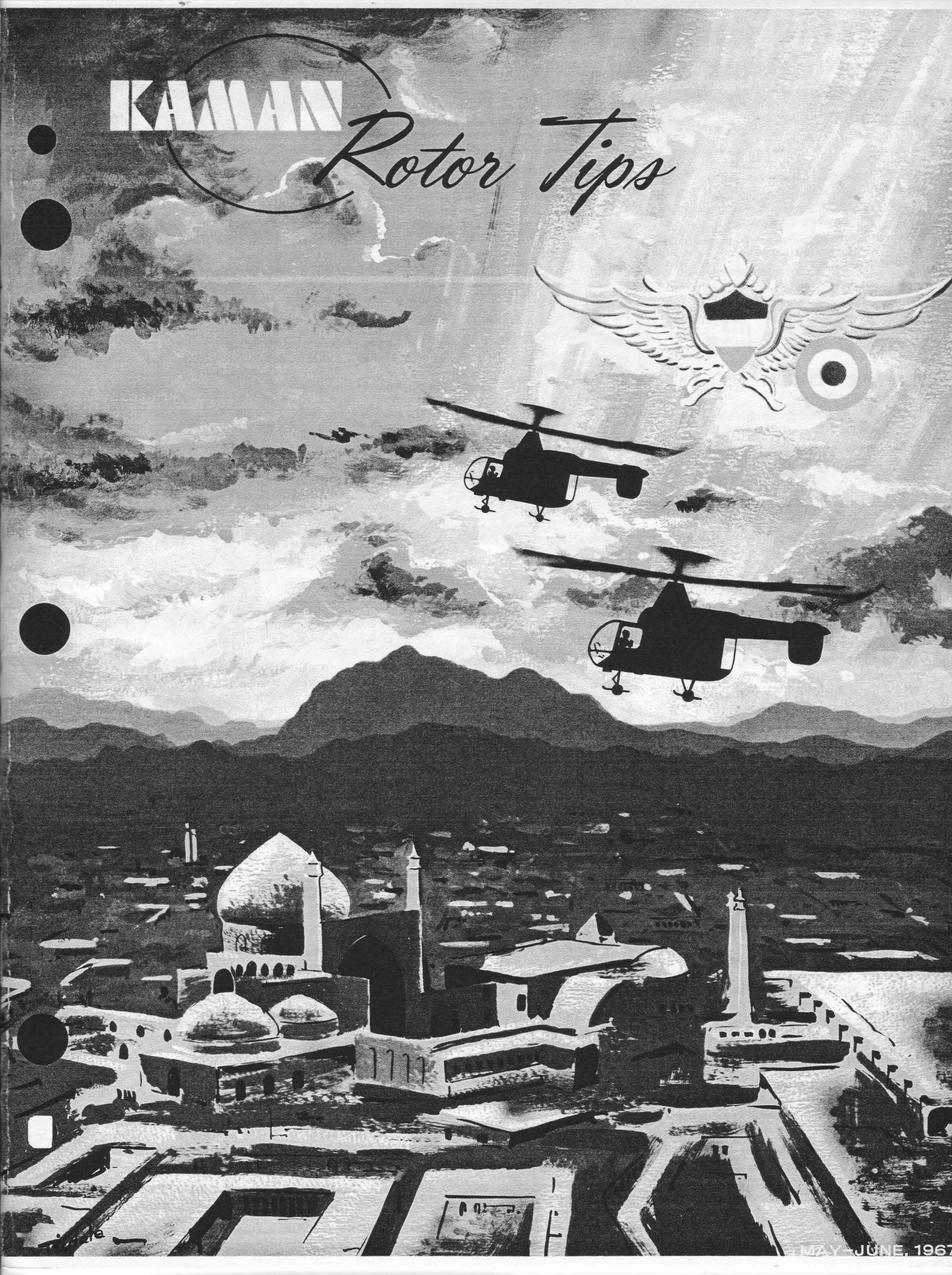


MAY - JUNE, 1967

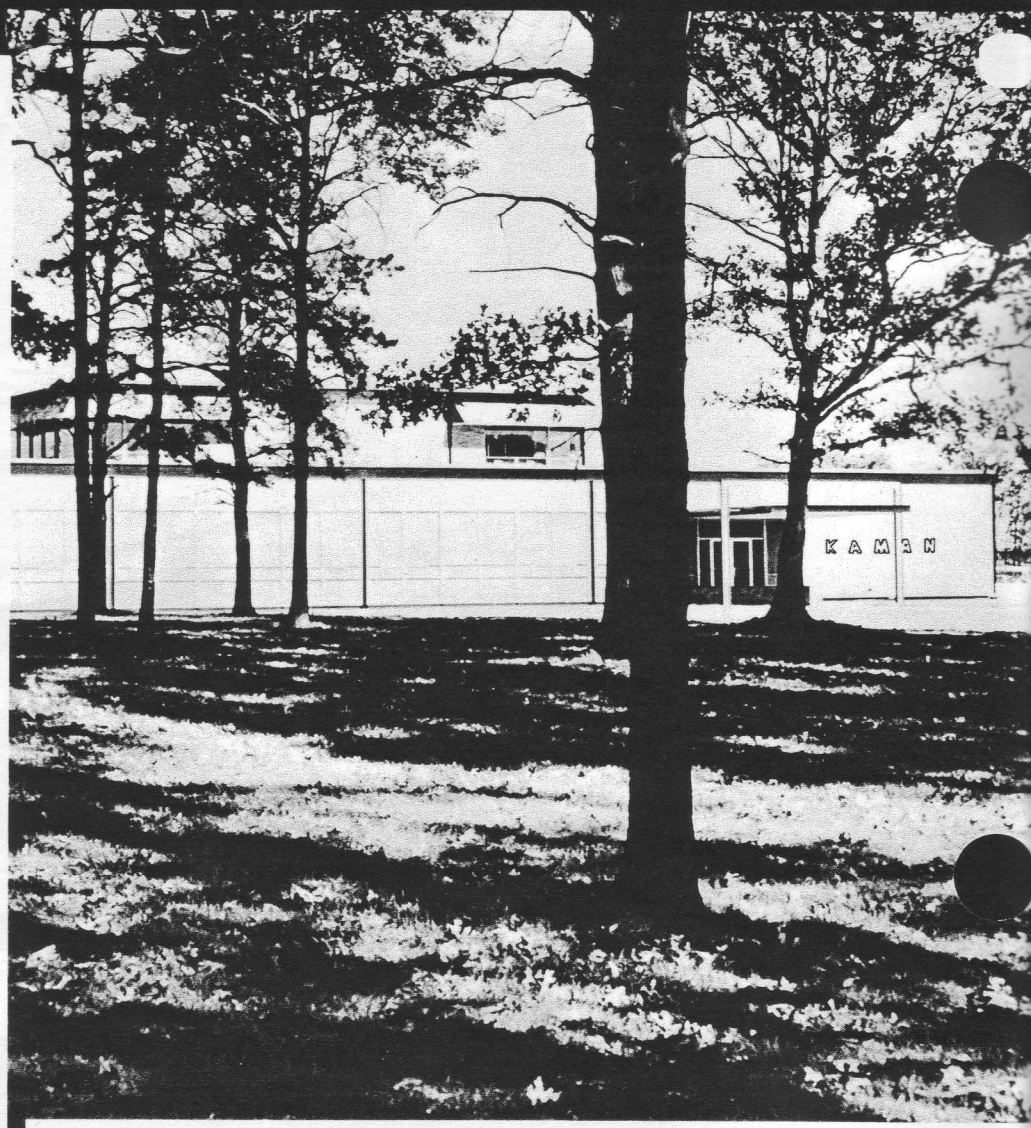
KAMAN AIRCRAFT
DIVISION OF KAMAN CORPORATION

Rotor Tips

Volume V Number 2

ON THE COVER

Missions completed, Imperial Iranian Army and Air Force HH-43F's return to base at the end of the day. Cover by Donald Tisdale, Service Publications.



FEATURES

DEPARTMENTS

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

KAMAN SERVICE REPRESENTATIVES

DONALD P. ALEXANDER
GERARD A. BOUTIN
DONALD G. BEASLEY
DONALD R. TANCREDI
NAS Lakehurst, N.J.

DAVID M. RUSH
NAF Naples, Italy

WILLIAM G. WELLS
RICHARD J. FAIN
DONALD T. LOCKRIDGE
PAUL D. WALLBANK
WAYNE H. ZARLING
NAAS Ream Field, Calif.
NAS Miramar, Calif.
NS Adak, Alaska

PAUL F. WHITTEN
NAS Jacksonville, Fla.
NAS Cecil Field, Fla.
NAS Key West, Fla.
NAS Pensacola, Fla.
MCAS Beaufort, S.C.

FRANK J. HEFFERNAN
NAS Alameda, Calif.
NAS Lemoore, Calif.
NAS Whidbey, Wash.
NAF Crows Landing, Calif.

HOMER C. HELM
GORDON R. FICKES
DONALD R. DELANEY
NORMAN M. MYERS
NAS Atsugi, Japan
NAS Cubi Point, P.I.

JOHN R. LaCOUTURE
O&R North Island, Calif.

THOMAS C. LEONARD
NAS Corpus Christi, Tex.
NAAS Kingsville, Tex.
NAAS Chase Field, Tex.

BILL L. MAGNAN
O&R NAS Jacksonville, Fla.

RICHARD A. REYNOLDS
MICHAEL T. FIASCHETTI
USS Wright

CLINTON G. HARGROVE
ABRAHAM R. THOMAS
Iran

WILLIAM C. BARR
HORACE F. FIELD
EDWARD F. NOE
JACK L. KING
Home Office

LOGISTIC REPRESENTATIVES

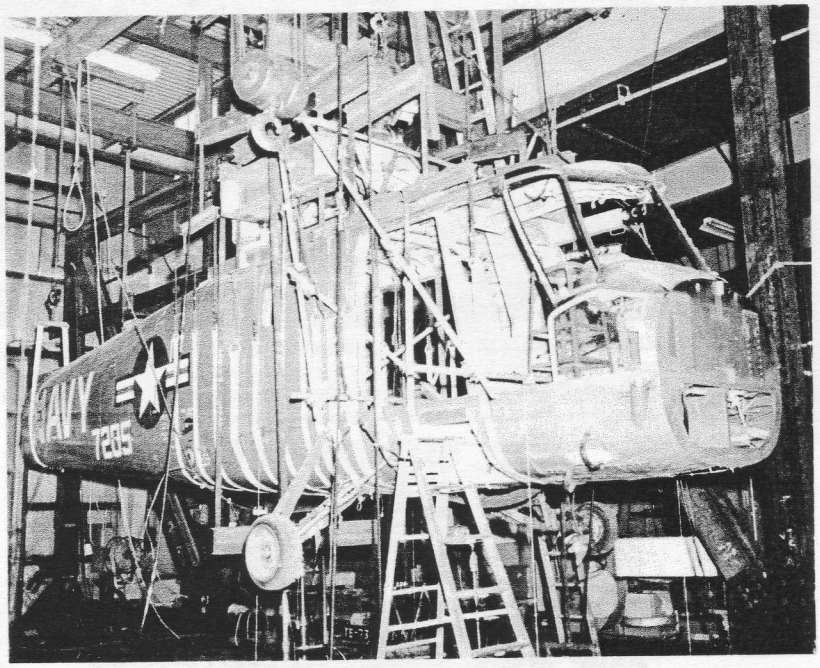
JOHN W. HENDRICKSON
NAS Lakehurst, N.J.

LLOYD R. GARDNER
NAAS Ream Field, Calif.

CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, *Supervisor*

CREW SAFETY STRESSED IN UH-2C TESTING

by E. R. Luff
Test and Development
Engineer



When the UH-2C begins Fleet Operations it will be structurally and mechanically well qualified. Since the twin-engine conversion is built onto the already proven UH-2A/B single-engine airframe, the following tests were conducted to prove the integrity of the areas in which major changes were made.

Foremost among the many tests made on the UH-2C was the one concerned with safety of the crew in the event of a forced landing. The fuselage shown in its nest of webbing, steel girders, pipes and hydraulic cylinders is being subjected to tremendous pressure during the static airframe test which proved that the engines, main transmission and combining gearbox on the twin would remain in place during a 20g crash landing.

The quickest way to snuff out an engine fire, always of concern to aircraft crews and designers alike, was explored at length during the development of the fire extinguishing system for the UH-2C engine compartment. During this period, test engineers constructed a special wind tunnel, and a T58-GE-8 engine, enclosed in a simulated cowling, was installed. To duplicate the airflow through the engine compartment while flying at cruising speed, the engine was blasted with a steady, 120-knot wind while a series of tests was conducted to find the best means of concentrating and distributing the extinguishing agent. The qualified system consists of two pressurized steel spheres containing bromotrifluoromethane; one sphere is mounted on each side of the UH-2C transmission mount. A valve and cartridge assembly on the bottom of the sphere allows the pilots to release the extinguishing agent which is then carried by distributing tubes to two nozzles installed on each of the inboard firewalls, one forward at the compressor section and one aft at the combustor section.

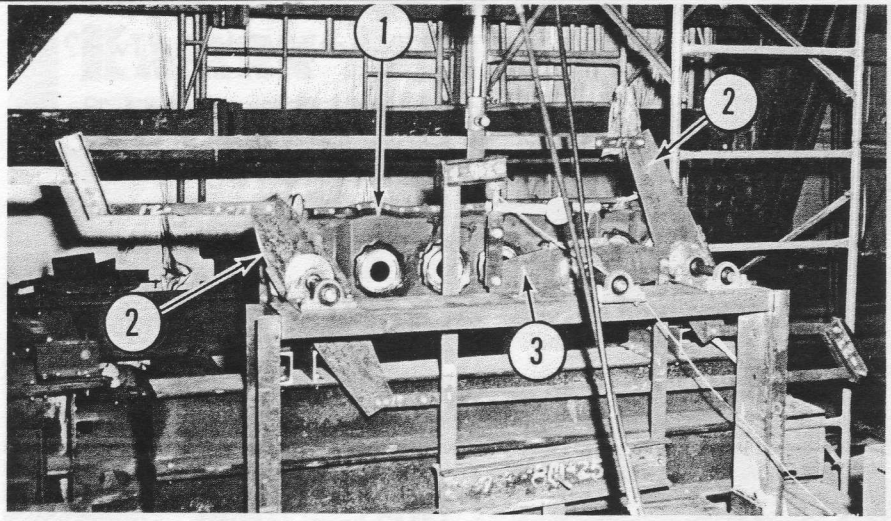
The installation of twin engines on the UH-2 called for major redesign in the power transmission area and, of course, testing and qualification of all new components. Foremost among these was qualification of the combining gearbox which unites the power from both engines and feeds it to the transmission. During endurance testing of this component a unique method was used which employed not one, but two of the gearboxes. The gearboxes were arranged front-to-back with the input shafts connected together through a pair of special couplings which could be adjusted to simulate various engine torque inputs. The output gear shafts of the two gearboxes were connected by a standard UH-2 output drive shaft. One of the output gear shafts was then connected to a 300 horsepower electric motor thus completing a continuous power loop with each gearbox driving against the resistance of the other. For 480 hours this set-up was operated at torque levels exceeding normal mission requirements and, to explore all probable operating conditions, various combinations of engine power-sharing were utilized. One gearbox was also equipped with all accessories — including the oil cooler shaft and blower — thus qualifying the accessory drive trains as well as the main power train.

KAMAN NAME CHANGE

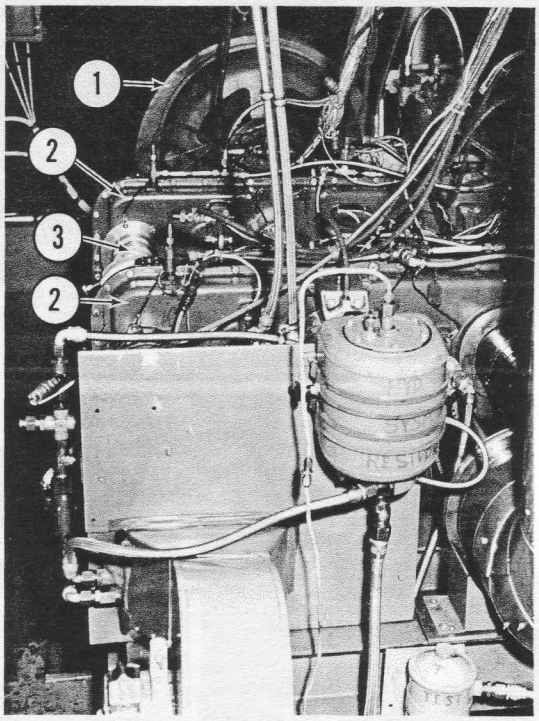
Kaman Corporation was founded in 1945 as designer, developer and producer of helicopters. Through progressive research, development and acquisition the company has become a widely diversified contractor serving the Department of Defense and industry.

A change in name of the company was recently made from Kaman Aircraft Corporation to Kaman Corporation. At the same time consolidation was accomplished of its nine divisions and one subsidiary into four market-oriented business groups, namely: Kaman Aircraft, Kaman Science and Technology, Special Products, and Air-Kaman, Inc. Corporate headquarters remain at Bloomfield, Conn.

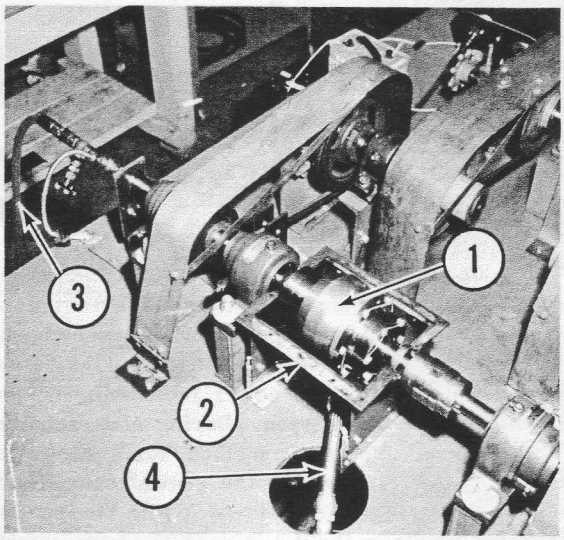
Kaman Aircraft is the largest division. It has aircraft research, development and production facilities at Hartford, Moosup, Bloomfield, Danielson and Windsor Locks — all in Connecticut.



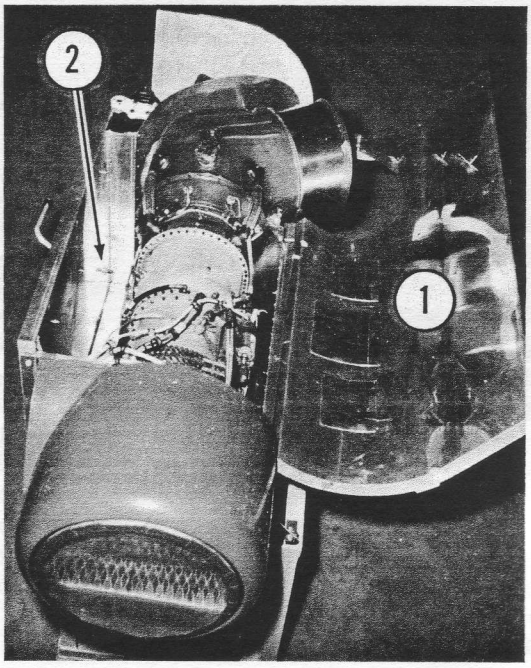
COMBINING GEARBOX TEST-TO-DESTRUCTION — 1. Combining gearbox 2. Torque arms which apply torque to input shafts (simulating engine power application) 3. Torque arm which reacts to torque applied at output shaft (simulating power to main rotor transmission).



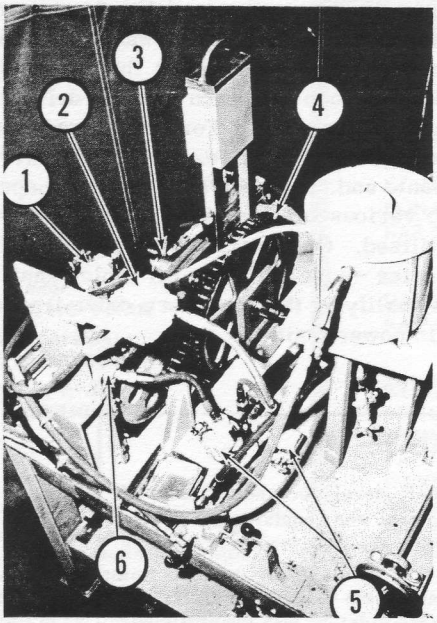
COMBINING GEARBOX ENDURANCE TEST — 1. Electric motor 2. Combining gearbox 3. Input shaft.



SPRAG CLUTCH ENDURANCE TEST — 1. Test specimen, sprag clutch 2. Oil shroud (cover removed) 3. Oil feed line 4. Oil scavenge line.



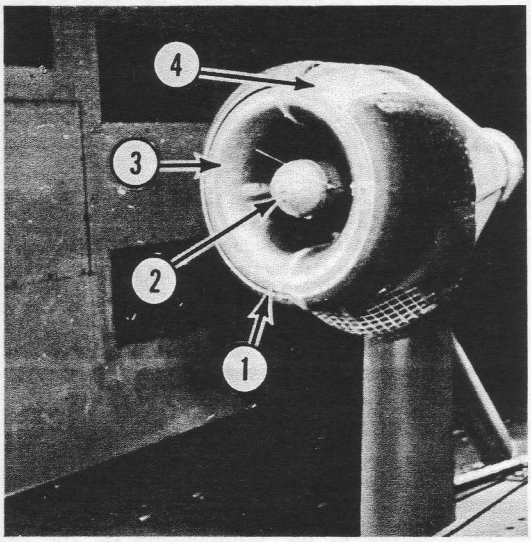
FIRE EXTINGUISHING SYSTEM TEST — 1. Simulated cowling 2. Extinguishing agent nozzle.



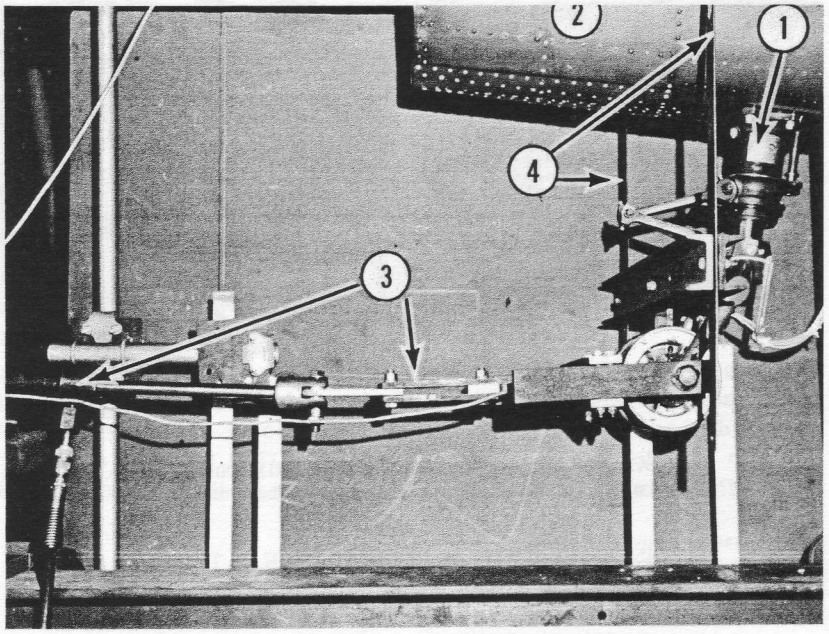
SPRAG CLUTCH FATIGUE TEST — 1. Control valve, clutch anti-slippage control 2. Flow control valve, hydraulic motor 3. Test specimen, sprag clutch. 4. Chain and sprocket for load reaction and autorotation 5. Pressure relief valves 6. Hydraulic motor.

The combining gearbox was also subjected to a grueling "twist to destruction" test which demonstrated that the maximum static torque carrying capacity of the gearbox is more than twice the combined power output of both engines.

Another area concerned with power transmission and also subjected to exhaustive testing, was the sprag clutch which allows rotor free-wheeling during auto-



AIRFRAME INLET ANTI-ICING TEST — 1. Engine inlet cowling 2. Bulletnose 3. Engine bellmouth 4. Experimental nose shape.

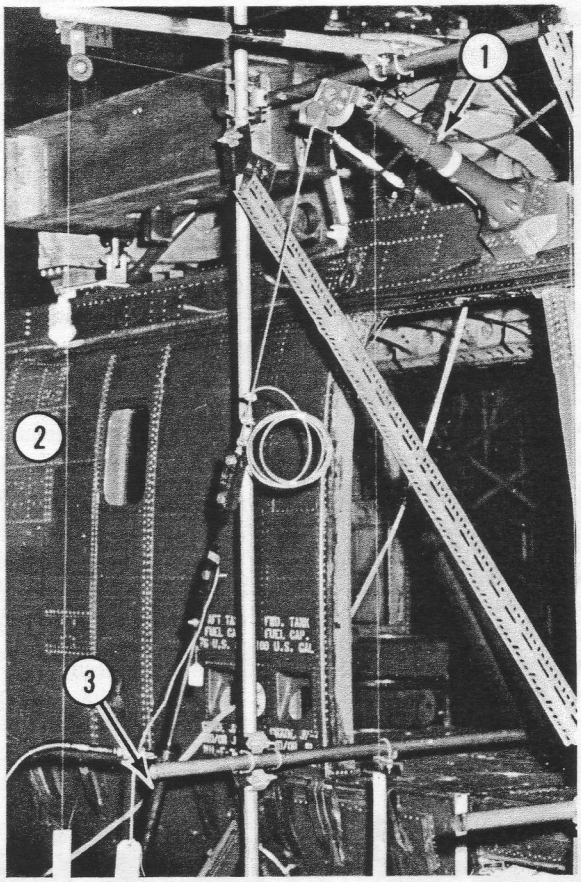


AUX LANDING GEAR LOAD TEST — 1. Auxiliary landing gear 2. Fuselage 3. Hydraulic cylinder and linkage which applied simulated towing load 4. Linkage which applied up load.

rotation. Two of these clutches are used on the UH-2C, one between each engine and the combining gearbox. During endurance testing, the clutch was exposed to various amounts of slippage ranging from simulated flight with one engine stopped to flight with engine power mismatched. In addition, the clutch was torqued at a steady continuous level while, at the same time, another vibratory or fluctuating torque was superimposed. Once each hour a simulated autorotation and power re-engagement took place.

The UH-2C rescue hoist installation, a different design from the UH-2A/B hoist, was also qualified with exhaustive static load testing. Using hydraulic cylinders to apply loads, hoisting operations in a hover attitude were simulated and the cable was stretched at an angle imposing the most critical stresses. The test was continued to destruction to demonstrate the reserve strength available. The major design differences on the two hoists stem from the engine relocation on the twin. The rescue hoist boom on the UH-2A/B, with the single engine located on the fuselage center line, is a built-up sheet metal assembly which retracts flush into the nacelle when not in use. The hoist winch and motor are located on the tip of the boom. With the shoulder-mounted engines on the UH-2C, it was not feasible to retain the retractable boom design, nor was it desirable to have a rectangular boom and winch protruding into the airstream in front of one of the engines since this would produce a possible FOD situation. The solution was to relocate the winch and motor inside the nacelle and streamline the boom to a forged tubular spar firmly fixed to the fuselage.

During final development of the engine inlet cowling anti-icing system, Kaman engineers assembled an inlet cowling, engine bellmouth and bulletnose on a special pylon in NASA's icing research tunnel at Cleveland. The subsequent series of tests not only qualified the anti-icing system, but also furnished valuable information regarding the ice-shedding properties of different shaped noses on the inlet cowling.



RESCUE HOIST STATIC TEST — 1. Rescue hoist boom 2. Static test airframe 3. Hydraulic loading cylinder.

Also tested was the auxiliary landing gear. This static load test subjected the gear to the forces encountered during towing operations at overload gross weight. A simulated tow bar end linked to a hydraulic cylinder applied the towing force while another hydraulic cylinder overhead applied upward force simulating wheel ground reaction. As with the rescue hoist, this test was continued to destruction by increasing the applied forces until a failure occurred.

GRADUATION DAY—Students from the first maintenance class pose for a group photograph after receiving their diplomas.

HH-43F MAINTENANCE SCHOOL IN IRAN

Several months ago Iranian Army and Air Force personnel began attending classes on HH-43F maintenance conducted by three Kaman Aircraft instructors. At the midpoint in the training program, Lead Instructor William Barr furnished the following report on the school and its activities.

ISFAHAN ARMY AIR BASE, IRAN... The first of two classes in an HH-43F Maintenance Training School here began a few months ago with 27 students — 23 from the Army and four from the Air Force. The instructors, Edward Noe, Horace Field and myself, were provided by KAC under a contract with the Iranian government. The program calls for each class to last 15 weeks with the first five weeks being devoted to fundamentals; the next eight weeks to actual work on the aircraft; and the last two weeks to the T53-L-11A engine. Through the cooperation of the base commander, LtCol Abass Bahrami, two operational HH-43F's were made available to the class for on-the-job training. Each student is supplied with a textbook dealing with basic aviation subjects, a modified Handbook of Maintenance Instructions, and work books.

While several of the students have received training in the United States, many others have not had the opportunity to attend a formal maintenance school. We have, therefore, included a basic course similar to those given U.S. servicemen in the States. This course covers subjects such as the proper use of mechanics' hand tools, fundamentals of electricity, figuring weight and balance, proper methods of safety wiring, metal work, and the use of electrical measuring instruments. Kaman instructional aids such as training boards and movies are used extensively during this introductory five weeks. The students are expected to take notes, examinations are given every Thursday, and each attendee is required to demonstrate his knowledge during the classwork.

TOP STUDENTS—Shown with their instructors are the four students who received the highest proficiency marks in the 27-man class. Left to right are 1/Sgt H. Shariffi, Horace Field, 1/WO A. Emadian, William Barr, 1/Sgt A. Moosapour, Edward Noe, and 1/WO A. Sedghi.

In phase two of the course, the accent is on actual field maintenance of the HH-43F. This involves removal and installation of the components on the two HUSKIES and performing all other functions necessary to maintain the helicopter. The third phase involves similar instruction on the engine.

A typical day commences at 0730. One of the three instructors is assigned as the "instructor of the day" while the other two either assist or prepare for their next class. Whenever possible, practical work is scheduled, with the main goal being to give each student the chance to perform all of the individual jobs necessary to return the aircraft to an "up status."

It is a source of great pride to the KAC instructors that the class average is 81 despite the fact that nine of the students speak little English — four of those attending the class have averages in the high 90's! This showing would not have been possible without the "eagerness-to-learn spirit" in the class room and the excellent cooperation received from Colonel Bahrami, LtCol Gholam Hosein Mirzazadeh, executive officer; Capt Manocherr Kay-Khan-Zadeh, training officer; Capt Esmaeil Farokh-Seresht, maintenance officer; and many others.

Maintenance School Attendees

CLASS I

Aid Off S. Mirbaghery, A/1c F. Damoori, A/1c N. Tabatabai, A/1c S. Amini, IIAF; 1/WO A. Emadian, 1/WO A. Sedghi, 1/WO H. Fatemi, 2/WO M. Bagherzadeh, 2/WO Y. Banitaba, 1/Sgt H. Shariffi, 1/Sgt S. Abdoirazaghi, 1/Sgt M. Salehi, 1/Sgt A. Moosavi, 1/Sgt A. Athamkhani, 1/Sgt R. Boueinifar, 1/Sgt H. Bahramzadeh, 1/Sgt M. Nemati, 1/Sgt K. Moosavi, 1/Sgt A. Manouchehri, 1/Sgt A. Moosapour, 1/Sgt A. Moshkbar, 1/Sgt H. Mardanloo, 2/Sgt A. Amiri, 2/Sgt Z. Alamdari, 2/Sgt M. Mahjoobi, 2/Sgt A. Fathi, 2/Sgt B. Salari, IIAA.

CLASS II

1/WO D. Hosseni, 1/WO E. Assefi, 2/WO M. Arjomandi, 2/WO H. Azari, 2/WO H. Delavari, 2/WO A. Sadeghi, 2/WO M. Nasseri, 2/WO W. Sherafati, 2/WO A. Najmai, 2/WO E. Masoudi, 2/WO E. Motamani, 2/WO T. Parsa, 1/Sgt E. Gholizadeh, 1/Sgt V. Ommani, 1/Sgt H. Sanei, 1/Sgt S. Solaimani, 1/Sgt A. Ebrahiminejad, 1/Sgt M. Amini, 1/Sgt A. Haj Karimi, 1/Sgt A. Khayatpour, 1/Sgt G. Agheli, 2/Sgt F. Sanjari, 2/Sgt R. Mirakhorloo, 2/Sgt K. Rezakhany, 2/Sgt B. Andalibi, IIAA.

Photographs of students at work will be included in a general round-up of HH-43 activities in Iran which will appear in the next issue of Rotor Tips.

Timely Tips

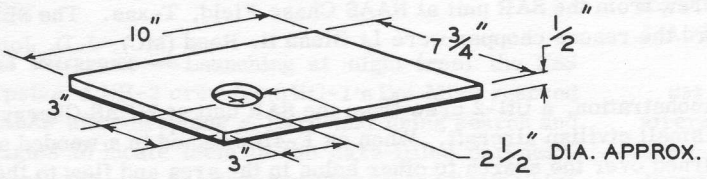
Plastic Dust Covers (UH-2, HH-43B, HH-43F)

Before attaching oil, fuel or other lines, make certain that all ends are open and do not contain a "hidden" dust cap or cover. Maintenance personnel have, in several cases, spent considerable time troubleshooting and then discovered that a line had been installed with the protective cap still in place. The caps were difficult to see with a casual glance since they were the wrong size and had been inserted INTO the lines. Protective caps should, of course, be fitted over the outside diameter of lines left open on the helicopter, in storage, or which have temporarily been removed from the aircraft during maintenance work.

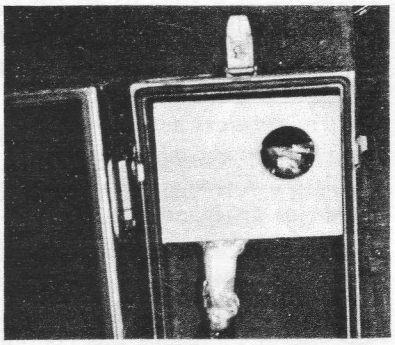
H. Zubkoff, Service Engineer

Tail Rotor Blade Shipping Container (UH-2)

The simple, easily fabricated fiberboard spacer or separator shown below will aid in preventing possible damage to the tail rotor blade during shipping. Because considerably more weight is concentrated in one end of the box, the packaged flyweight can shift and momentarily compress the packing. If this happens, the tail rotor blade may strike the metal cover and damage the blade trailing edge at the inboard corner. In use, the separator is placed on top of the packing at the blade grip end with the flyweight protruding through the hole as shown in the photo. When the box cover is closed, the semi-rigid surface of the separator bears against the packing and effectively restrains the blade. The separator is cut from triple wall fiberboard to the dimensions and specification shown.



MATERIAL — Triple wall fiberboard, PPP-B-640C, grade A, class II or equivalent.



W. J. Wagemaker, Service Engineer

Use Of -201 And -301 Rigging Fixture Sets (UH-2)

When using the Rig Fixture Set on the lateral controls before or after incorporation of Airframe Change 93, check the Part Number on the fixture to determine whether or not shimming is required. The following chart should prove helpful in determining shim requirements. This information will appear in a future change of the HMI NAVWEPS 01-260HCA-2-2, Airframe Group. (AFC 93 authorizes increasing lateral cyclic and directional control on the UH-2A/B. Authorization to rework the -201 rigging fixture set to eliminate the shimming requirement was made in Support Equipment Change 567. Sets which have been reworked carry the -301 designation.)

Part Number	AFC 93 Incorp.	Aircraft Application	Shims Required?
K604802-201	Before	UH-2A/UH-2B	No
-201	After	UH-2A/UH-2B	Yes
-301	After	UH-2A/UH-2B/UH-2C	No

K604802-301 can be used only after incorporation of AFC 93.

C. D. Morse, Service Engineer

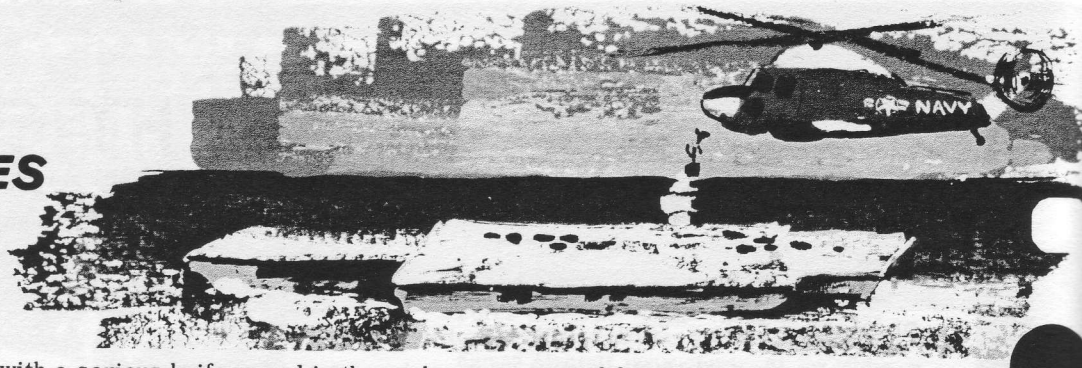
Main Rotor Blade Tiedown Weldments (UH-2)

The following list and locations of main rotor blade tiedown weldments for the UH-2A and UH-2B will be incorporated in a future change to the IPB, NAVAIR 01-260HCA-4-6. The list will also be incorporated in the handbooks issued for the UH-2C. The IPB for the UH-2C will have a more detailed parts breakdown and, as a result, the sections will be renumbered. The list of weldments for the UH-2C will appear in the IPB, NAVAIR 01-260HCB-4-2.

PART NUMBER	LH OR RH	STATION	WATER LINE	PART NUMBER	LH OR RH	STATION	WATER LINE
K634019-303	LH	390.0	75.0	K634019-301	RH	390.0	100.0
K634021-303	LH	330.0	100.0	K634021-304	RH	330.0	100.0
K634022-205	LH	330.0	70.0	K634021-305	RH	375.0	100.0
K634019-209	RH	390.0	75.0	K634022-206	RH	330.0	70.0

H. Zubkoff, Service Engineer

SEASPRITE ACTIVITIES



...A civilian with a serious knife wound in the neck was evacuated from a merchant ship by a UH-2 SEASPRITE crew from the SAR unit at NAS Atsugi, Japan. Due to a heavy overcast, LCdr Richard B. Baumstark used TACAN and then dead reckoning to pilot the helicopter to the ship, which was 60 miles offshore. The patient was hoisted aboard in a litter while the ship was underway and then treated by Lt Steven H. Libian (MC), flight surgeon, and Zelt K. Dunbar, HM2, while on the way to the Naval Hospital at Yokosuka. Others taking part in the mercy mission were Ens Brit R. Armstrong, Jr., the copilot, and Roger T. Campbell, ADJ1, crewman....A UH-2 crew from the SAR unit at NAS Cubi Point, RP, flew more than 100 miles offshore to evacuate an appendicitis patient from the USS Bainbridge in the South China Sea. Accompanied by a UC-45J, the SEASPRITE rendezvoused with the ship, landed, picked up the patient and returned to Cubi Point without incident. Lt(jg) D. A. Cranor piloted the helciopter on the mercy mission, LCdr C. A. Herpick was copilot, K.D. Myhre, AMH2, crewman, and Lt T. E. Dupuy (MC), doctor.

...A sailor who fell from the quarterdeck of the USS Wright was rescued from heavy seas by a UH-2 SEASPRITE crew from HC-4's Det 85. Despite hampering winds, the rescue helicopter was airborne 90 seconds after the "man overboard" call sounded and the rescuee was back on deck a few minutes later. Pilot of the UH-2 was Lt Charles D. Craft,and Lt(jg) James R. Williams was copilot. Crewmen were John A. Steffke, AEAN, and Raymond F. Antonak, ADJ2.

...A pilot who ejected from his uncontrollable F9J was picked up by a UH-2 crew from the SAR unit at NAAS Chase Field, Texas. The SEASPRITE pilot was Lt Jon W. Walker; others aboard the rescue chopper were Lt Glenn H. Reed (MC), J.D. Jones, HM1 and D. L. Spillars, ATN3.

...After an airshow demonstration, a UH-2 crew from the SAR unit at MCAS Cherry Point, N.C., launched to direct the search for a small civilian aircraft. When an F-4B crashed in a wooded area soon after, UH-2 pilot Capt William W. Crews turned over the search to other helos in the area and flew to the aid of the military personnel. A litter was lowered through 50-foot pines and the crewman from the F-4B was hoisted to the SEASPRITE. The UH-2 then headed for the station since an ambulance had arrived to pick up the pilot of the downed aircraft. Upon returning to the crash site, it was found the ambulance was mired in the mud so Captain Crews landed in a small clearing among pine trees and power lines and the pilot was loaded aboard. SSgt Oakley F. Atkins was copilot on the UH-2 and LCpl Richard W. Porter, crewman.

...Two pilots who ejected after their planes collided in mid-air, were later picked up by a UH-2 crew from the SAR unit at NAS Cecil Field, Fla. One pilot was recovered from a pine tree where he was dangling 10 feet above the ground. Lt Fred J. Lakeway was UH-2 pilot and Ronald G. Spoone, ADR3, crewman. Also aboard was Lt J. W. Spence (MC), doctor.

...Two survivors who had bailed out of their crippled A3B at night over the Caribbean 17 miles from the USS Forrestal were rescued from their life rafts by a UH-2 crew from HC-2's Det 59 aboard the carrier. SEASPRITE pilots were Lt Michael E. Howe and Lt(jg) Paul F. Adams; crewmen were Corbett J. Lee, AE2, and Douglas G. Wainwright, AMS3.

...A pilot who ejected from his crippled aircraft and landed in a heavily wooded area was hoisted to safety by a UH-2 crew from the SAR unit at NAS Oceana, Va. Lt B.J. Patterson was pilot of the SEASPRITE, J.B. Rhodes, ADR3, copilot, and J.W. Rushton, ADR2, crewman.

...A UH-2 crew from HC-2's Det 38 aboard the USS Shangrila was on plane guard when an F-8D struck the ramp and dropped into the rough waters of the Mediterranean. Two minutes later the downed pilot was safely on the carrier deck after having been hoisted aboard the SEASPRITE. Members of the helo crew which carried out the speedy rescue were LCdr Adam R. Trupp, pilot; Ens John F. Buchanan, copilot; David L. Fetrow, ATN3 and Edward P. Kilfara, ADR2, crewmen.

...One of two A-4 pilots who ejected after a collision 23 miles from the USS America was rescued from the Iberian Sea by a UH-2 crew from HC-2's Det 66 aboard the giant carrier. Michael Dubois, AN, aircrewman, was lowered to assist the pilot, injured and unable to mount rescue seat. The rescuee and his rescuer were hoisted to the hovering SEASPRITE by Michael Butler, ADR3. Lt Robert Chandler and Lt(jg) Wayne Stiles were pilots on the mission, which was completed in 25 minutes. A helicopter from HS-9 was also at the scene....A UH-2 crew from the SAR unit at MCAS Beaufort, S.C., launched after the engine on an A-4 flamed out and the pilot ejected a short distance from the air station. Six minutes after launch the SEASPRITE returned with the downed pilot who had been hoisted from a tidal swamp. Capt Joseph E. Gunnels was pilot of the rescue helicopter, and crewmen were Sgt Charles F. Hancock and Cpl Charles R. Singley.

Southeast Asia

USS MAHAN —A pilot down in the South China Sea was rescued by a UH-2 crew from HC-1's Det 5 aboard the USS Mahan. The second crewman from the SEASPRITE leaped into the water to aid the injured survivor, cut the parachute shrouds and assisted him into the sling. Five feet from the water the survivor fell from the sling so the crewman once again put him into the harness and then was hoisted with him to the helicopter. LCdr M. T. LeGare was pilot of the SEASPRITE and Lt(jg) R. Parkinson, copilot. Crewmen were W. F. Stock, ATN2, and W. D. Sullivan, AN.

USS TICONDEROGA —A pilot who ejected from his A-4 was rescued soon afterward by a UH-2 crew flying plane guard near the USS Ticonderoga. A crewman from the helicopter went into the water and cut the downed airman's chute loose, then he and the rescuee were hoisted to safety. LCdr Paul B. Travis was SEASPRITE pilot; Lt(jg) Peter J. Eversole, copilot; Charles W. Stecz, AMH1, and D. R. Zach, AN, crewmen. All are attached to HC-1's Det Echo aboard the Ticonderoga....In another Det Echo mission, a pilot was rescued from the South China Sea after G. D. Russell, AMH2, went down the wire to assist the survivor because of the rough water. Commander Travis was UH-2 pilot, Lt(jg) Randall W. Vitek, copilot, and Airman Zack, the other crewmember.

USS ENTERPRISE — Launching at night from the USS Enterprise, a UH-2 crew from HC-1's Det Mike rescued two pilots after dropping a flare and using search and floodlights to locate them in the haze-filled darkness. The survivors were hoisted aboard from the South China Sea without incident despite the five-foot waves and unfavorable conditions. Lt B. W. Burford was pilot of the SEASPRITE and Lt(jg) J. M. Lebron, copilot. Crewmen were C. L. Randle, AE1, and H. L. Spencer, ATRAN. ...In another Det Mike rescue, a UH-2 crewman leaped into the South China Sea to aid a survivor who was injured and having difficulty entering the sling due to his entangling chute and the 10-foot waves. A second survivor was rescued without incident. SEASPRITE pilot was Lt Harry M. Borders and Ens Thomas A. Matthews was copilot. Crewmen were Petty Officer Randle and Marvin L. Farris, AMH3.

USS HANCOCK — R. J. O'Connor, AMH3, a UH-2 crewman, leaped into the turbulent wake of the USS Hancock to aid a sailor who had fallen overboard and was floating face down in the water. After the crewman managed to get the survivor into the sling, the rescuee was hoisted to the helicopter and revived with artifical respiration. Lt(jg) R. L. Esslinger and Ens Doug Wright were pilots and M. J. Heemer, ADJ3, the other crewman aboard the SEASPRITE. All are attached to Det Bravo on the Hancock.

USS ENGLAND — In a well-coordinated rescue mission, two downed fliers were plucked from the South China Sea by a UH-2 crew from HC-1's Det 17 aboard the USS England. Lt Jaque L. Meiling was pilot of the rescue helicopter and Lt Andrew J. Curtin, copilot. Crewmen were Richard H. Hall, ADJ3, and Allen E. Salsbury, AN.

USS KITTY HAWK —A sailor blown overboard at night by a jet blast was rescued a few minutes later from the dark waters of the South China Sea by a UH-2 from HC-1's Det Charlie on the USS Kitty Hawk. LCdr A. O. Hanson was pilot of the rescue helicopter; Ens R. C. Kearley, copilot; L. F. Raines, ADJ3, and D. D. Richmond, PRAN, crewmen....In a similar incident, during the day, a sailor was rescued by a Det Charlie UH-2 crew consisting of Lt(jg) J. M. Flynn, pilot; Ensign Kearley, copilot; J. A. Hanna, ADR3; and J. D. Pendleton, ATN3.

USS DAHLGRAN —A pilot who ejected from his crippled aircraft was rescued soon after splashdown by a UH-2 crew from HC-1's Det 19 aboard the USS Dahlgran. Jerry L. Crick, ADJ2, went into the water to aid the survivor and dove underwater to cut him loose from entangling parachute shrouds. After the rescuee was aboard the helicopter the UH-2 crewman was hoisted to safety. Lt F. C. Meyer was SEASPRITE pilot; Ens C. H. Yates, III, copilot; and E. M. Meyer, ATR2, the other crewman. High praise was given to Petty Officer Crick for the proficiency shown during the rescue. Also praised was the training he had received from Paramedic Team One, NAS Cubi Pt, R. P....In another Det 19 mission, two downed pilots were rescued from the South China Sea by Lieutenant Meyer, Ensign Yates, Petty Officer Crick and J. W. Freeman, AMH3.

ZERO AOCP FOR UH-2 —Smiles, backslapping and congratulations were the order of the day recently at HC-1. The squadron, based at NAAS Ream Field, Calif., had reached a goal often sought in aircraft circles but rarely attained — no aircraft out of commission due to a lack of parts. With one of the squadron's UH-2 SEASPRITES hovering overhead, pilots and maintenance personnel proudly show the sign proclaiming the achievement. In a letter afterward to Lloyd Gardner, Kaman logistics representative, Cdr Lloyd L. Parthemer, executive officer of HC-1, thanked him for "the invaluable contributions" he had made in helping the squadron reach the coveted goal. A few weeks later there was need for still another sign — HC-1 again hit the UH-2 Zero AOCP mark. (USN photo)

Q's AND A's

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

Q. (Applies UH-2) WHAT IS THE LARGEST SINGLE CONTAINER THAT CAN BE LOADED INTO THE CABIN CARGO AREA AND STILL BE MOVED FORE OR AFT IF NECESSARY?

A. With the litter brackets removed, a single container measuring 46 inches wide by 48 inches high by 45 inches deep (57.50 cubic feet) can be positioned within the cargo area and properly secured. When the litter brackets are installed in the aircraft, the maximum single container dimensions are 46 inches wide, 48 inches high and 42 inches deep (53.66 cubic feet). The cargo door opening is 48 inches wide by 50 inches high.

R. J. Trella, Service Engineer

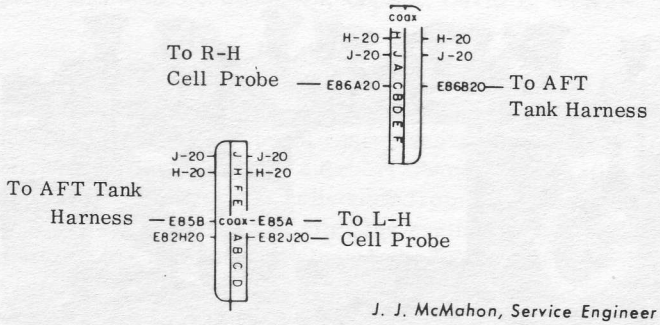
Q. (Applies UH-2) WHAT IS THE CORRECT NOMENCLATURE AND FEDERAL STOCK NUMBER FOR THE RESCUE NET, P/N 64-A-110H1?

A. The correct nomenclature for the net is: Net Assembly, Personnel Rescue, Scoop Type. The net FSN is: RD 4220-933-2070LA20.

C. D. Morse, Service Engineer

Q. (Applies UH-2) BEFORE ROUTING THE AFT TANK FUEL PROBE WIRING HARNESS, WHAT SHOULD BE CHECKED?

A. The wire length and identification numbers should be checked before installation to assure proper harness routing. If this is not done and the connectors are transposed, the condition won't become obvious until the installation has almost been completed. The connector will not reach one fuel probe and there will be a noticeable surplus of wire at the other probe. The connector with the longer wire attached is routed to the right-hand cell while the connector with the shorter wire is routed to the left-hand cell. The schematic shows the connector and harness wire numbers. The connector with wire number E86B20 attached to pin C is routed to the right-hand cell. The connector with wire number E82H20, attached to pin A, and coaxial wire, number E85B, is routed to the left-hand cell.



J. J. McMahon, Service Engineer

Q. (Applies HH-43B) THE BLEED BAND, OVER THE BLEED AIR HOLES IN THE COMPRESSOR, PERMITS A SMOOTH COMPRESSOR ROTOR (N_1) ACCELERATION. WHAT PRECAUTIONS SHOULD BE OBSERVED WHEN INSTALLING THE BLEED BAND?

A. When installing the bleed band place the short band on top of the compressor and the long band on the bottom. Be certain both bands bear directly against the bleed air holes in the compressor. and that the band assembly is properly adjusted. Before attempting engine run-up, be sure bleed band clips are positioned properly and that the fire detector element clamps are installed over, not under, the bleed band. If the detector clamps are inadvertently installed under the bleed band. the band can not fully close and engine operation will be adversely affected. When checking the operation of the bleed band be sure the fire detector clamps do not interfere with band operation, and that the band opens and closes in accordance with the applicable handbook of Maintenance Instructions.

H. Zubkoff, Service Engineer

Q. (Applies UH-2) WHAT CORROSION CONTROL PROCEDURES SHOULD BE USED ON THE COLLECTIVE TORQUE TUBE BEARING HOUSING AND ITS ATTACHING BOLTS?

A. Normal installation of magnesium housings, P/N K652023-11, requires the special corrosion protection procedures listed in H-2 Airframe Bulletin 36 and H-2 Airframe Bulletin 36, Amendment 1. It is further recommended that the sealant called out in AFB 36 (Specification MIL-S-8802 or MIL-S-7502) be used to seal the two bolts attaching the housing to the cockpit floor. The arrow in illustration A points to the area where moisture could accumulate and speed corrosion of the housing. Apply the sealant according to the directions listed in AFB 36. The sealant should be sloped as shown in illustration B.

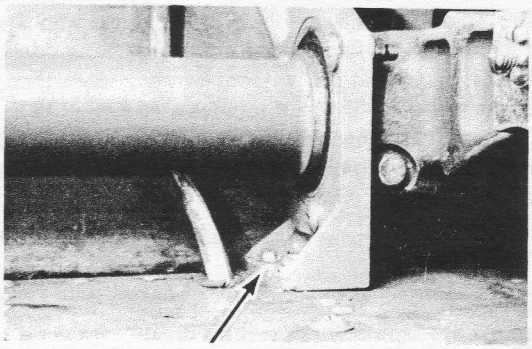


Illustration A

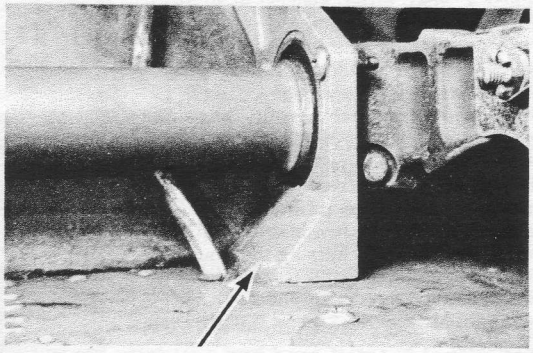
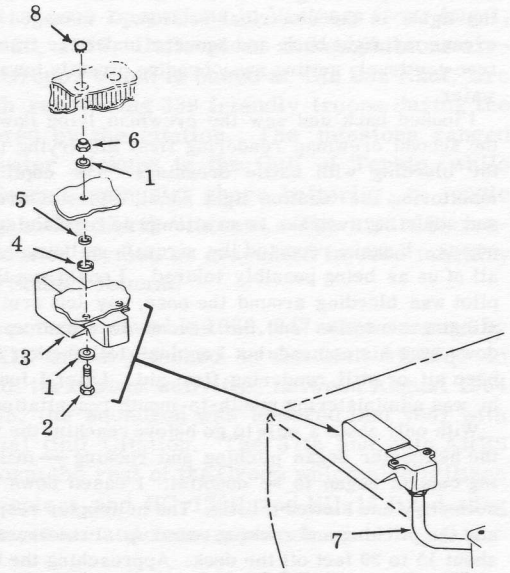


Illustration B

J. A. Kelly, Supervisor, UH-2 PAR/Mod

Q. (Applies UH-2) WHEN INSTALLING A FUEL CELL VENT VALVE ASSEMBLY, TO WHAT TORQUE SHOULD THE ATTACHING BOLTS BE TIGHTENED?

A. The bolts, two for each vent valve, should be torqued to 12-15 pound-inches. Over or under torquing may cause the valve to wear or chafe against the fuel cell. Failure to include all the necessary washers during fuel cell vent valve installation can also lead to damage of the cell. The following procedure, when used with the accompanying illustration, will aid in fuel cell vent installation: A. Place washer (1) on bolt (2) and insert into the vent valve (3). Put special washer (4) and a lock-o-seal (5) onto the bolt (2). Repeat the procedure for the other attaching bolt. (A piece of tape may be used to hold the bolts in position while installing the valve.) B. Reach in through the fuel cell access hole and align the bolts with the bolt holes in the fuel cell. Push the bolts through the fuel cell and into the holes in the helicopter floor. C. From inside the helicopter, place a washer (1) and a nut (6) onto each bolt. Tighten the bolts fingertight. D. From inside the fuel cell, the attaching bolts should be tightened to 12-15 pound-inches. Connect the vent valve tube (7) to the vent valve. E. Install the protective caps (8) over the holes in the helicopter floor.



H. Zubkoff, Service Engineer

Q. (Applies UH-2A/B) WHEN ORDERING ACCESSORY DRIVE SHAFT SEALS, P/N 328-7185AN AND 336-7185AN, WHAT NUMBER SHOULD BE USED, THE PART NUMBER OR THE SOURCE CONTROL NUMBER AND ITS FEDERAL STOCK NUMBER?

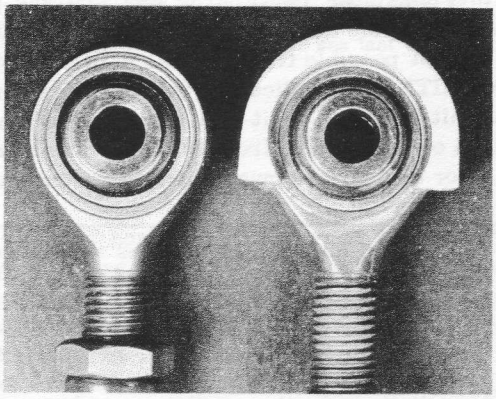
A. Source control. Although the seals are listed in IPB NAVAIR 01-260HCA-4-2 by part numbers, the supply system carries these seals by source control number and FSN. There is no substitution or change in the seal, only a change in the method of ordering them. To order the seals use the following cross reference:

Nomenclature	Part No.	Source Control No.	Federal Stock No.
Seal, O-Ring	336-7185AN	43118-1	RM 5330-929-8965X110
Seal, O-Ring	328-7185AN	43118-2	RM 5330-929-8964X110

F. E. Starses, Service Engineer

Q. (Applies UH-2) CAN THE DELRIN CAPPED TAIL-ROTOR PITCH LINK RODEND, P/N K616281-1, BE USED AS A REPLACEMENT FOR THE UNCAPPED RODEND, P/N K616101-1?

A. Yes, provided the Delrin cap is removed. The rodends are identical except for the Delrin cap on P/N K616281-1. Airframe Change 93 provides new pitch links and new pitch arms. The Delrin capped rodends are designed for use with these new pitch links. Use of a capped rodend on an aircraft which does not have Airframe Change 93 type pitch links will cause restriction of the pitch link movement. Supply will carry the new rodends as spares rather than the old type which can't be used once Airframe Change 93 is incorporated. The photo shows the two rodends.



W. J. Wagemaker, Service Engineer

Q. (Applies HH-43B/F) WHY IS IT IMPORTANT TO SECURE THE CANNON PLUGS WITH ELECTRICAL TAPE OR SIMILAR MEANS WHEN THE COPILOT'S CONTROL PANEL, C-842A/AIC-10A, IS NOT INSTALLED?

A. Unless the plugs are secured in this manner they may work free, fall onto the cockpit floor and possibly jam the cyclic stick thus preventing lateral movement.

M. Whitmore, Jr., Service Engineer

Q. (Applies UH-2) TAIL ROTOR GEARBOX REWORK PROVIDED BY AIRFRAME CHANGE 133 ALSO INCORPORATES A NEW CRANK ASSEMBLY, P/N K653100-5, AS AN INTEGRAL PART OF THE GEARBOX ASSEMBLY. WHAT SHOULD BE DONE WITH THE OLD CRANK ASSEMBLY, P/N K653100-1 OR K653100-3?

A. The old crank assembly, if serviceable, should be returned to local supply. AFC 133 reidentifies the tail rotor gearbox from K671302-3 to K671302-5. Rework also includes installation of a new crank assembly on the gearbox as an integral part of the assembly. This had been done in order to provide positive indexing of the splined directional control crank assembly when it is placed on the pitch control shaft assembly. The new crank assembly, P/N K653100-5, is constructed of corrosion-resistant aluminum while the superseded crank assembly, P/N K653100-1 or K653100-3, is constructed of magnesium. To summarize, when installing a K671302-5 tail rotor gearbox assembly, use the crank assembly attached to the gearbox, remove the old crank assembly from the helicopter and return it to local supply.

W. B. Flanagan, Technical Publications

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

Southeast Asia

GALLANT UH-2 CREW FROM HC-1 RUNS GAUNTLET OF FIRE IN RESCUE ATTEMPT

The names of the participants in this heroic mission have been deleted at the request of the Navy. Their actions exemplify the spirit of service shown by all SAR crews operating in the Southeast Asia area.

Bullet-riddled, the pilot and copilot wounded, one crewman dying — the UH-2 landed back aboard the destroyer after a gallant, but unsuccessful attempt to rescue a Navy pilot downed three miles inland from the North Vietnamese coast. The fact that the pilot was able to bring the helo back at all was a near miracle and the highest possible tribute to his skill as a pilot — the SEASPRITE from Helicopter Support Squadron One had taken hit after hit as it ran a gauntlet of enemy fire. Fifteen ot the 41 holes from bullet and shell fire were in the rotor blades, communications were knocked out and the copilot's controls almost inoperative. The shell which shattered the bullet-proof windshield and burst in the cockpit had wounded the copilot in the face, and sheared the electrical connections in the overhead panel. One of the crewmen, wounded while returning enemy fire, died afterward despite the efforts of the remaining crewman to save his life during the crippled helicopter's flight back to the ship. The pilot was wounded in the arm.

Below are excerpts from the pilot's report on what happened from the time the UH-2 took off until it returned after the dramatic rescue attempt:

I orbited off shore at two miles awaiting the arrival of RESCAP and any other aircraft that could render protective cover. While orbiting, I could see the smoke from the downed aircraft and an occasional burst of enemy AA fire at the aircraft strafing them. These left shortly due to lack of ammunition and fuel. By the time RESCAP arrived, there was only about 10 minutes of good daylight left and an attempt had to be made soon or it would be too dark. The plan was for the aircraft to start strafing to suppress fire and for me to go in as briefed.

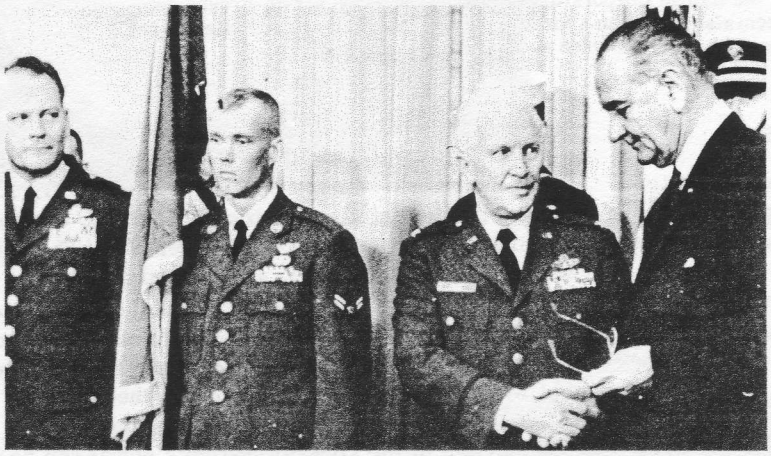
The RESCAP rolled in and I started a dash into the beach descending at high speed, doors open, weapons loaded and the crew with their flak vests on. As I approached and crossed the beach, very heavy small arms fire was directed at us from behind trees and vegetation outlining the coast. It sounded like a Chinese New Year's Eve. I could see the flashes from small arms extending to the right of me along the beach for a good 500 feet. I didn't look to see what was to the left. No hits were detected or felt at this time. About two miles inland, I spotted the downed aircraft and could see the flames coming up from it and the brush fires in the general area as it lay on the slope of the hill to our left. I continued on for a few seconds when a stream of tracers and bursting shells rose up at us from the base of the hill. The copilot, and the crewmen began firing their machine guns.

I was apparently flying down a line of automatic weapons and anti-aircraft batteries. The helicopter began lurching and bouncing from hits and nearby air bursts. It was at this time that the crewman and I were hit. I reported, "we're hit, we're hit." One of the aircraft replied, "get out of there. Head for the water. We'll pick you up on the way out." I turned right, aborting the mission, to avoid any more ground fire, which lasted for approximately ten seconds. I maintained a right turn wanting to exit to the north of a hill on our right and to cross the beach at a different point from entry. The helicopter was now vibrating very badly. More lights started glowing on my caution light panel but the vibration made them unreadable. Upon passing through a northerly heading, I ran into another gun battery. The helicopter again took several hits as the vibrations magnified. The copilot's windshield was penetrated by a bursting type shell. The fragments entered the overhead control panel severing electrical connections. Some bits struck and penetrated my hard hat. The caution light panel began to glow with an increasing brightness as the first two or three of the fuel section came on, then the top two lights of the engine section and all of the lights in the electrical section. I managed to increase my right bank and squeeze under the tracers at tree-top level, getting away heading directly toward the water.

I looked back and saw the crewman lying down with the second crewman rendering first aid trying to stop the bleeding with battle dressings. The copilot was monitoring the caution light panel, circuit breakers, and adjusting switches in an attempt to regain electrical power. I again reported the aircraft as being hit with all of us as being possibly injured. I could see the copilot was bleeding around the nose, my left arm had a stinging sensation and the second crewman was bent down over his comrade but I couldn't tell whether he had been hit or still rendering first aid. Later I found out he was administering mouth-to-mouth resusitation.

With only about a mile to go before reaching the water, the helicopter began pitching and rocking — maintaining control began to be doubtful. I eased down on the collective and slowed a little. The helicopter responded and the pitching and rocking eased up. I continued on at about 15 to 20 feet off the deck. Approaching the beach, I could see flashes ahead from small arms aligned along the trees at the coast line. No hits were felt or detected. I eased up over the trees and dropped low over the water holding the slower speed. I reported being over the water and asked for a steer to the ship from RESCAP. As I spoke the last word the radio went dead. We continued for another two miles in order to avoid an island. I looked back over my right shoulder and saw two A1's coming upon us. As one of them passed by I broadcast in the blind our condition and requesting a lead to the ship. I also gave him the "no radio" sign visually. I followed him, and soon he fishtailed for me to follow. I moved out on his left wing and we continued this way for ten minutes before I could make out two ships ahead about two miles apart. Our destroyer had on her flashing helo light. This was of immense help in identification and I headed right for it. As I neared, she turned into the wind and I made my approach. The deck lights were on and the landing was uneventful. As soon as the helo was firmly on deck, I rotated the throttle to the "OFF" position disregarding normal shutdown so that the injured crewman could be rushed to sick bay. The copilot immediately began applying rotor brake....

PRESIDENT HONORS 3rd ARRGp FOR RESCUE ACTIVITIES IN VIETNAM



WHITE HOUSE CEREMONY— President Lyndon B. Johnson congratulates Col Arthur W. Beall after awarding the Presidential Unit Citation to the 3rd Aerospace Rescue and Recovery Group. At left are LtCol Baylor Haynes and A2c Malcolm Hassler. ARRS is credited with saving more than 600 persons in Southeast Asia. HH-43 HUSKIE crews rescued 347 of the 490 plucked from the jungle or sea last year.

The 3rd Aerospace Rescue and Recovery Group, Military Airlift Command, was awarded the Presidential Unit Citation recently for "extraordinary gallantry" while carrying out rescue operations in Vietnam from Aug 1, 1965 to June 30, 1966. Helicopters and amphibious aircraft in the Group, which is based at Tan Son Nhut, are credited with recovering 339 friendly troops during the period covered by the citation. The missions ranged from open water pickups in the Gulf of Tonkin, while under fire from Communist shore batteries, to jungle rescues deep within North Vietnam. The unit also rescued many downed airmen or evacuated injured military personnel in South Vietnam.

Of the 490 persons saved in 1966, 347 were rescued by HH-43 HUSKIE crews attached to the 38th ARRSq. In recognition of its rescue activities between August 1964 and July 1965, the squadron was honored last year with a Presidential Unit Citation. The 37th and 39th ARRS squadrons form the rest of the Group which also utilizes HH-3E helicopters and HC-130H and HU-16 fixed-wing planes in the rescue and recovery work.

In saluting the men of the 3rd ARRG during the White House ceremony, President Johnson said:

"The contributions of the 3rd Aerospace Rescue and Recovery Group to the struggle for freedom are already legendary. By risking their lives so that others might live, the men of the 3rd have won the everlasting gratitude of their fellow countrymen — and the right to be honored among America's heroes.

"In all weathers, over the most difficult terrain, faced always with the peril of enemy fire, they have reached out and plucked to safety — from the jungles, from the mountains, from the sea —fliers downed in combat. In Southeast Asia alone, the group has been credited with 597 combat rescues.

"By their very existence, they have provided our downed fliers with the knowledge that they are not forgotten — that help is on the way. To a man bobbing in an empty sea or crawling through a dense jungle, that knowledge is a blessing without price.

"Their place of honor was not earned without sacrifice: seven members of the group have given their lives, fourteen are listed as missing, and two have been captured — all in devotion to the spirit of the 3rd's motto: 'That Others May Live.'

"We are proud to pay tribute, with this citation, to the gallant men of the 3rd Aerospace Rescue and Recovery Group. Their courage and self-sacrifice have provided us with a glowing example of the best of American manhood. They are a credit to a grateful nation. We salute them all."

Several members of the 3rd Group, during the period of the citation, attended the ceremony. They were Col Arthur W. Beall, group commander; LtCol James L. Blackburn, operations officer; LtCol Baylor R. Haynes, rescue squadron commander; Captains James L. Butera, John F. Guilmartin, Jr., and William E. Cowell, rescue aircraft commanders; MSgt Charles T. Walther, and A2c Malcolm C. Hassler, pararescue technicians. Also attending were Air Force Secretary Harold Brown, who read the citation; Gen John McConnell, Air Force chief of staff; BrigGen George Boylan of the Military Airlift Command; and BrigGen Allison C. Brooks, commander of the Aerospace Rescue and Recovery Service.

More than 1800 individual awards have been made to personnel in the 3rd ARRG. Three have been for the Air Force Cross, one of which was awarded posthumously to A1c William H. Pitsenbarger, an HH-43 crewman and the first airman to receive the award. Other awards and decoration won by the unit include 64 Silver Stars, 3 awards of the Legion of Merit; 251 Distinguished Flying Crosses; 18 Airman's Medals; 24 Bronze Stars; 1330 Air Medals; 25 Purple Hearts; and 117 Air Force Commendation Medals. The 3rd Group served with distinction in World War II and the Korean War, with 15 campaign streamers and six unit citations to its credit.

Meanwhile, rescue crews from the 3rd ARRG continue their rescue efforts in Vietnam. The following are a few of the missions carried out by HH-43 crews from the 38th ARRSq:

continued on page 18

Design For RESCUE—

PART III

The loud hailer now in use on the Navy UH-2 SEASPRITE and the public address system on the Air Force HH-43 HUSKIE are essentially the same equipment — both systems were designed, tested and produced by the Kaman Corporation to furnish one-way, air-to-ground communication. The complete system also comes in a kit form which can easily be installed in any aircraft when a reliable, lightweight, high-powered audio system is needed.

The Loud Hailer and P.A. Systems

Before introduction of the speaker system, helicopter crews often encountered difficulty in directing or advising survivors because of the disrupting sounds from the rotor blades and engine on the aircraft and the wind or other environmental conditions. Voice communication with ground parties or ships was also impossible in many cases. Experiments with conventional public address systems, similar to those mounted on the tops of trucks and used for advertising, did not satisfy the requirement since the sound was garbled in the area under the helicopter. Several other means of communication were explored, but similar difficulties were encountered so Kaman audio engineers concentrated their efforts on developing a powerful amplifier with directional-type loud speakers. The speakers were then mounted so that sound is projected forward and away from rotor and engine noises. When correctly installed and operated, the speaker system generates a cone of sound covering about one-half square mile if the transmitting helicopter is approximately one mile away and at an altitude of 2000 to 3000 feet.

DESCRIPTION

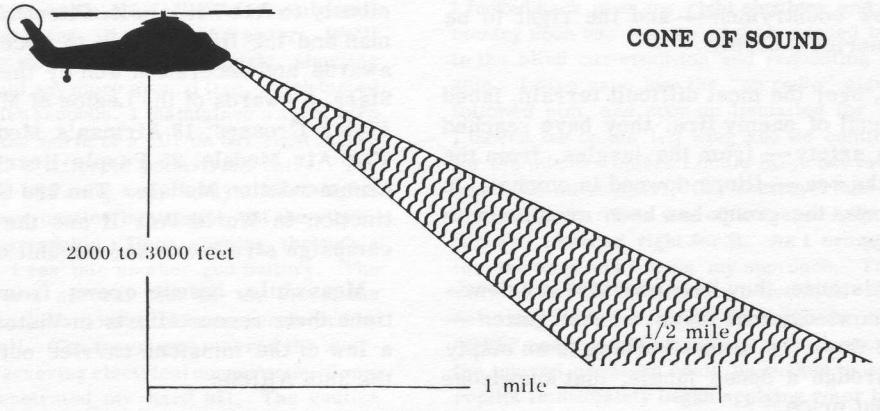
The audio amplifier is a 250-watt, transistorized unit consisting of a preamplifier, four power output transistors, two finned heat-sink assemblies and an interstage transformer. Mounted on the amplifier front panel are the power connectors, a carbon microphone jack, a gain potentiometer and a 15-ampere fuse. Built into the amplifier are three protective devices, two thermal and one semi-conductor. Each heat-sink contains a thermal device which will, when overheated, cause signals to bypass the power amplifier and short out to ground. The semi-conductor protects the unit against transient voltages by causing the 15 ampere fuse to blow when its rated voltage is exceeded. The conical-shaped speakers have permanent magnet sound drivers rated at 4 ohms each. The speakers are wired in parallel to provide a 2-ohm load.

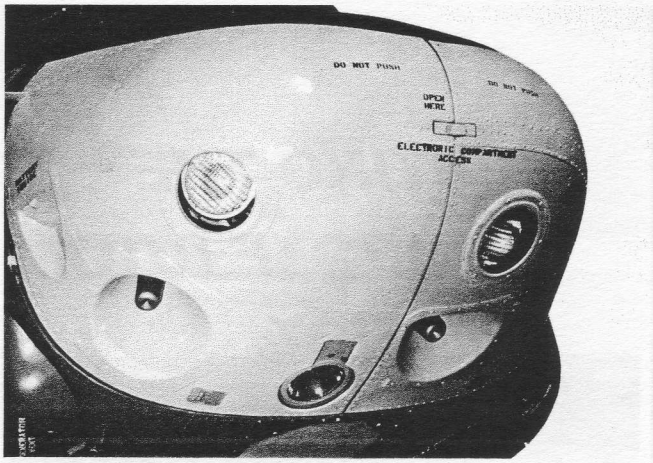
The adaptability of the speaker system is illustrated by observation of the two configurations, one on the SEASPRITE and the other on the HUSKIE. The speaker cones on the SEASPRITE are formed as integral parts of the nose doors. The HH-43 speaker system has the speakers mounted on the fuselage immediately forward of the pilot's feet. Both installations are mounted so that when the helicopter is pointed at the rescuee, he is within the speaker system's cone of sound.

The extent of the speaker system's power can be illustrated by comparing it with a household Hi Fi hookup. An amplifier set up in a house would normally range from 40 to 80 watts with the realization that full power, if available, could never be utilized. The sound emanating from a 40 watt unit at full power in a house would be unbearable to the human ear. Since the public address or loud hailer system has a 250 watt power output, it SHOULD NEVER BE OPERATED ON THE GROUND AT FULL GAIN unless personnel within 50 feet are wearing ear plugs or other protective devices similar to those used in the vicinity of jet aircraft. Failure to observe this precaution could result in injury to personnel.

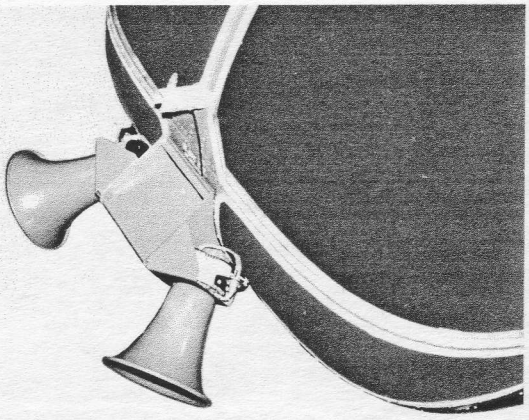
UH-2 OPERATION

The control box or panel in the UH-2 SEASPRITE contains a power switch marked "on-off" and a selector knob marked "pilot," "standby," "copilot" and "crewman." When the power switch is moved to the on position, 27.5-volt dc power is applied from the primary bus, through the control box to the power input of the audio amplifier. The selector knob is then used to select which station will operate the speaker system. Placing the selector knob in the standby position will allow unrestricted radio operation while keeping the speaker system available for immediate use. The speaker system is wired into the aircraft's interphone system, allowing crewmen to use existing microphones

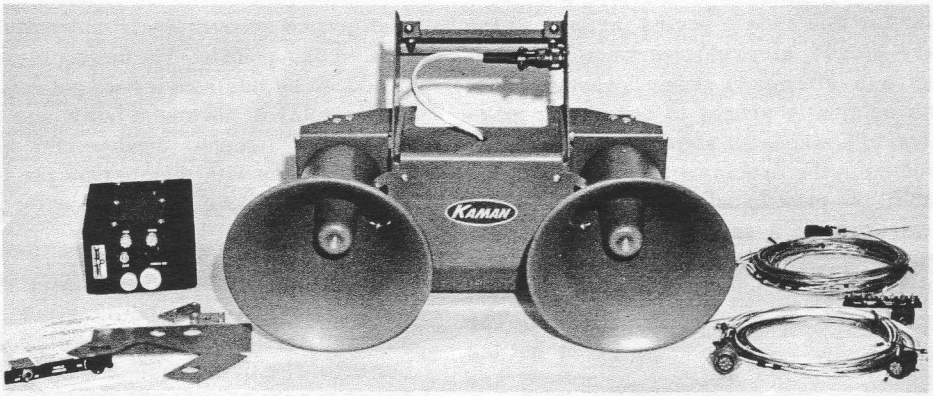




UH-2 SEASPRITE nose doors showing integral speakers installed by incorporation of Airframe Change 29.



HH-43 HUSKIE speakers ready for use after incorporation of T.O. 1H-43(H)-506 and T.O. 1H-43(H)-506C.



The complete speaker system in kit form showing, left to right, the control panel, installation instructions, required brackets, audio amplifier, two speakers, wiring harnesses, terminal blocks and a 15-ampere fuse.

with the speaker system, the interphone system and for normal radio transmission. When the selector knob is placed in the pilot position, the pilot will be able to transmit over the speaker system. To use the aircraft radio the pilot must place the selector knob in standby or one of the other positions. The copilot may transmit over the aircraft's radio at the same time the pilot or crewman is using the speaker system. The speaker system is operated at the pilots' stations by keying the radio switch, provided the control box selector knob is in the required position. When the selector knob is placed in the crewman position, the crewman must press his microphone switch to the second detent in order to use the speaker system.

HH-43 OPERATION

The control panel on the HH-43 HUSKIE has an on-off switch and a volume control. When the power switch is placed in the on position, the public address system attains a standby mode and can be activated by any member of the crew. The operator must place his intercom switch in the public address position and commence broadcasting by speaking into the regular microphone.

AUDIO SYSTEM KIT

The Kaman K-250 Aero-Speaker system, can easily be installed in aircraft, on ground vehicles, buildings or poles and anywhere an extremely powerful lightweight audio system is needed. During testing at Kaman, the system was installed in a variety of aircraft including light planes. In all cases it proved to be an attention-getting, extremely powerful audio system, particularly when operated at full gain. The unit was also tested while mounted on top of a small sports car and, although it couldn't be used at full gain in city streets, it helped show the unit's adaptability.

OPERATIONAL TECHNIQUES

Personnel using the speaker system must speak slowly and distinctly. Sentences should be as brief as possible and, if necessary, directions should be repeated until complied with or have obviously been understood. Brief pauses should also be made between each word (or syllable if necessary). This procedure will be particularly helpful when dealing with survivors who may be in a confused or panicky state of mind, rescuees wearing hard hats, or with those in the water or other environment where hearing may be difficult.

For effective use of the speakers, UH-2 and HH-43 pilots should point the nose of the helicopter in the direction of the ground party or rescuee. Those below will be unable to hear the transmission once the helicopter is over or heading away from them. Prevailing winds should also be considered while transmitting. Because the range of the cone of sound is greatly reduced when broadcasting into a strong wind, every effort should be made to transmit instructions while upwind from the rescuee. Since helicopter noise is greatest when at low hover, transmissions should, whenever possible, be made from an altitude that will provide the greatest clarity. The altitude chosen will, of course, be determined by the pilot and his familiarity with the capabilities of the broadcasting device. Navy and Air Force helicopter pilots report that having this means of directing survivors and ground parties has been of great assistance during rescue and other missions.

TESTING THE FISHPOLE BOOM AND NET

by C. Ray McMillan
Kaman Test Pilot

The background for this article begins far back in the history of rotary-winged air vehicles when the first pickup of a man was attempted from hover position. Early pilots who originally sought to coax their marginal air machines to a standstill above a rescue candidate were confronted by the problems of hover positioning. Simply stated, the pilot found extreme difficulty in controlling his aircraft in a satisfactory hover while endeavoring to look straight down. The foregoing can be likened to balancing on a bicycle while leaning over, looking down and counting spokes in the rear wheel. The passing time brought much helicopter progress but the fact remained— rescue pilots still were unable to see satisfactorily beneath their craft during pickup. To circumvent this problem of the pilot's blind spot, team work was employed wherein the crewman gave directions as necessary for rescue hover.

Some of the early methods used by helicopter crewmen to indicate correct hover position, prior to the days of hard hats and intercommunication circuits, were shouting, gently pressing on an arm, or firmly gripping a shoulder. Coordination between pilot and crewman greatly improved with the advent of two-way communication within the helicopter,but yet, in the crucial moments of rescue, such problems as a bad microphone, broken wire, or garbled voice transmission sometimes confused and delayed emergency recoveries. Not until 1965 was the Navy rescue helicopter pilot truly placed in the driver's seat with the opportunity of personally seeing the entire rescue completed within his natural field of vision.

Design of this equipment began in 1962 at Kaman. Word was passed that some type of out-rigger rescue boom would be tested on the UH-2 helicopter. By midsummer the prototype had been constructed and I first saw the article which was later to be named "fishpole boom." Very briefly this device is an eight-foot ten-inch crescent shaped arm that is pivot-mounted far forward on the SEASPRITE's right hand side. The fishpole was designed to accomplish a rescue sufficiently outboard and forward of the cockpit to be within the pilot's normal hover scan and then after hoist-up to be folded back flush with the aircraft for delivery of a rescuee to the cabin door.

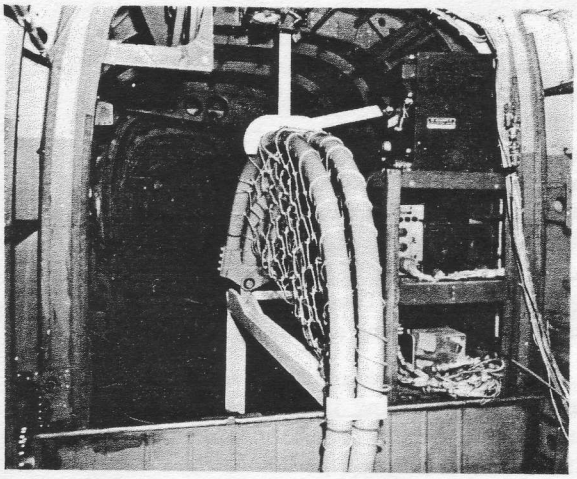
Our first flight test with the fishpole boom consisted of hoisting a 260-pound lead weight while in normal hover (fishpole extended). Since all areas of the initial test proved encouragingly uneventful. the load was doubled to 520 pounds. The helicopter unbalancing tendency produced by this heavier weight required some counteracting control movement but it was not bothersome. All results of fishpole dead-weight hoisting checked out satisfactorily with members of the test team,so the next step was to move into the real environment of overwater evaluation.

A lake in southern Massachusetts was selected as our first water test site, and the ground support crew busily accomplished the innumerable preliminary details involved. The first phase of fishpole water testing called for 30 mobile rescuee retrievals using the three pronged Navy rescue seat. The person to be picked up entered the water from our photographic/safety boat. Very soon thereafter this same man found himself smartly lifted free of the water by means of the SEASPRITE fishpole boom solely controlled by the pilot. If I were to properly express the piloting advantage I experienced in being able to observe and precisely place the rescue seat. some readers would think me over-enthusiastic; however, the fact remains, it was great to finally see exactly what was going on throughout an overwater pickup as compared to the previous 10 years of pilot concern for the unknown that may have been happening out of view. Although 30 pickups were certainly not required to establish superiority of the fishpole method for pinpoint delivery of rescue apparatus, we did continue to complete the alloted number of Phase I (Navy seat) recoveries. The minimum practice necessary for fishpole rescue proficiency was clearly emphasized to us while reviewing Phase I test films: during one pickup the rescue seat remained in the water only two seconds!

With the soundness of the fishpole rescue concept no longer in question, the second overwater test phase was to check the usefulness of a new rescue net. This net was designed by Kaman for the most crucial mission in rescue operations—water retrieval of those who cannot help themselves. Without exception, the helicopter rescue crews have always trained and strained to provide the absolute optimum recovery means for injured or unconscious personnel, and with that in mind we began full testing of the ladle type net. All initial net operations were devoted to the "scooping" concept for an unassisted immobile rescue. As with the rescue seat, I found the fishpole invaluable for placing the net where I could see and control its trawling movement through the water. Numerous ballast combinations were explored before the net became stabilized and this was followed by considerable practice in smooth water before I became reasonably proficient at netting a man who simulated unconsciousness by floating on the water with his eyes closed. While the unassisted scooping of an inert man was successful from a test standpoint, a better operational technique was discovered.

Realistically, once the helicopter has been committed to hover in the cold sobering conditions of actual rescue, there can be no justification for using other than the quickest and surest means of rescuee retrieval. We became most enthusiastic therefore when in Phase II it was discovered how effortlessly a crewman could rest in the net, be lowered to the water, use both hands to pull another person into the net, and yet never have the risk of being adrift himself. Upon learning that some helicopter units have the policy of sending a crewman down to assist in the water on each pickup, we immediately recognized the net's value as a natural rescue container or platform from which the rescue crewman operates in relative safety. Space won't permit me to elaborate on tragic near misses in the realm of helicopter pickups, but there have been cases where survivors were lost out of horsecollar slings or fallen from rescue seats. Similar losses from the net would not occur since the rescuee is suspended within a nylon "nest" in which he would continue to rest even though he may lose consciousness.

Open sea evaluation for the fishpole and net was conducted 40 miles off Block Island with the surface winds above 30 knots velocity. Our photographic group rode a 35 foot vessel to the appointed area whenever the winds were sufficient for testing; invariably sea sickness had engulfed them by the time we, in the airborne crew, arrived at rendezvous. Nevertheless, cameras were manned with the dedication common among photographers and all testing was properly documented on film. Using the fishpole for personnel pickups in waves of 8-10 feet was simple and rapid because of the added scope for pilot observation already described. Unassisted scooping net pickups were tried and eventually accomplished, but this rough water experience strengthened my belief that a crewman should always occupy the net when it is deployed for rescue of an injured man. However, when our pickup man entered the net for final retrieval from the sea he did so without assistance, and later commented on the natural ease with which he positioned himself safely in the net. While enroute to and from the open sea tests; our crew reported the need for a positive means of stowing the folded rescue net within the cabin. This stowage problem was not resolved during initial testing, however, an engineering change proposal has since been submitted (by Kaman) to the Navy which would furnish a means for safely stowing the net.



NET STOWAGE PROVISIONS—The net stowage provisions proposed by Kaman consist principally of a track, or channel, which is attached to the aircraft with metal struts and braces, and an upper hold-down bracket, also attached to the aircraft. To stow the net, it is first folded, then the tang end is placed in the track and slid aft. When the ramp at the aft end of the track is encountered, the net is forced upward and into the padding in the hold-down bracket, wedging it securely against vertical and lateral movement. The forward end of the net rests on a wear plate on the cabin floor, just forward of the sill. The net is secured in the fore and aft direction by a strap around its forward end. The strap is attached to the channel and is part of the stowage installation.

Following the open sea evaluation there were no other tests required, and I might end this article right now except for my belief that a rescue pilot should have personal experience in being picked up by the equipment he uses. My chance came on a chilly December day when Navy pilots, operating about 20 miles northeast of NAS Lakehurst, N.J., evaluated the fishpole and net at sea. Fully attired in a wet suit, mae west and helmet, I was dropped in among the white caps to assume the role of rescuee. After being picked up a few times in the net by a pilot who had no previous experience with either the net or the fishpole boom, I became entirely convinced that the enthusiasm I had earlier shown for this new rescue concept was completely justified!

HONORED—HH-43 crews from Det 6, 38th ARRSq, Bien Hoa AB, RVN, display Kaman Scrolls of Honor presented for recent hazardous missions. Left to right are Maj David M. Randall, SSgt Barry Sherman, Lt Robert A. Reilly, Maj James F. Jansa, Lt Wendell B. Wood, Capt David L. Wiest, A1c Harrison H. Ewton and TSgt Robert S. Loud. (USAF photo)

continued from page 13

At 0330 Danang AB and a neighboring village were subjected to a vicious mortar and rocket attack. Even before the all-clear signal sounded, Lt William T. Sehorn and his HH-43 crew from Det 7, 38th ARRSq, scrambled to the HUSKIE to ready it for the support and medical evacuations that would be needed. For the rest of the night they treated and evacuated the casualties. A small field hospital was established in the helicopter and temporary first aid was given to the wounded by Lieutenant Sehorn; Lt Alfred R. Jacox, Jr, the copilot; SSgt Hugh A. Pike, A1c Russell W. Price, A1c John F. Tobey, A2c Duane O. Hackney, rescue specialists; and A1c Edward L. Thorpe, helicopter flight mechanic. The critically injured were treated and then evacuated in the HUSKIE to the Navy or Army hospitals nearby. As more helicopters arrived, Lieutenant Sehorn assumed command of the fleet and "superbly organized and directed the evacuation operations." The HH-43 crew was constantly exposed to sporatic ground fire during the entire period, from 0330 until sunrise, when the evacuations were completed. Their actions were described afterward as "outstanding and highly praiseworthy."

Among the best examples of ARRS determination and perseverance during life-saving activities in Vietnam may be found in a report on a mission flown by Capt Richard A. Smith and his HH-43 crew from Det 9, 38th ARRSq, Pleiku Airport. Sharing in the hazardous rescue effort were Capt Jack V. Butler, the copilot; A1c Harry J. Hull, flight engineer; and A2c Michael J. Rosler, pararescue specialist.

Captain Smith and his crew flew into an "extremely hostile" territory to evacuate six seriously wounded soldiers. Air cover had failed to arrive but, due to the condition of the evacuees, Captain Smith continued with the mission. He approached the area, effected an approximate 200-foot hover, then hover-taxiied under overhanging tree limbs to the site. Airman Rosler was lowered to prepare the wounded for hoisting — 207 feet of cable was used. The HH-43F left but made the same hazardous approach a few minutes later to make the pickup. Three litter patients were hoisted to the HUSKIE with max power being used as the third was taken aboard — the tailpipe and vertical stabilizer were touching a second tree canopy cover to the rear of the chopper. As Airman Rosler waited on the ground, Captain Smith eased the helicopter from the hazardous site, flew to the hospital and then returned for the other wounded. The area was now under hostile fire, but again the hazardous approach was made and the HH-43 hovered beneath the tree canopy. Two litter patients had been hoisted into the helicopter when it was found the hoist would not operate from Airman Hull's position. Captain Butler took over the helicopter control's while Captain Smith, better able to observe the hoist cable from his side, "threaded" the third survivor through the trees to the HUSKIE. A jungle penetrator was then lowered for Airman Rosler who had been on the ground for two hours and 25 minutes. The pararescueman, however, had still another "adventure" in store for him before reaching the helicopter. By this time low fuel was a definite problem so the helicopter transitioned to forward flight with Airman Rosler still below on the hoist. Hoisting was completed while climbing to 3000 feet at 60 knots. The patients were delivered to the hospital and the HH-43F returned to Pleiku.

Disregarding small arms and automatic weapon fire less than 50 yards away, an HH-43 HUSKIE crew from Det 6, 38th ARRSq, Bien Hoa AB, landed in a small jungle clearing to evacuate a seriously wounded infantryman. Since the FM radio was inoperative, the helicopter had been unable to communicate with Army ground personnel so, after landing, the rescuemen waited in the exposed position for 10 minutes until the soldier could be brought to the clearing. Maj Breeden P. Hamer was pilot of the HH-43; 1stLt Robert A. Reilly, copilot; SSgt Robert S. Loud and A1c Melvin G. Goff, crewmen.

In another Det 6 mission, soon after an A-1H pilot landed in a rice paddy with one wing aflame, an HH-43 crew deposited a fire suppression kit nearby and quickly extinguished the blaze despite the danger from live ammunition. Capt David L. Wiest was RCC; 1stLt Wendell B. Wood, copilot; A2c Steve M. Northern, rescue specialist; and SSgt Henry B. Peterson, firefighter.

—— HH-43 Crew Receives DFC's ——

The members of an HH-43 crew from Det 8, 38th ARRSq, at Cam Ranh Bay were presented Distinguished Flying Crosses recently for the hazardous rescue of a Special Forces soldier who had fallen 150 feet from a helicopter. The DFCs were presented to 1stLt Delford G. Britton, the pilot; 1stLt Loran C. Schnaidt, copilot; A2c Donald J. Lake and A2c Carlos L. Joiner, crewmen; by Col Donald T. Smith, PARRC (MAC), commander.

The accident occurred as a helicopter was hovering over the wreckage of a downed aircraft preparing to lower troops in order to secure the area. Disregarding the constant threat of hostile small arms fire, Lieutenant Britton immediately moved the HUSKIE into position over the soldier and then lowered the aircraft into the tops of the tall trees so that the wheels and lower part of the fuselage were in the branches. The tips of the rotor blades on the HH-43 brushed leaves from the branches as Lake lowered Joiner to the ground on the forest penetrator. The airman placed the injured man in the rescue basket, which had also been lowered, and then rescuee and rescuer were hoisted to the helicopter.

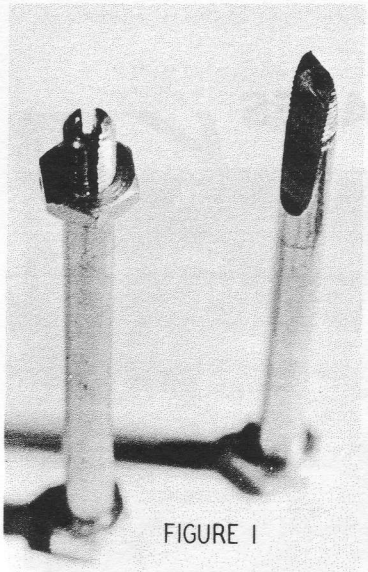


FIGURE 1

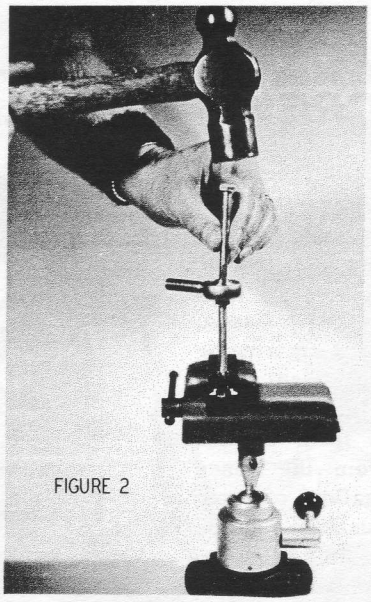


FIGURE 2

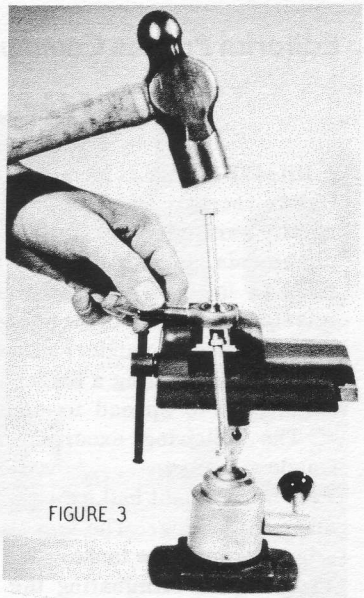


FIGURE 3

UH-2 SPLIT BUSHING REMOVAL TOOL

by Jack L. King
Senior Field
Service Representative

The two-piece bearing bushing in a shoestring or tracking turnbuckle may become difficult to remove after constant exposure to salt water or spray. If this occurs, the simple removal tool shown in figure 1 may easily be fabricated from two standard 1/4-inch bolts. The bolts should be approximately three inches long with 1/2-inch or more threaded. One bolt is ground to a wedge shape while the second bolt is slotted as shown in figure 1. The slot is approximately the thickness of a hacksaw blade. Thread a 1/8-inch thick nut onto the slotted bolt. The nut is used as a platform for the bearing during bushing removal. Figure 2 shows the tool ready for use. The slotted bolt is locked in the vise with the rodend resting on the nut. The wedge bolt is about to be struck with the hammer to spread the threads of the slotted bolt. Drive the wedge into the slot until the two bolts are locked together as a unit. Before striking the wedge, be sure the slotted threads do not extend beyond the lower bushing. Remove the unit from the vise and position as shown in figure 3. The vise jaws are open enough to support the rodend without touching the bearing. Tap the wedge until the bushing is driven out of the bearing. Once out of the bearing, use the bushing as a pivot point and fold the bolts toward each other. The wedge will extract itself from the slot and the bushing will have been removed. Figure 4 shows the completed operation and the equipment used. The wedge, shown protruding through the rodend, points to the removed bushing and the slotted bolt.

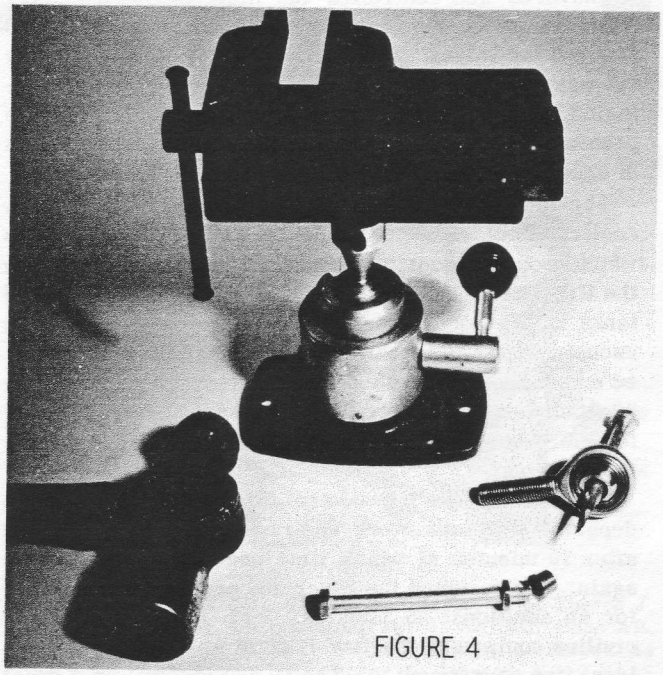


FIGURE 4

CURRENT CHANGES

	Issue Date
H-2 Airframe Change 85 - Electrical System: INCORPORATION OF 3-PHASE CIRCUIT BREAKERS	15 May 1967
H-2 Airframe Change 93, Amend. 1 - Flight Controls: INCREASED LATERAL, CYCLIC AND DIRECTIONAL CONTROL	28 April 1967
H-2 Airframe Change 125 - Rotor System: MAIN ROTOR RETENTION LEVER ASSEMBLY PIVOT BEARING IMPROVEMENT	28 April 1967
NAVAIR 01-260HCA-2-4 - Handbook, Maintenance Instructions, Navy Model UH-2A/UH-2B Helicopters, TRANSMISSION SYSTEM	15 February 1967
NAVAIR 01-260HCA-2-9 - Handbook, Maintenance Instructions, Navy Model UH-2A/UH-2B Helicopters, ELECTRICAL SYSTEM	15 January 1964
changed	15 January 1967
NAVAIR 03-95D-9 - Technical Manual, Overhaul Instructions, Navy Model UH-2A/UH-2B Helicopters, MAIN AND ACCESSORY GEARBOX SYSTEM	15 October 1965
changed	1 April 1967
NAVAIR 03-95D-11 - Technical Manual, Overhaul Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, MAIN ROTOR SYSTEM	15 January 1966
changed	1 May 1967
T.O. 13C9-2-3 - Technical Manual, Overhaul with Parts Breakdown, CARGO RELEASE MODELS A-25, A-25LK, HH-43B and HH-43F Helicopters	15 April 1967
T.O. 36A11-8-6-3 - Technical Manual, Overhaul, TRAILER MOUNTED AIRBORNE FIRE EXTINGUISHER, PART NOS. 58C49, A58C49; HH-43B and HH-43F Helicopters	2 February 1967

F. G. Weber, Supervisor, Service Publications

Editorial Praises Community Service

HH-43B CREWS BATTLE BLAZES

HH-43B crews at Det 14, CARRC(MAC), Vance AFB, Okla., recently added two more missions involving community service to the long list of similar ARRS accomplishments. In addition, they also aided another detachment in the rescue of two downed pilots. In the first mission, a HUSKIE crew headed by Capt Ralph L. Gaede, detachment commander, was credited with being a major factor in controlling a blaze in a propane gas plant which threatened to spread to eight 30,000 gallon gas tanks.

The following excerpts were taken from Captain Gaede's report: ....A water tanker from the Vance Fire Department had expended its 1,000 gallons of water and was leaving. The tanker was being used to cool the adjoining propane tanks. We faced a two-fold problem. First was in eliminating the source of the fire. While we hovered and controlled the flames with the rotor wash, Chief Moxley, in bunkers, entered the area and secured the valves. This had been attempted previously but was unsuccessful due to the intense heat. This eliminated 240,000 gallons of gas from the fire but left the problem of 52,800 gallons remaining in some 10 miles of underground piping.

The local fire department was unable to apply any cooling effect on the eight above-ground storage tanks which were adjacent to the fire. The heat generated by the fire was intense enough to allow the two closest fuel tanks to blow the spring-loaded relief valves and the escaping fuel was torching at about 100 feet. We assumed a hover and controlled the flames for approximately 30 minutes thus allowing the two tanks to cool sufficiently for the pressure relief valves to reset, and eliminate the torching.

We broke off our fire control to allow the civilian fire department to take over. Their equipment malfunctioned after 10 minutes at which time one tank began to torch again. We resumed the hover and provided fire control for an additional 45 minutes. With the arrival of new civilian equipment the fire control was resumed by the local fire department.... The P.A. system was a great help in controlling the firemen on the ground....

With Captain Gaede on the hazardous mission were SSgt Robert D. Hill, HM, and two members of Serv-Air-Inc — Fire Chief Willis B. Moxley and Assistant Fire Chief Forney D. Bailey — attached to the detachment for rescue duties.

BRAVED FLAMES—Capt Ralph L. Gaede, left, and SSgt Robert D. Hill of Det 14, Vance AFB, Okla., who used HH-43B rotorwash to control raging propane gas fire. Also sharing in the hazardous mission were Fire Chief Willis B. Moxley and Assistant Fire Chief Forney D. Bailey of Serv-Air Inc. (USAF photo)

In the second mission, an HH-43B crew again headed by Captain Gaede responded immediately when a civilian oil truck overturned and caught fire eight miles from the base. The HUSKIE crew combined efforts with the base firefighting trucks in extinguishing the fire. One fireman, overcome by heat and fumes, was airlifted by the helicopter to the dispensary. With Captain Gaede were Capt Darvan E. Cook, copilot; and Mr. Kelsey C. Hawkins and Mr. Billy J. Avery, both assigned to Serv-Air.

Afterward, in a letter to Col Joseph H. Perry, commander of the 3575th Pilot Training Wing at Vance, a spectator said: "I just want you to know that I have never seen anything like it in my life. The bravery shown by the helicopter crew and the foam truck people was absolutely amazing to me. The co-ordination between air and ground operations was truly remarkable."

In a third mission, a Det 14 crew on a cross-country flight had stopped at Base Operations, Perrin AFB, Texas, when an F-102 crashed near the base. As the HH-43B crew from Det 13 at Perrin scrambled, the Vance crew flagged down a pickup truck and rushed to their helicopter. The Perrin-based HUSKIE picked up one of the downed pilots, while the Vance crew landed to assist the second pilot. He was unhurt, however, and chose to wait and ride back to the base in the local helicopter. Meanwhile, the flaming wreckage had started a large grass fire which, in turn, destroyed a deserted frame house. The Vance helicopter crew directed firefighters and equipment to combat the fire. Later, on request from the Perrin Command Post, they also transported a flight surgeon to the hospital, then recovered equipment belonging to the two pilots, including the emergency radios which were disrupting communications at the command post.

Manning the Det 14 Helicopter were Capt Nickolas P. Thornton, III, pilot; Captain Cook, copilot; Capt Robert R. Recker (MC), flight surgeon; and Sergeant Hill, helicopter mechanic.

A VANCE CONTRIBUTION

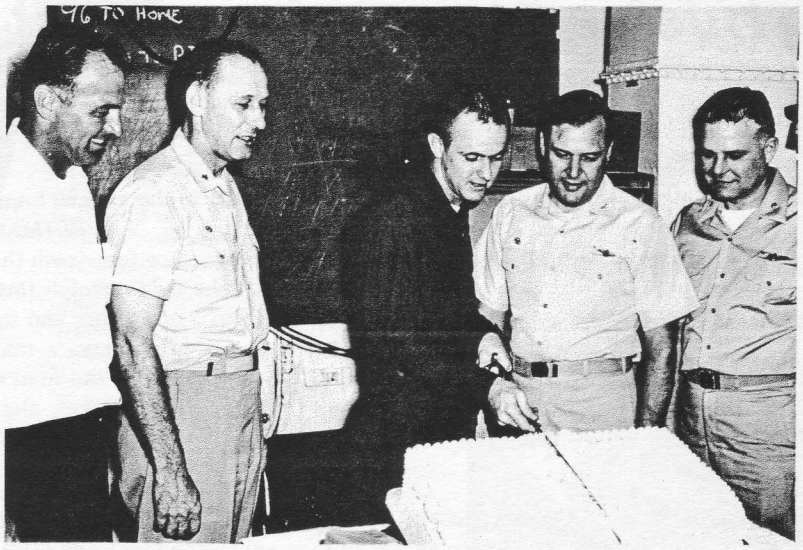
Another example of Vance Air Force Base's contributions to community life was demonstrated the other day when fire struck the Continental Oil Company's Medford gasoline plant.

With blazes threatening to spread to eight 30,000 gas tanks, a firefighting Vance AFB helicopter, piloted by Capt Ralph L. Gaede, hovered over the ruptured gas line, using the downdraft of the copter's rotor blades to keep the flames directed away from the gas storage area.

Firemen from Vance, Enid and Medford helped to prevent the fire's spread. But for the helicopter's efforts in keeping flames fanned away from bulk gas storage tanks, firemen may have been greatly handicapped in controlling the fire and the company's loss may have been much greater than it was.

We mention this Vance incident for reason that too many of us often look on Vance as only a pilot training command of the Air Force and sometimes overlook its many contributions to community life.

1000-Hour Pilot Awards



In top left photo, **Capt Arthur F. Machado**, Det 7, AARRC (MAC), receives a congratulatory kiss from Miss Erlinda Castillo, a secretary at Torrejon AB, Spain, after logging 1000 hours in the HH-43 HUSKIE. More than 350 of the hours were accumulated while flying combat support missions in Vietnam. Captain Machado will receive the plaque awarded by Kaman to pilots who log 1000 hours in helicopters produced by the company. In top right photo, **Lt Benjamin W. Burford** cuts the cake presented to him aboard the USS Enterprise after hitting the 1000-hour flight mark in the UH-2 SEASPRITE. The Lieutenant is serving as assistant OIC of HC-1's Det Mike which is carrying out rescue operations in Southeast Asian waters. With him are, left to right, Norman Myers, Kaman technical representative; Cdr James L. Shipman, COMCVAW-9; Capt James L. Holloway, III, commanding officer of the Enterprise; and LCdr Robert S. Collins, OIC of Det Mike. In third photograph, **Maj Charles P. Nadler** of Det 11, EARRC(MAC), Craig AFB, Ala., is congratulated after completing 1000 hours in the HH-43. Left to right are SSgt William V. Overstreet, A1c Gene R. Carnes, Major Nadler, and Capt Kenneth C. Franzel. Many of the Major's hours in the HUSKIE were logged while attached to the 38th ARRSq in Vietnam. Other pilots who have recently received or qualified for similar plaques are: HH-43 HUSKIE — **Capt David L. Wiest**, Det 6, 38th ARRSq, Bien Hoa AB, RVN; **Maj Kenneth L. Spaur**, Det 5, WARRC, McChord AFB, Wash.; **Maj Keaver Holley, III**, Det 2, WARRC, Cannon AFB, New Mexico; **Capt Earle D. Williams, Jr.**, Det 3, AARRC, Lakenheath AB, England; **Capt Charles E. Mayes, Capt Theron J. May, Capt John W. Christianson**, Det 5, AARRC, Hahn AB, Germany. UH-2 SEASPRITE — Lt Ronald A. McDaniel, Lt **Harry M. Borders** and Lt(jg) Roger L. Johnson, HC-1 NAAS Ream Field, Calif. (USAF and USN photos)

Paine Field Det Reassigned To Keesler AFB

After serving Paine Field, Wash., and the surrounding communities for almost six years, the men of Det 4, WARRC, recently packed their rescue gear into two HH-43's and headed for Keesler AFB, Miss., 2000 miles away. Kessler AFB was recently given the additional mission of training foreign pilots under the Military Assistance Program, so the unit was assigned there to provide urgently needed local base rescue coverage. Maj Erling R. Drangstveit, who commanded Det 4, has been reassigned to Det 5 at McChord AFB, Wash.

Since its formation at Paine Field in 1961, Det 4 has established an impressive record of community service. The unit's accomplishments during the first four-year period were made part of the Congressional Record through the efforts of the Snohomish County Sheriff's Department and Washington State Sen Henry M. Jackson. In 1966, HH-43B crews from the detachment flew 70 missions, 23 of them in support of search and rescue operations by a civilian agency. Civilian rescues have ranged from locating missing children to the hazardous evacuation of seriously injured hunters and mountain climbers from rugged, heavily-wooded mountain sides or deep canyons.

The Paine Field fighter-interceptor mission is now being covered by Det 5. Major Drangstveit said that support of civilian rescue missions will be provided whenever possible but that the increased number of take offs and landings at McChord, and the distance between Snohomish County and Tacoma, will effect the detachment's ability to respond.

Summing up the feelings of the men as they were leaving, the Major said, "Almost everyone in the detachment was sorry to hear that we had to leave Paine Field. We made many friends in the communities surrounding Paine Field and, of course, we were happy to be able to help the people who, for different reasons, needed our help."

Huskie Happenings

...A hunter, seriously injured after a 40-foot fall in the rugged Superstition Mountains, was evacuated from a narrow box canyon by a HUSKIE rescue crew from Det 16, WARRC(MAC), Williams AFB, Ariz. With the rotor blades clearing the rocky wall by inches and the tail only a few feet from the vertical side of the canyon, Capt Edward L. Gilliam held the HH-43B in a hover while Capt John E. Randolph (MC), flight surgeon, was lowered to the ground. As dusk approached, the patient was hoisted aboard in a litter and the helo headed for the hospital. When the helicopter returned and the sling was lowered to the ground party, a malfunction developed and it would not reel in. Using the public address system, Captain Gilliam directed the men to the highest rock and then hovered while they were pulled into the cabin. Other members of the HUSKIE crew sharing in the hazardous mission were Capt David C. Weber, copilot; SSgt James E. Acreman, medical technician; and A2c Charles T. Rich, crew chief.

...An HH-43B crew from Det 7, PARRC(MAC), Misawa AB, Japan, made a 146-mile night flight over mountains and open water after being called on to assist in the search for a downed pilot who landed atop a snow-covered mountain. Two other Japanese pilots who also ejected after an F-104 and T-33 collided, were rescued by Japanese helicopters but the aircraft were unable to proceed to the top of the mountain to search for the third because of the high winds and turbulence. The Det 7 HUSKIE, piloted by Capt Glen P. Walther, RCC, and Capt Vance E. Need, refueled and then, at 0400, flew to the area. The rescuee was located on a wind-swept ridge 300 feet from the mountain top and picked up without incident, despite the unfavorable conditions. Others aboard the HUSKIE, which covered 400 miles during the mission, were MSgt John J. Kelly, flight engineer; and SSgt George C. Snell, medical technician.

...Two lost surveyors, one 72 and the other 79 years old, were rescued from a narrow, 400-foot-deep canyon by an HH-43B crew from Det 13, WARRC(MAC), Reese AFB, Texas. Operating at an altitude of 3600 feet and with the rotor blades clearing the rocky walls by only ten feet, Capt Harold A. Solberg held the HUSKIE in a 40-foot hover to effect the rescue. TSgt Melvin Stanfield was lowered to the ground by A1c Alexander Montgomery, fireman,and the thinly-clad survivors, who had spent the night in below freezing temperatures, were hoisted to the helicopter. Capt James E. Jarrett (MC), was the other member of the crew on the hazardous mission.

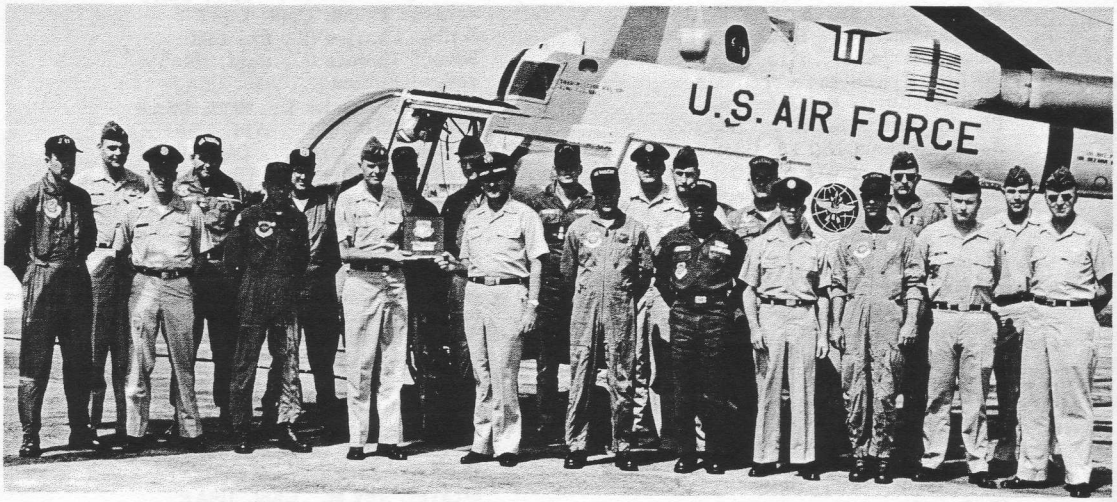
...A1c Travis L. Haynes, a rescue specialist aboard an HH-43B from Det 14, EARRC(MAC), MacDill AFB, Fla., played a key role in the rescue of an injured pilot from Tampa Bay. The pilot, who had been aboard an F-4 which crashed in the bay, was in a dazed condition and still attached to his raft and chute when attempts were made to hoist him aboard. Under the direction of Maj Edwin J. Christy, HUSKIE RCC, Haynes dropped into the water and, despite the rough seas, managed to free the rescuee so that the pickup could be made. Another survivor in a raft was also located by the HH-43B. Others taking part in the rescue were SSgt Terrance E. Henry, medical technician; SSgt Roy E. Bailey, rescue specialist; and A1c Jessie L. Herrell, flight engineer....In another Det 14 mission, an alert HH-43B crew at Avon Park Gunnery Range rescued two pilots who ejected and landed in a swamp. After depositing the FSK on the ground, 1stLt Albert C. Schube landed the HUSKIE as close as possible to one of the survivors. MSgt Jefferson D. Smythe, medical technician; and SSgt Norris W. Davidson, rescue specialist; fought their way through the mire and underbrush to the rescuee, placed him on a litter and then made their way back over the same tortuous route to the helicopter. The second downed pilot was spotted by the HUSKIE crew but, because of the injured man's condition, they flew directly to the hospital and then returned to pick up the second man. Others aboard the rescue helo were A1c Harrold R. Terrell, rescue specialist; and SSgt Joseph A. Champion, flight engineer.

...An HH-43B crew from Det 17, WARRC(MAC), Davis-Monthan AFB, Ariz., flew a 4-1/2 hour, 200-mile mission to evacuate a man who had fallen into a canyon near Globe. Refueling was done under field conditions. Due to the rugged terrain, the helicopter couldn't land so the rescuee was retrieved by hoist and then evacuated. Maj Elmer L. O'Banion was pilot of the HUSKIE; Capt Peter J. Kerrigan, copilot; TSgt Chester E. Rainey, crew chief; and SSgt John Rath, medic.

...An HH-43 HUSKIE crew from Det 9, PARRC(MAC), Osan AB, Korea, scrambled after the base hospital requested immediate air evacuation of a retired rear admiral due to his extremely serious condition following a heart attack. The patient was placed aboard the HUSKIE and accompanied by a medical technician and doctor. Oxygen was administered continuously during the 35-minute flight to the ASCOM Army Hospital. Pilot on the mercy mission was Capt Walter F. Turk. Crewmembers were SSgt Willie B. Bell, Jr., rescue specialist; SSgt Jimmy D. Scoggins, crew chief; Capt Phil Zimmerman (MC), doctor; and A1c Harlan G. Schwertfeger, medical technician.

APPRECIATION—Capt Alex P. Lupenski, left, commander of Det 3, WARRC, Kirtland AFB, N.M., receives the Air Force Special Weapons Center Certificate of Appreciation from Col Ralph S. Garman, Center commander. The second such award given at Kirtland, it cited the detachment's support of the base tour program and immediate response to over 130 runway emergencies and seven civil mercy missions. The "respected place earned by the HH-43B and the unit in both military and civilian life" at the base were also noted. (USAF photo)

FOR SEA MISSIONS—In top right photo, Capt Michael E. Davis of Det 10, CARRC, Laredo AFB, Texas, receives one of the six Scroll of Honor plaques awarded to him by Kaman Aircraft for his outstanding rescue performance while attached to Det 9, 38th ARRSq, Pleiku AB, RVN. Presenting the Scroll is Col Hugh F. Jordan, left, CARRC commander. Capt Carlton P. Vermeys, another Scroll recipient, who served with Captain Davis in Vietnam, is now attached to CARRC headquarters. During a recent ceremony Captain Vermeys was awarded the Silver Star, DFC, Air Force Commendation Medal, two Air Medals and one Purple Heart for his rescue efforts. In right photo, Col Donald E. Matthews, AARRC commander, presents Capt David R. Stevenson, right, with one of the two Scrolls he received for his activities in Vietnam while attached to Det 7, 38th ARRSq, Da Nang AB. The HH-43 pilot rescued two downed pilots and also evacuated a number of Vietnamese who were critically injured when a transport crashed into their village. Captain Stevenson is now a member of Det 5, AARRC (MAC), Hahn AB, Germany. (USAF photos)



MAC FLYING SAFETY AWARD—Det 6, PARRC, Kadena AFB, Okinawa, was awarded the Military Airlift Command's Flying Safety Award for 1966 at a recent flight-line ceremony attended by the 28 men in the unit. Maj Charles N. McAllister, detachment commander, and Col Emil Beaudry, deputy commander of ARRS who made the presentation, are holding the coveted plaque. During the one year of accident-free flying in HH-43 HUSKIES, personnel logged 676 flying hours on 277 sorties, 70 of them mercy missions in isolated areas within the Ryukus. The in-commission rate of the HH-43's ranged from a one-month low of 65.8 to a high of 89 percent. (USAF photo)

Det 18 Aids Flood Victims

A woman and two children, isolated in a narrow canyon by raging flood waters near Carlsbad, N.M., were evacuated by an HH-43B crew from Det 18, WARRC(MAC), Webb AFB. In addition, Capt William F. Clark, his copilot, 1stLt Curtis K. Bayer, and crewman, A1c John W. Coleman, logged 16 hours during the two and a half days spent delivering food and water to other ranch families cut off by the high waters and washed out roads. Many of the mercy missions were made in rain or overcast while flying over rugged mountains, narrow canyons and swollen rivers — instrument penetration through 3000 feet of overcast was required during one phase of the rescue effort. Another time, with darkness approaching, Captain Clark had to slip the HH-43 between the top of the mountains and bottom of the overhanging clouds in order to drop emergency rations to a 70-year-old man. In many cases, the helicopter hovered over ranch families while the public address system was used to offer aid. The three-man rescue crew, Webb AFB, and WARRC received considerable newspaper recognition for the assistance given.

KAMAN AIRCRAFT

SCROLL OF HONOR

1964

Maclellan, A. E., Sgt, USMC
Malone, Thomas, Capt, USAF
Martin, Duane W., 1stLt, USAF
Martinez, Edward, A1c, USAF
McGatha, Charles R., SSgt, USAF
McGeechan, R. J., Lt, USAF
McHugh, Edward, Dr., USAF
Medsker, William, A1c, USAF
Meetze, Robert Y., Capt, USAF
Melcher, Richard K., Ens, USN
Metzinger, Donald D., Capt, USAF
Michael, William H., TSgt, USAF
Miears, James R., Capt, USAF
Miehlke, Emil F., SSgt, USAF
Milam, Bert D., PR2, USN
Miller, Luther Ray, Civilian
Miller, Thomas H., TSgt, USAF
Moore, Glenn E., CMSgt, USAF
Moore, John A., A2c, USAF
Moore, R. N., Capt, USMC
Moore, Robert W., Capt, USAF
Morse, John A., Lt(jg), USN
Mscichowski, Joseph J. TSgt, USAF
Mullen, David E., 1stLt, USAF
Nagy, Charles W., A1c, USAF
Neville, Ernest L., Capt, USAF
Nichles, Curtis E., A2c, USAF
Norris, James B., SSgt, USAF
Norris, Robert L., Lt, USN
Norton, R. L., WO, USMC
O'Connor, Maurice E., Capt, USAF
O'Gorman, Kenneth G., Lt, USNR
Olsen, Richard L., ADR3, USN
Olson, D. R., Capt, USAF
Oyler, Joseph G., Lt(jg), USNR
Palmer, Marvin L., Capt, USAF
Parks, John M., 1stLt, USAF
Parker, Albert P., SSgt, USAF
Parker, Lefay, A1c, USAF
Parker, McCrea A., SSgt, USAF
Parry, R. F., ATN3, USN
Parsons, Arlin, A1c, USAF
Pearson, William A., SSgt, USAF
Pelto, J. B., AE3, USN
Phelan, Joseph P., 1stLt, USAF
Pilgrim, Samuel, TSgt, USAF
Pinaud, Joseph H., Capt, USAF
Pipa, J. L. Capt, USMC
Potter, Dale L., Capt, USAF
Pratt, George E., Capt, USMC
Precious, Thomas D., 1stLt, USAF
Priestly, Joseph R., LCdr, USN
Priscock, Martin, MSgt, USAF
Purvine, Bruce M., Capt, USAF
Radcliffe, Lynn K., Cpl, USMC
Ramirez, Dariol, ST3, FAC
Ramsey, Homer L., SSgt, USAF
Reber, Peter M., Lt(jg), USN
Reese, William W., AM1, USN
Regan, John G., TSgt, USAF
Richards, William L., LCdr, USN
Rios, Robert, SSgt, USAF
Roberts, Charles M., Capt, USAF
Rodriquez, Alsidez, SSgt, USAF
Ross, Clyde R., SSgt, USAF
Rotrock, William, Civilian
Ryan, Lloyd, Civilian
Saintheart, Arthur R., SSgt, USAF
Salem, Harold D., Capt, USAF
Schildgen, Paul R., Capt., USAF
Schnee, Frank, Capt, USAF
Sears, Charles R., SA, USN
Seebo, Thomas C., Capt, USAF
Sedgwick, Ted E., A3c, USAF
Severns, Charles D., SSgt, USAF
Shown, William C., A1c, USAF
Shriber, Richard W., Capt, USAF
Shumlay, Robert L., TSgt, USAF
Simmons, John A., 1stLt, USAF
Singleton, Bobby W., SSgt, USAF
Smith, R. J., PFC, USMC
Smith, Randolph M., A2c, USAF
Solberg, Harold A., Capt, USAF
Spaur, Kenneth L., Capt, USAF
Spear, David W., Civilian
Spradley, Van E., LCdr, USN
Sprouse, Raymond B., AD2, USN
Stapleton, N., LCpl, USMC
Steinert, Richard O., A2c, USAF
Stevenson, O. D., Capt, USAF
Stockett, Zack L., Capt, USAF
Strayer, Jay M. Capt, USAF
Stringfellow, E. C., ADR2, USN
Strickler, James W., Lt(jg), USN
Stonack, George H., TSgt, USAF
Stumpf, Karl J., Capt, USAF
Syverson, Richard H., A1c, USN

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