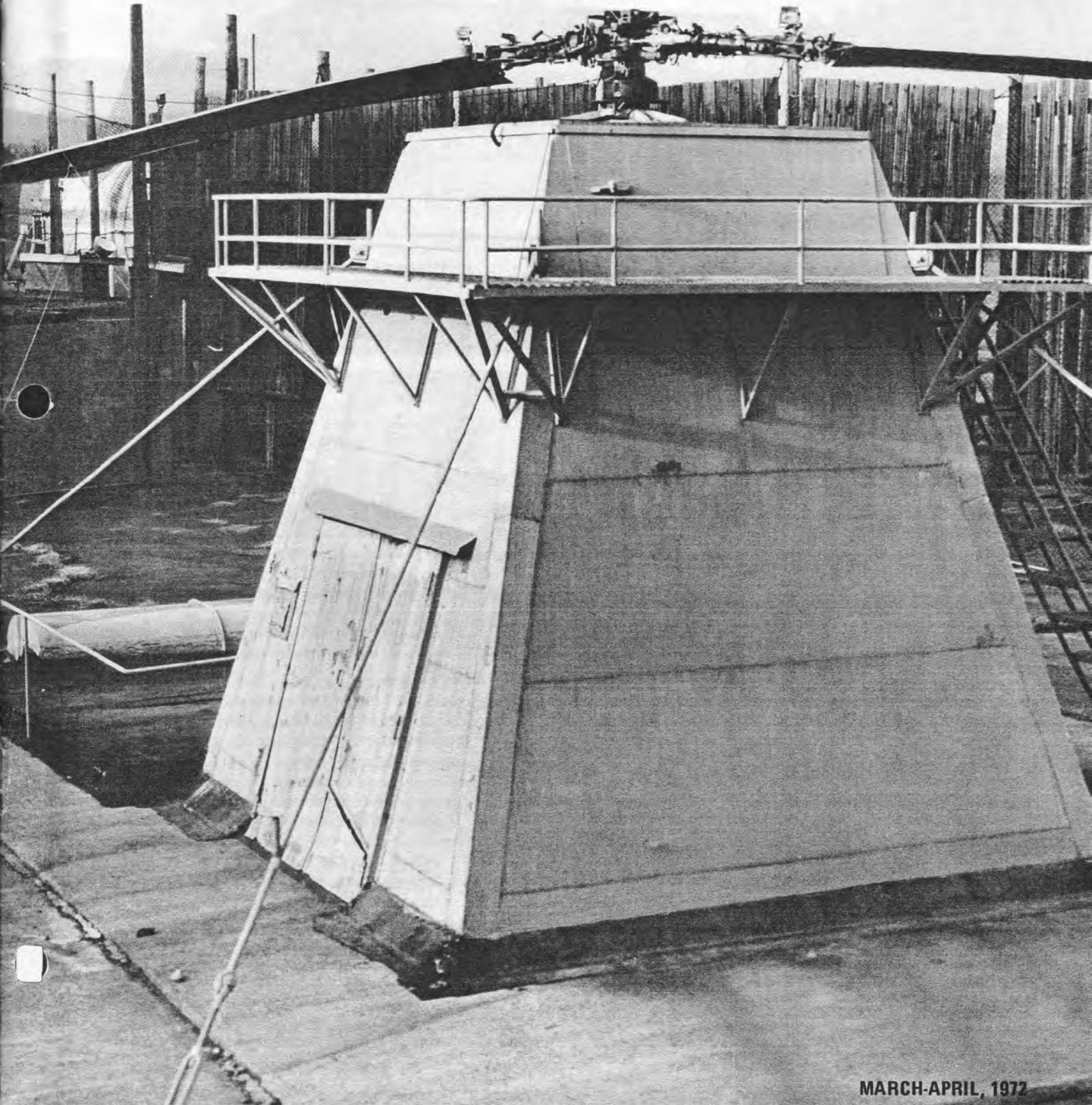


KAMAN

Rotor Tips



MARCH-APRIL, 1977

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Rotor Tips

Volume VII Number 3

ON THE COVER

The Kaman "101" rotor blades and controls on one of the whirl rigs. The new system provides substantial improvement in operational maintainability and increased flight performance. KAC photo by D. J. Ruggiero.

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FEATURES

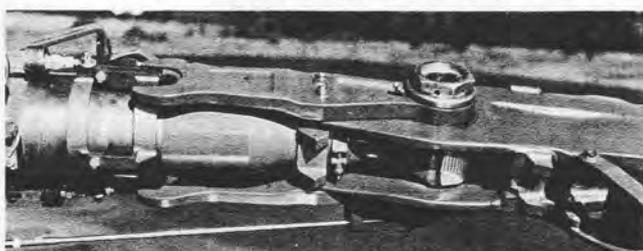
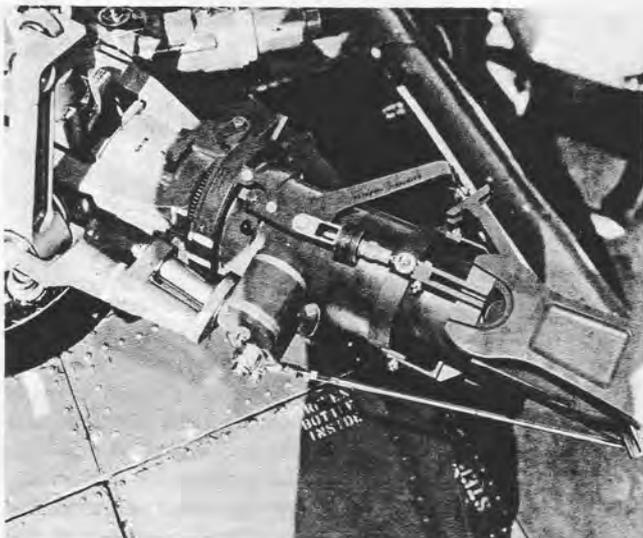
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101 ROTOR

*By D. W. Robinson
Director of Research & Development
H. W. Gewehr, Program Manager*



101 ROTOR SYSTEM—Shown above are two views of the retention assembly on the 101 rotor. Top photo highlights blade releasing device to permit blade folding. Lower photo shows pin about which blade rotates to stowed position. In right photograph, 101 rotor is flight tested on an HH-2D. (Ruggiero photos)

A Naval Air Test Center team from NAS Patuxent River, Md., has completed preliminary evaluation of Kaman Aerospace Corporation's new "101" Rotor system for the H-2 series SEASPRITE helicopter. Funded last year under a \$2.6 million Naval Air Systems Command contract, and by Kaman's independent research and development, the "101" Rotor system provides substantial improvement in operational maintainability and increased flight performance.

Kaman engineers have designed and qualified a 3000-hour life rotor blade and hub in combination with a 3000-hour time between overhaul (TBO) blade retention assembly. The servoflap controls are simplified to a great degree, involving only 40% the number of parts in the present rotor system. Self-lubricating KAcarb bearings replace the old type bearings, thus, the entire rotor is essentially maintenance-free between overhauls.

Attainment of a 3000-hour TBO for rotor components results in substantial savings in the cost of spare parts, since



THE KAMAN "101" ROTOR SYSTEM

Increases maximum speed 10 knots. (Guarantee)
Increases stall speed 39 knots. (Guarantee)
Increases maneuvering capability
Improves flying qualities
Improves maintainability via simplified control system having 60% fewer parts.
Attains 3000 hour (Time Between Overhaul) TBO.
Saves the Navy 10 million dollars in H-2 spare parts. (FY'74)

a lower percentage of replacement components will be required and their cost per flight hour will be proportionately lower than components with shorter TBO's. For the present fleet of H-2 SEASPRITES, approximately \$10 million net savings can be realized in spare part costs over a four year operating period.

The life of the main rotor blade was increased by a reduction in vibratory bending moments and by revising the method of leading edge ballast attachment at the blade tip. The blade spar was strengthened at the tip to carry ballast weight centrifugal loads through a mechanical connection, instead of adhesive bonding as on the present blade. In addition to the primary load path, the weights are vulcanized into the blade spar to provide a failsafe feature. The performance improvements were the result of dynamic tuning of the blades.

The new rotor retention assembly incorporates larger, high capacity flapping bearings, and a high strength, wire wound, tension-torsion strap assembly to attain the increased overhaul interval. In addition, inner and outer retention barrels are made of titanium to save weight; the previous retentions were steel. Detail improvements to blade locking mechanisms, lead-lag and flapping axis shimming and retention controls simplify the rotor system and reduce maintenance requirements. The main rotor hub material was changed from aluminum to titanium, increasing its life as a result of higher mechanical properties plus design improvements. The control system was simplified by eliminating 60 percent of the moving parts while retaining the successful control kinematics of the present system. This was accomplished by rerouting and by combining functions within the servoflap control sub-system. Durability of bearings was improved by increasing their capacity and changing to self-lubricating KAcarb bearings. These changes will reduce rotor system maintenance on the H-2 substantially, resulting in increased reliability and helicopter operational availability.

The 101 Rotor is easily retrofitted to any H-2, providing across-the-board maintenance reduction, cost savings, and performance improvement. In addition, the new blade can



TEST RIG—The 101 rotor blades and controls are shown on one of the Kaman whirl rigs at the Bloomfield, Conn., facility. On the rigs, production blades are matched with a master blade before delivery to military customers. Experimental rotor systems are also tested in this area. At left is a rectangular viewing window which incorporates mirrors to observe test blade operation from the safety of the concrete "blockhouse" beneath. (Ruggiero photo)

be installed on the present H-2 rotor hub in place of the present blade, thereby eliminating the need for continued spare blade procurement of the earlier lower life configuration.

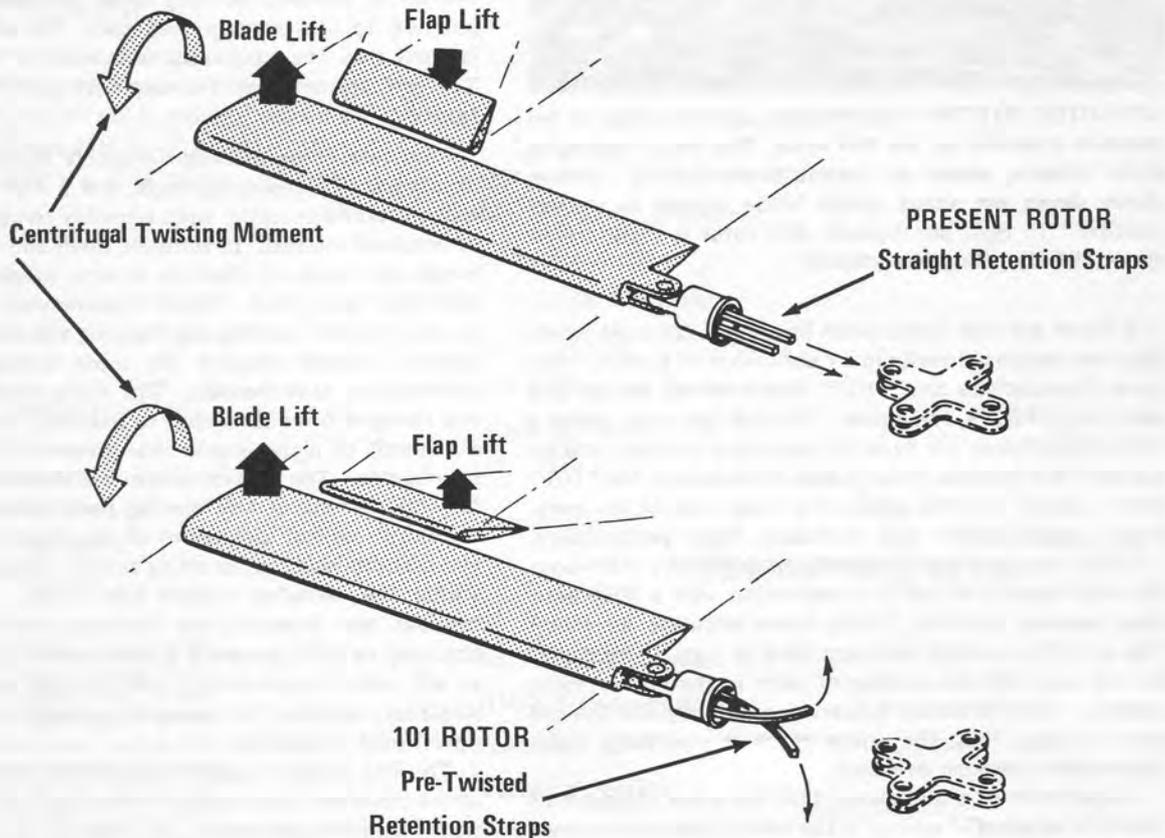
In the preliminary evaluation, the flight test HH-2D exceeded Kaman's guarantee for substantial increase in flight performance. This new rotor improvement has the potential of significantly increasing the H-2's useful load, resulting in increased range and endurance if the added capability is utilized for fuel.

The "101" Rotor system also enhances the SEASPRITE's

maneuvering and handling qualities, with and without automatic stabilization, while incurring no increase in vibration, which on the H-2 is the lowest of any military helicopter in service.

These improvements represent a continuation of the planned growth and refinement of the H-2 SEASPRITE helicopter, established as one of the most versatile rotary wing aircraft in use. This new and modern rotor system will provide the Navy with significantly increased cost effectiveness in the operation of the H-2. SH-2D has been selected by Navy for the important LAMPS program (Light Airborne Multi-Purpose System).

EFFECT OF RETENTION STRAP WINDUP ON SERVOFLAP LIFT



DET 15 CHALKS UP RECORDS



er, these two pilots have flown the HH-43 over Mexico, Korea, England, Thailand, Libya, Cambodia, Spain, North Vietnam, Laos, South Vietnam, and 12 states.

Colonel Kay commands Det 15, Captain Machado is an aircraft commander with the same unit.

2000 Hours Each

On 5 January, 1972, LtCol Charles R. Kay, left, and Capt Arthur F. Machado of Det 15, 43rd ARRSq, Sheppard AFB, Texas, completed a flight which marked a milestone in each pilot's flying career. On the flight, both Colonel Kay and Captain Machado logged their 2000th hour of HH-43 flying time. Exceeding 2000 hours in the HH-43 is a singular achievement for any pilot; to have two pilots achieve the same mark on one flight is something of a record.

As remarkable as their HH-43 flying time, is the amount of territory covered while flying in the helicopter. Togeth-

1200-Hour Anniversary

The engine was first installed on aircraft 58-1846 more than five years ago at Duluth International Airport in Minnesota. It was a pretty good marriage. Oh, there were some hard times—an oil leak at Suwan, Korea, and a cracked fuel nozzle two years later at Osan, Korea. Yet, on 2 November, 71, aircraft and engine flew their 1200th anniversary hour together.

Officiating at the ceremony and representing all the pilots and mechanics from Minnesota to Korea who figure in this history are, second photo, left to right, TSgt John A. Madsen, engine mechanic, Sgt Earl S. Wright, aircraft crew chief, and Maj Charles P. Nadler, pilot on the historic flight.



DET 15 PERSONNEL—Front row, left to right, TSgt John A. Madsen, MSgt Thomas J. Brown, Jr., Capt Arthur F. Machado, LtCol Charles R. Kay, detachment commander; Maj Karl G. King, Maj Charles P. Nadler, TSgt John J. Rushford. Back row, SSgt William P. Beilman, SSgt Herbert L. Belcher, A1c Donald McCauley, A1c Leonard J. Lindeman, A1c Joe E. Escobedo, Sgt Charles A. Groleau, Sgt John L. Kirsopp, A1c Leigh H. Hammond, III, SSgt James W. Warf, Jr., Sgt Earl S. Wright. (USAF photos)

LAMPS Activities

By Bruce Goodale,
LAMPS Program Manager

All 20 of the SH-2D LAMPS helicopters under contract have been delivered on schedule through March 1972. Two of these have been "bailed" to Kaman for test purposes, and nine are assigned to each of the two LAMPS squadrons, HSL-30 (redesignation of HC-4) at NAS Lakehurst, N. J., and HSL-31 (redesignation of HC-5) at NAS Imperial Beach, Calif.

The first operational LAMPS detachment joined the USS Belknap (DLG 26) in the Mediterranean early in December 1971, and returned with the Belknap in mid-March 1972, after a very successful cruise. The aircraft completed the cruise in outstanding condition, and both the air detachment and ship's company are enthusiastic about the capabilities and potential of their new weapons system.

The second LAMPS detachment to become operational deployed from San Diego early in January 1972 aboard the USS Sterett (DLG 31), and is still on station in the Pacific. The Sterett also reports its aircraft in excellent condition and, like the Belknap, is developing tactics and procedures to fully exploit the system capabilities.

Of the various sensors and avionics installed in the SH-2D to perform the primary ASW and missile defense missions, the two detachments have heaped the most praise on the LN-66HP radar and the ASQ-81 magnetic anomaly detection (MAD) gear as performing most above expectations. The radar has also been commended for being particularly maintenance-free.

Kaman expects to negotiate a contract this summer for an additional 30 LAMPS helicopters, with an up-graded sensor and avionics complement referred to as Mark II



LAST OF 20—An impromptu flight line ceremony marked the arrival at Kaman of this HH-2D from NAS Quonset Point, R. I. The helicopter, last among 20 the Navy had authorized for conversion to the SH-2D configuration, was flown to Kaman from the Naval Air Rework Facility (NARF) at Quonset where it had undergone overhaul. Left to right, William Zins, KAC customer service director; LCdr Robert Norris, Quonset test pilot; Owen Polleys, KAC H-2 program manager; Capt Leslie Pomeroy, Jr., Commanding Officer of NARF; and Andy Foster, KAC chief test pilot. Kaman expects a Navy go-ahead this summer for an additional 30 LAMPS helicopters. (Ruggiero photo)

(the complement in the first 20 SH-2D's is referred to as Mark I). Kaman is working with the Naval Air Development Center, Warminster, Pa., on two SEASPRITE prototypes of the Mark II configuration to be used for at-sea trials aboard the USS Fox (DLG 33) this summer. These trials are designated as Phase F-1 of NADC's D/V-98 Program. Pre-deployment tests are now underway on the Phase F-1 configured SH-2D's at NADC, NATC, and Kaman.

The Navy plans to convert all H-2's to LAMPS configuration over approximately the next three years. A competition for additional LAMPS helicopters with Mark III sensors and avionics is already being considered by the Navy, and NADC has started on sensor development studies for Mark III.

CNO BRIEFED ON LAMPS SH-2D WHILE ABOARD BELKNAP



Adm Elmo R. Zumwalt, Jr., Chief of Naval Operations, and RAdm George Tally, assistant DCNO (plans and policies), were introduced to the LAMPS SH-2D on a recent visit to the USS Belknap in the Mediterranean. The HC-4 LAMPS helicopter airlifted both admirals from the USS Independence to the Belknap where Admiral Zumwalt engaged in a question and answer period with the crew. Afterward he inspected the SH-2D and was briefed on the helicopter. The SH-2D also airlifted both admirals back to the Independence. (continued on page 15)

ADMIRAL ZUMWALT ON BELKNAP VISIT—In left photo, the chief of naval operations answers questions asked by Belknap and HC-4 personnel. Center photograph shows Admiral Zumwalt in the SH-2D sensor seat. In last photo are, left to right, LCdr H. E. Higginbotham, OIC, HC-4 LAMPS Detachment; Admiral Zumwalt; J. A. Peluso, Kaman Service Representative aboard the Belknap; SMC Ralph Griffin, chief master-at-arms on the ship. (KAMAN photos)



GREETING—A photograph of HC-5's LAMPS Det 1 in the January-February issue of Rotor Tips showed personnel drawn up in ranks aboard the USS Sterett. Immediately after the picture was taken the detachment learned that LCdr LaRon Stoker, also a member of the HC-5 LAMPS team, was piloting the helicopter from which the aerial shots were being taken. Det 1's subsequent "Greeting" is shown in the photograph at right. Members of the HC-5 detachment aboard the Sterett are: Lt Robert H. Clark, Jr., OinC; Lt(jg) Le Roy Anderson, Lt(jg) David A. Rannells, ATC James R. Wilson, AE1 David A. Reid, AW1 Wayne K. Jones, AW1 Donald C. Hoosier, AE2 Monte O. Nichols, AT2 Larry A. Dick, ADR2 Leland E. Lumsden, AX2 James E. Trapp, ADJ2 David A. Stewart, AMS3 James W. Reich, AMH3 Harry W. Unangst, AT3 Jimmy W. Anderson, AHAN Stephen A. Fowler, AWAN Lawrence W. Phelps. The second photograph shows the USS Sterett whose crew also play an important part in the LAMPS program. STG2 F. B. Cross, a member of the ship's company, recently attended a LAVA (Low Frequency Acoustic



Vernier Analyzer) training course at Kaman in conjunction with the program.



HC-4 1st LAMPS DET—Personnel from detachment take time out from work for an informal group photograph aboard the USS Belknap in the Mediterranean. Kneeling, Lt J. D. Dickinson, LCdr F. O. Dammann; standing, first row, AMSC T. C. Leonard, AMH1 B. M. Laurendeau, ATAN R. H. Hooten, LCdr H. E. Higginbotham, Det OIC; AW1 C. E. Cade. Second row, ADJAN R. A. Wagner, AMAN C. D. Averett, AW2 R. D. Liley, Capt F. E. Field, C. O. USS Belknap; Lt(jg) A. T. Goldberg, AK1 S. H. Katz, J. A. Peluso, KAC field service representative. Third row, AE2 D. S. Olson, AE3 C. A. Miller, AWAN J. C. Blackman, AX2 M. A. Cavalier, Cdr G. S. Tsantes, executive officer, USS Belknap; LTJG R. E. Schmidt. On or in SH-2D, from left, AT1 R. L. Daniel, ADJ2 W. A. Sosby, AXAN K. T. Balcom. (USN photo by R. C. Sullivan)



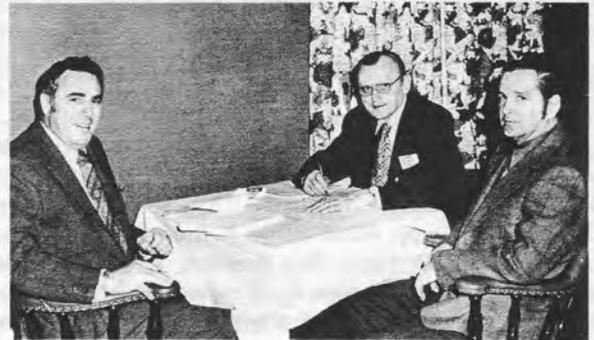
CONFERENCE COORDINATORS—Seated, left to right, D. Brammer, NASCREPLANT; V. E. Sizemore, NAVAIRSYSCOM; LCdr D. Smolnik, DCASO; W. Cerny, NAVAIRSYSCOM; Cdr R. Walsh, CNM. Standing, left to right, R. J. Myer, W. E. Zins, KAC. Other committee members, not shown, were J. Lively, ESA-76; and H. Burden, APC-256.

The sixth quarterly SH-2D (LAMPS) Integrated Logistic Support Management Team Conference was held a few weeks ago. It was hosted by the Kaman Aerospace Corporation at the Bradley International Airport Ramada Inn.

The conference was conducted under the administration and chairmanship of the Naval Air Systems Command AIR-41031 representatives, V. E. Sizemore and C. W. Cerny. In addition to other assigned NAVAIR representatives, attendees were present from all Navy Commands and Agencies having LAMPS program support responsibilities.

The conference dealt with status and future considerations related to all applicable program support requirements including: Spares; Repair Parts; Repair of Repairables; Ground Support Equipment (CFE & GFE); Helicopter-Ship Interface; Training-Trainers; Publications; Contractor Engineering Technical Support; Facilities.

A majority of program support requirements were determined to be on schedule or on-track. Action items were



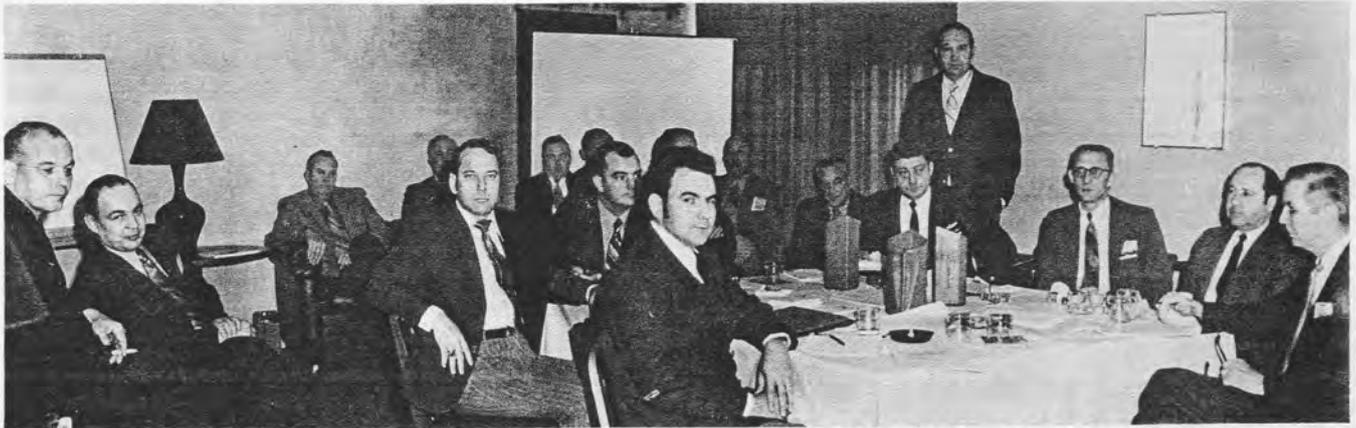
PUBLICATIONS COMMITTEE—Left to right, R. H. Chapdelaine, KAC; E. Moravec, NATSF; R. Carlton, NARF Quonset.

established for those areas requiring further consideration and/or follow-up.

The next SH-2D (LAMPS) ILSMT conference has been tentatively scheduled for June 13-15 of this year.



SPARES COMMITTEE—Standing, left to right, C. E. Brown, NAVAIRSYSCOM; C. A. Locurto, NADC; W. W. Vardeman, WSAO; R. N. Crooks, KAC; Maj C. O. Hubbel, USMC, CNAP; K. E. Smith, KAC; J. P. Welsh, NWESA; W. J. Flores, NASCREPAC; Miss M. E. Unland, ASO; Capt J. J. Paige, USMC, COMNAVAIRLANT; E. W. Myers, Tensor Industries. Sitting, left to right, Lt G. White, LCdr T. J. Spratt, ASO; J. Dowd, HC-4; Cdr R. S. Hudson, COMFAIR Quonset; CWO J. F. Marshall, HC-4; LCdr H. T. Cook, COMCRUDESANT; LCdr W. M. Miles, COMFAIRSan Diego; F. J. McNulty, KAC. Other committee members, not shown, were T. O'Brien, ESA-76; ADJC R. Rogers, NAILSC; D. B. Palmer, J. L. Cardello, N. L. Hankins, KAC.



TRAINING/TRAINER COMMITTEE—Extreme left and back row, Cdr G. T. Crowell, HC-5; Cdr J. M. Lang, HC-4; AFCM R. J. Johnston, NAMTD Lakehurst; E. Shrouse, NASCREPLANT; R. E. Picton, NTDC; G. Schiff, FAETULANT, Lakehurst; LCdr R. J. Oliver, FAETULANT, Norfolk; LCdr B. Newlon, CNTECHTRA; LCdr J. H. Childs, COMNAVAIRLANT. At table, left to right, LCdr R. Storms, COMTRALANT; LCdr E. H. Dyer, COMCRUDESANT; ADCS J. F. Carson, NAMTRAGRU; Cdr J. Crain (partially obscured), COMFAIRSan Diego; LCdr C. Duffie, HC-4; AECS N. Svee, NAILSC; Capt S. Edelman, CINCLANTFLT; R. Carter, NAVAIRSYSCOM. Other committee members, not shown, were Capt J. L. Woodbury, OPNAV; J. Richardson, NAVAIRSYSCOM; Cdr W. P. Ziarnik, NTDC; CWO N. H. Faulkner, NAESU; R. L. Bassett, KAC.



KAC ILS ADMINISTRATION—Left to right, W. L. Magnan; Mrs. C. J. Albani; Mrs. R. L. Henry; A. G. Migli.



SHIP INTERFACE COMMITTEE—Seated, left to right, I. J. Fessler, NAVSHIPS; LCdr J. I. Ford, COMNAVAIRPAC; C. A. Richmond, TRACOR/NAVAIRSYSCOM; J.V. Front, Tensor-Industries; LCdr D. E. Bradt, H. Ziemer, NAVAIRSYSCOM; Lt C. S. Park, NAVAIRENGCEN; E. R. Jahn, NVCSan Diego. Standing, LCdr R. W. Groggett, COMCRUDESPAC. Other committee members, not shown, were S. Kotz, NAVELECSYSCOM; S. D. Seay, KAC.



GROUND SUPPORT EQUIPMENT COMMITTEE—Left to right, LCdr J. S. Chasteen, COMFAIRQUONSET; LCdr L. L. Stoker, HC-5; E. B. Link, COMNAVAIRPAC; J. Pino, ESA-76; J. Arnone, E. Hunsley, NAVAIRENGCEN; J. L. Normandin, KAC; R. D. McMichael, NAVAIRSYSCOMREPLANT; Lt M. L. Beaudrot, HC-4. Other committee members, not shown, were AEC J. D. Stearns, NAVAIRTESTCEN; G. M. Legault, KAC.



ATO/SENSOR CLASS—Front row, left to right, Lt(jg) Nicholas J. Ali Jr., HC-4 NAS Lakehurst, N. J.; AW1 George Ray Smith, HC-5, NAS Imperial Beach, Calif.; AW2 John M. Keith, AW1 Thomas F. Terrell, III, HC-5. Standing, left to right, Lt Luther William Wheat, Lt Dennis H. Christian, LCdr LaRon L. Stoker, HC-5; Lt Robert D. Hathaway, HC-4; LCdr Arnold D. Jackmond, NADC Warminster, Pa.; AW1 Konard Kerr, HC-5; Lt Carl Paul Saviola, HC-4; Robert C. Belisle and Terrence R. Provost, instructors.

ORGANIZATIONAL MAINTENANCE CLASS—Front row, left to right, Donald R. Delaney, instructor; AX3 M. J. Seastrand, AX1 J. R. Rench, HC-4. Standing, left to right, AT2 L. C. Hall, AT2 E. D. Coomer, AX3 J. A. Conlon, AT2 C. R. Watkins, HC-4; AXAN R. E. Robinson, AT1 D. R. Bellmare, AT3 J. S. Mahoney, AT1 A. Amarosa, HC-4; ATC W. H. Huffman, HC-5.



INTERMEDIATE MAINTENANCE CLASS—Standing, left to right, Bernard M. Conley, NAESU, NAS Lakehurst, N.J.; Richard L. Stevenson, NAESU, NAS Imperial Beach, Calif.; Herman M. Demulling, instructor; AX2 Alexander F. Krieger, HC-5; John Ringuette, NAESU, NAS Quonset Point, R. I.; Gaddis G. McKee, NAESU, NAS Imperial Beach. Kneeling, Richard L. Smith, instructor.



ATO/SENSOR CLASS—Front row, left to right, AWC Josh Pierce, AW1 Edward P. Connelly, AWC Richard L. Minnish, Lt David W. Williams, HC-4; Lt(jg) John T. Marino, HC-5. Standing, AWC Milford P. Price, HC-4, Instructor Herman M. Demulling; Lt(jg) David W. Moulton, Lt Herbert H. Hob, HC-4; Ens Kerry Young, Ens Peter J. Murphy, HC-5.

RESCUE 26—This dramatic USAF photograph of TUSLOG Det 84 rescuing Turkish nationals during flooding last year was taken by SSgt Nat Hayes. Flying in gusting winds and light rain, two HH-43's from the Incirlik CDI detachment rescued 16 persons and medevaced a seriously-ill man in one day. Two days later, after continued heavy rain, an HH-43 from Det 84 hoisted nine more people to safety. Members of the helicopter rescue crews were: Maj John J. Elliff, pilot and detachment commander; Capt John Duggan, pilot; Maj David J. Given, pilot; MSgt Emile F. Miehle, hoist operator; Michael Austrain, U. S. vice consul in Adana, interpreter; TSgt James E. Withers, hoist operator; SSgt Flournoy E. Montgomery, medical technician; SMSgt O. G. Crenshaw, observer.



- 72 - 890 -

DET 10 RECEIVES INTERNATIONAL RECOGNITION FOR RESCUE SERVICE

AVIANO AIR BASE, ITALY—Det 10, 40th ARRWg here received the Star of Merit in the Order of the Thistle during recent ceremonies held in Milan, Italy. The award, presented annually, is the highest Italian award presented to agencies or individuals who have distinguished themselves in support of rescue operations in the mountains.

On hand to receive the award for the unit and the United States Air Force was Maj William F. Cunningham, Jr., detachment commander; and Capt James F. Bauer, a pilot in the detachment that flies the Kaman HH-43 HUSKIE.

The citation accompanying the award states "The Star of Merit in the Order of the Thistle and the amount of 150,000 lire (approximately \$250) are awarded to the 40th Air Rescue and Recovery Wing, United States Air Force, Aviano Air Base for the generous and unselfish services rendered from 1961 to 1971 to mountain rescue agencies on numerous and difficult operations, some of which conducted in inclement weather, resulted in the prompt evacuation of injured people and the saving of their lives."

The Order of the Thistle was established in Milan in 1947. It is an international organization with the purpose being to recognize the valor, heroism and sacrifices of people in the mountains. It is also to honor culture, art

and any other form of spiritual activity promoting love for the mountains and to promote programs aiming at human solidarity in connection with mountain operations. Awards honoring the objectives of the Order of the Thistle are given out annually before Christmas. A panel of six members of the Order meet to select the award recipients based on recommendations from rescue corps throughout Italy. Recommendation for the award to Det 10, was made by the Pordenone-Maniago rescue corps.

When members of the local detachment discovered that a monetary award accompanied the honor, they recommended that the money be given to the Pordenone-Maniago rescue corps to aid them in their accomplishments. This recommendation was accepted by the panel of judges. In addition to Det 10, 18 Italian agencies and individuals received awards at a gala banquet attended by local civilian and military dignitaries.

2000 HOURS

Maj Gayl Bernhardt, USAF, recently logged his 2000th hour in the HH-43. Major Bernhardt is attached to Det 6, 44th ARRSq, Andrews AFB, Md.



1000 HOURS—Lt Douglas B. Hackett, right, of HC-5, NAS Imperial Beach, Calif., displays the plaque presented by Donald P. Alexander, Kaman senior service representative, after he logged 1000 hours in the KAC-produced H-2 SEASPRITE. Other HC-5 pilots who recently qualified for the award are Lt Robert E. Hofstetter and Lt Donald L. Morgan. Another H-2 pilot, also honored by the company for passing the 1000-hour milestone, was Lt Allen Petrie, HC-4, NAS Lakehurst, N. J. Three HH-43 pilots who have joined the list of those logging 1000 hours in the HUSKIE are LtCol Robert W. Hastings, Det 5, 40th ARRWg, Hahn AB, Germany, Lt A. Mohseni and 1stLt Mostafa Taheri, IIAF. (USN photo)



SEASPRITE ACTIVITIES

HC-5 RESCUES SEVEN FROM 20-FOOT SEAS

Following are excerpts from a news release in the Dec 11, 1971, edition of the *Stars and Stripes* by PO3 John Polis.

A group of 31 fishermen, who set out from Kaohsiung, Taiwan, were fishing for lobster 145 miles west of the Philippines when they were trapped by swelling seas and forced against the craggy shoal. For nearly 14 hours they battled the wet and the cold, clinging to their overturned boats.

A U. S. Navy patrol plane first spotted some of the survivors, and soon both the Navy and Air Force had help on the way. The guided missile light cruiser USS Oklahoma City, command ship for the U. S. 7th Fleet, its UH-2C helicopter "Blackbeard One" (from HC-5, NAS Imperial Beach, Calif.) and two big Air Force HH3 rescue helicopters went to work, despite extremely hazardous flying and landing conditions. Thirty of the 31 fishermen on board the boats were rescued.

"Clutch flying" by Lt Jeff F. Smith of HC-5 and his copilot Lt(jg) Hubert Archambo, Jr., of HC-5, enabled the 7th Fleet helicopter to make two crucial landings on the USS Oklahoma City's flight deck with seven of the survivors. With 20-foot seas, 18-knot winds and a pitching, bobbing flight deck, Lt Smith inched the helicopter down onto the deck of the command ship, where the six picked up on the first trip received food, dry clothing and medical aid.

Lieutenant Archambo described takeoff and landing conditions as "the worst I've ever seen. I really had my doubts about us getting back aboard the OK City the way it kept bouncing around in the water."

The UH-2C helicopter crewmen, AMHC Harvey Fansler and AMSAN Ben Okland of HC-5, handled important jobs during the search and rescue mission. Chief Fansler, a 16-year veteran in helicopter flying, gave directions during the crucial takeoff and landing maneuvers. Airman Okland went down the life-line at the scene of the rescue to help the victims into the rescue sling.

Lieutenant Smith, who regularly flies the helicopter to transport VADM William P. Mack, commander 7th Fleet, embarked on the Oklahoma City, said the command ship helicopter was operating beyond its ordinary capabilities. "We usually carry only three passengers. But we jettisoned about half our fuel to lighten the load and were able to carry six persons back to the Oklahoma City on our first run." Blackbeard One later returned to the scene to pick up one more survivor.

Hunters, Hiker Saved By Adak Unit

Two lost hunters, one of them with an injured leg, were located and picked up by a UH-2C crew from the SAR Unit at NS Adak, Alaska. The SEASPRITE launched shortly before sunrise and began the search over the isolated area where the hunters were thought to be. They were found shortly afterward.

Manning the rescue helicopter were LCdr Kenneth L. Sterling, pilot; Lt(jg) James C. Ward, copilot; and R. A. Bervmen, crewman. In another mission, the same crew picked up a hiker who had injured his foot. To make the pickup, LtCommander Sterling landed on the tundra in a narrow valley.

HC-4 Praised By Police Chief

Helicopter Combat Support Squadron Four, stationed at NAS Lakehurst, N. J., recently received a letter of appreciation from Richard C. Clement, Dover Township chief of police, for assisting in the search for a pack of wild dogs which had been roaming the Dover area. The animals had attacked and critically injured a four-year-old boy.

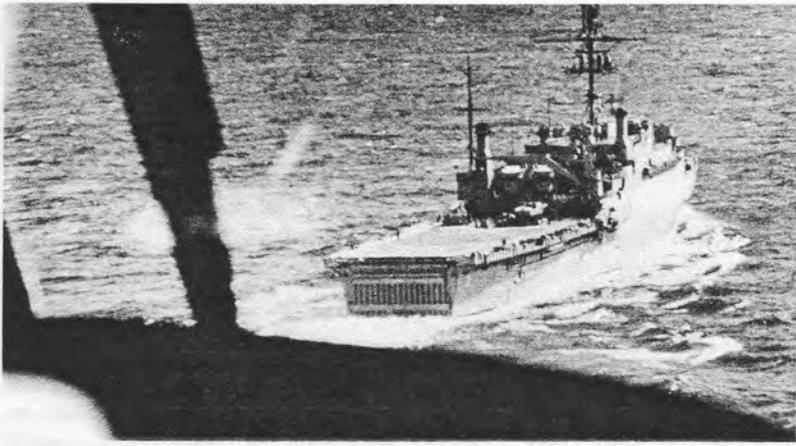
In his letter addressed to Capt W. G. Nealon, commanding officer of NASL, Police Chief Clement praised both the instant response to the call for aid and the outstanding service and cooperation rendered by the HC-4 personnel involved in the mission. After a communications net was set up by means of a mobile ground unit, pilots flying over the area in the HH-2D SEASPRITE helicopter directed ground personnel as the animals were spotted. The mission resulted in the apprehension or destruction of 22 wild dogs. Helicopters from HC-2 also participated in the search.

More recently, Navy and civilian personnel joined forces again when an HC-4 HH-2D crew rescued two Cherry Hill youths from the Lebanon State Forest after the two boys had wandered lost for nearly nine hours. Manning the rescue helicopter were Lt William Fellner, Ens Fred Bridge, ADJ1 Gerald Parks and ADR Kevin Smith. Petty Officer Smith was lowered from the HH-2D to show the boys how to use the rescue sling.

Oceana Unit Aids Ill Sailor

A sailor suffering from an appendicitis attack was airlifted from an LSD in the bay to the hospital by an HH-2D crew from the SAR Unit at NAS Oceana, Va. To make the pickup Lt(jg) J. H. Daugherty landed the SEASPRITE on the deck of the USS Plymouth Rock which was approximately seven miles from the air station.

The landing and takeoff were made without incident despite 30-knot winds gusting around the ship's superstructure. The patient was delivered to the Portsmouth Naval Hospital. Others aboard the HH-2D were Lt William Baucom, copilot; AD3 Tony D. Searce and AD2 H. Jackson, crewmen.



HC-4 IN ACTION—Shown are only a few of the at-sea photographs taken of squadron activities during 1971. Left photos show HH-2D pilot's view of the USS La Salle, and a flight deck view of two HH-2D's. HC-4's Det 80 was deployed aboard the La Salle. In right photos, Det 70 aboard the USS Chauvenet, utilizes an HH-2D to deliver a jeep while below, a crewman prepares for the pickup of more conventional cargo. (USN photos) In photos below, an SH-2D takes off from the USS Wainwright during testing. ADJAN Richard A. Wagner prepares to unfold blades and Lt(jg) Robert Schmidt, left, and Lt John Dickenson pause while checking aircraft. Shown in the SH-2D cockpit is LCdr Charles Duffie, HC-4 LAMPS OinC.





ARRS CREWS SAVE 732 IN 1971

In missions of unusual scope and diversity, the U. S. Air Force's Aerospace Rescue and Recovery Service proved its responsiveness to its global humanitarian mission by saving 732 lives in 1971.

Located at more than 100 areas around the world, ARRS crews saved the lives of 482 men and women throughout non combat areas, and 250 people in Southeast Asia. Of the total saves, 431 were civilians.

BrigGen Frank K. Everest, Jr., ARRS commander, said "The key to our global success has been teamwork. March 13th of this year marked our 25th anniversary, and during our 25 year history, we have saved more than 22,000 lives. But not one of these saves could be credited to any one individual. It was teamwork—both men and machines—that counts for success."

79th ARRSq Rescues Swimmers From Surf

Two swimmers, one a Navy petty officer, the other a civilian lifeguard, were plucked from heavy seas off Tarague Beach, Guam, by an HH-43 crew attached to the 79th ARRSq at Andersen AFB.

When the HUSKIE crew arrived at the scene they found the Navy man lying on a reef and being pounded by 12-foot breakers. The other swimmer was about 100 feet beyond the reef in 10-foot waves. Since the man on the reef was in immediate danger, Maj William P. Shea held the helicopter in a steady hover overhead while SSgt Michael T. Tool, a medical technician, made a rescue sling pickup. Then the second swimmer, who identified himself as a lifeguard, was picked up with the sling a few minutes later. The survivors were taken to the USAF dispensary where it was found the man recovered from the reef was suffering from multiple abrasions on both arms and legs. Others manning the HUSKIE were SSgt Jose M. Mendiola and A1C Daniel L. Arellano, firefighters.



Canyon Mission By Det 6

A 13-year-old boy who plunged 100 feet from the rim of a canyon and landed on a narrow ledge was airlifted to the hospital by an HH-43 crew from Det 6, 42nd ARRSq, at Holloman AFB, N. M. To make the pickup, Maj James L. Cantey held the HUSKIE in a hover with the rotor blades clearing the canyon wall by a scant five feet. Sgt William L. Wilcox, helicopter mechanic, lowered Sgt Felix E. Torres, medical technician, approximately 80 feet in the rescue sling to aid the victim. The boy was hoisted to the helicopter in a Stokes litter and taken to the hospital. Copilot on the mission was Maj Preston E. Koentop. Major Cantey, the pilot, was TDY from Det 3, 42 ARRSq, at Kirtland AFB, N. M.

Speedy Rescue By Det 8

Just eight minutes after he ejected over the ocean, an A-7D pilot was picked up by an HH-43 crew from Det 8, 44th ARRSq, Myrtle Beach, S. C. While launching for an intercept mission with the FSK after the alert sounded, Maj Harold Pickering and his crew were advised that the A-7D pilot had been forced to eject from the disabled aircraft. An MA-1 rescue basket was placed aboard the HUSKIE and the FSK left behind. A minute or two later the downed airman was located in the ocean four miles to the south of the base.

The HH-43 public address system was used to interrogate the survivor as to his condition. The downed pilot, who had not yet boarded his raft, indicated he was unhurt and a hoist approach was initiated utilizing the rescue sling. A minute later the rescuee was safely aboard the helicopter and on his way to the hospital for a checkup. Other members of the rescue crew were SSgt Hershel G. Moore and SSgt Ray Payne, firefighters; MSgt Charles M. Holmes, medical technician.

FOR SERVICE—1stLt Djalal Djalali, left, is presented the Kooshesh Medal by LtGen Jaafar Qoli Sadri, Chief of police administration. Lieutenant Djalali, helicopter maintenance officer, 1st Fighter Wing, Mehrabad AFB, Iran, received the medal for his efforts in providing high HH-43F availability for the Police Helicopter Pilots Training Program.

Lieutenant Djalali is also responsible for the maintenance and continual training of each Search and Rescue Detachment located at various bases in Iran.

Lieutenant Djalali familiarized himself with the HH-43 during an extended visit to Kaman some years ago.

Southeast Asia

Det 1 Crews Medevac Four

PHAN RANG AB—A small Vietnamese boy and three U. S. military personnel were evacuated in separate missions by Pedro crews from Det 1, 3rd ARRGp based here.

The boy, seven years old, was airlifted to the dispensary after stepping on a mine near the base perimeter. His condition was listed as serious. Maj John R. Cassarini was pilot on the mission and Capt Larry B. Doege was copilot. Others aboard were Capt Gary L. Kissel (MC), SSgt Leslie B. Terbeest, and SSgt Raymond B. Campbell. To make the pickup, the HH-43 was landed in the mine field.

An army officer suffering from an appendicitis attack was medevaced at night by a Det 1 Pedro crew consisting of Major Cassarini, Capt Kevin M. Mahan, Captain Kissel, SSgt Roger A. Klaes and SSgt James H. Lowery. While flying to the hospital at Cam Ranh Bay and also while returning to Phan Rang, the rescue crew found it necessary to fly around artillery fire.

The third mission involved the medical evacuation of a sergeant suffering from malaria, heart failure, peptic ulcers and diabetes. His condition was critical when he was placed aboard the HH-43 for the flight to the hospital at Cam Ranh Bay. Because of the patient's condition it was necessary to make a fast, but smooth, flight. The malaria had created an extremely dangerous condition in the patient which led to his heart failure. He was on oxygen and being intravenously fed during the flight. Members of the crew were Capt Robert M. Albers, pilot, Captain Mahan, copilot; Captain Kissel, Sergeant Klaes, SSgt Jim H. Lowery and SSgt Gavin H. Sloan.

A sergeant who had suffered a compound fracture and severed tendon on his index finger was taken to the hospital at Cam Ranh Bay for the surgery needed to assure the reuse of his hand. Captain Albers was pilot and Captain Mahan was copilot on the flight. Other members of the HH-43 crew were SSgt Raymond B. Campbell, Sergeant Klaes, SSgt Lester W. Clements and Captain Kissel.

Det 5 Night Flight Saves Civilian

UDORN RTAFB—Flying at night through numerous rain storms, an HH-43 Pedro crew from Det 5, 3rd ARRGp, evacuated a US civilian who had suffered a cerebral hemorrhage at Khon Kaen, 55 miles from Udorn.

On the flight to the pickup site Capt Robert F. Raggio and his copilot, Maj Walter A. Malkiewicz, used dead reckoning as the primary source of navigation; a night approach was made to the unlighted airport upon arrival. The patient was placed aboard after examination by Capt Ronald W. Knight (MC), a flight surgeon, and the HH-43 headed back for Udorn. On the way, rain storms again hampered the flight. After landing at Udorn, Captain Knight said the patient's life would have been in grave danger had it not been for the helicopter evacuation. Other members of the rescue crew were A1C LeMayne E. DeWild, helicopter mechanic; and Sgt Robert W. Mosteller, medical technician.

Wounded Airman Medevaced By Pedro Crew

DA NANG AFLD—A security policeman, seriously wounded by an enemy sniper, was medevaced to the hospital shortly after midnight by an HH-43 crew from the Pedro Division (LBR Det), 37th ARRSq, here. Manning the Pedro were Capt Michael F. Schmidt, pilot; Capt John N. Drexler, copilot; A1C Leon J. Raska, flight mechanic; and SSgt Wallace H. Long, medical technician.

CNO briefed on LAMPS. . .continued from page 6

The week before, the SH-2D helicopter flew to the Independence and picked up VAdm Gerald E. Miller, commander Sixth Fleet, and Adm Wm F. Bringle, Commander in chief US Naval Forces Europe, for a one-hour briefing on LAMPS. Afterward they returned to the Independence in the SH-2D.

The first LAMPS medevac in the Mediterranean was also made during this period. While cruising about 15 miles off the port of Trieste, Italy, waiting for extremely high winds to subside, a crewman aboard the Belknap suffered a suspected mild heart attack shortly before midnight. A doctor contacted aboard the USS Independence anchored in Trieste harbor, advised that a helicopter from the Independence would pick up the crewman and airlift him to the carrier. However, due to the high winds, the blades on the Independence helicopter could not be unfolded.

The SH-2D aboard the Belknap was pushed from the hangar and the sonobuoy launcher was removed to make room in the cabin. Minutes later the LAMPS helicopter was airborne with the ill sailor aboard. At the time the ship was tossing in eight to ten-foot seas and 30-knot winds were sweeping the deck. The landing aboard the Independence was made without incident and the helo returned at 0300 with the first mail the Belknap had received in a week at sea.

Manning the SH-2D on the mercy flight were LCdr H. E. Higginbotham, pilot; Lt J. D. Dickinson, copilot; AT1 R. L.



ADMIRALS MEET SH-2D—Left to right are LCdr Higginbotham, Adm W. F. Bringle, COMUSNAVEUROPE; VAdm G. E. Miller, COMSIXFLT; Capt F. E. Field, C. O. USS Belknap. (Kaman photo)

Daniel, crewman, and HM3 J. Griffin, ship's corpsman. LtCommander Higginbotham is OIC of the HC-4 detachment, the first to operate a LAMPS helicopter in an operational theatre.

Several months ago LtCommander Higginbotham, Lt Commander C. L. Duffie and Petty Officer Daniel made the first SH-2D LAMPS medevac when they airlifted two seriously-ill sailors from the USS Wainwright to a shore-based hospital. The Wainwright was operating off the Florida coast at the time.

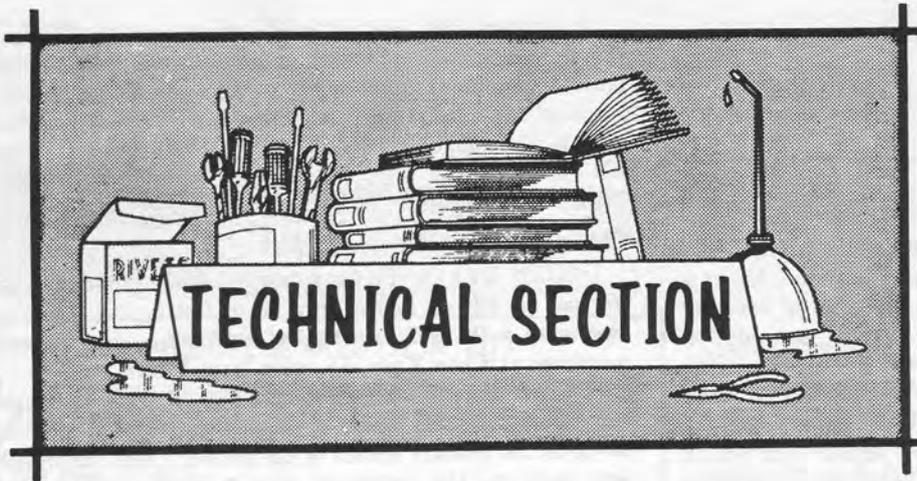


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Information presented in the Technical Section of Rotor Tips has been reviewed and approved by the Service Engineering Section.

G. M. Legault, Supervisor

SH-2D TAIL ROTOR BLADE QUICK-FOLD PROCEDURES

W. Wagemaker, Service Engineer

A design change on SH-2D aircraft provides a fast method of folding one or more tail rotor blades. This hardware will be especially useful to dets operating from DLG's because at least one blade must be folded in order to hangar the aircraft. Photo A shows the component parts of the new quick-fold system. To fold a blade, items 1 and 2 are moved away from item 3 as the blade is moved away from the aircraft towards the folded position. These procedures will discuss folding blades while standing on the horizontal stabilizers.

CAUTION

Prior to folding a blade, it is necessary to place the rudder pedals in neutral.

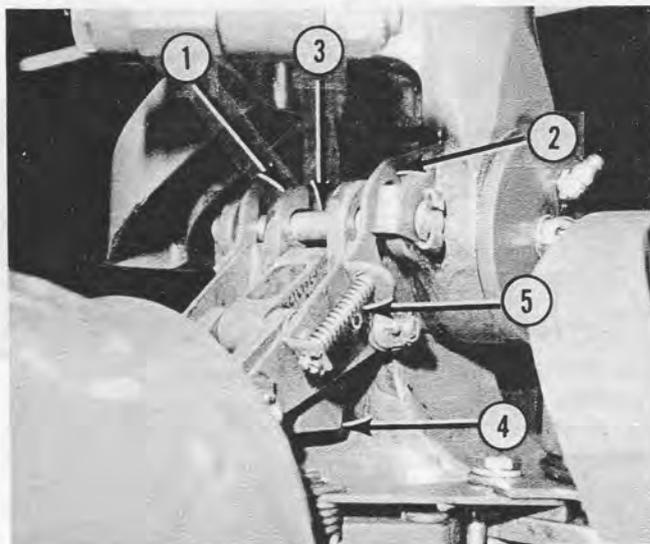


Photo A

- | | |
|-------------------|--------------------------------------|
| 1. Latch assembly | 4. Flyweight assembly |
| 2. Flapping lock | 5. Flapping lock spring and retainer |
| 3. Pin | |

1. Install the support cradle, P/N K604083-1, on the control spider and secure the attaching straps with the two snaps as shown in Photo B.

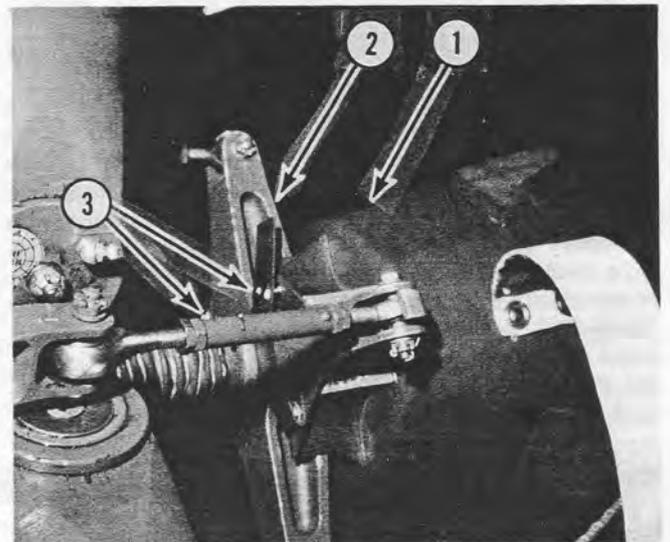


Photo B

1. Support cradle
2. Spider
3. Snaps (2)

2. With the left hand, grasp the folding hardware as shown in Photo C. Note the thumb engages one corner of the flyweight assembly (4). When in this position, squeeze the

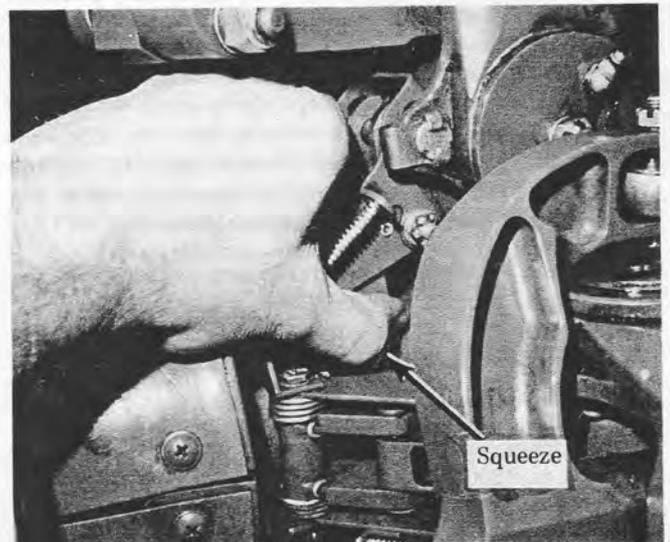


Photo C

TECHNICAL SECTION

thumb toward the palm (in direction of arrow), and the latch (1) will withdraw from the pin (3).

3. As the thumb moves toward the palm, the index finger naturally moves toward the flapping lock spring retainer (5). Place edge of index finger on top of the spring retainer and push toward the thumb, thus depressing spring and moving the flapping lock (2) away from the pin (3). (Push in direction of arrow, Photo D).

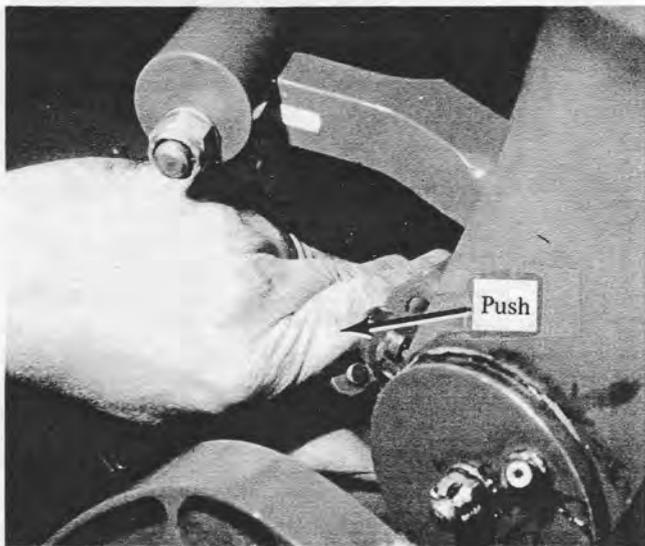


Photo D

4. With the right hand on the blade trailing edge, move the blade away from the aircraft while twisting to position the leading edge slightly toward the pylon. (It may be necessary to pull on the crank flyweight while twisting.)

CAUTION

The leading edge must be twisted toward the pylon before moving the blade to the folded position in order to preclude the pitch arm crank from interfering with the adjacent blade grip thru-bolt.

5. Allow the blade to contact the cradle.
6. If necessary, fold second blade in same manner as first.
7. Secure blade(s) in folded position against the cradle by wrapping the cradle strap around the folded blade(s) as shown in Photo E.

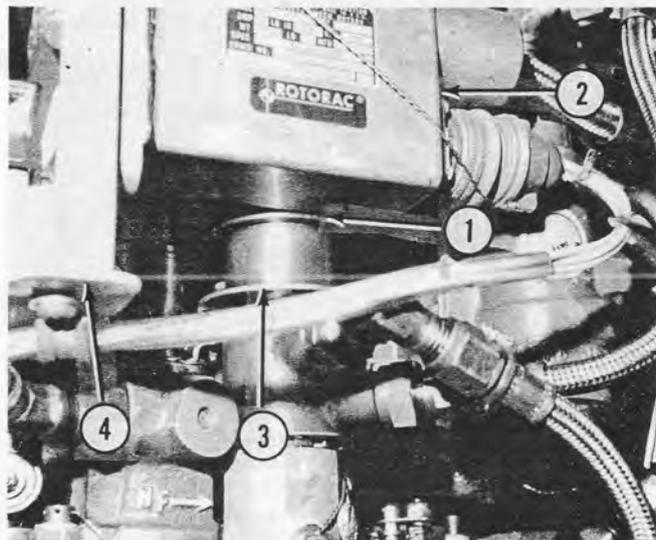


Photo E

H-2 EMERGENCY FUEL CONTROL ACTUATOR INTERFERENCE

Caution must be exercised when installing and/or adjusting position of the emergency fuel control actuator to preclude chafing on adjacent engine lines or components. Several reports have been received concerning the actuator contacting the fuel metering valve cap at the point indicated by item 1 in the accompanying Photo. Two methods of positioning the actuator are available: The actuator may be moved in the slots provided in the bracket or the bracket may be slightly pivoted on its attach-points at the engine-tach-generator mounting boss. (The bracket holes are slightly elongated to provide for this contingency.)

The actuator must be properly positioned prior to rigging and connecting the linkage to the emergency throttle rack. For further information, refer to NAVAIR 01-260HCA-2-4. This information will be incorporated into applicable manuals by a future Change.



1. Contact point
2. Actuator
3. Metering valve cap
4. Bracket

H. Zubkoff, Service Engineer

H-2 CRACKED ELBOWS

The wheel brake system and the landing gear retraction system lines run from the landing gear, up to the strut and to the fuselage within the wheel wells, arrow Photo A. Aluminum elbows carry the lines through the fuselage as shown in Photo B (two elbows for the retraction system and one for the wheel brake system in each wheel well). Some elbows have reportedly cracked and since replacement necessitates fuel tank removal, steel elbows have re-



Photo A

cently been authorized.* The steel elbows will be installed on an attrition basis. (Be sure to use the steel nut with the steel elbows.) Callouts: Number 1 in Photo B are wheel retraction lines; Number 2 is the wheel brake system line. The authorized substitutions are as follows:

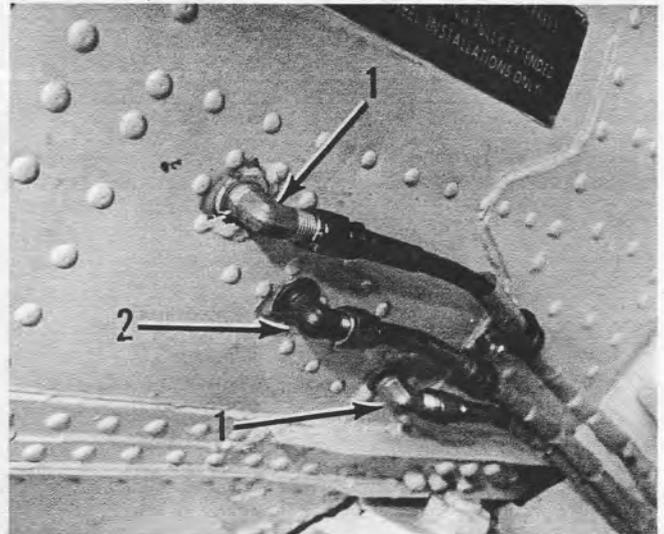


Photo B

1. Aluminum elbow, MS21908D4, aluminum nut, NAS1022D7, replaced by steel elbow, MS21908-4C and steel nut, NAS1022C7.

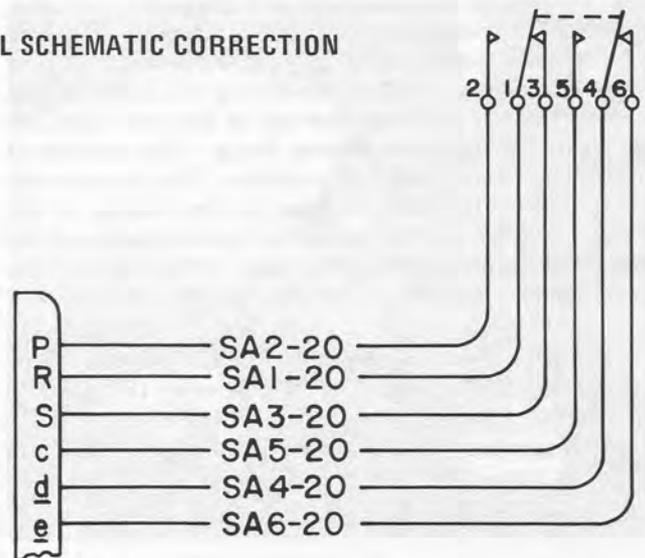
2. Aluminum elbow, AN833-4D, aluminum nut, NAS1022D7, replaced by steel elbow, AN833-4J, steel nut, NAS1022C7.

This information will be incorporated into NAVAIR 01-260HCB-4-4, dated 1 May 1969, changed 15 November 1970.

*(Refer to NAVAIRSYSCOM T & E COORD Msg, R 142147Z Feb 72 to DCASO, Kaman.)

H-2 LANDING GEAR CONTROL SCHEMATIC CORRECTION

Schematics for wires routed between the Ship Aground Switch, P/N 41EN35-6B, and connector, P/N PTOOSE-18-32P (331/332), will be changed to reflect the information shown on the accompanying schematic. The schematic shown is a portion of Figure 27, Landing Gear Control, NAVAIR 01-260HCA-2-8.1, Dated 1 October, Changed 30 November 1971.



N. Hankins, Service Engineer

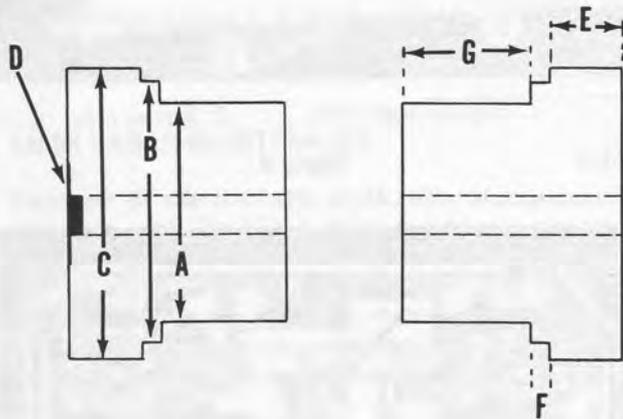
TAIL ROTOR BLADE INSTALLATION

SH-2D

With the new quick fold hardware installed on SH-2D tail rotor hubs, the smaller section of the retaining assembly, K604404, cannot be used to compress the seals, shims and collar assemblies. The new flapping lock interferes with installation of the tool. The device shown in Photo A will align and compress the components and allow more effective use of the K604404-203 part of the K604404-201 assembly.

The device consists of two Phenolic plugs drilled for a through-bolt and cut to the dimensions shown in illustration 1. A nutplate may be installed in one plug as shown in Photo B and a wood washer used to prevent gouging on the other plug. (A loose nut and bolt may also be utilized.) The bolt should be at least 3-1/2 inches long.

In use, the seals, shims and collar assemblies are installed and the plugs placed into the rocking pin liner. Install the through-bolt, align the components and tighten to compress and retain alignment. Install the larger part of the K604404 assembly as shown in Photo C, and remove the plugs. Installation of the tail rotor blade may then proceed as usual.



- A. 1.50
- B. 1.62
- C. 1.75
- D. Nutplate
- E. 0.50
- F. 0.10
- G. 0.875

Note: All dimensions in inches

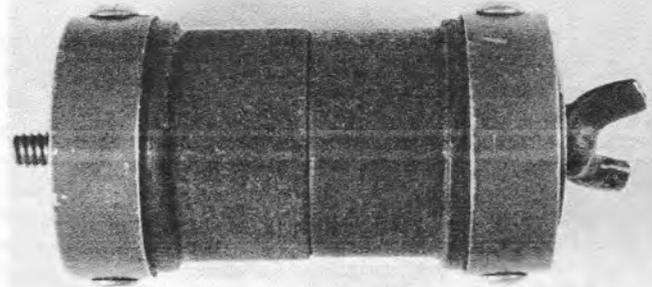


Photo A

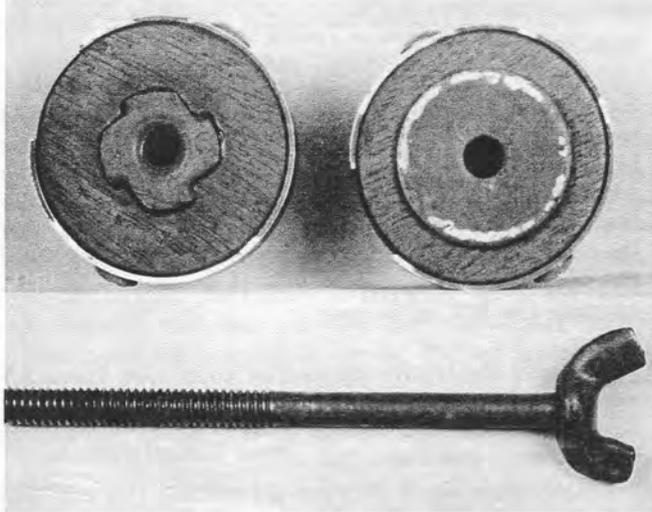


Photo B

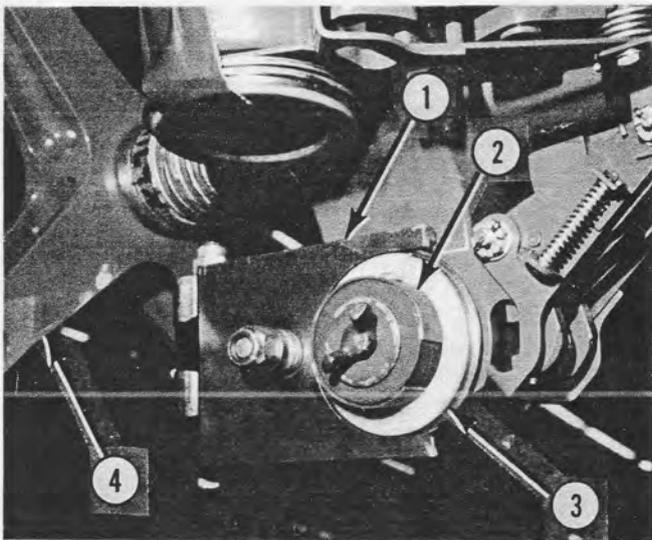


Photo C

- 1. K604404 tool
- 2. Plug
- 3. Collar and shims
- 4. Spider

W. Wagemaker, Service Engineer

SH-2D LN-66 RECEIVER-TRANSMITTER BRACKET REMOVAL AND INSTALLATION

C. Snow, Service Engineer

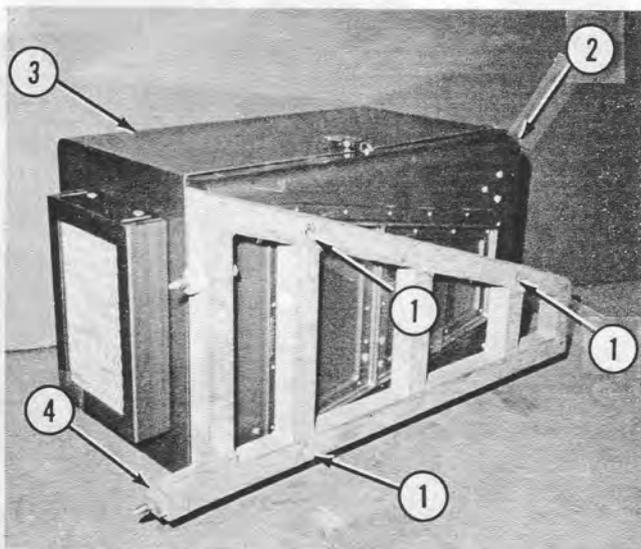
Two configurations exist for securing the receiver-transmitter (R/T) to its mounting bracket. Initially, the R/T was secured to the bracket with three screws, washers, and nuts. This configuration requires disassembly of the R/T to gain access to the retaining nuts when bracket removal is necessary. Later-manufactured R/T's incorporated three threaded inserts to replace the retaining nuts, thus eliminating the need for R/T disassembly. The following procedure details both attachment configurations for removal/installation of the bracket from the R/T mounting base.

BRACKET REMOVAL

A. Remove the receiver-transmitter and bracket assembly from the aircraft.

B. Attempt to remove one of the three screws (1, Photo A) securing the bracket to the receiver-transmitter mounting base (item 2). If the unit has threaded inserts, it will be possible to remove all three screws and separate bracket from the R/T. If the mounting base does not contain the threaded inserts but has the retaining nuts (indicated by the screws not backing-off), it is then necessary to disassemble the R/T as follows:

1. Remove the receiver-transmitter cover (See Photo A.)
2. Remove the high voltage cover. Retain screws and lockwashers. (See Photo B.)

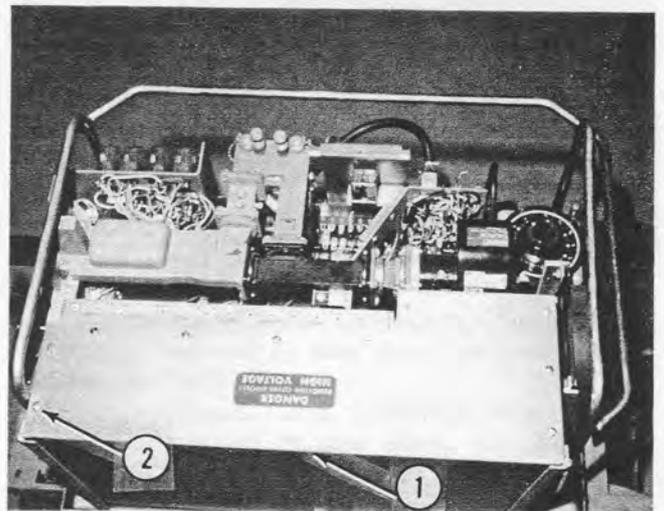


1. Screws
2. Mounting base
3. R/T cover
4. Bracket

Photo A

3. The arrows in Photo C show the general location of the six screws which attach the R/T chassis to the mounting base. Remove the four corner screws, two of which are shown in Photo D. *NOTE: Do not remove the two centrally located screws, instead, loosen until the chassis can be lifted away from the base. (If the screws are removed, some effort will be required to reinstall due to proximity of other components.)*

4. See Photo E and remove the three screws, nuts and washers securing base to bracket and remove bracket.



1. High-voltage cover
2. Screws (10)

Photo B

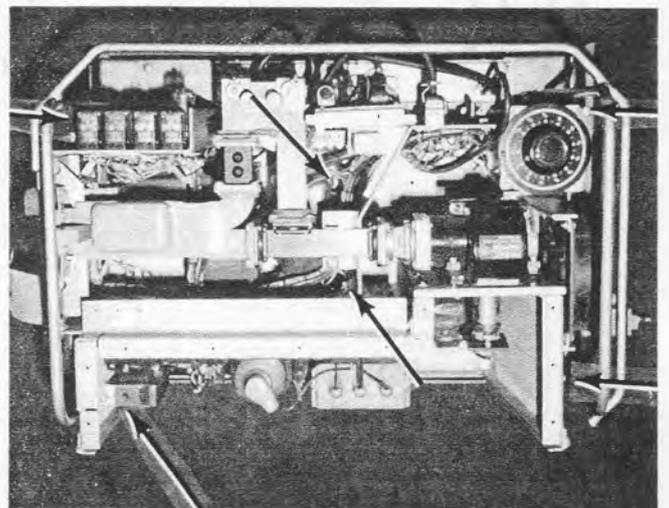


Photo C

TECHNICAL SECTION

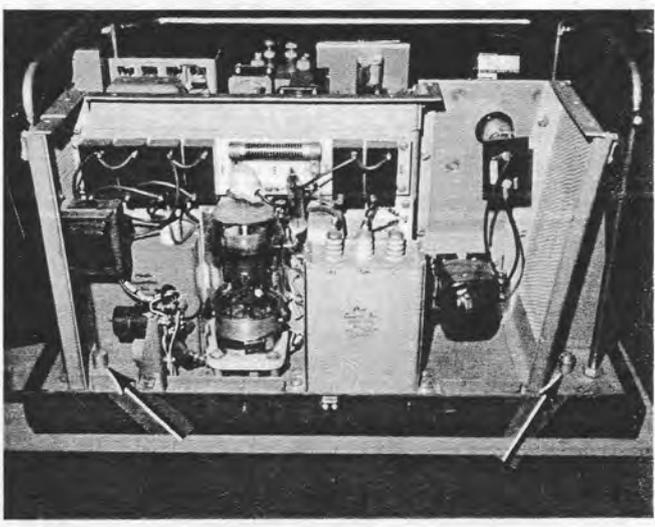
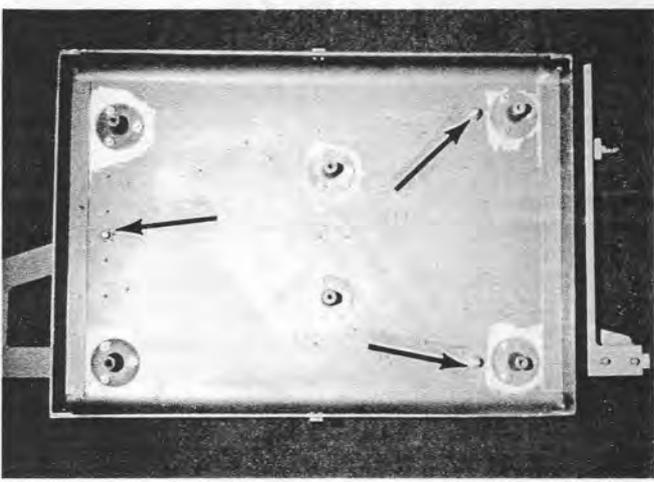


Photo D



Arrows { Screw - AN509-516R41
Nut - MS20364-524
Washer - AN960-516

Photo E

BRACKET INSTALLATION

A. Installation of a bracket onto a new or replacement receiver-transmitter is dependent on the mounting base configuration. If the three threaded inserts are installed in the mounting base, position the bracket and install the three screws. If the mounting base does not contain the threaded inserts, proceed as follows:

1. Accomplish steps 1, 2, and 3 of BRACKET REMOVAL procedures.

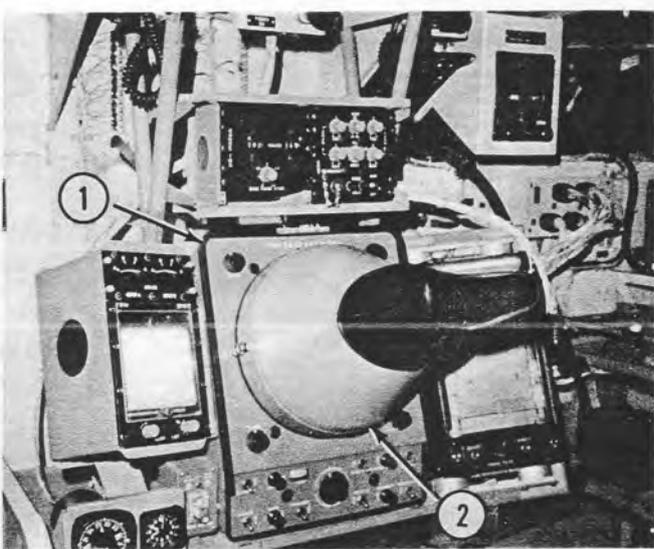
2. Assemble the bracket to the base with screws, nuts and washers.
3. Reassemble the chassis to the base. Place the chassis in position and start the two centrally-located screws; then install the four corner screws. Tighten center screws.
4. Reinstall the high voltage cover, screws and lockwashers.
5. Replace the R/T cover.
6. The R/T and bracket assembly is now ready for installation into the aircraft.

LN-66 RADAR MAINTENANCE

SH-2D

Field use of the NAVAIR 16-45-1691, Maintenance Instructions with Illustrated Parts Breakdown manual to maintain the LN-66 radar has shown several areas of incorrect information. The following corrections have been coordinated with the equipment manufacturer and will be incorporated in future manual revisions. It is suggested that delivered manuals be revised accordingly as an interim measure.

1. Magnatron Current Adjust setting. On pages 3-2 and 5-25 change 7.4 VDC to 6.1 VDC.
2. Pulse Repetition Frequency (PRF). On pages 1-2, 3-23, 5-13, 5-42, 6-1, and 6-7, change 500 pps to 388 pps. Also, on same pages, change 1000 pps to 1050 pps.
3. On page 4-23; item 27, PRF PCB Assembly part number should be changed from 220-189893-403 to 220-189893-404.
4. An item not called out in the manual is the display unit hood assembly, part number 620-732528-701, shown in the accompanying Photo.



1. LN-66 Display board
2. Hood assembly

N. Hankins, Service Engineer

CURRENT CHANGES

This list reflects latest manual changes and technical directives released to the field.

H-2 Airframe Change 199, Part III — Combining Gearbox, HYDRAULIC PUMP DRIVE SPLINES, LUBRICATION IMPROVEMENT
21 January 1972

R. H. Chapdelaine, Supervisor, Service Publications

NAVAIR 01-260HCA-2-1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, GENERAL
15 February 1972

NAVAIR 01-260HCB-4-9 — Illustrated Parts Breakdown, SPECIAL SUPPORT EQUIPMENT, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters
1 June 1967
changed 30 November 1971

NAVAIR 01-260HCA-2-8.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, WIRING DATA
1 October 1967
changed 15 January 1972

NAVAIR 03-95D-11 — Manual, Overhaul Instructions, MAIN ROTOR SYSTEM, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D/SH-2D Helicopters
15 January 1966
changed 1 November 1971

NAVAIR 01-260HCB-4-8 — Illustrated Parts Breakdown, RADIO AND ELECTRICAL, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters
1 June 1967
changed 30 November 1971

NAVAIR 03-95D-14 — Manual, Overhaul Instructions, TAIL ROTOR GEARBOX ASSEMBLY, P/N K671302-1, -3, -5; K671652-1
1 May 1970
changed 15 January 1972

***** TECHNICAL DIRECTIVES RELEASED *****

This list reflects information released to the customer by KAC for distribution.

SEC/AFC No.	TITLE	RELEASE DATE (KAC)
H-2 Airframe Change 179, Amend 1	Avionics, AN/APN-182 (V) RADAR NAVIGATION SYSTEM, INSTALLATION OF	18 Feb. 1972
Support Equipment Change 1820	HOIST ASSEMBLY, ENGINE REMOVAL KIT, MODIFICATION OF	21 Jan. 1972

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DARFO! The continuing action of Detecting and Removing Foreign Objects before injury or damage occurs.

Foreign. One dictionary explains the word this way: "relating to a thing other than the one under consideration." Another explains it as: "having nothing to do with the area where found." Another good word might be: "misfit." As DARFO continues, it is obvious most Foreign Objects are related to aircraft work but usually when the item is found, it does not belong in the area where it was discovered. Such is the case here. KRT has been urging mechanics to take that last look around and Mr. M. E. Mills, Kaman experimental flight test mechanic did just that. As he was about to leave the upper area of an H-2, his eyes routinely searched and. . .DARFO! Follow the photos and see if you can discover the item before our eyeballers point the way. . .

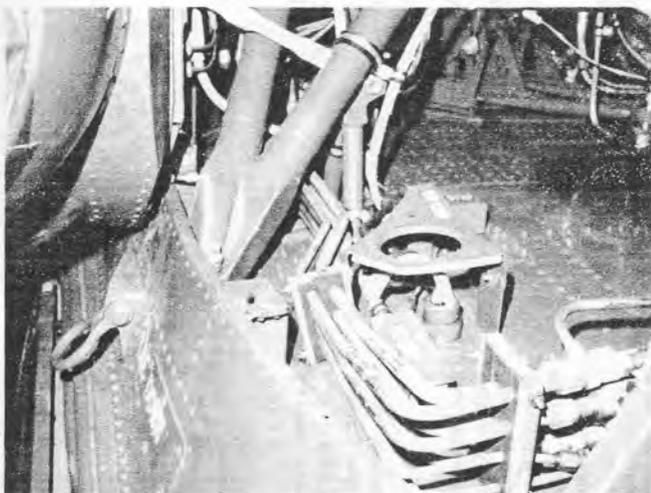


Photo A. The camera is aimed at the roof section, immediately above the pilot's door. A Foreign Object is visible; can you see it?

Rotor Tips is looking for examples of DARFO in action. When you detect a foreign object, try and get a photo of it to send to us. If you cannot send a photo, send us the complete location and description of your find (also, your impression of how it got there)—we will try to simulate the condition here at Kaman.

We will credit the sender with the find if he desires.

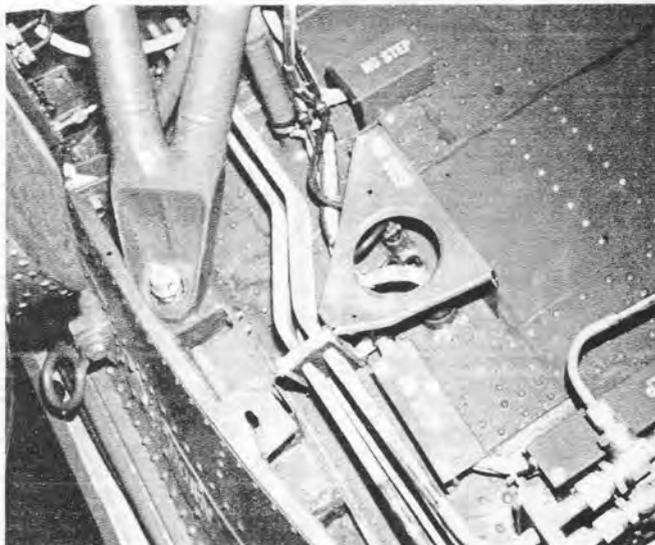


Photo B. A closer look at the same area and the Foreign Object is closer but perhaps not more visible.

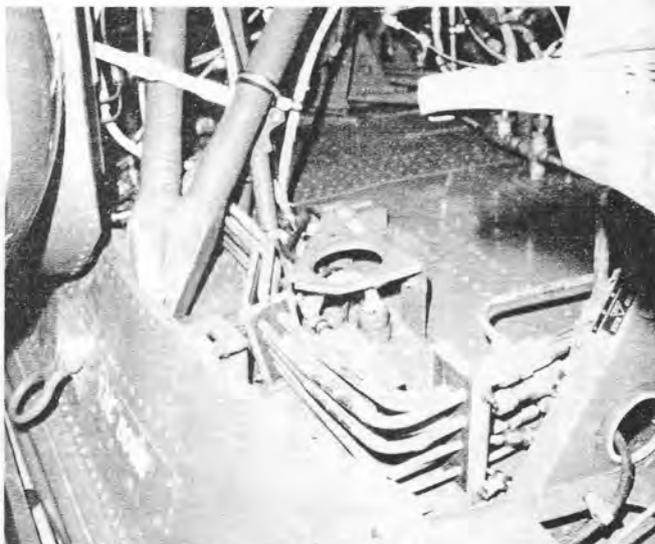


Photo C. From this angle, the Object seems to jump out of the photo.

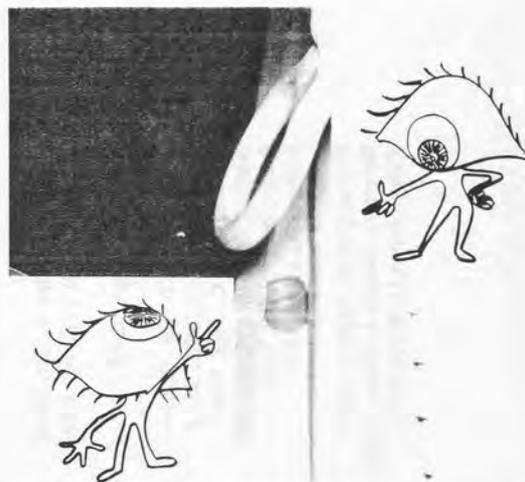


Photo D. For those who have not found the CD-10 Caplug, our eyeballers again point the way. Most mechs are accustomed to seeing door rollers in the door tracks and this round item might have gone unnoticed except for that "last look around."

SCROLL OF HONOR

1970

(Additions)

Anderson, Leroy, Lt(jg), USN

Bauer, James E., Captain, USAF
Boyd, Christopher L., Sgt, USAF
Brewington, Hardy L., Sgt, USAF
Bucknall, Gerard J., SSgt, USAF

Clark, Robert H., Jr., Lt, USNR
Cunningham, William F., Jr., Major, USAF

Hardin, Arnie E., AT1, USN
Herrin, Curtis T., Sgt, USAF

Liebman, Marc, Lt(jg), USN
Lorren, Lonnie D., Lt, USNR

Olson, Philip C., LCdr, USN

Schuppe, Robert O., Major, USAF
Shupp, Richard W., Captain, USAF

Wisniewski, Dennis, ABH1, USN

1971

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Beck, Lyle A., Major, USAF
Biezad, Daniel J., Captain, USAF
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Carden, Carl E., Lt(jg), USN
Casey, Howard E., Captain, USAF

Cook, C. Leroy, Lt, USN
Cowher, David M., Sgt, USAF
Cuddeback, B. A., Lt, USN

Dean, William L., TSgt, USAF
Demler, Jack W., Sgt, USAF
Dineen, Peter F., Captain, USAF
Disanto, Alfredo, Airman Italian AF
Dow, Blake C., SSgt, USAF

Farrow, Jimmy D., Sgt, USAF
Ferguson, Samuel L., Captain, USAF
Fisher, Francis M., SSgt, USAF
Fonner, Richard C., SSgt, USAF
Foster, Frank LCdr, USNR
Franklin, Richard L., AMHAN, USN

Gaede, Ralph L., Major, USAF
Ghrist, Roy A., SSgt, USAF

Hall, Ronald E., AE1, USN
Hammer, James R., SSgt, USAF
Hansen, Jay W., Captain, USAF
Harris, James D., Captain, USAF
Hatch, John L., SSgt, USAF
Higbie, John M., Captain, USAF
Hoffend, Albert P., Sgt, USAF
Hopkins, George H., Captain, USAF

Jessee, Fred L., Sgt, USAF
Kearley, Richard C., Lt, USNR

LaFleur, Steve M., Sgt, USAF
Lay, Bobby S., Major, USAF
Lewis, Louis C., Jr., Major, USAF
Lyon, William T., Captain, USAF

MacIntyre, J. W., Chief, USN
Mahan, Kevin M., Captain, USAF
Miekam, Jeffrey M., A1C, USAF
Murphy, Ronald W., Sgt, USAF
Murray, Floyd L., ADR3, USN
Mynatt, Stephen L., SSgt, USAF

O'Banion, Elmer L., Major, USAF
O'Grodnick, Thomas M., Captain, USAF
O'Leary, Dennis E., Sgt, USAF
Osler, John R., Sgt, USAF

Parker, Talmadge W., Sgt, USAF
Pedriana, James T. T., Sgt, USAF

Reed, Ralph, Sgt, USAF

Smith, Charles D., Sgt, USAF
Somes, Garrett A., SSgt, USAF
Sprutell, Jessie C., SSgt, USAF
Sterling, Kenneth L., LCdr, USN
Suchy, Daniel, LCdr, USN
Sullivan, P., ADR2, USN

Walker, Cole E., Captain, USAF
Waterman, Donald J., Major, USAF
Wissert, James L., Major, USAF

KAMAN AEROSPACE CORPORATION

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.