pilots as "worse than anything our airmen encountered over Korea or during World War II" yet the HH-43's sometimes ventured to within 40 miles of Hanoi to rescue downed aircrews.

The HH-43 was featured last year in an article, "Never Fear, Pedro's Here!!" which appeared in the *Airman*, official magazine of the U. S. Air Force. The following is an excerpt from the story:

"No other aircraft, not even the fabled Jolly Green Giant or its big brother 'Buff'—combined, has recorded as many combat saves as the little unarmed Pedro. Through April 1, 1969, in slightly over four years of operation in SEA, Pedro crews have rescued a total of 825 individuals who might otherwise have perished or fallen into enemy hands. That's more than half of all the combat saves recorded in Southeast Asia."

As with the UH-2's, space limitations make it impossible to even begin to tell the complete story of HH-43 activities in Southeast Asia. Mission reports arriving at Kaman tell of rescues made under heavy fire, crews saved from battle-damaged aircraft which crashed on the runway, fliers saved after ejecting over jungles, mountains and the ocean, and hundreds of medical evacuations involving both military personnel and civilians.

On a visit to Kaman, one HH-43 crewman told of evacuating wounded while under fire. Bullets chewed holes in the fuselage as he operated the hoist and beside him another Pedro crewman with an M-16 was returning the VC fire. "The cabin was loaded with wounded," the crewman said, "and hand grenades we had taken from them were rolling all over the floor along with ammunition, flares and a lot of other equipment." The crewman added that, because of the HH-43's comparatively small size but great lifting capability, Army and Marine patrols deep in the jungle often asked specifically for Pedro since "no other chopper can get in here and make it out again."

REPRESENTATIVE MISSION

Representative of the courage shown by the men who man the Pedros—and the faith they have in their aircraft—is the following mission account. Appropriately enough, the pilot of the rescue helicopter was 1st Lt Philip H. Kammann.

Nine times during a 13-hour period the HH-43 crew braved heavy fire in an attempt to evacuate two seriously injured U. S. soldiers from the side of a night-shrouded mountain. Caves which pock-marked the face of the mountain were occupied by enemy troops armed with rockets, 75mm recoilless rifles, mortars, machine guns and various other kinds of weapons. Since the tiny Army patrol had no litters

(continued on page 30)

HC-7 MANS HH-2C's ON SEA RESCUE DUTY



USN photos by PH3 Ralph Pabst



On June 15, the first operational Kaman HH-2C helicopter gunship was put into service on an advanced Search and Rescue station off the coast of Vietnam. The new combat configured SEASPRITE, flown by Helicopter Combat Support Squadron Seven's Det 107, is currently operating from a guided missile frigate (DLG). The honor of flying the first operational HH-2C goes to HC-7 pilots Lt Douglas H. Wassmer and Lt(jg) Donald P. McMahon, and crewmen AMH2 Jerry T. Braswell, ATNAN Thomas M. McCann and ADJAN Joseph A. Huston.

Ten days later on June 25, HC-7's last UH-2A/B was relieved of its Search and Rescue duties, and was replaced by another new HH-2C. HC-7 has made use of the SEASPRITE on their Search and Rescue detachments since September of 1967. Operating from DLG's off the coast of Vietnam, the men of these detachments are credited with the rescue of 33 American aviators from the unfriendly waters of the Tonkin Gulf. Equipped with the new helos, HC-7 will continue its tradition of being constantly on the alert to rescue American pilots, should they be forced to eject over the Vietnam coastline. The last UH-2A/B was piloted by Lt Richard W. Basore and Lt(jg) Lewis H. Smalley. Crewmembers were AMS2 John D. Birch, AE2 Robert T. Conlin and ATR2 Donald W. Post.

Prior to being put into service on the line, the HH-2C's went through final preparation and tests at HC-7's maintenance detachment at NAS Cubi Point, R. P. There the new birds are uncrated and assembled, and the crews receive last minute training. These SAR helos remain at sea for a period of 60 days, during which time they perform routine logistics and personnel transfer while remaining on a 24-hour-a-day SAR alert status.



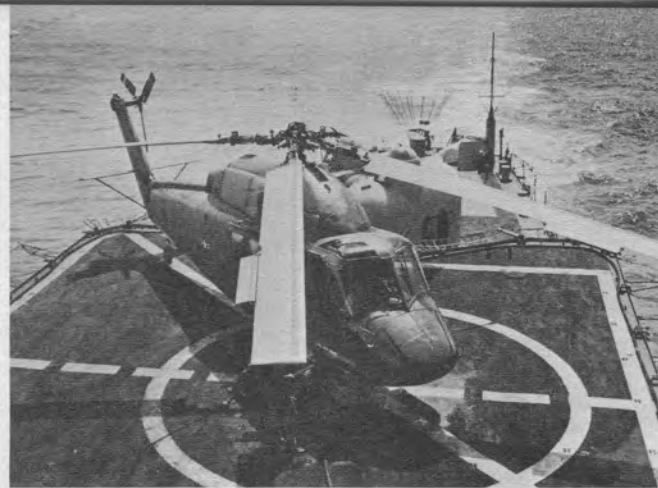
In photos, top to bottom, "Seadevil 20," the first operational HH-2C, lands in the rain on a DLG in the Tonkin Gulf. Seconds after touchdown, Det 107 personnel have chocked wheels and a few minutes later begin to tie helicopter down in anticipation of the rough seas which sometimes sweep the vessel's flight deck.



Det 107 personnel "shoot the breeze" while relaxing between missions and maintenance chores. Below, left, as the sea begins to roughen, a precautionary check is made of all tie-downs. In photo at right, newly arrived HH-2C is prepared for departure to the line by HC-7 personnel attached to the squadron's maintenance detachment, NAS Cubi Point, R. P.



Members of HC-7's Det 105 proudly display banner after UH-2 landed for 1000th time on DLG on which they are deployed. Soon afterward, HC-7's last UH-2A/B was relieved of its SAR duties and replaced by a HH-2C. Holding the banner are Lt(jg) R. J. Jaeger, left, officer in charge of the detachment, and Lt(jg) R. J. Wright, assistant OIC. Seated, from left, are ADJ2 R. J. Blomquist, AMH2 R. E. Conrad, crewleader; ADJ1 M. McMichael, ATR3 D. E. Cornish, AMS2 S. K. Steinmetz, AE3 P. M. Batson, AMS3 D. D. Sickles, ADJAN R. E. Ankrom. Not shown is AE2 L. C. Johnson (Det Cubi).



The last HC-7 UH-2 in SAR service is rolled out to DLG helo pad. "Seadevil 13" turns up and then takes off on final mission over Tonkin Gulf. The squadron has been flying UH-2's on SAR missions off the Vietnamese Coast since 1967. At left, Det 105 personnel pose for commemorative photograph. A Kaman Service Representative later described their mission accomplishments and maintenance work during the cruise as "outstanding."

AT SEA ABOARD USS AMERICA—Sea-serving ice cream to a destroyer is one of the more unique jobs performed by HC-2's Det 66 deployed on the Seventh Fleet aircraft carrier USS America. More usual are the search and rescue missions that have earned the nine officers and 31 enlisted members of Det 66 the nickname "America's Angels."

The "Attaboy" ice cream was given to the USS Robison by America for her speedy pick-up of the carrier's man-overboard-drill dummy, Oscar.

The Angels have rescued seven America crewmembers from the sea since America joined the Seventh Fleet in May. Det 66, homebased at NAS Lakehurst, N. J., is commanded by Cdr Philip F. Duffy. America, commanded by Capt Thomas B. Hayward, is homeported at Norfolk, Va. and presently serves as flagship for VADM Frederic A. Bardshar, Commander Attack Carrier Striking Force, a unit of the Seventh Fleet in the Western Pacific. (USN photo by PH3 Lenny J. LaFeir)



1000-Hour Pilot Awards



Lieutenants Hitch, left, and Ahearn display the 1000-hour plaques received from Kaman Aerospace. Cdr J. J. Mozley, HC-2 commanding officer, is at far left and Edward Noe, Kaman Service representative, on the right. (USN photo by PH3 Lundsteen)



Lieutenant Hanks is presented a Kaman 1000-hour plaque by Capt T. M. Smyer, commanding officer of NAS Kingsville, Texas. (USN photo)



Mr. Noe presents a Kaman plaque to Lieutenant Olson of HC-2. Present for the ceremony was Cdr D. J. Hoyes, left, squadron executive officer. (USN photo by PH3 Dale)



Lieutenant Nelson proudly displays the plaque he received during a ceremony attended by Mr. Noe and Cdr E. W. Hille, left, commanding officer of HC-4. (USN photo by D. Kelley)

More than 400 plaques have been awarded by Kaman Aerospace to pilots logging 1,000 hours in helicopters produced by the company. Recent recipients are: HH-43 — Capt George R. Andrews, Det 10, 40 ARRWg, Aviano AB, Italy and Capt James T. McComsey, 3637th Student Sqdn, Sheppard AFB, Texas; UH-2/UH-2C — Lt Bruce E. Nelson, HC-4, NAS Lakehurst, N. J., Lt James H. Hitch, Lt Robert W. Ahearn, Lt Thomas L. Olson, HC-2, NAS Lakehurst, N. J., Lt Lonnie D. Lorren, HC-7, NAS Atsugi, Japan; LCdr John B. Reardon, LCdr Philip C. Olson, HC-5, NAS Imperial Beach, Calif., Lt William L. Hanks, NAS Kingsville Texas.

Captain Andrews logged his 1000th hour in the HH-43 while flying a medevac, one of several made by Det 10 during the year. Left to right are Captain Andrews, Sgt James A. Payne, SSgt Alan L. Suit and SSgt Wiley T. Sanford. (USAF photo)





SEASPRITE ACTIVITIES

Service Representatives Commended By Navy

Two Kaman Service Representatives received commendations from the Navy recently for their assistance during the "Iron Barnacle" operation in Cambodia and the Republic of Vietnam. Both William G. Wells, senior field representative, and Donald T. Lockridge, field service representative, were attached to Helicopter Combat Support Squadron Five's Det 102 during the operation. HC-5, along with HC-1, is based at NAS Imperial Beach, Calif. The representatives are presently assisting both squadrons.

The commendations, from Vice Admiral J. H. King, Jr., commander U. S. Naval Forces, Vietnam, were presented to Mr. Wells and Mr. Lockridge, by Capt C. A. Merryman, Jr., chief of staff, COMFAIRSANDIEGO. Also participating in the ceremony was Cdr William N. Elders, HC-5's commanding officer, and Mr. William R. Murray, Kaman vice president.

The commendation said that the judgment and guidance shown by the two representatives in the maintenance areas of the HH-2D were "invaluable assets" to the Detachment and contributed "immeasurably" to the success of the mission. Continuing, the commendation said they spent many long hours, both day and night, working alongside the maintenance crew and provided vital on-the-job training and expert technical assistance. The service representatives' "unlimited knowledge and willingness to perform under the most adverse conditions were inspirational and added immeasurably to the professionalism displayed by the Iron Barnacle team," the commendation concluded.

Det 79 Makes Mountain Medevac

A UH-2 crew from HC-4's Det 79 aboard the USS Raleigh evacuated a Navy corpsman who had been injured by a falling rock while on a training mission with the 2nd Marines. The accident occurred at an altitude of 6,000 feet near a cliff on the side of a steep mountain.

Due to the terrain, several unsuccessful attempts were made to make the pickup, then the accident victim was moved to a more suitable area for hoisting. The evacuee was taken to the USS Francis Marion for treatment. UH-2 pilots were Lt C. R. Rankin and Lt T. P. Sullivan. ADJ3 D. J. Coley was aircrewman.

During another Det 79 mission, a Greek civilian suffering from the bends was evacuated from the town of Khalkis to Rhodes. The flight was made at low altitude due to the patient's condition and a landing was made in a small space with only 10-foot rotor blade clearance. Authorities said afterward that the diver would have suffered permanent injury or death without the helicopter evacuation. Pilots were Lieutenants Rankin and Sullivan. AMH2 J. W. Pojedinec was aircrewman.

Lemoore Unit Rescues Two

Two Marine officers whose aircraft crashed in an enclosed canyon at 11,300 feet were rescued by a UH-2C from NAS Lemoore, Calif. Due to the snow in the canyon, the survivors were unable to move from their almost inaccessible position.

The SEASPRITE, piloted by Lt J. E. Bookout, was vectored into the general area by a C-130 and then an OV-10 guided the UH-2C until visual contact was established. Due to the survivor's position in the canyon, the crew aboard the rescue helicopter did not have radio contact with them. Other members of the SEASPRITE crew were Lt M. R. Sutton, copilot; and HN3 E. A. Collins, crewman.

(continued on page 27)

Honored By Navy—Shown during the recent Commendation Awards ceremony are, left to right, Mr. William R. Murray, Kaman vice president; Don Lockridge, service representative; Capt C. A. Merryman, Jr., chief of staff, COMFAIRSANDIEGO; William G. Wells, senior service representative; and Cdr William N. Elders, commanding officer of HC-5. (USN photo by PH3 R. E. Behr)





Friendly Visitor—A SEASPRITE from HC-4, NAS Lakehurst, N. J., hovers just a few feet above and away from the bandshell during Navy Night festivities held recently in Dover Township. Taking its cue from the squadron, the NAVAIR-LANT band immediately began playing "Up, Up and Away" for the Toms River audience. The helicopter was one of three from HC-4 that participated in the event. (USN photo)

Gotcha! — When the Russians send out one of their long range jets to photograph our ships in the Mediterranean Sea, we counter by sending a jet fighter up to intercept. But what happens when the Russians send out a helicopter from their new helicopter carrier, Moskva, to photograph our ships? The answer, launch a HC-2 helicopter to "block that shot."

That's just what happened recently aboard the USS Roosevelt, (CVA-42), when a Russian helo appeared on the scene and began to photograph operations. A UH-2 helo from HC-2, Det 42, with LCdr Tom Leblanc as pilot and Lt Jim Barry as copilot, was immediately launched to intercept. Before the Russians could commence, LCdr Leblanc had deftly maneuvered his UH-2 between the Soviet helo and the Roosevelt, obstructing the field of view and making attempts to photograph the carrier very difficult.

Frustrated at this turn of events, the Russians soon departed for the more congenial atmosphere of their own carrier. . . .from *The Lakehurst Station Break*
NAS Lakehurst, N. J. (USN photo)



Workhorse—While Navy crews have chalked up an impressive rescue record with the UH-2A/B and UH-2C SEASPRITE they obviously haven't forgotten that the "U" stands for utility. One detachment, in addition to flying plane guard, carried almost 9,000 pounds of mail and cargo in a month, and personnel transfers of 200 or more during a similar period are often reported. One pilot "vertrep'd" 36,000 pounds of ammunition from a cargo ship in only six hours. Shown above is a UH-2C during vertical replenishment evaluation at NAS Patuxent River, Md. (USN photo)



Southeast Asia



Pedro Pilots Also Instructed

TRAINING THE 'MEN IN THE SILVER SUITS'

By Sgt Ken Hacker

PHU CAT AB, Republic of Vietnam (7AF)—There's a plaque on an officer's club wall, stating, "If you drink, don't fly; if you fly, don't stall; if you stall, don't flame out; if you flame out, don't spin; if you spin, don't crash; if you crash, don't burn."

Good advice, but what if a plane crashes without leaving the ground, say the aircraft's engines catch fire halfway down the runway? Or, what if a pilot comes home with holes all over his fuselage caused by an irate Viet Cong?

The answer lies with those people on the ground in those silver and asbestos fire suits, who have the job of getting the crews out of the burning aircraft with the maximum amount of speed. Whether they be overhead in an HH-43 Pedro helicopter or screaming down the runway in one of the base's 50-foot-long crash trucks, the sight of one of these silver-clad firemen is quite welcome to a wounded pilot looking out of his cockpit. But these unsung heroes in the silver suits do not just happen to be in the neighborhood when an accident occurs. They are on their way to the scene while the aircraft is still 10 minutes away from the base. The tower contacts them, and they are in position and ready before the pilot ever feels his wheels touch the ground.

The training of these airborne and truckborne firefighters takes place on an almost daily basis at this air base. Phu Cat has the distinction of being one of the few bases in the Republic of Vietnam with the facilities for training firefighters to battle their foe, JP-4...the go-juice for the Air Force's jet fighters. As one of the few bases with a pit for simulated aircraft fires, the 12th Civil Engineering Squad-

ron and Det 13, 38th ARRSq, play host every month to firefighters from almost all bases within the Republic. They have the facilities for training up to 50 firemen and 30 pilots every month. This job includes igniting some 20 simulated pit fires every month.

Pilots of the twin-rotor Pedros go through eight hours of flight training, covering the delivery of the firefighter to the scene and the delivery of the red satellite which they call a fire suppression kit (FSK). The FSK is a round tank and hose affair which holds 690 gallons of firefighting agent for use by the aircraft's firemen.

After delivering these, the copter is again airborne and will hold above the firemen, beating down the flames with the downdraft from its rotors. The firemen will set up the suppression kit and begin to clear a path to the aircraft's cockpit and the crew. In the meantime, the base's four crash trucks will have arrived on the scene and will begin extinguishing the fire itself.

The proficiency of these men in silver and the men who pilot and man the Pedros is maintained with practice fires and rescues, check rides and the like. They are required to perform at least one day and one night-fire flight and crew extraction each three months. The question is, how do you do it without an aircraft crash? The answer lies in an abandoned rice paddy not far from the base.

With the help of bulldozers from the 12th CES, a pit has been dug to use for simulated rescue exercises. Under careful supervision, the pit is filled with 500 gallons of jet fuel. A flare is thrown in and, voila, a simulated burning aircraft.



Once the fire is going strong, a Pedro comes in and deposits two firefighters and their equipment. Trainees, under the eye of their instructors, go through the time-tested actions of cutting an 8 to 10-foot wide path through the flames, simulating the approach to an aircraft cockpit. The exercise gives the trainees the actual experience of suppressing the flames with the foam from the kit carried by the helicopter. The only difference between this exercise

and the real thing is the lack of an aircraft. Instructors make the most out of the exercise by having the firemen put out the entire fire. In an actual incident the men brought in by Pedro would only cut a path to the aircraft. The base fire department personnel in the crash trucks would take care of the rest of the blaze.

But what if in an actual incident the crash trucks beat the helicopter to the fire? Technical Sergeant James E. *(continued on next page)*



Tan Son Nhut AB...The 38th ARRSq headquartered here, recently held its first maintenance superintendents conference for units based in Southeast Asia. The purpose was to discuss the overall responsibilities of the maintenance supervisor and to allow an interchange of ideas from the field on associated topics such as operations, quality control evaluations, safety and manning. All HH-43 "Pedro" detachments were represented. Pictured are: front row, left to right, MSgt Terry Dorsey, 38th ARRSq; SMSgt Donald Murdock, Det 8; SMSgt Clyde Baker, Det 14;

SMSgt Joseph Riberdy, Det 9; SMSgt Roy Modglin, Det 7; 1stLt Howard Wallace, 38th ARRSq; Capt Steve Weston, 38th ARRSq; SMSgt Paul Koonce, Det 13 and TSgt James Kermon, Det 11. Second row, SMSgt Anthony Mills, Det 1; SMSgt John Tucker, Det 3; TSgt Mort Mikkelsen, 38th ARRSq; SMSgt James Frazier, Det 4; LtCol Donald Jensen, Commander 38th ARRSq; SMSgt Joseph Kennedy, Det 5; MSgt Thomas Brown, Det 6; SSgt William Wilson, Det 6; SSgt Jack Pavelich, 3rd ARRGp and SMSgt Earl Holland, Det 2. (USAF photo)



Hooker deputy fire chief here, said "The first truck would initiate crew extraction. It's important for all our personnel to know the procedures for extracting crewmembers from burning aircraft. No one knows who will be first on the scene. And the first man on the scene has the responsibility for that crew in the aircraft."

Base fire chief, MSgt Robert E. Hunter, added, "If the base fire department trucks get there first, then the Pedro backs up the men in the first truck in their path-cutting journey to the aircraft. But in normal instances, Pedro will get there first, and its men will cut the path while our trucks work on the remaining fire."

SSgt Robert E. Morris, noncommissioned officer-in-charge of the airborne firefighters assigned to the Pedro unit, commented on why his only job is to extract the crew and leave the bulk of the fire to the truck crews. "The fire suppression kit carried by the HH-43 holds 78.5 gallons of water and five gallons of foam. These two ingredients combine to form 690 gallons of fire reducing agent. This amount is not enough to work on the whole fire, but is more than sufficient to cut a path to the aircraft and push the flames away from the cockpit."

Sergeant Morris continued, "On the other hand, the trucks from the base fire department carry an almost unlimited amount of agent and with their four trucks have the capability to extinguish the entire fire."

Training for the men in silver starts after basic training. They'll go through four weeks at Sheppard AFB, Tex., where they will learn the fundamentals and two weeks of academics. At their first assignment, they will undergo on-the-job training and further familiarization with the various pieces of firefighting equipment. Once selected for airborne firefighter assignment, the individual will attend the U. S. Air Force Survival School at Clark AB, R. P. Completing that course, he will be sent to a rescue detachment for his airborne fire training.

According to SSgt Jerry W. McCutcheon, flight examiner for the 12th CES fire department, "The students start off with 13 hours of ground training and are taught pre-flight checking of all the alert equipment, emergency procedures and the hand signals used to communicate with the aircraft commander during engine starts and shutdowns."

"They also learn about the fire suppression kit. We teach them the daily maintenance which must be performed, how to refill and recharge it, and how to hook it up properly to the HH-43 Pedro's cargo hook," added the sergeant.

"The men also get 12 hours of flight training, including familiarization with the aircraft's hoist, operating the craft's cargo sling, handling litters and constant briefings



Hoist Checkout—SSgt Jerry W. McCutcheon observes hoist operations by one of his students, Sgt Glen G. Lucero. Hoist operation is just one of the facets of flight testing done by Sergeant McCutcheon. The student will go through 12 hours of flight training in the HH-43 "Pedro" for the initial qualification as an airborne firefighter. (USAF photo by Sgt Jose Sanchez)

on flying safety. They then go on to the two fires at the base fire pit—one during the day and the second during that same night."

The next time you are on a flight line and see one of the red crash trucks speeding down the ramp or see a Pedro hovering over an incoming aircraft with a fire suppression kit hanging from its underside, forget about the impressive looking equipment and think about the men whose job it is to pull aircrews from disabled and burning aircraft. They're risking their lives "so that others may live."

Det 13 Cited For Safety

Det 13, 38th ARRSq, Phu Cat AB, was recently presented the Military Airlift Command Flying Safety Award for a two-year period which ended Jan 1, 1970.

The presentation was made by Col Malcolm C. Frazee, then commander of the 3rd Aerospace Rescue and Recovery Group at Tan Son Nhut AB. Accepting the award on behalf of Det 13 personnel was Maj Joseph D. Price, detachment commander.



TAN SON NHUT AB—LtCol

Donald E. Jensen recently assumed command of the 38th ARRSq in ceremonies held here. Formerly commander of Det 6, 38th ARRSq, Bien Hoa AB, the Colonel will be responsible for directing local base rescue at all major air bases in Southeast Asia. Utilizing the HH-43 "Pedro" helicopter, these forces have ac-

counted for the rescue of 1,031 individuals since December 1964. This is the largest number of saves recorded by any Air Force Rescue unit in Southeast Asia.

LtColonel Jensen received a bachelor of science degree from the United States Naval Academy in 1952. Upon the completion of pilot training in 1953, he flew the B-29, RB-50 aircraft and participated in "Operation Red Wing," the Eniwetok nuclear test in 1956. After obtaining a masters degree in electrical engineering from the University of Oklahoma, he served with the Air Force Systems Command from 1959 to 1968. He worked on the "Discoverer" series and in orbit and mission plans for the Air Force's unmanned satellite program. During this tour he was also commander of the USAF Satellite Tracking Station, Mahe Island, Seychelles, and was assigned as the senior American representative to the British Government there from 1965 to 1968. His military decorations include the Air Medal with Oak Leaf Cluster and the Air Force Commendation Medal with Oak Leaf Cluster.

Det 8 Makes Hazardous Medevac

An HH-43 crew from Det 8, 38th ARRSq, Cam Ranh Bay AB, responded after a request was received to evacuate a seriously-ill soldier from a night-shrouded hilltop 10 miles away. As Capt Peter F. Dineen held the Pedro in a hover over the 30-foot trees, the medical technician, A1C Thomas P. Gratton, was lowered on the forest penetrator seat. Aided by the lights on the helicopter, he made his way through a five-foot opening in the trees and then reached the ground. He and the evacuee were then hoisted to the HH-43 one at a time by Crew Chief Thomas W. Hooker. Aiding Captain Dineen in maintaining a stable hover over the small opening in the trees were the crew chief and copilot, Capt Bruce W. Staples.

In another Det 8 mission, an HH-43 crew evacuated a seriously-ill seaman from the S. S. Trans Colorado almost 30 miles off the coast of South Vietnam. As Captain Dineen hovered the Pedro over the moving vessel, SSgt Eugene E. Cramer was lowered on the forest penetrator to the deck. He secured the evacuee to the seat and it was hoisted to the Pedro by SSgt Thomas W. Seibert. The medical technician was then recovered in the same manner and the helicopter headed for the hospital.

In a third mission, a man who had been seriously injured when two jeeps collided, was taken to the hospital in an HH-43 from Det 8. Manning the Pedro were Captain Dineen, Major Lamkin, Sergeant Cramer and Airman Hooker.

Pedro Helps Hijacker Victim

A crewmember, shot during an attempted C-141 hijacking at Bien Hoa AB, was taken to the hospital in an HH-43 from Det 6, 38th ARRSq. The detachment is stationed at the base. The seriously wounded man, who had been shot at close range with an M-16, was accompanied to the U. S. Army 24th Field Evacuation Hospital by a flight surgeon. The hijacker had been captured immediately after the shooting. Manning the Pedro were Capt Roy M. Litzen, pilot; Capt Russell T. Birmingham, Jr., copilot; Sgt Earl S. Wright, helicopter mechanic; and TSgt Grady J. Mullins, medical technician.

In another Det 6 mission, an HH-43 crew scrambled at night after an O-2 reported it had lost an engine and was going down. The crash site was located in a rice paddy four miles from Bien Hoa and the pilots, both uninjured, were picked up without incident. Manning the Pedro were Maj Elmer Funderburk, Jr., pilot; Capt Richard S. Dunlap, copilot; SSgts George W. Tatum, Harry W. Bryant, and Glenn A. Mumpower, crewmen.

During a third mission carried out by Det 6, a seriously injured airman was taken to the hospital by an HH-43 crew consisting of Captain Dunlap, pilot; Capt Leo P. May, copilot; SSgt Elex R. Scroggins, Sgt Thomas Mack and Sgt Timothy J. Thomen, crewmen.

Night Medevac Saves Two

Two firefighters, among 14 injured when ordnance exploded aboard a blazing Marine aircraft on the ramp at DaNang AB, were taken to the hospital in an HH-43 from Det 7, 38th ARRSq. The detachment is based at DaNang. The pre-midnight flight to the hospital was made over hostile territory. Afterward, a doctor said the immediate medical evacuation meant the difference between life and death for the critically-wounded men. Capt Isamu S. Momii was pilot of the rescue helicopter and Capt Joseph A. Ori was copilot. SSgt Herbert L. Belcher was helicopter mechanic, and SSgt Garland D. Becker, medical technician.



Protector—An HH-43 "Pedro" from Det 6, 38th ARRSq, settles down on its landing pad at Bien Hoa AB after a mission. Standing around-the-clock alert duties, Pedro and other helicopters just like it provide almost instantaneous rescue coverage for the Bien Hoa AB area. Should a pilot go down near the base, he can expect Pedro's distinctive form to be hovering above him quickly. (USAF photo by SSgt David Spaner)

The Spartan Angels

Story and USN photos
By PH3 Jerome Ryden



The first helicopter rescue unit ever assigned to the Navy's training carrier, the USS Lexington (CVT-16), has been flying cover for student pilots and their instructors in Kaman UH-2B "SEASPRITES" since last spring. The formation of the detachment, April 27, relieved Helicopter Training Squadron Eight which had been providing plane guard service for the carrier in addition to training pilots for the Viet Nam War.

The new unit was formed with five pilots, one chief petty officer and one UH-2B. The detachment, nicknamed "Spartan Angels," acquired temporarily assigned aircraft from around the Naval Air Training Command and temporary personnel from HT-8. Within the first few hours of the first mission June 1, the CVT-16 Plane Guard Detachment had already saved the life of a pilot of an A-7 attack jet who ejected after his aircraft lost power on a catapult launch during carrier qualifications.

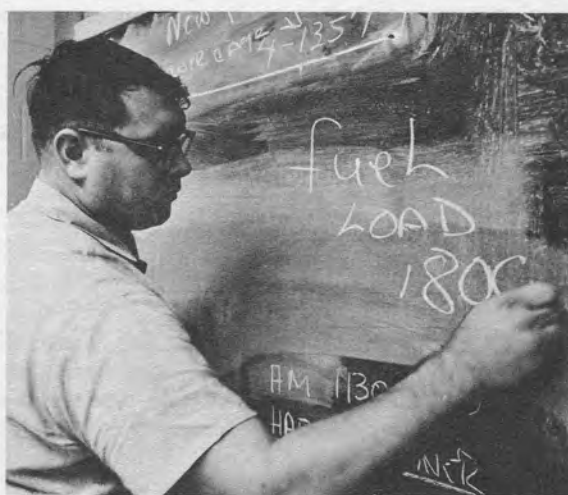
According to the unit's officer-in-charge, LCdr Tim Buckley, the group's rapid development to operational

status was due to intensive training and the crew's accumulated experience. "When we organized the unit, we had nearly 180 years of total enlisted experience in helicopters," LCdr Buckley said.

Although the detachment is now receiving permanent personnel, maintenance and training is continuing.

"The Spartan Angels will fly about 2000 hours annually," LCdr Buckley estimated. He indicated, to fly that much, the unit will be required to provide a constant and significant amount of helicopter maintenance and other support efforts. Leading the crewmen through their training program and supervising aircraft maintenance is AMCS T. W. Williams who has 10 years experience with helicopters. The CVT-16 Plane Guard Detachment is his first experience with the Kaman SEASPRITE.

The crew leader is ADJ1 Frederick Elliott who was last associated with the UH-2 at Cubi Point, Phillipines. The maintenance chief is ADJ1 Arlington Levi who has had 14 years experience with helos. The electrical supervisor, AE1



At left, LCdr Tim Buckley, officer-in-charge, and AMCS Terrell W. Williams discuss training and helicopter maintenance. Above, AMS1 Richard E. Osborne who plans aircraft load and required crew before each flight.



In above photo, LCDr Buckley and ADJAN Dale C. Knott, plane captain, make a pre-flight check before SEASPRITE takes off. At right, detachment personnel load the helos at their parking area, Forrest Sherman Field, NAS Pensacola.



Ronald Hall, who had nine years experience with the Kaman rescue aircraft, while the other electrical supervisor, AE1 Hubert A. Johnson, has had five years with HC-1.

Coming from HC-1, Richard Osborne is the aircrew training petty officer. Also a former member of Helicopter Combat Support Squadron One, is the airframes supervisor, AMH1 Maxie K. Nix. The line supervisor, ADJ1 Cameron Reeves, has served with both HC-1 and HC-5. The power plants supervisor, ADJ1 Richard Beitler came to Pensacola from HC-2. Coming from the NAS Pensacola SAR detach-

ment is AT1 R. B. Wallace. The assistant avionics supervisor, ATN2 Charles Palmer, was recently attached to both HC-2 and HC-4.

Leading the crew's third class petty officers in SEASPRITE experience is ADR3 Bobby S. Putney with 13 years. Both ADJ3 George Walker and ADR3 L. A. Witt have six years each. Both came to Pensacola from HC-2. AMS3 Robert Goodrich previously served with HC-1. AMHAN Richard Franklin has two Kaman rescue awards for live rescues aboard SEASPRITES. Shortly after leaving



In photos above, ADJ3 George P. Walker and AA Larry E. Casey install lead-lag pin on UH-2B rotor head....ADR Loren D. Hasley aligns the rotor hub prior to installing main rotor blades. Left photo is a cockpit view of the Gulf shoreline, a familiar sight to the SEASPRITE pilots and crewmen.



Top photos, left to right, AMSAN Terry A. Powers helps maintain detachment records; AE3 Andrew B. Smoak calibrates an altimeter; AEAN Daniel J. Ciesielinski practices corrosion control, a routine precaution used with all aircraft exposed to salt water. Bottom photos, AMS2 Bobbie

R. Marise readies high pressure air bottle used by UH-2 mechanics. Watching are AMH1 Maxie K. Nix, AMS3 Robert J. Goodrich and AA John M. Bulgier. Homer Helm, left, Kaman service representative, discusses proper care of the rotor head with the linecrew.



the NAS Pensacola SAR unit, Franklin made the first live rescue of the CVT-16 Plane Guard unit.

Leading the pilots in helicopter experience is Lt C. E. Walker with over 3000 flight hours. LCdr Buckley was formerly a pilot with HC-4. Lt Dick Kearley, the maintenance officer, flew for HC-1 and Lt R. A. Hargis, the operations officer, piloted SEASPRITES for HC-4. The detachment recently received two officers from SEASPRITE training at NAS Lakehurst. They are Ens Earl G. Purnell and Lt(jg) Roy C. Walker. Eventually the unit will have 12 pilots.

"At the moment the detachment has 12 qualified aircrewmen," LCdr Buckley said. "Considering we started with five, qualifying men to fly in the SEASPRITE has been a large job."

Each aircrewman must be a volunteer and must have at least 50 flight hours in the UH-2 and have made 20 practice rescues. They also must know the mechanics of the SEASPRITE and be qualified in both swimming and first aid.

"We try to make every flight hour a training hour," the unit's officer-in-charge said. "Because every minute ashore not used to maintain the aircraft is spent in training for both day and night operations, the detachment is already professional. It will be some time before the detachment has only permanent personnel, but we expect to make every commitment."

The maintenance program on the SEASPRITES also continues every day. Two field representatives are assisting the unit in bringing its aircraft into first-rate condition.



The technical specialists—Homer Helm, Kaman Aircraft, and Bob DeMay, Ryan Aircraft—provide advice both ashore and at sea, day or night. Helm specializes in airframe problems and DeMay in the avionics portions of doppler installation.



AMS3 John R. Setters maintains a careful lookout during a mission over the Gulf. Backing up the UH-2 crews are the efforts of every man in the CVT16 Plane Guard Detachment.



Kaman Corporation headquarters at Bloomfield, Connecticut, are shown above. The widely diversified organization serves four principal markets—Aerospace, Science and Technology, General Aviation and Music—with annual sales of more than \$80 million. The photograph at right was taken more than 20 years ago during Kaman Aircraft's pioneering helicopter days.

(continued from page 5)

while the "B's" were powered by Lycoming T-53 gas turbines.

Also in 1957, as the result of winning a Navy design competition, the company received a contract to design, develop and produce a prototype quantity of HU2K-1 utility helicopters. The HU2K-1, since designated the UH-2A/B, is a single engine helicopter powered by a General Electric T-58 gas turbine.

Further development of the Kaman Aircraft "Family" is shown on pages 6 and 7.

Twenty five years have passed since Kaman Aircraft took its first trembling steps forward. The infant has become an adult. Mr. Kaman now heads Kaman Corporation, the parent company, while Jack G. Anderson, whose message appears in the front of Rotor Tips, is president of Kaman Aerospace Corporation. Aerospace, largest of the subsi-



diaries, produces, overhauls and modifies helicopters and is deeply involved in several other programs including the production of components for the F-14 and C-5A. Numerous test and development programs such as SEALITE, shown on page seven or SAVER (Stowable Aircrew Vehicle Escape Rotoseat) are underway. Kaman Automation is producing automatic candy packaging machines while KAcarb Products division produces extremely long-life, self-lubricating bearings of titanium, ceramic and compacted carbon.

Kaman Corporation, founded in 1945 as a pioneer helicopter company, has expanded into markets of nuclear research, general aviation, aerospace components, music and industrial products. The widely-diversified organization serves four principal markets with annual sales of more than \$80 million.

— Last Minute Save Made By Det 16 Crew —

The fire was less than 100 feet from the prospector when Capt Lew E. Phillips and his HH-43B crew from Det 16, 42ARRSq, Williams AFB, Ariz., arrived at the scene. The man below, weakened by thirst, appeared to be moving only with great effort. He was on a steep slope with the rapidly advancing flames in front of him and a 30-foot dropoff at his back.

Landing was impossible, so Captain Phillips held the HUSKIE in a hover while Maj Roger A. Beck (MC), a flight surgeon, was lowered by Sgt John C. Lantry, the helicopter mechanic. At the time a left crosswind was blowing and the rotor blades were less than 20 feet from the rocks on the cliff. The flames had advanced to within 50 feet as Major Beck placed the prospector in the sling and he was hoisted aboard. At this point, a clump of burning material rolled downhill toward the helicopter, spreading fire as it rolled. Captain Phillips used the rotor wash to divert the material and the flames were retarded until the doctor could be hoisted aboard. As the helicopter left the area, flames engulfed the rescue site.

The other member of the HH-43 crew was Sgt William J. Hungerford, medical technician. He had participated in an unsuccessful search earlier over the rugged terrain and then

deplaned so the prospector's partner could guide Captain Phillips to the spot where he had left the exhausted man. A member of the Maricopa County Sheriff's Department was also aboard. Captain Phillips said maximum assistance was given by the law officers.



Left to right: Sgt John C. Lantry, Capt Lew E. Phillips and Sgt William J. Hungerford. (USAF photo)

DET 15 AND 22 PARTICIPATE IN 'MAST' PROGRAM

Two 42nd ARRSq detachments participating in the Assistance for Safety in Traffic program have already flown several missions under the MAST concept. Three such flights were made by Det 22, Mountain Home AFB, Idaho, and two by Det 15, Luke AFB, Ariz. The four-month program, which began September 1, is designed to determine the value of helicopters in providing medical assistance to automobile accident victims and other persons needing emergency care. It is sponsored by The Departments of Transportation and Defense.

Two MAST missions, both involving automobile accident victims, were flown recently by Det 15, 42 ARRSq, Luke AFB, Ariz. An HH-43B crew from the detachment responded at 2:45 a.m. after the Arizona Highway Patrol requested assistance in evacuating a 12-year-old boy. He had suffered a critical head injury in an automobile accident on Highway 93. Maj Elmer L. O'Banion landed the HUSKIE on the highway by the headlights of four patrol cars and the injured boy was placed aboard. On the way to the hospital, TSgt Peter J. Lee, medical technician, administered first aid. Other members of the crew were Capt Robert K. Stuart, copilot, and SSgt Jessie C. Spruiell, helicopter mechanic.

A few days later, Det 15 responded to another call from the Highway Patrol and evacuated two critically injured automobile accident victims. The crash had also occurred on Highway 93. Maj Richard R. Cowles landed the HH-43 on the highway and the patients were placed aboard. Treatment on the way to the hospital was given by Sgt Marion E. Bankson, medical technician. Sgt George H. Bohl, helicopter mechanic, was the other member of the crew.

A gold miner, hunter and ill woman were evacuated by HH-43B crews from Det 22. The miner had suffered a heart attack while in an isolated cabin on a mountain slope heavily wooded with 150 to 200 foot trees. Capt Albert E. Tollefsen had to abandon an attempt to land in a clearing near the cabin because of the trees and terrain but then found a small open area amidst 200-foot trees. A vertical approach was made and after shutdown the crew hiked to the cabin a mile away. Capt Lyle Wendling (MC), a flight surgeon, examined the miner and then he was placed on a Stokes litter and carried back to the HUSKIE. A maximum power available vertical takeoff was made and then the

HH-43 climbed to 9500 feet to clear the mountains for a direct flight back to Mountain Home AFB. The mission was reported to be the first MAST mission for the US Air Force. Other members of the crew were Capt Gary A. Dietze, copilot; MSgt Hubert O. Marsh, helicopter mechanic; and SSgt Jerry F. Hibner, medical technician.

In a second mission, Det 22 evacuated a hunter who was thrown by his horse and injured internally. The accident occurred at 5,000 feet in a mountain valley meadow. Pilot of the HH-43B was Captain Dietze and Capt Frank C. Andrews II was copilot. Crewmen were SSgt Gerard J. Bucknall, helicopter mechanic; and SSgt Frederick P. Pecotte, medical technician.

Four forest fires which threatened the Tonto National Forest were extinguished with the help of two HH-43 crews from Det 15, 42nd ARRSq (MAC), Luke AFB, Ariz. The HUSKIES airlifted 188 firefighters, and five tons of food, water and equipment to the remote mountain areas from which the fires were fought. In all, the HUSKIE crews flew 113 sorties and logged 19 hours during the three-day operation. Pilot of the first HUSKIE was Maj Elmer L. O'Banion; copilot, Maj Richard R. Cowles; and flight mechanic, Sgt George H. Bohl. Maj Ralph L. Gaede was pilot of the second HUSKIE crew. Maj Bobby S. Lay was copilot and SSgt Jessie C. Spruiell, flight mechanic.

In another mission, a civilian seriously injured after a 500-foot fall in Salt River Canyon, was saved through the efforts of an HH-43 crew from Det 15 and a highway patrolman. When Major O'Banion arrived at the accident scene he found that the injured man was lying at the base of a canyon wall--there was no suitable landing site in the area for the HUSKIE. The pilot held the HH-43 in a hover and MSgt David J. Wheeler, a pararescueman, was lowered with a Stokes litter. After administering first aid, Sergeant Wheeler and a highway patrolman at the scene began carrying the injured man over the rugged terrain toward the nearest suitable pickup point. After an exhausting hour and a half trip they reached a cleared area and the HUSKIE was able to make the pick up without incident. Other HH-43 crew members were Maj John L. Wells, the copilot, who was TDY from 42 ARRSq Standardization; and Staff Sergeant Spruiell, the crew chief.

BUSY RESCUE/MEDEVAC SCHEDULE FOR HC-7

Two milestones were passed by HC-7 recently with the rescue of a downed pilot from the Tonkin Gulf. The mission, flown by Det 104 deployed aboard a Navy frigate, was the squadron's 77th "save" and the first rescue in which the Navy's new HH-2C SEASPRITE was used. Manning the rescue helicopter were Lt Joe W. Behunin, pilot; Lt(jg) John P. Kennedy, copilot; AT3 Dewayne E. Cornish and ADJAN Randall D. Cochran, crewmen.

Meanwhile, HC-7's UH-2 SEASPRITE crews based at NAS Cubi Point, R. P., were adding to the squadron's medevac score. An ill Navy wife was flown to Clark AB in a UH-2 piloted by Lt J. D. Karr and Lt(jg) R. W. Williams. Crewman was AE2 B. R. Buchan. A sailor with a head injury was evacuated to Clark by a SEASPRITE crew consisting of Lt D. H. Wassmer, Lt(jg) R. W. Olsen, ATN2 L. C. Johnson and ADJ3 C. Dennis.

Earlier, while standing SAR for the entire island of

Luzon, HC-7 was called on one night for a "life or death" medevac involving a highway accident victim from Wallace AB. Manning the UH-2 on the hazardous flight over unfamiliar territory were Lt W. C. Vivian, Lt(jg) J. W. Crawford, LCdr Myron Persoff (MC), and ADJAN Gary Mitts.

Lieutenant Vivian was also pilot on two other medevac missions. During one, a seriously-ill young girl was taken to Clark AB in a SEASPRITE. Other members of the crew were Lt(jg) Jack Adamson, Airman Mitts, Petty officer Johnson, Lt David Kessel (MC), and HM2 Carl Hensel. During the other mission, which also involved a flight to Clark, Lieutenant Vivian and his crew evacuated a patient who suffered complications while recovering from an operation. Others aboard the UH-2 were Lieutenant Crawford, Petty officer Dennis, Petty officer Johnson, LCdr Vernon Hutchison (MC) and HN Jerome Robinson.

ACCIDENT VICTIM MEDEVACED BY DET 8



One Of Many—An HH-43B Helicopter from Det 8, 44th ARRSq, at Myrtle Beach AFB lowers a litter for an emergency rescue. (USAF photo by Sgt Jud David)

A 47-year-old woman, seriously injured in an accident aboard a charter fishing boat, was picked up by an HH-43B crew from Det 8, 44th ARRSq, Myrtle Beach AFB, S. C., and taken to the hospital. The Coast Guard in Charleston, requested assistance from the detachment at 2:14 p.m. after the boat radioed that a woman passenger had amputated her thumb and was bleeding severely.

By 2:26 the helicopter was in the air with a medical team on board. Keeping a LORAN fix on the vessel, the Coast Guard relayed the information to the Radar Approach Control facility at Myrtle Beach AFB. TSgt James L. Murphy and SSgt Michael J. Saupp, Jr., plotted the position of the ship and the helicopter simultaneously, and gave directions to LtCol Bruce C. Bowden, pilot of the HH-43B.

At 2:59 the chopper intercepted the ship 45 miles south of the base in the Atlantic Ocean. After a smoke bomb was dropped the ship headed into the wind and stopped completely to make the rescue easier. MSgt Edward D. Congleton, a senior medical technician, was lowered to the ship. After giving emergency treatment he placed the woman in the rescue litter which the flight engineer, SSgt Erskine E. Brewington, hoisted to the helicopter. While enroute to the base, Capt Rafael Perez-Figaredo (MC), a flight medical officer with the 354th Tactical Hospital, gave additional medical treatment.

The helicopter landed at the hospital emergency helipad at 3:52 p.m., one hour and 45 minutes after the initial call had been received.

Colonel Bowden said afterward, "The rescue mission was an outstanding example of coordination, cooperation and prosecution among all the agencies concerned. Everything worked just like it's supposed to." Colonel Bowden added that the helicopter rescue cut in half the time that the ship would have taken to get the woman back to port.

Two other medevacs, both at night and of a life or death nature, were also made by Det 8 recently. A 13-year-old boy with a serious head injury suffered while playing football, was airlifted from the base hospital to medical facilities in Charleston. Colonel Bowden was pilot of the HH-43 and Capt Johnny R. Johnson was copilot. Others aboard were Sgt Thomas N. Brown, medical technician; Sergeant Brewington, helicopter mechanic; and Capt Norman Shorr (MC), flight surgeon.

An airman who suffered critical head injuries in an automobile accident, was airlifted from the base hospital to medical facilities in Charleston. Captain Johnson was pilot

of the HH-43; Maj Harold Pickering, copilot; TSgt Charles M. Holmes, medical technician; Sergeant Brewington, helicopter mechanic; and Captain Perez-Figuardo, flight medical officer.

(continued from page 16)

In a second mission, a sailor, seriously injured in an automobile accident in Yosemite Park, was evacuated to the U. S. Naval Hospital by a UH-2C crew from NAS Lemoore. The pickup, at an altitude of 4700 feet, was made from a meadow surrounded by tall pines. To avoid the trees, Lt L. L. Duncan made a precision approach to the clearing. Other members of the crew were Lt(jg) H. F. Matthew, ADJ3 M. R. Michael and HM2 R. C. Reid.

Three Rescued By Det 67

Two pilots who ejected from their aircraft after it plunged into the water on takeoff were rescued by an HH-2D crew flying plane guard for the USS John F. Kennedy. One pilot who was tangled in the shroud lines, was freed by the H-2 "wetman," ATAN Robert E. Touchett, who had leaped from the SEASPRITE to assist. Others manning the helicopter were Lt(jg) James C. Harrison, pilot; Lt(jg) Larry R. Ammerman, copilot; and ADAN Kurt M. Carlsen, crewman. All are attached to HC-2's Det 67. Afterward, Lieutenant Harrison praised both H-2 crewman for an "excellent job."

A sailor who fell overboard from the Kennedy during a "man overboard" drill was rescued a few minutes later by an HH-2D crew from Det 67. Manning the SEASPRITE were LCdr D. T. McCloskey, pilot; Lieutenant Ammerman, copilot; ADJ1 W. V. Fenney and AMR3 R. C. Sossong, crewmen.

Det 66 Saves Three, Medevacs One

A UH-2C crew rescued the three occupants of an EKA-3B after the aircraft plunged into the Gulf of Tonkin during a night take-off from the USS America. The recovery was made without incident. Manning the SEASPRITE were Lt Mike L. Ceruzzi, pilot; Lt Steve S. Hoxie, copilot; AE2 Anthony R. Stornio and AMH2 William J. Willis, crewmen. All are from HC-2's Det 66 which is deployed aboard the giant carrier.

In another UH-2C mission, Det 66 evacuated a seriously ill chief from the USS America to the Kai-Tak Airport. From there he was transported by ambulance to the Hong Kong Hospital for emergency surgery. Visibility was extremely poor and the SEASPRITE vectored around several Red Chinese islands and air defense zones during the flight. The helicopter crew included Lt Lonnie D. Lorren, pilot; Lt Ceruzzi, copilot; and AMH2 William J. Willis, crewman.

HUSKIE HAPPENINGS



Det 21 Aids In Celia Damage Survey

By Capt Philip H. Kammann

On 3 August, 1970, Hurricane Celia struck the South Texas coastal area wreaking havoc and devastation. This hurricane was one of the most destructive in Texas history. The following morning Det 21, 43 ARRSq at Ellington AFB, Tex., was called upon to transport Dr. Robert Simpson, director of the National Hurricane Center in Miami, to the stricken area. One H-43 was placed at Doctor Simpson's disposal. The pilots were Captain Philip H. Kammann and Nicholas O. Gaspar; SSgt Benjamin J. Marshall was the flight mechanic.

Doctor Simpson was picked up at Houston Intercontinental Airport and airlifted to Corpus Christi for an immediate survey of damage. Enroute arrangements were made to pick up two Corpus Christi officials at the local airport. After unloading the passengers, the H-43 flew them on an extensive assessment survey of Corpus Christi, Aransas Pass, and the surrounding area. The accompanying photos were taken at this time. Before the day was completed, 5 sorties totaling 8.7 hours were flown. The Huskie and crew returned to Ellington at 10 p.m. for a much needed night's rest.

The first photo shows tanks of the Humble Oil and Sun Oil refineries at Ingleside burning uncontrolled. The fires raged for two days after the hurricane hit.

The second photo shows shrimp boats huddled together like frightened animals and forced up onto the land. Many other boats were submerged in the adjacent harbor area.

Photo three depicts an example of the hurricane damage. Some houses were completely razed while others nearby suffered no visible damage whatsoever. (USAF photos)



Driver Saved By Det 17

A truck driver, trapped by a flash flood in the Pantano Wash in Tucson, was rescued from his precarious position by an HH-43 crew from Det 17, 42nd ARRSq (MAC), Davis-Monthan AFB, Ariz. A road that crosses the normally dry wash was under almost ten feet of rapidly flowing water which had washed the large dump truck partially off the road and onto the sandy bottom of the wash. When the HUSKIE arrived, the man was standing in the back of the vehicle, which was off the road at a 35° to 45° angle, and in imminent danger of being swept into the wash which was now a bed of quicksand. The HH-43 made a steep approach to avoid the many power lines in the area and hovered at 20 feet to keep the water spray at a minimum. The survivor was instructed in the use of the sling and then lifted without incident to the helicopter. Recovered also was a Tucson fireman, who had been stranded on a small island in the middle of the wash while attempting to rescue the truck driver. Members of the Det 17 crew were Capt Raymond M. Hanson, pilot; Capt Robert A. Sheppard, copilot; SSgt Ronald L. Engberg, helicopter mechanic; and SSgt Zeno Lamarr, firefighter.

In another Det 17 mission, the HUSKIE crew rescued two pilots who had bailed out of their F-4D after engine failure. During the 75 mile flight, partially through light rain, to the rescue site the HH-43 crew made numerous detours to avoid thunderstorms which appeared in all quadrants. The immediate search area was obscured by blowing dust and heavy clouds with close-to-ground lightning. Maj Edward A. DuChene chose a clear area, between the thunderstorms approximately a half-mile from the crash site. The pilots, apparently uninjured, were soon located and returned to the base. Others manning the HH-43 were Captain Sheppard, copilot; Capt Peter I. Monheit, flight surgeon; and Sgt James Reynolds, medical technician.

Six Rescued By Det 6

Prompt action by an HH-43 crew from Det 6, 47th ARRSq, Kadena AB, Okinawa, was credited with saving the lives of five men who had been swept out to sea. The pick-up was made without incident despite a slight haze on the surface and an extremely rough sea caused by a recent typhoon. One of the survivors believed to have pneumonia was airlifted to the hospital at Camp Kue; artificial respiration was administered on the way. Members of the crew were Maj Alma L. Williams, pilot; Capt Robert M. Garlow, copilot; and SSgt John H. Hazzard, helicopter mechanic. In a second Det 6 mission, a pilot who bailed out of his crippled F-105, was rescued from the water 28 miles north of Kadena AB. Participating in the rescue were Capt Bobby L. Meadows, pilot; Sgt Paul R. Coile, medical technician; Staff Sergeant Hazzard, helicopter mechanic; and SSgt Vincent K. Matulja, firefighter.

Det 5 Medevacs Two

A woman suffering from probable brain hemorrhage was evacuated to the hospital by an HH-43 crew from Det 5, 40th ARRWg, Hahn AB, Germany. Capt Eugene E. Kercher, flight surgeon on the mission, said afterward that the "prompt action of the ARRS men was credited with saving the woman's life." Others aboard the HUSKIE were Maj Robert W. Hastings, pilot; Capt Ronald L. Bachman, copilot; SSgt Robert T. Anderson, helicopter mechanic; and TSgt Wayne R. Smith, medical technician.



DET 17 IN ACTION

*Photo By Bruce Hopkins
Tucson Daily Citizen*

In another mission, at night, the Det 5 rescuemen airlifted a two-year-old boy with massive skull fractures to the hospital at Wiesbaden. Members of the HH-43 crew included Maj Robert J. Bennett, pilot; Major Hastings, copilot; TSgt Nolan P. Pearson, helicopter mechanic; Sgt Kenneth F. Chin, medical technician; Maj David G. Alexander (MC), doctor; and Maj Franklin R. Smilek (MC), anesthetist.

Det 10 Makes Life-Saving Flight

A mountain climber, critically injured while scaling the Italian Alps, owes his life to the quick action of an HH-43 crew from Det 10, 40th ARRWg, Aviano AB, Italy. The HUSKIE crew located the injured man inside a steeply sloped box canyon in the Pra Maggiore mountains. Peaks in the area ranged from 6,000 to 12,000 feet. The accident victim was lying on a ledge which protruded only four or five feet from the face of the cliff. With the injured man were two friends who had dragged and carried an iron litter to the almost inaccessible spot. Hovering at 5,300 feet, Capt George R. Andrews hovered the HH-43 as close to the sides of the mountain as blade clearance allowed and the medical technician, Sgt John Galdikas, lowered the cable. The two men below attached the cable hook to the litter and Sergeant Galdikas began hoisting it aboard. Hampering the operation were peg-like legs on the litter. The hoist operator had to lift the litter each time he came to one of the legs. When safely aboard the HUSKIE, the man was treated for his extensive injuries by Capt William D. Henderson (MC), flight surgeon, and flown to the hospital. Capt Darvan E. Cook, was copilot on the mission.



Men from Det 10, 38th ARRSq, Binh Thuy AB, Vietnam, with their HH-43 "Pedro" helicopters. (USAF photo)

(continued from page 11)

with it, the wounded could not be moved to a safer spot for the pickup—the HH-43 pilot had to either fly directly toward the waiting guns or abandon the mission. Pedro headed for the mountain.

The first attempt was made shortly before 2 a. m. and during the next few hours, the HH-43 crew made try after try to reach the Army patrol. A regular pattern developed: Each time, the mountainside was first raked by heavy gunfire from U. S. helicopter gunships and fixed-wing aircraft. Afterward, a gunship would make a pass but there would be no enemy fire. The area was then declared "secure" and the HH-43 would move in on its errand of mercy. As soon as Pedro was within range, the enemy opened fire with "every thing he had." Each time, Lieutenant Kammann took evasive action and, almost miraculously, Pedro escaped into the darkness.

At dawn, the HH-43 refueled and made two more rescue attempts. On the second, the HH-43 began taking hits and again was driven off. Although he was fighting to keep the battle-damaged HH-43 under control, Lieutenant Kammann made a ninth try at the evacuation but found it impossible to continue. He was forced to leave the area, but not before two litters were dropped to the soldiers below. When the HH-43 landed a few miles away it was discovered that Pedro had been hit 10 times. Meanwhile, another HH-43 moved in and evacuated the wounded. The litters dropped by Lieutenant Kammann's crew had been used to carry the soldiers to a safer pickup point.

KAMAN RESCUE DEVICES IN WIDE USE

While a great many people in Southeast Asia owe their lives to the UH-2 and HH-43 operations, hundreds of others can be equally grateful for another Kaman product—the forest penetrator seat.

Development of the penetrator came about because of a rescue problem peculiar to heavily forested



Kaman forest penetrator seat and shield

countries like those found in Southeast Asia. During helicopter rescue operations before the Vietnam War, it was customary to lower a sling at the end of a cable. A downed airman slipped into the sling and then was hoisted to the helicopter. In Southeast Asia, however, trees grow to well over 100 feet and the limbs are so closely intertwined that they form one or more "canopies" far above the ground. Many times helicopters hovered over hostile territory and the crews attempted to lower the sling through the umbrella-like canopy. Usually the sling caught or rested on the branches and, as the rescuee waited helplessly below, had to be retrieved again and again. Valuable time was lost, and the lives of the downed airman and rescue crew were placed in jeopardy, as the frustrating attempts were made to get the sling



Boom And Net—This dramatic photograph of a UH-2 plainly shows the Kaman-developed fishpole boom and rescue net.

to the ground. Kaman's forest penetrator seat, often referred to as the "jungle penetrator," solved the problem and is widely used today in Southeast Asia and many other areas. Rescue crews flying in several other type helicopters, as well as the HH-43 and UH-2, also utilize the device. For use with the jungle penetrator, Kaman designed a shield to protect rescues from tree branches as they were hoisted through the jungle canopy to the helicopter, and a flotation collar that keeps the penetrator afloat for water rescues.

Other rescue devices produced by Kaman include a "fish-pole boom" and rescue net, for use by UH-2 crews making water rescues, and the fire suppression kit (FSK).

The FSK is used in conjunction with Local Base Rescue coverage furnished by the Aerospace Rescue and Recovery Service at Air Force bases in many parts of the world including Southeast Asia. When an aircraft declares an emergency, an ARRS alert crew "scrambles" in one of the HH-43's and picks up the FSK from its trailer. The rescue helicopter

then meets the stricken aircraft and follows it down the runway during the landing. If a crash occurs, the HH-43 pilot hovers nearby, and two airborne firemen leap out. The FSK is detached from the helicopter and the firefighters unreel the hose from the kit as they run toward the downed aircraft. If the plane has caught fire, the firemen cut a path through the flames with foam from the FSK. They are aided by the HH-43 pilot who gains altitude and then hovers overhead, using the rotor downwash to help keep the path open and to supply cooling air while the survivors are taken from the plane. Many owe their lives to this rescue concept which was developed by Kaman. Previously, pilots and crewmen were often trapped in burning wreckage and ground equipment could not get to them because of rough terrain, fences or other obstacles.

In addition to furnishing LBR coverage, HH-43 crews have made countless other flights to carry out rescue, evacuation and other missions. UH-2 crews have carried out the same tasks as well as flying plane guard for aircraft carriers—one of their primary duties. The Air Force, Navy and Marines have received plaudits from U. S. and foreign governments and the grateful thanks from hundreds of individuals, for the help they have given during floods, fires and other emergencies.

According to the reports submitted as part of the Kaman Award Program, more than 5,000 rescues or missions of mercy have been made in Kaman helicopters.

UH-2's, which fly most of their missions at sea, have rescued or otherwise aided 1,305 persons. HH-43's which fly most of their missions over land, have saved or aided 4,483 persons.

Based on information from other sources, it is conservatively estimated that another 5,000 missions, have not been reported for one reason or another.

Eighteen Iranian troops stand in front of the HH-43 which rescued them from a mountain top in 200 below zero weather. Two flights had been planned but when the pilot of the Iranian Army helicopter landed to evacuate them and saw the condition of the freezing soldiers, all 18 were jammed aboard. Despite the overload, weather and rugged terrain, the Kaman helicopter made the flight without incident. With the troops are the two rescue pilots.





Table of Contents

Cyclic Stick Connectors . . .	32
Timely Tips	33
Q's & A's	34
Nose Door Hinge	36
Service Reps	37
Current Changes	38
DARFO	39

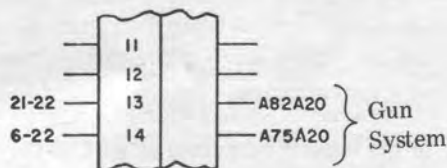
PILOT'S/COPILOT'S HH-2C CYCLIC STICK CONNECTORS

UH-2C; HH-2

Views A and B show how the cyclic stick connector wiring on HH-2C aircraft (gunships) differs from that on UH-2C and HH-2D aircraft. On both HH-2C connectors (pilot's and copilot's), the Coord Turn feature has been

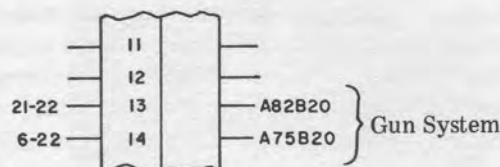
deleted and the switch rewired to operate within the gun system. This information will be incorporated into applicable handbooks by a future change.

D. Delaney, Service Engineer



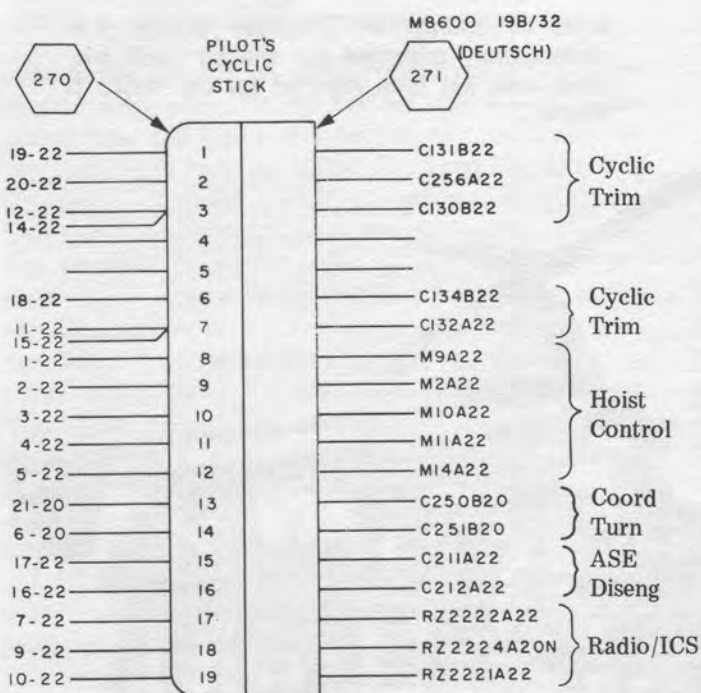
VIEW A
PILOT

HH-2C ONLY

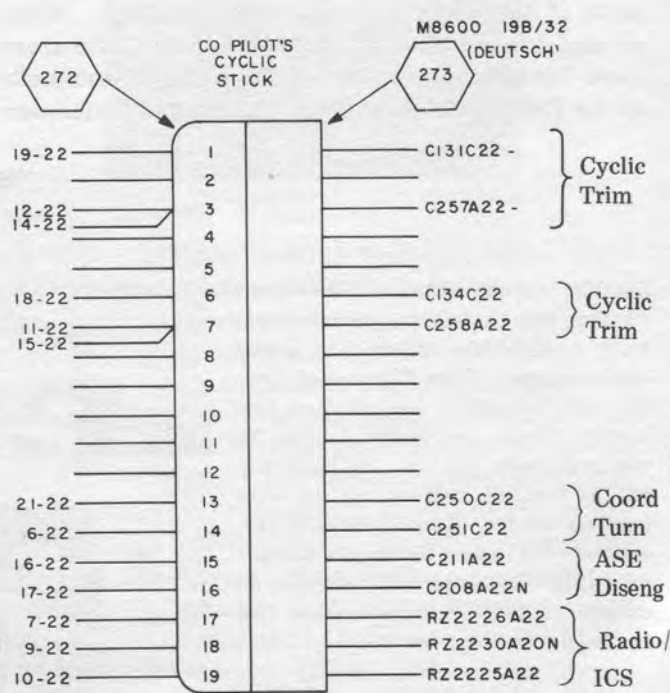


VIEW B
COPILOT

HH-2C ONLY



UH-2A/B/C & HH-2D



UH-2A/B/C & HH-2D

TIMELY TIPS

MAIN DRIVE SHAFT INSPECTION CRITERIA

H-2

The following information will be incorporated into NAVAIR 01-260HCA-2-4.1 at the next scheduled Change. The information will appear in paragraph 4-69, Step b. It will read as follows: "Inspect coupling sleeves and spacer for evidence of surface damage consisting of nicks, scratches, gouges, etc. Such surface damage, up to 0.010-inch deep, is considered negligible and may be removed by blending out. Surface damage greater than 0.010-inch deep requires replacement of the damaged part. In all cases, determine the cause of the damage and take corrective action to prevent recurrence." The surface finish requirements of paragraph 4-69, Step c will apply.

R. Trella, Service Engineer

DIRECTIONAL TRIM FORCES

UH-2

With boost in OFF position, it takes less force to move the left rudder pedal than it takes to move the right rudder pedal. The same is true of the trim system; less trim force is required to move the left pedal than to move the right. The reason for this difference is as follows: In the right pedal direction, the trim strut force is not great enough to overcome the combination of system friction force, plus the stabilizing force produced by the counter-weights on the tail rotor blades. The difference is more pronounced in the UH-2C and HH-2C/D because the higher RPM generates more stabilizing force (in addition, HH-2C/D models have 4-bladed tail rotors). It should be stressed that trim force in all models is sufficient to maintain any pedal trim setting.

W. Wagemaker, Service Engineer

RODEND PLAY MEASURING DEVICE

H-2

The tool shown in the illustration can be used to measure radial play in rodends or retention link assemblies (dogbones). To fabricate the device, obtain one "C" clamp, one 1 x 1 x 1-inch angle iron and a 1/4-inch metal plate of suitable size. Drill a 1/4-inch diameter hole approximately 3/8-inch from one end of the plate. Select the rodend or dogbone to be measured and bolt it to the plate with a washer between the bearing ball and the plate. Clamp the plate and angle iron to a table or workbench, allowing approximately 0.060-inch (gap A) between the face of the angle iron and the



PRESETTING CONTROL ROD LENGTHS

UH-2

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

W. Wagemaker, Service Engineer

ALUMINUM/COPPER LEADS

H-2

The lead between the DC external power relay and the starter is called out as aluminum in A/B aircraft. All UH-2C and HH-2 aircraft use copper wire, P/N 108445, which is identified as P30F2 (AN2 gage copper wire). In the event aluminum wire and/or aluminum terminals are not available, copper may be used in A/B aircraft. This information will be incorporated into applicable handbooks by a future change.

J. McMahon, Service Engineer

ROTOR TRACK/AIRCRAFT VIBRATION

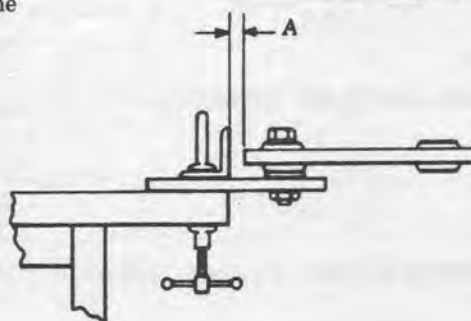
UH-2; HH-2

Many man-hours have been consumed attempting to attain a PERFECT, knife-edge track on main rotor blades. While a PERFECT track is certainly desirable, in most cases the man-hours expended to achieve it are not warranted. The determining criteria as to a good rotor track should be aircraft vibration; however, small variances in the rotor hardware coupled with slight aerodynamic differences between rotor blades will, on occasion, allow an out-of-track condition with no vibration. If and when the variances produce a significant vibration, corrective action would be justified.

W. Wagemaker, Service Engineer

outside edge of the rodend. Push the rodend toward the angle iron and, while maintaining pressure, measure and record gap A. Pull the rodend away from the angle iron and, while maintaining pressure, again measure and record gap A. The difference between the two recorded dimensions is the bearing radial play. Up to 0.006-inch play is acceptable for KAcab and Teflon-lined bearings. Rigging or other functional concerns may dictate replacement with less play.

W. Wagemaker, Service Engineer

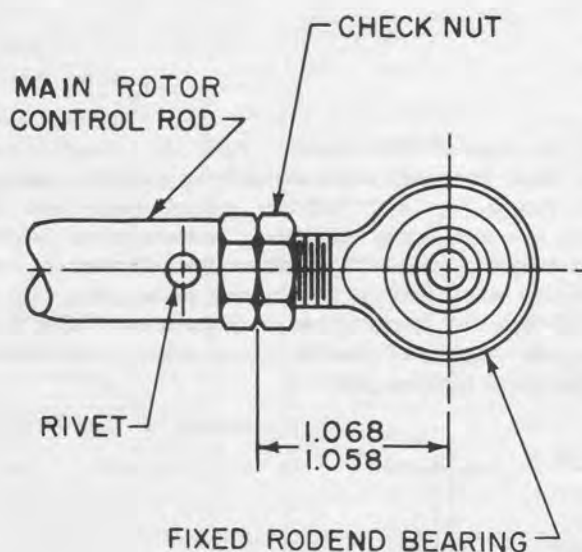


QUESTIONS & ANSWERS

Q. (Applies H-2) WHEN INSTALLING A RODEND INTO A MAIN ROTOR CONTROL ROD, HOW IS THE DIMENSION FOR THE FIXED END DETERMINED?

A. The correct method of measuring is from the hex-shaped end of the rodend to the centerline of the bearing hole as shown in Illustration and NAVAIR 01-260HCA-2-2.1. Under no circumstances should the locknut be used for a dimensional check. Measurements taken from the locknut would position the rodend at 1.20 to 1.25 inches instead of the correct 1.058 to 1.068 inches. If the fixed rodend is improperly installed, control rigging problems will later be encountered. When a rodend is to be replaced, proceed as follows:

1. Place the shoe string rod in a drill vise and place on a drill press table.
2. Drill off the peened end of the rivet with a 3/32-inch drill and punch out the rivet.
3. Remove the rodend from the shoe string rod.
4. Thread a locknut onto a new rodend. Insert the rodend into the shoe string rod until the dimension between the hex-shaped end of the rod and the centerline of the bearing bolt hole is 1.058 to 1.068 inches. Refer to Illustration.



When the correct dimension has been obtained, lock the rodend in position with the locknut.

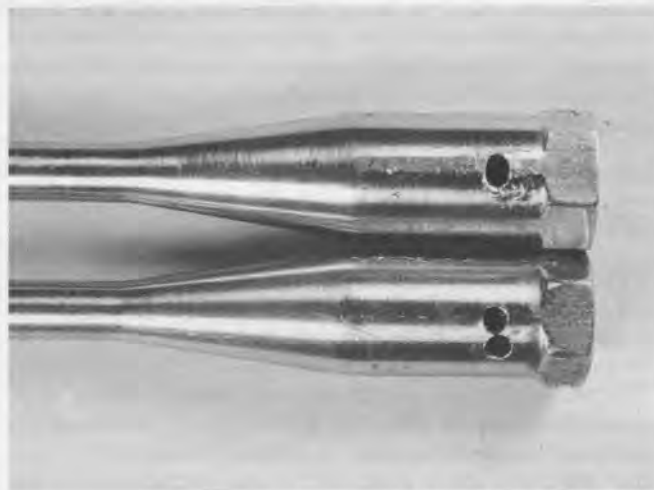
5. Use the shoe string rod holes as a guide and carefully drill a hole through the rodend with a Number 45 drill. Be sure to support the rodend so the drill drives straight through.

6. Enlarge the hole with a Number 40 drill.

7. Insert and secure the rivet.

An alternative method used by some Detachments when the rivet cannot be punched-out or when drilling a new rodend, is to drill half way through the rodend from each side with a Number 45 drill then follow with a Number 40 drill.

Photo shows what can occur when the rod is not carefully drilled. Both rods have a standard size hole on the other side but as can be seen, the drill was angled. The resulting enlarged hole and double hole caused the rods to be scrapped. This information will be incorporated into applicable manuals by a future change.



J. Bycenski, Group Leader, UH-2 PAR/Mod

Q. (Applies H-2) WHAT ARE THE EXTERNAL POWER REQUIREMENTS FOR H-2 AIRCRAFT?

A. External power requirements for H-2 aircraft are listed in NATOPS flight manuals NAVAIR 01-260HCA-1, 15 March 1968, Changed 1 July 1970; NAVAIR 01-260HCB-1, 15 September 1969, Changed 1 July 1970; and NAVAIR 01-260HCC-1, 1 September 1970, as follows: DC 28 volts, 750 amps continuous, 1000 amp intermittent; AC, 115/200 volts, 400 CPS, 3 Phase power. These requirements are optimum and provide for ground maintenance and starting of the aircraft during extreme cold weather even under the most severe conditions. However, experience has shown that most starting and maintenance work is performed within reasonable temperatures which allow easier starts. Therefore, an ampere rating somewhat less than optimum may be used. For example: the NC-5 power cart which has a DC rating of 200 amps continuous and 1000 amps intermittent has proven capable of starting and ground servicing the aircraft under normal conditions. Use of power carts which have a DC rating less than 1,000 amps intermittent is not recommended. The recommended power carts are: NC-1; NC-5; NC-7 or equivalent.

J. McMahon, Service Engineer

TECHNICAL SECTION

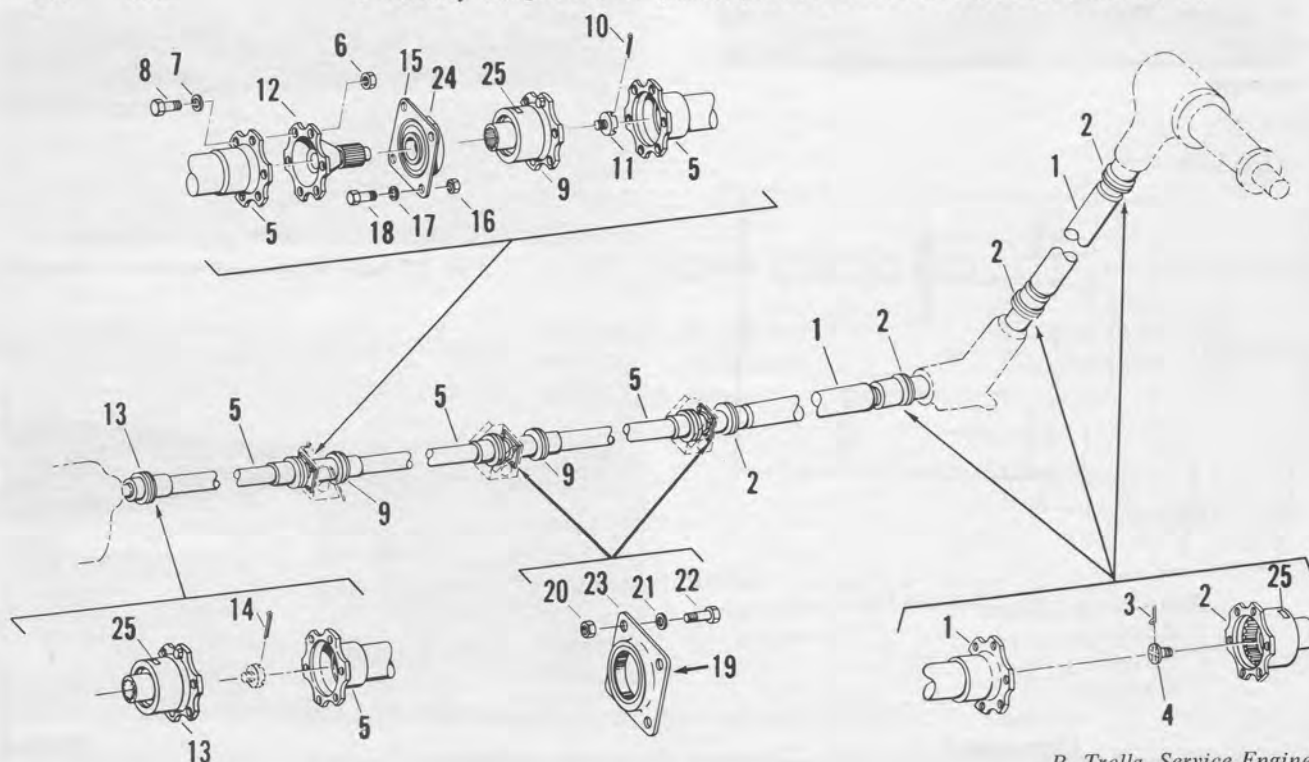
Q. (Applies H-2) ARE TAIL ROTOR DRIVE SHAFT COUPLING PILLOW BLOCK SHAFTS IDENTICAL?

A. No. Concurrent with the introduction of HH aircraft (Airframe Change Number 170), a new tail rotor drive shaft coupling pillow block shaft was introduced. (See item 12 of the accompanying Illustration.) The new shaft, P/N K671502-13, appears identical to the old shaft, P/N K671502-11; however, the -13 shaft has been especially hardened in order to accomodate the increased torque of the 4-bladed tail rotor. The -11 shaft is being replaced on an attrition basis and eventually, all H-2 aircraft will use the new shaft. While the -13 may be used on any H-2 aircraft, under no circumstances should a -11 shaft be installed on

an HH aircraft. It should also be noted that items 15 and 19 have the same part number and are identical in all aspects except installed position. For example: Item 15, located at Station 231.57 is installed so that the bearing faces *aft*. Both flange bearings (item 19), are installed so that the bearing faces *forward*. Item 19 can be located as follows: one at Station 291.75 and the other at Station 351.87. The preceding information, the accompanying Illustration and the following parts list will be incorporated into applicable handbooks by a future change. Callouts 1 through 14 are contained in Figure 18 of NAVAIR 01-260HCB-4-6.

Section II Group Assembly Parts List

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS		USABLE ON CODE
			PER ASSY.		
		1 2 3 4 5 6 7 8			
TAIL ROTOR DRIVE SHAFT INSTALLATION (Continued)					
18-15	K671530-11	. BEARING, Flanged (selected from part number..... F206NPPS4 mfd by 21335) (ATTACHING PARTS)	1		
-16	NAS679A3	. NUT.....	4		
-17	AN960-10	. WASHER (under head).....	4		
-18	AN3-4A	. BOLT.....	4		
		-----*			
-19	K671530-11	. BEARING, Flanged (selected from part number..... F206NPPS4 mfd by 21335) (ATTACHING PARTS)	2		
-20	NAS679A3	. NUT.....	8		
-21	AN960-10	. WASHER (under nut and head).....	16		
-22	AN3-5A	. BOLT.....	8		
		-----*			
-23	K634050-77	. DOUBLER.....	2		
-24	216	. PLATE, Temperature (08086).....	3		
-25	222	. PLATE, Temperature (08086).....	14		



R. Trella, Service Engineer

TECHNICAL SECTION

NOSE DOOR HINGE MODIFICATION H-2

H. Zubkoff, Service Engineer

The nose doors lower hinge assembly, because of its exposed location, is susceptible to corrosion and binding. The "bending" loads which result when opening and closing the doors, have caused broken hinges and excessive maintenance man-hours for subsequent repair. The present method to counteract the corrosion and binding (applying oil with a hand oil can) is obviously inadequate. It is therefore suggested that 3 lube fittings P/N NAS516-1, FSN 9C 4730-227-4780, one on each hinge lug, be installed on both the left and right lower hinge assemblies. The procedures shown here were completed with the nose doors installed on the aircraft. In order to safely do this, it is necessary for both door latches to be secure. Also, a hinge bolt should be removed from one side and the hinge modified before moving to the other side of the aircraft. Do not remove the hinge bolts from both sides of the aircraft at the same time. If the modification is accomplished

on doors which have been removed from the aircraft, be sure lube fittings will face outboard when the doors are re-installed and closed. Install the fittings as follows:
1. Use a straight edge to mark a perpendicular line on the hinge lugs at a point outboard so the lube fittings, when installed, will be positioned as shown in Photo A. (For exact positioning, refer to Illustration 1.)

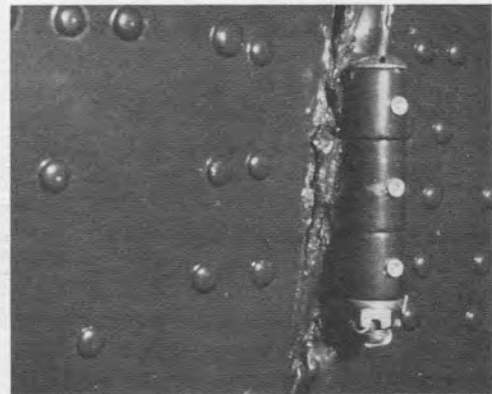
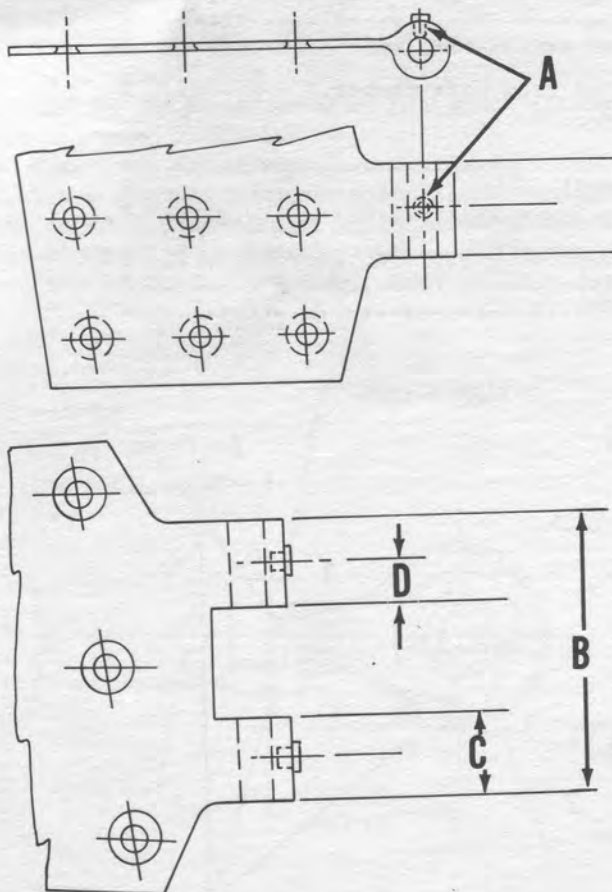


Photo A



- A. NAS 516-1, 0.1250-0.1265-inch hole
- B. 2.0 inches
- C. 0.6-inch
- D. 0.40-inch

Illustration 1

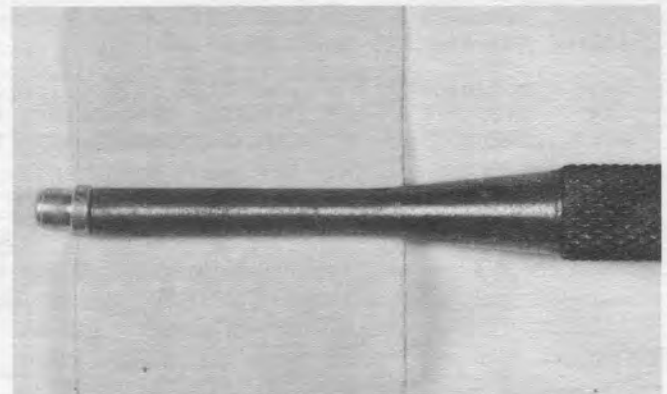


Photo B

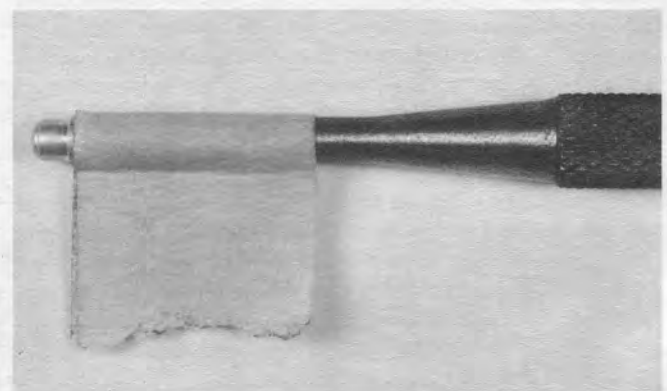


Photo C

TECHNICAL SECTION

2. Be sure both nose door latches are secure. Remove the cotter pin, nut, washer, and hinge bolt. Because of the slight pressure imposed by the door seals, it may be necessary to lightly tap out the hinge bolt.
3. Mark the position of each fitting (approximately centered on the lug or see Illustration 1).
4. Drill a hole, with a Number 31 drill, through one wall of each hinge lug.
5. Use a small piece of masking tape as shown in Photo B and C to hold the lube fitting to a metal drift. Do not use a drift smaller than 5/32-inch or the lube fitting may be damaged.
6. Position the lube fitting over the hole and carefully tap in place. (See Photo D). Repeat for each lug.
7. Install the hinge bolt and related hardware. Because of hinge alignment it may be necessary to lightly tap the bolt. When installing the nut, be sure it is only fingertight. Also, be sure to use a new cotter pin.
8. Apply lube with a standard Alemite gun and "needle" nozzle as shown in Photo E.

Subsequent lubrication should be no later than at each Calendar Inspection or more often if the operating environment is conducive to rapid corrosion of parts. If a hinge half is found to be cracked, be sure that the new part is the correct one. The right-hand and left-hand hinges have slight differences in the angular off-set of the hinge lug relative to the hinge body. It is important that the correct hinge be used if replacement should be required. If a RH hinge-half is used on the LH side or vice-versa, an interference in the full open or full closed position will occur. Such an interference will ultimately result in hinge failure. After the lube fittings have been installed, re-identify the hinges as follows:

a) Nose door hinge half

Hinge (LH) from K633066-11 to K633066-1 Assembly

Hinge (RH) from K633066-12 to K633066-2 Assembly

b) Forward fuselage hinge-half

Hinge (LH) from K633067-11 to K633067-1 Assembly

Hinge (RH) from K633067-12 to K633067-2 Assembly



Photo D

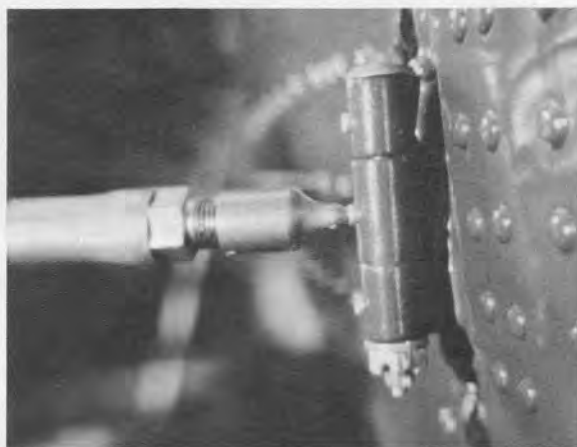


Photo E

KAMAN SERVICE REPRESENTATIVES

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WILFRED L. MAGNAN
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NAS Cubi Point, P. I.

EDWARD F. NOE
NAS Lakehurst, N. J.

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

WILLIAM C. BARR
MICHAEL T. FIASCHETTI
DONALD R. DELANEY
Home Office

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

CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, Supervisor

CURRENT CHANGES

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

H-2 Airframe Change 160, Part II — Equipment,
INSTALLATION OF 200-FOOT RESCUE HOIST
SYSTEM IN UH-2C HELICOPTERS
13 August 1970

H-2 Airframe Change 182 — Flight Instruments,
RELOCATION OF LOW LEVEL FUEL WARNING
LIGHT
15 October 1970

NAVAIR 01-260HCA-2-3 — Manual, Maintenance
Instructions, EQUIPMENT (FURNISHINGS,
HYDRAULICS, UTILITIES, ARMAMENT) Navy
Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D
Helicopters
15 December 1969
changed 15 August 1970

NAVAIR 01-260HCA-3 — Manual, STRUCTURAL
REPAIR, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/
HH-2D Helicopters
1 October 1967
changed 1 October 1970

NAVAIR 01-260HCA-4-2 — Illustrated Parts Breakdown,
DRIVE SYSTEMS, Navy Models UH-2A/UH-2B Helicopters
15 January 1967
changed 15 July 1970

NAVAIR 01-260HCA-4-8 — Illustrated Parts Breakdown,
NUMERICAL INDEX AND REFERENCE DESIGNATION
INDEX, Navy Models UH-2A/UH-2B Helicopters
15 July 1970

NAVAIR 01-260HCB-1B — NATOPS PILOT'S POCKET
CHECKLIST, UH-2C Helicopter
15 September 1969
changed 1 July 1970

NAVAIR 01-260HCB-1C — NATOPS AIRCREWMAN'S
POCKET CHECKLIST, UH-2C/HH-2C/HH-2D Helicopters
15 September 1969
changed 1 July 1970

NAVAIR 01-260HCB-4-1 — Illustrated Parts Breakdown,
NUMERICAL INDEX AND REFERENCE DESIGNATION
INDEX, Navy Models UH-2C/HH-2C/HH-2D Helicopters
15 May 1970

NAVAIR 01-260HCB-4-4 — Illustrated Parts Breakdown,
EQUIPMENT (FURNISHINGS, HYDRAULICS,
INSTRUMENTS, UTILITIES, ARMAMENT) Navy Models
UH-2C/HH-2C/HH-2D Helicopters
1 May 1969
changed 15 May 1970

NAVAIR 03-5CE-149 — Illustrated Parts Breakdown,
QUADRANT ASSEMBLY, P/N K673802-7, K673802-103,
K673802-105, K673802-107
1 September 1970

NAVAIR 03-25KAM-1 — Manual, Overhaul Instructions,
MAIN LANDING GEAR SYSTEM, Navy Models UH-2A/
UH-2B/UH-2C/HH-2C/HH-2D Helicopters
15 September 1965
changed 1 August 1970

NAVAIR 03-45C-18 — Manual, Overhaul Instructions
With Parts Breakdown, CONTAINER AND VALVE
ASSEMBLY (UNCHARGED) P/N 894083
15 October 1970

NAVAIR 03-65KAM-1 — Manual, Overhaul Instructions,
WINCH (WITHOUT MOTOR) P/N K682162-5,
WE2003-1, WE2003-2, WE2003-3
1 August 1965
changed 15 October 1970

NAVAIR 03-65KAM-2 — Illustrated Parts Breakdown,
WINCH (WITHOUT MOTOR) P/N WE2003-1,
WE2003-2, WE2003-3
1 October 1970

NAVAIR 03-95D-9 — Manual, Overhaul Instructions,
Navy Models UH-2A/UH-2B Helicopters, MAIN AND
ACCESSORY GEARBOX SYSTEM
15 October 1965
changed 1 February 1970

NAVAIR 03-95D-17 — Manual, Overhaul Instructions,
TAIL ROTOR BLADE AND GRIP ASSEMBLY P/N
K614001-201, -205, -207
1 July 1970

NAVAIR 03-95D-22 — Manual, Overhaul Instructions,
MAIN GEARBOX ASSEMBLY, P/N K674877-1
15 December 1969

NAVAIR 03-95D-27 — Illustrated Parts Breakdown,
RESOLVER AND TACHOMETER GENERATOR
DRIVE GEARBOX ASSEMBLY, P/N K674826-5,
K674826-7
1 October 1970

NAVAIR 03-95D-29 — Illustrated Parts Breakdown,
SPRAG CLUTCH ASSEMBLY, P/N K674709-3
1 September 1970

NAVAIR 03-95D-31 — Illustrated Parts Breakdown,
MAIN GEARBOX ASSEMBLY, P/N K671802-1
15 April 1970

NAVAIR 05-10-91 — Illustrated Parts Breakdown,
FREQUENCY LIMIT INDICATOR, P/N KA00125-3,
KA00125-5
1 October 1970

R. H. Chapdelaine, Supervisor, Service Publications



DARFO! Detect And Remove Foreign Objects. **DARFO!** The continuing crusade of accident prevention through positive personnel actions. When all foreign objects have been removed, a major cause of personnel accidents and aircraft damage will disappear.

The object shown here went unnoticed until an alert crewman approached the bird for a preflight inspection... **DARFO!** A foreign object caught his eye. Normally, an object this size would have been seen and retrieved by a mechanic; normally, the object would have been missed by the owner...but what happened???

Photo A shows the upper nacelle section on the pilot's side of an H-2. It is almost invisible, but a mechanic actually saw a foreign object in this position, from this angle. Can you see it?



PHOTO A

Rotor Tips is proud to be a part of this accident prevention effort; however, it should be stressed that you, the reader, are most important to the success of DARFO.

Before closing or sealing a component, whether it be a fuse box or gearbox, 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. Take the time to "take one last look around,"

Photo B is a closer shot of the same area from a higher and slightly different angle. Although quite large, the object still blends into the background.



PHOTO B

In Photo C, however, the object jumps into view after our two eyeballers help point the way. These "dykes" actually measure 6 inches from stem to stern!



Here again is pointed out the fact that items which cannot be seen from one angle suddenly become blatant killers or purveyors of damage when seen from another vantage point. Remember, before climbing down from any high point on the aircraft, look around and practice DARFO... you just may save the price of a new tool, or an engine, or an aircraft or...a life!

remember, if we all do our part and practice DARFO, everyone will benefit.

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.



1968

Christy, Edwin J., Major, USAF

Davison, Ronald E., Major, USAF

Denny, James T., LCdr, USN

Donaldson, John W., Lt, USAF

Flynn, James M., Lt, USNR

Fraser, John H., Lt(jg), USN

Gaede, Ralph L., Major, USAF

Gilliam, Edward, Major, USAF

Goljahani, Ghasem, Lt, IIA

Goodwin, John B., Captain, USAF

Goodwin, Lewis R., Captain, USAF

Goven, Richard C., Captain, USAF

Griffis, Kenneth G., Captain, USAF

Hamel, Robert A., Lt, USNR

Hayden, Carol, Captain, USAF

Haynes, Gerritt F., Jr., Lt, USAF

Hightower, David B., Major, USAF

Hurt, Hoyt B., Major, USAF

Kamrani, Tahmasb E., 1stLt, IIAA

Kay, Charles R., Major, USAF

Kekuna, George L., Captain, USAF

Kiseljack, Charles, Lt, USN

Marcum, Lawrence F., Major, USAF

Matthews, Thomas, Lt(jg), USN

McMeen, Walter C., Major, USAF

Metziner, Donald D., Captain, USAF

Meyer, Frederick C., Lt, USN

Pasco, Robert H., Lt, USNR

Passiglia, John S., Lt, USAF

Scamardo, Sam, Major, USAF

Sprague, Joseph H., Captain, USAF

Stevenson, David, Captain, USAF

Stroh, Jerry D., Major, USAF

Sweet, Charles R., Captain, USAF

Weber, David C., Captain, USAF

Wendt, William A., Lt, USN

1969

Burtch, Patric J., Lt, USN

Bush, Ralph, Major, USAF

Dirren, Frank S., Lt, USN

Emrie, William C., LtCol, USAF

Estreich, Daniel, Lt, USN

Fenner, David L., Lt, USN

Foss, Geoffrey A., Lt, USN

Grant, Wayne, Captain, USAF

Irvin, Troy G., Captain, USAF

Jobst, Russell, Lt, USNR

Jowers, James, LCdr, USN

Lewis, Ronald, Lt, USN

Mason, Richard, Lt, USN

McLain, Joseph, Captain, USAF

Melecosky, Timothy, Lt, USN

Meyn, John P., Lt, USN

Mohammad, Valinia, 1stLt, IIAF

Need, Vance, Captain, USAF

Nowell, George, Jr., Captain, USAF

Noyes, Charles, Captain, USAF

Parkinson, Robert, Lt, USN

Phillips, Lew E., Captain, USAF

Quinn, Joseph P., Lt, USN

Richards, John R., Lt, USN

Sams, Donald D., Captain, USAF

Schibier, Mark, Captain, USAF

Seyedein, Biuck, Captain, IIAF

Stoker, LaRon L., LCdr, USN

Stockett, Zack, Major, USAF

Vespico, Robert D., Major, USAF

Woodle, A. S., Lt, USN

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.