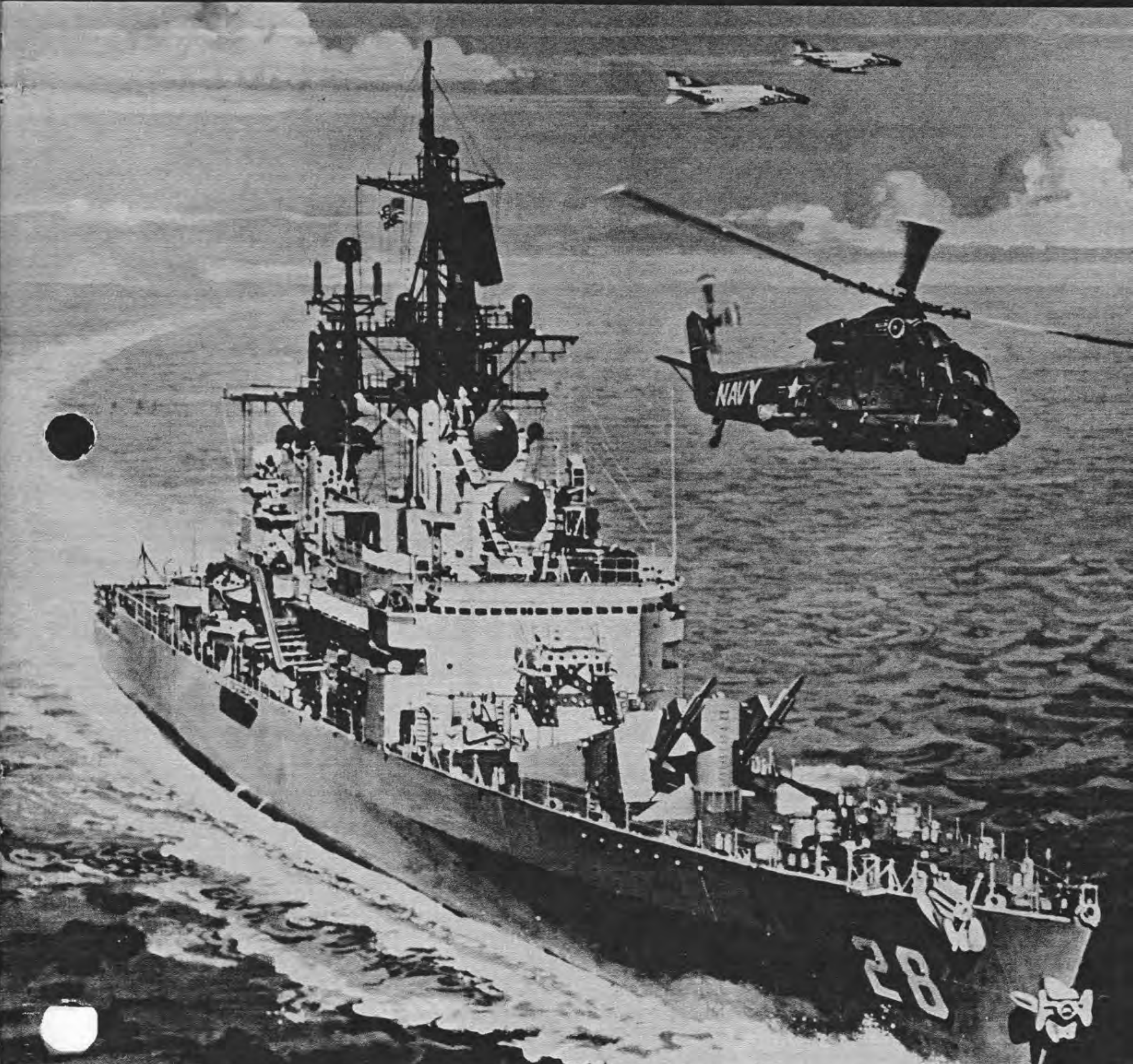
KAMAN Rotor Tips



SEPTEMBER-OCTOBER, 1973

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Rotor Tips

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Volume VII No. 12

FEATURES

DEPARTMENTS

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

ON THE COVER

Enchancing the Rotor Tips' cover this issue is a reproduction of a painting by artist Tom McCall showing an SH-2D LAMPS helicopter operating from the USS Wainwright (DLG-28). The action scene accompanied by the admonishment "Don't just sit there. Be a Navy man," is currently being used by the U. S. Navy on posters and billboards as part of its recruiting program.

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HSL-31's

WESTPAC

MEMORIES

Periodically, LAMPS detachments from Helicopter Anti-Submarine Squadron Light Thirty-One, NAS Imperial Beach, Calif., deploy aboard ships like the guided missile frigates USS Sterrett and USS Holt for service with the U. S. Seventh Fleet in the Western Pacific (WestPac) area.

Within the past year, nine HSL-31 detachments deployed to this area. Many of the events which took place during these six or seven-month cruises have been captured on film and in prose by LAMPS det personnel. The photographs appearing with this article were taken by Lt(jg) Michael Skahan and ADJ2 Lester E. Ottem of LAMPS Det Two. Excerpts from the HSL-31 newsletter, "The Lamplighter," also provide a glimpse of the activities of personnel on a typical WestPac cruise.

LAMPS DET ONE

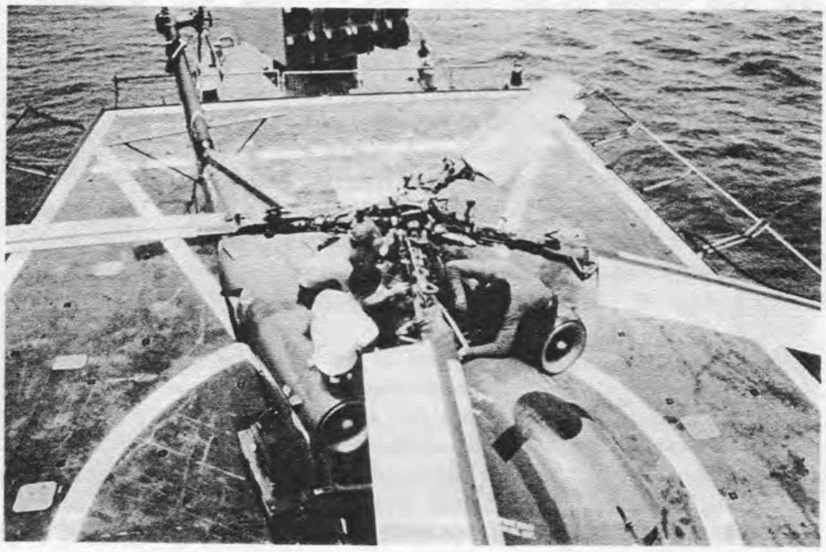
From "The Lamplighter"

USS STERRETT. . . ."LAMPS Det One personnel are rapidly preparing for their upcoming deployment. Officer-in-Charge, Lt Lee Khinoo, has been hampered by personnel shortages in the early work-up phase, but he and Chief Wilson have taken the available assets and done an outstanding job. The packup has been placed on board USS Sterrett, and the aircraft is nearing the readiness level needed to deploy to the Pacific.

The remaining time, before deployment, will be spent training Det personnel in the areas of corrision control and various maintenance checks that will have to be performed during the cruise.

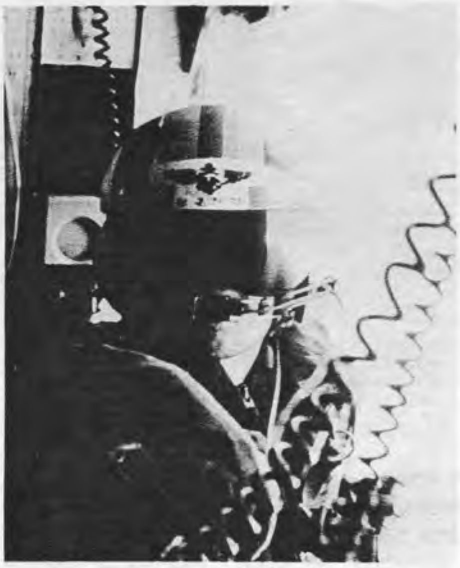
The entire crew spent four days on Sterrett, training in such areas as launching/landing procedures, aircraft movement on deck, blade folding etc. During this period, all four pilots were day/night qualified. The 'short cruise' proved to be extremely successful and proved to all that LAMPS Det One personnel 'CAN DO'!!!

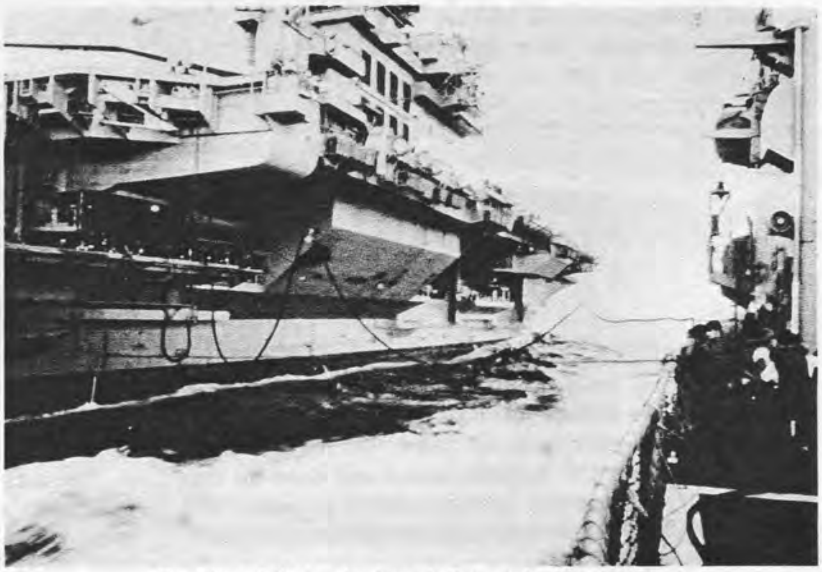
With this attitude and high spirits, Det One is yearning to take its place as the LEADER in the LAMPS program!"




Firebottle manned. . . .


Chocks pulled. . . .


Aircrewman mans his lofty post


Familiar sight to deployed dets—refueling at sea

LAMPS DETACHMENT TWO

By Lt(jg) Pete Murphy

USS HOLT. . . ."Following departure from CONUS, Det Two, aboard its new home, USS Harold E. Holt (DE-1074), began intensive day/night operations in preparation for its assignments upon arrival in WESTPAC. The transit was broken up by an exciting 5-day interlude in the Pearl of the Pacific, Hawaii.

Receiving its first assignment as a member of an interdiction zone, Holt and LAMPS Det 2 spent 45 days at sea establishing a reputation for the LAMPS team. A much deserved port visit brought the Detachment to the Philippines, where, unfortunately, much of the precious liberty time was spent on installing special equipment aboard the SH-2D.

The next line period was a mere 36 days, and the Det got its first crack at Naval Gunfire Support. After some anxious moments, it was obvious that the Harold E. Holt Air Department was building an enviable record. As the ship left the line for the second time, the crew wanted something different. Fortunately their wishes were well received as the ship headed northeast to Sasebo, Japan.

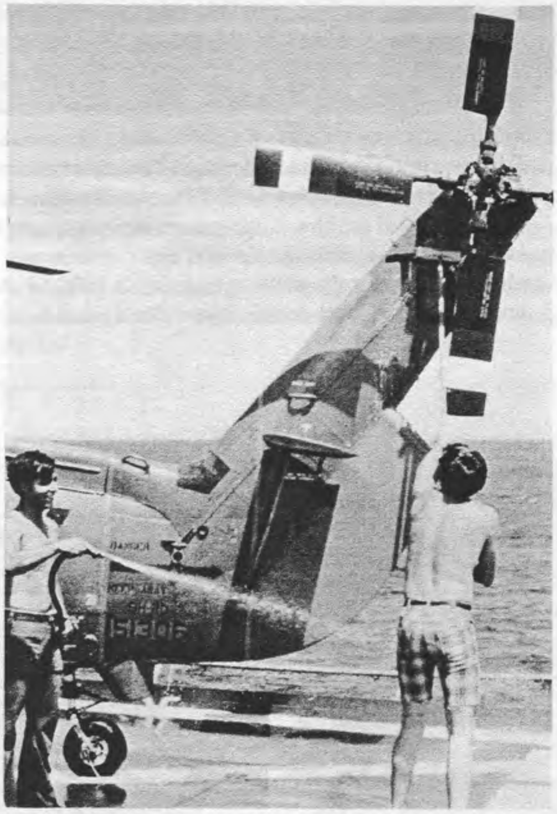
The inport visit was enjoyed by all as exciting Japan afforded fantastic sights and beautiful weather. At sea again, most of the time was spent performing Naval Gunfire Support and surveillance. Although the mission was similar each day, every flight was unique and no spirit was ever dampened.

The last three port calls were made to Taiwan, where the Det trained the Nationalist Chinese Navy in VERTREP operations; Hong Kong, where the money saved for six months fell to the British Colonists with their fabulous wares; and a farewell visit to Japan.

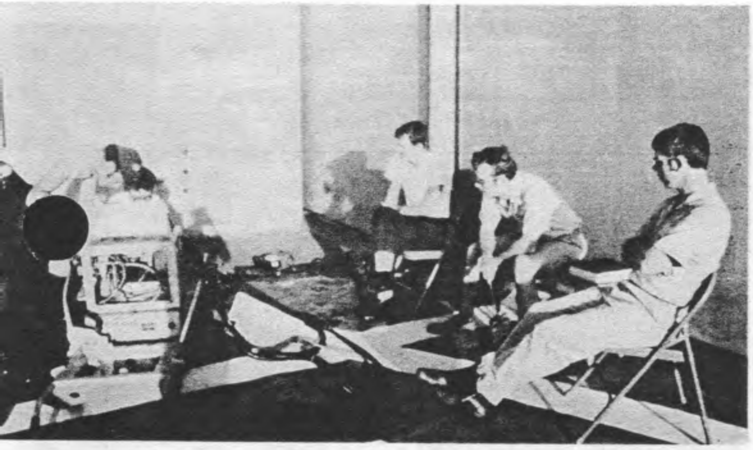
The transit home seemed to take an eternity; however, with the support of HC-3, all Detachment members were greeted by loved ones and Squadron-mates in a quasi-spectacular fly in. Despite the long hours and many months of separation, the entire Detachment came away with a great experience and the satisfaction of knowing because of their accomplishments the LAMPS light now shines brighter."

SH-2D launches. . . .

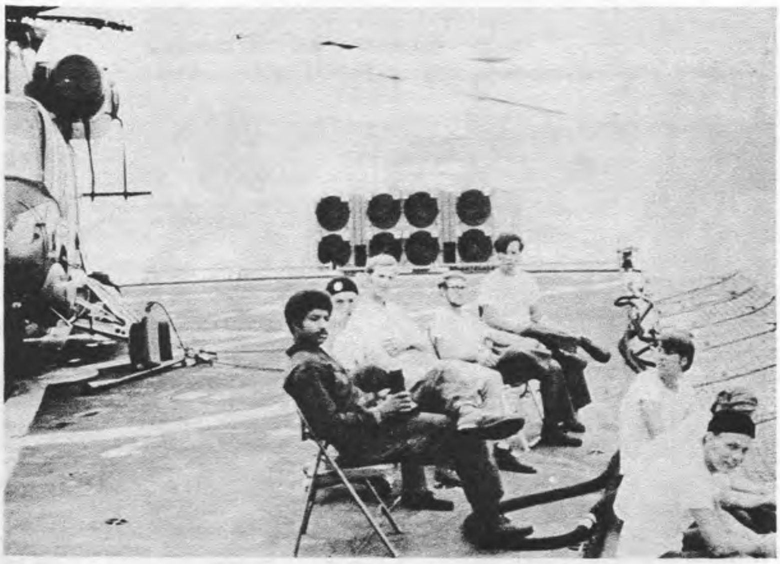
When not engaged in the serious business of helicopter operation and maintenance, members of deployed dets find many ways to occupy their time. Several were recorded on film by Lieutenant Skahan and Petty Officer Ottem.



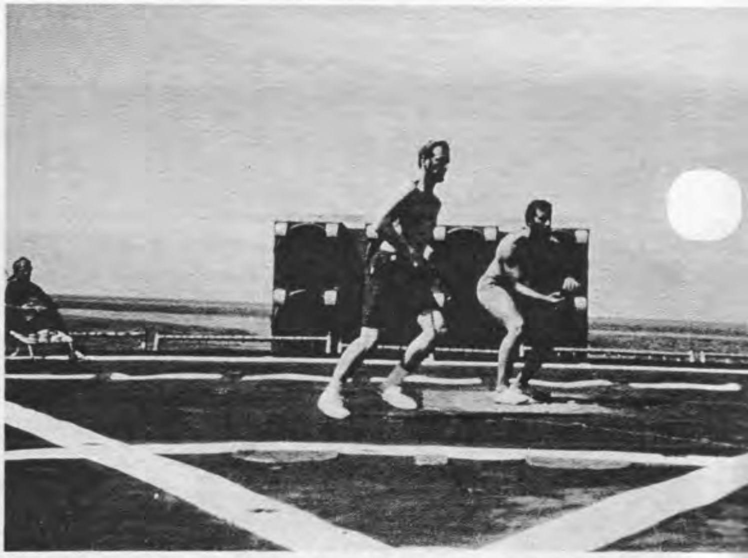
When not taking pictures of his shipmates, Les Ottem, left, "helps them out" in other ways.



Kibitzing is always a popular pastime

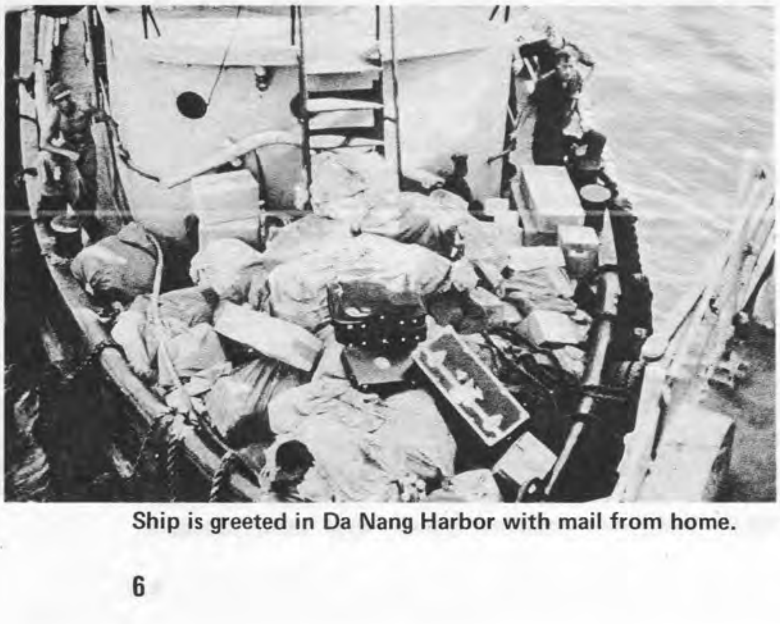


Conversations begun during the day are often continued in the evening as det personnel relax on their "front porch."



Taking time out from the demanding responsibilities as O-in-C of Det Two, LCdr Dennis Christian trys his hand at "drone riding." Downed drone had been recovered from sea by det's SH-2D and vertreped to the Holt (see Kaman Rotor Tips, March-April, 1973). LtCommander Christian's numerous contributions to the LAMPS program before, during and after the deployment later brought him the coveted title of "Pilot of the year" for 1972 from the Navy Helicopter Association. In top right photo, det personnel play ball on helo deck as another member relaxes in a lawn chair. An entirely different scene is offered during helicopter operations or when the "ball field" is sharply angled and swept by wind-driven spray during a storm.

With almost 40 days "on the line" behind them, det personnel on liberty take advantage of low prices ashore to buy tailor made uniforms and gifts.



Ship is greeted in Da Nang Harbor with mail from home.

DET SEVEN CRUISE RESUME

From "The Lamplighter"

USS O'CALLAHAN. . . .HELANTISUBRON(L) 31 LAMPS Det Seven "Wild Bunch" has recently completed a six and one-half month deployment in WESTPAC aboard USS O'CALLAHAN (DE-1051). During this time, the "Wild Bunch" and their LAMPS SH-2D helicopter performed airborne reconnaisance, ASMD, personnel transfer, mail transfer, logistic support, Medevac missions, Holy helo runs, vertreps, Naval Gunfire Support, spotting missions, mine sweeping support operations, and ASW operations. This impressive array of operations truly proves the versatility of LAMPS and Det Seven's motto, "You name it, we did it."

Det Seven's most notable exercise was conducted with the Nationalist Chinese Navy in February of 1973. USS O'CALLAHAN was the only LAMPS configured ship in the exercise, and Det Seven's performance in maintaining contact on the submarine and logging "kills" with their LAMPS helicopter was noted with admirable comment by COMSEVENTHFLT, VAdm J. L. Holloway, III, USN. The Det Seven "Wild Bunch" has shown, along with previous sister LAMPS Dets, that LAMPS is here to stay.

LAMPS BIRDS—SH-2F LAMPS (Light Airborne Multi-Purpose System) helicopters are shown on the line after conversion from H-2 SEASPRITE's. Kaman Aerospace recently received funding for 30 more conversions to follow 25 SEASPRITE's already being modified at KAC's Bloomfield, Conn., plant. Delivery of the last of this group is now being made. Delivery of the new group of 30 H-2's in this, the fourth increment, will begin in November. The fifth and final increment of 30 H-2's will continue through December, 1975, to complete the Navy's inventory of these craft. Primary role of the LAMPS helicopters is AWS (anti-submarine warfare) and ASMD (anti-ship missile defense). The secondary role will be utility/rescue plus all the many other tasks expected of a Fleet helicopter. (Ruggiero photo)

HSL-33 Commissioned On West Coast

NAS Imperial Beach, Calif.—In ceremonies held 31 July 1973, Helicopter Anti-Submarine Squadron Light Thirty-Three (HSL-33) was established here. The Commanding Officer is Cdr M. A. Belto. Cdr L. "L" Stoker is the Executive Officer.

Cdr Meryl A. Belto, left, assumes command of HSL-33 and is congratulated by Capt Jack R. Evans, Commander Anti-Submarine Warfare Wing, U. S. Pacific Fleet. Captain Evans was guest speaker at the commissioning and also at HSL-31's change of command ceremony earlier in the month. (USN photos)

Commander Belto cuts cake at reception after HSL-33 commissioning.

HSL-33 is the Navy's first squadron dedicated solely to providing Light Airborne Multi-Purpose System (LAMPS) detachments for LAMPS-configured ships of the U. S. Pacific Fleet. The 45 officers and 160 men forming the Squadron's 13 detachments have been involved with developing the LAMPS concept since 1969 as members of HSL-31. They have participated in projects and deployments which developed and evaluated LAMPS tactics, equipment and procedures.

The primary missions of LAMPS are Anti-Submarine Warfare (ASW) and Anti-Ship Missile Defense (ASMD). LAMPS is a significant contribution to both the offensive and defensive capabilities of Fleet destroyers. The LAMPS helicopter is able to localize and classify submarines initially detected by the destroyer's sonar, attack the target by delivering a homing torpedo, and give early warning of and conduct countermeasures against an anti-ship guided missile attack. In addition, LAMPS has the inherent capabilities to conduct search and rescue, naval gunfire spotting, medical evacuation and vertical replenishment missions.

Cdr LaRon "L" Stoker

The teamwork required for the efficient operation and effective utilization of LAMPS detachments and the individual challenges to the personnel are formidable. The three officers assigned are required to have extensive knowledge in all areas of operations, tactics and aircraft maintenance. With only eight maintenance personnel and two Anti-Submarine Warfare operators assigned, each man must not only know his own rate, but also must be extensively cross-trained in related fields. No record speaks more eloquently of their efforts than that which reflects their ability to maintain a single helicopter aboard destroyers with minimum personnel and aircraft parts, and austere working conditions. At the time of the HSL-33 commissioning, HSL-31 had six of its 13 detachments deployed to the Western Pacific and Southeast Asian areas.

HSL-31 personnel have established an enviable record. The teamwork developed, the responsibilities accepted, the missions accomplished, and the challenges met by Squadron personnel should rank high in the annals of Naval Aviation.

HSL-32 Commissioned On East Coast

NAS NORFOLK, Va.–In ceremonies held 17 August, 1973, Helicopter Anti-Submarine Light Thirty-Two (HSL-32) was established here. The Commanding Officer is Cdr William C. Powell. Cdr R. V. Buck is the Executive Officer.

The new squadron has split from the parent squadron, HSL-30, and moved across hangar LP-3 to occupy its new spaces. HSL-32 is tasked with providing LAMPS helicopter detachments to designated ships assigned to Commander-Cruiser Destroyer Force Atlantic. The LAMPS Weapons System is the closest ship-aircraft marriage which exists, capitalizing on the strengths of both type vehicles. HSL-32 will be the only East Coast helicopter squadron deploying LAMPS to Atlantic Fleet ships.

Admiral Michaelis congratulates Commander Powell as Capt W. L. Jensen, Commander Helicopter Sea Control Wing One, looks on. Painting in background of LAMPS operation from the USS Wainwright was presented to the newly-commissioned squadron by HSL-30. The presentation was made by Cdr Charles E. Myers, until recently, Commanding Officer of HSL-30.

Commander Powell presents VAdm Frederick H. Michaelis, Commander Naval Air Force Atlantic Fleet, with HSL-32 LAMPS sticker.

In left photo is Cdr R. V. Buck, HSL-32's Executive Officer. At right is the guest speaker, RAdm Donald V. Cox, Deputy Chief of Staff (Operations and Plans) CINCLANTFLT. The text of Admiral Cox's speech appears on the following page.

Admiral Cox Lauds LAMPS Program

". . . .Right now you are, officially, only a very specially designated collection of individuals—in a few moments you will be a squadron. As HSL-32 is commissioned today, it is entered into the annals of Naval history. The pages that follow will record what happens in these new offices and this hangar—and what you do as you fly these aircraft off destroyer decks. Today's ceremony is a proud and momentous one and I am delighted and honored to have a small part in it.

Commissioning of this squadron represents a real milestone to the Atlantic Fleet, to Naval Aviation, to the Destroyer Force, to the LAMPS program, and to the increase of our Naval capability to control the seas. This commissioning milestone has been in planning for over two years—and it is occurring very close to the schedule planned that long ago. These have been tumultuous years—filled with changes—but the Navy has kept this program on track.

Now what does this mean? It means that the LAMPS program, and you in the program, have lived up to—have exceeded—every hope that was held for you at the beginning of the program, and have done this in spite of considerable obstacles. Times have been hard for the Navy in these years. While the Vietnam war was on, the Navy tightened its belt everywhere else to do what had to be done in Southeast Asia. Two years ago the LAMPS program was being evaluated—as an additional duty project in two utility squadrons—one your parent squadron HC-4 and the other HC-5 at Imperial Beach.

In December 1971 the first pioneering LAMPS detachment was deployed to the Sixth Fleet in USS Belknap. Later, LAMPS was officially recognized when these utility squadrons were re-designated HSL-30 and 31. By December of last year 12 detachments had been deployed to the Sixth and Seventh Fleets. The program not only survived that traumatic period but picked up a great combat record while so doing. Then as Vietnam started phasing down—and to the present—we have really been tightening our belts to get ready for the years ahead with the decreasing funds available to us. Everything which doesn't bear great future promise is being culled out. Ships, aircraft, bases—and people—that aren't in our future plans are going now—in order that we can afford the future. In this climate LAMPS grows apace. This should tell how much the Navy is relying on you for its future.

I hope I've proved that you in the LAMPS program are in a booming business. I'd like to examine for a moment some of the reasons why.

As you must know, LAMPS had a very unusual beginning. In science fiction robots replace men. In real life—in LAMPS—a manned aircraft program replaced a drone, DASH. The program took a utility aircraft which just happened to be available and made it into one of our most effective, efficient and respected tactical aircraft. Today these aircraft operate regularly in tactical environments from the decks of ships—known rather ignominiously in the aviation community—as non-aviation ships. Ships whose designers had no idea such a thing would happen to them. In fact the major class ship in the LAMPS program, the 1052 class destroyer escort, had been on the rocks, figuratively speaking. The 1052 was a beautiful new ship, still building in quantity—but it was being so roundly criticized that the very existence of the remaining ships in the program was in jeopardy. It was damned by the Congress, the Press, TV programs, the Government Accounting Office, and by Naval Officers who were writing articles and letters in the Naval Institute Proceedings. It was pictured as an expensive new ship—delivered in the seventies, but built for World War II missions. LAMPS, again figuratively speaking, pulled this ship off these rocks—out of the past and into the future.

Ladies and gentlemen—there's something exciting about this. A helicopter that was deemed a castoff and a ship that was termed a mistake were pulled together in the LAMPS program into a system whose concept and results defy anyone—congressman, reporter, systems analyst or Naval expert—to question it.

What makes this program so important and so valued at all levels to the future of the Navy?

First—there is the growth of the Soviet Navy. The authoritative annual, Janes Fighting Ships for 1973, says the Soviets are No. 1. I don't buy that—but there's no question that the Soviets have far more submarines than we do—no doubt that they have made the anti-ship missile a number one threat against our striking forces and merchant shipping. To me this means that there is no doubt that our anti-submarine warfare and our anti-ship missile defense need to be beefed up to the best of our ability. The LAMPS mission precisely counters these threats.

Second—and as I've said before—we are reducing the numbers of our ships and aircraft—each ship and each aircraft will be expected to do more and do it more effectively. LAMPS certainly fills this ticket. The SH-2F is pound-for-pound the most potent tactical ASW and surveillance aircraft in the business—combined with a ship it can reach any part of the world's waters. The system—ship and aircraft together—can cover many times more ocean in both looking for targets and attacking them than either could alone. One of the 1052 class DE's with LAMPS can now do the job that formerly took 3 to 4 ships.

These facts are recognized in the commissioning today of this squadron to help accommodate the growth of the program—recognized in the decision to equip all new destroyer-type ships with LAMPS in addition to converting all possible existing ships, and recognized in a new high priority LAMPS follow-on program, LAMPS Mark III.

This squadron—and LAMPS—are going to be much in demand. You will be kept very busy, indeed, as you officially set up business and move into the future. There's an awful lot that has to be done; in training, in developing new tactics and new maintenance procedures, in operating with new aircraft and new ships, in working with the CV and with the Sea Control Ship—in exercises to practice your trade, and in deployments to use it. I know you're up to it. We're all counting on you—you have all of our support and best wishes! "

New C.O.'s For HSL-30,31

Cdr William E. Walker

Cdr Jerry L. Vanatta, left, and Cdr Dale P. Myers

NAS IMPERIAL BEACH, Calif.—In ceremonies held here on 18 July 1973, Cdr William E. Walker relieved Cdr Dale P. Myers as Commanding Officer of HSL-31. Commander Walker reported for duty at HSL-31 after serving on the staffs of Commander Amphibious Forces Pacific and Commander Fleet Air San Diego, which has been renamed Commander Anti-Submarine Warfare Wing, U. S. Pacific Fleet. Cdr Walker was previously C. O. of HS-6. Cdr Jerry L. Vanatta is the new Executive officer.

Guest speaker at the event was Capt Jack R. Evans, Commander Anti-Submarine Warfare Wing, U. S. Pacific Fleet.

Commander Myers is now serving with Commander Cruiser-Destroyer Force, U. S. Atlantic Fleet in Norfolk,Va.

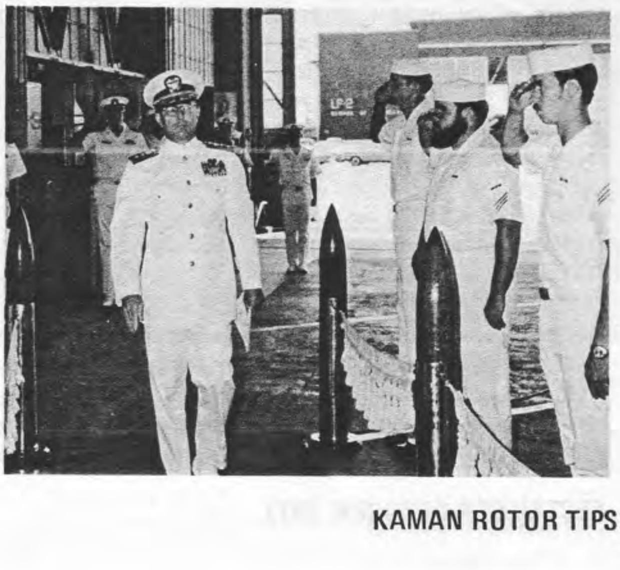
NAS NORFOLK, Va.—In change-of-command ceremonies on 6 August, 1973, Cdr Daniel R. Bilicki relieved Cdr Charles E. Myers as Commanding Officer of HSL-30. The event took place in HSL-30's new home, hangar LP-3, NAS Norfolk. The squadron recently moved here from NAS Lakehurst, N. J., as part of the Navy's base closure and re-alignment program. New Executive Officer for HSL-30 is Cdr W. R. Lang.

Commander Bilicki, left, and Commander Myers

Guest speaker at the ceremony was RAdm Roy H. F. Hoffmann, Director, Surface Warfare Division, Office of CNO, who officially welcomed the group into the area. Photo at right shows Admiral Hoffmann receiving traditional honors as he arrives for the event.

Commander Bilicki was previously C. O. of HC-2 at NAS Lakehurst. Commander Myers has reported to Commander, Helicopter Sea Control Wing One as the Readiness Officer.

Cdr W. R. Lang



First SH-2F Landing On Bagley

NAS IMPERIAL BEACH, Calif.—Cdr M. A. Belto, Commanding Officer of Helicopter Anti-Submarine Squadron Light Thirty-Three (HSL-33) is shown landing an SH-2F aboard the USS Bagley (DE-1069). It was the first shipboard landing to be made with the "F" model since it joined the Fleet after testing.

The SH-2F is Kaman Aerospace Corporation's newly configured Light Airborne Multi-Purpose System (LAMPS) aircraft, which was introduced to the Pacific Fleet early this summer. The "Foxtrot" is equipped with features, such as the new 101 rotor system, the more effective and powerful T58-8F jet engines, radar, sonobuoys, magnetic anamoly detection gear and electronic surveillance equipment. It also has the capacity of carrying acoustic homing torpedoes.

Presently, six HSL-33 LAMPS detachments are deployed to the western Pacific, with three more undergoing readiness training prior to deployment.

Rapid Response—Rapid Rescue

USS SHREVEPORT—A Marine who fell overboard from this ship was rescued by an HH-2D crew and returned to the deck only six minutes after the alarm sounded. The helicopter was unmanned and in the hangar with the blades folded when the alarm was first given at 1150. . . at 1156 the survivor was returned to the ship. What happened between those times was described in his report by the HH-2D pilot, LCdr Stanley J. Wass:

"When the 'man overboard' sounded I ran to the helo hangar and got into the right seat. Helo crew personnel were breaking down the chains and unchocking the aircraft. As soon as I released the brakes and tail wheel lock, they rolled me back on to spot 2. The crew from the helo det immediately spread the blades and gave me a 'blades spread and doors closed and pinned.' By this time, power was plugged in and I turned on the fuel pumps and started number one engine. Note: The prestart check list had been completed up to 'fuel pumps-on/boost light-out' prior to hangaring. Number two engine was started and as soon as power was removed rotors were engaged. The copilot (Lt Richard L. Penman) completed the check list as I got RPM checks, control and boost check. Chains were removed and the tower cleared us to lift. We lifted off without ASE as it hadn't warmed up yet.

"Tower advised us that the survivor was off the port bow, two hundred yards ahead of the ship. As soon as we lifted I had the man visually and maneuvered over him. ADJ2 Floyd A. Burke, the rescue crewman, directed me over the man and effected the pick-up. At one time during the evolution he advised me that the man was in the sling backwards. As he started lifting the man I lowered to a 20-foot hover in case he slipped out of the sling.

"As soon as the survivor was aboard we broke the hover and called for landing and lowered the landing gear. Tower gave us immediate landing. The doctor met the aircraft upon landing and took charge of the patient.

"The extraordinary performance of the Shreveport's air department personnel and that of the detachment ground crew made the rapid rescue possible."

All members of the HH-2D crew are attached to HSL-30's Det 37 deployed aboard the Shreveport.

Hazardous Medevac Made By Det 40

USS LASALLE—An HH-2D crew from HSL-30's Det 40 aboard this ship medevaced an accident victim from a civilian tanker 62-miles off-shore in the Persian Gulf. The over-water night flight covered more than 125 miles.

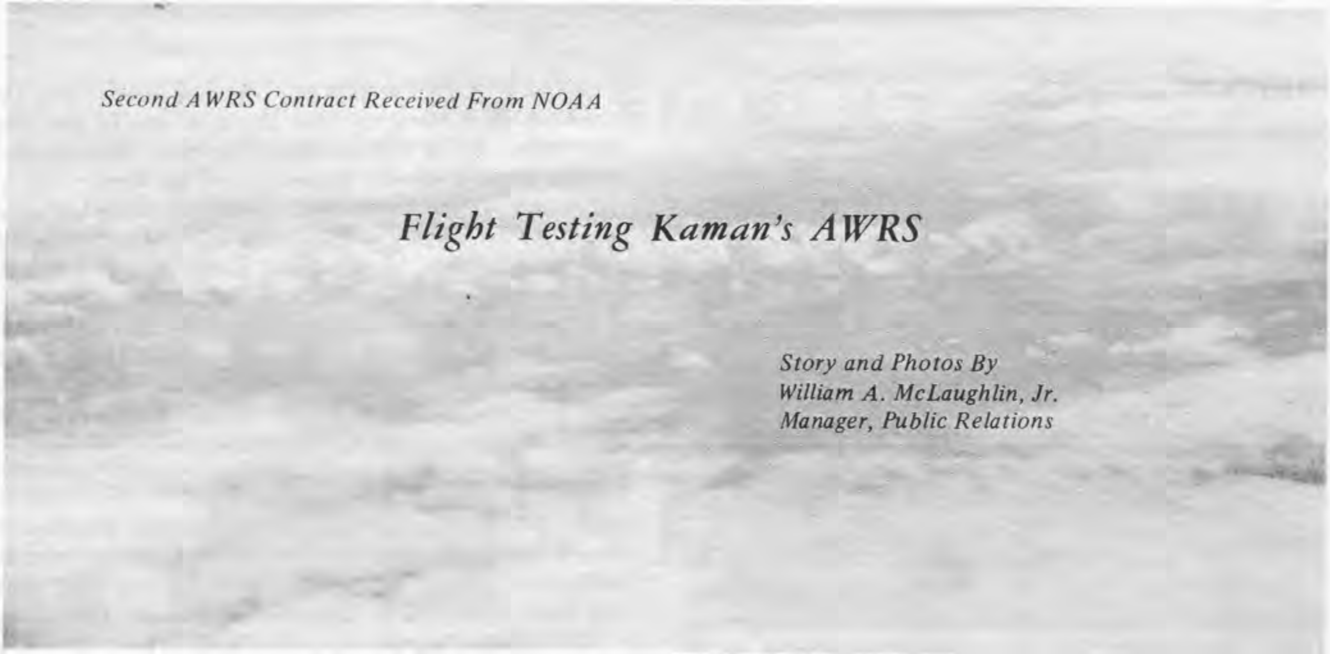
The mission began as Lt James W. Crawford, the pilot, and his copilot, Lt(jg) William G. Borries, were flying practice instrument approaches to Bahrein Airport. A request was received to medevac a crewman aboard a tanker who had come in contact with high voltage current and was unconscious. After receiving clearance from the LaSalle, the H-2 refueled and took two corpsmen aboard.

Guided at first by radar, and later by lights aboard the ship, the H-2 arrived over the tanker. After making a pass to determine the location of obstructions aboard, the H-2 hovered over the ship and AMS2 Kenneth D. Herborn, lowered AMS2 Barrett W. Peterson, the first crewman. One of the corpsman, HM2 Michael K. Aaron, and a Stokes litter were also lowered. When they were safely on deck, the SEASPRITE broke hover and circled the ship until the accident victim was brought on deck. Again the H-2 was hovered overhead and the litter was hoisted aboard. Then the crewman and corpsman were recovered. During the return flight the two corpsmen, made constant attempts to revive the patient with oxygen and closed heart massage. Upon landing the accident victim was carried to a waiting ambulance. The second corpsman was SN Russell C. Lucas.

Kaman Conducts Maintenance Study For Army

A research effort aimed at reducing the maintenance costs on future Army aircraft by simplifying the task of removing and replacing components and subsystems is the goal of a $127,000, 15-month contract awarded to Kaman Aerospace Corp. Announcement of the contract award was made by Paul F. Yaggy, Director, Army Air Mobility R&D Laboratory (AMDRL), Moffett Field, California. Project engineer is Maj Robert A. Mangum; contract specialist is Ellen Morgan, both of AMDRL's Eustis Directorate, Fort Eustis, Va., where the contract will be monitored.

Two more pilots qualified recently for the Kaman Aerospace plaque presented to those logging 1000 hours in helicopters produced by the company. Capt Fred Ayoub, USAF, LBR Det 10, Aviano AB, Italy accumulated the required number of hours while flying the HH-43 HUSKIE in Ubon RTAFB, Thailand; Loring AFB, Maine; and Aviano. Lt Edwin K. Weigel, USN, logged his 1000th hour in the H-2 SEASPRITE while stationed at NAF Warminster, Pa. He was scheduled to be transferred to NAS Pensacola in September.



Second AWRS Contract Received From NOAA

Flight Testing Kaman's AWRS

Story and Photos By
William A. McLaughlin, Jr.
Manager, Public Relations

Precise measurement and analysis of air currents and the interaction between sea and atmosphere in the equatorial zone, where hurricanes and tropical storms originate, will be possible with a new Airborne Weather Reconnaissance System (AWRS) developed by Kaman Aerospace Corporation, a subsidiary of Kaman Corporation. The system is intended to advance meteorologists' knowledge of weather phenomena, leading to improved forecasting, storm prediction and possibly weather modification.

KAC President William R. Murray announced acquisition of a contract from the National Oceanic and Atmospheric Administration (NOAA), an agency of the U. S. Department of Commerce, for design and installation of the heavily-instrumented AWRS in a NOAA Research Flight Facility C-130B weather aircraft. The contact was issued by the Office of Weather Modification in NOAA's Environmental Research Laboratories at Boulder, Colo.

NOAA's system will be similar to the prototype AWRS unit Kaman developed for the U. S. Air Force and installed in an Air Weather Service WC-130 "Hurricane Hunter" under contract to the Air Force's Electronic Systems Division, Bedford, Mass. The prototype unit is now undergoing verification flight testing.

The one-year contract is in two phases. The first, funded at $770,000, provides for system design and acquisition and testing of long lead time equipment. The second phase, to be funded at approximately $1 million in October, provides for aircraft modification, equipment installation, systems integration and testing. Aircraft modification and equipment installation will be accomplished at Kaman's facilities at Bradley International Airport, Windsor Locks, Conn., beginning in January 1974. The modified aircraft is scheduled for delivery by May 1974 to NOAA'S Research Flight Facility in Miami, where the aircraft is based.

NOAA's Airborne Weather Reconnaissance System is expected to be employed next year in the Global Atmospheric Research Program's Atlantic Tropical Experiment (GATE), sponsored by the World Meteorological Organization and the International Council of Scientific Unions. GATE will be the most intensive international study of tropical weather phenomena ever undertaken, spanning one-third of the earth's equatorial belt from western Africa to the Gulf of Mexico, where most Atlantic tropical disturbances occur. GATE will muster satellites, ships, aircraft, meteorological buoys, and land stations of several nations for three months of concentrated observations and samplings aimed at improved forecasting and storm prediction.

Tropical convective currents created by heat and moisture exchange from sea to air are key elements in the formation of incipient cyclonic waves. It is not yet fully understood how these currents are transformed into hurricanes. For the first time, the airborne system will be able to provide precise measurements and analysis of these currents in both vertical and horizontal components, from near sea level to 30,000 feet. Frequent samplings will afford a synoptic picture of cloud mass formation and movement over extended periods.

AWRS introduces new state-of-the-art sensors and instrumentation designed to provide a fully automatic data gathering system with high accuracies, implemented through two IBM CP-2 computers and backed up by a succession of redundant systems. A third CP-2 computer is dedicated to the Northrop inertial/Omega navigation subsystem, which will provide positional accuracies within two nautical miles on long overwater flights. Effects of aircraft motion, sensed by attitude instruments feeding into the computer system, are neutralized during data processing and recording. The ADPS provides continuous real time analysis, smoothing and response correction of data for immediate display, a print out in hard copy and a recording on magnetic tape. Among parameters displayed and recorded are: time, aircraft position in longitude and latitude, true heading, air and ground speeds, ground track, drift angle, radar and pressure altitudes, roll, pitch, vertical velocity, atmospheric temperature, barometric pressure, relative humidity and dewpoint, horizontal wind velocity, 150-second wind speed and direction, vertical wind speed, atmospheric density and sea surface temperature. There is excess capacity not presently committed for additional sensor input, display and recording.

The system also offers continued use of self-diagnostic routines in addition to growth capabilities to perform other weather reconnaissance and modification functions which may be incorporated in the future.

In recent months Kaman Aerospace Corporation's prototype Airborne Weather Reconnaissance System (AWRS), installed in a USAF Air Weather Service WC-130B Lockheed Hercules aircraft, has undergone more than 50 hours of actual flight testing in over a dozen flights from Kaman's AWRS facilities at Bradley International Airport, Windsor Locks, Conn.

Purpose of the engineering flight tests is to verify satisfactory operation of the various integrated weather sampling and recording systems, navigation and communication subsystems and integral aircraft equipment. The aircraft modification program carried out by Kaman to equip the Herky for its AWRS role involved improvements in the environmental control (heating, air conditioning and sound proofing) system and an increased capacity electrical system. Some of the AWRS equipment installations effected basic weight, balance and trim of the aircraft and the extent of deviations had to be determined. Likewise, static pressure tubes and sensors mounted on the fuselage had to be aligned and through-the-hull installations—such as observation bubbles, antennas and probes—had to be checked for possible effect on the aircraft's pressurization system.

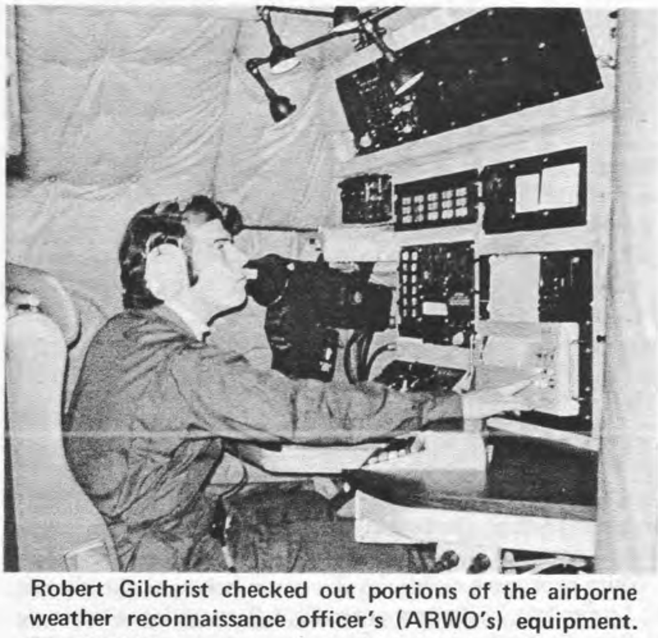
The flight tests have been flown by an Air Weather Service (AWS) crew from the 53rd Weather Reconnaissance ("Hurricane Hunters") Squadron, which was reassigned recently from Ramey AFB, Puerto Rico, to Keesler AFB, Miss. Also on board have been official observers from the Electronic Systems Division (ESD), Laurence G. Hanscom Field, Bedford, Mass., the Air Force contract administration agency. Kaman's flight test personnel, headed by flight test director Edmund W. Hanson, have included Bob Cartier, Bob Gilchrist, Jim Harrington, Ray Goguen, Don Cronin, Paul Goldberg and Charles Butler.

The accompanying photos show a recent typical five-hour flight of the prototype AWRS aircraft—radio call sign "Gull 20"—over the Bay of Fundy, paralleling the Maine coast to Canadian airspace off the southern tip of Nova Scotia.

AWRS VIEW—One of the best views of the passing terrain is provided through the two 20-inch observation bubbles installed as part of the aircraft modification. The ARWO uses the viewing ports for cloud observations. Weather over the Bay of Fundy flight path was scattered clouds and bright sunshine. White caps were visible on the ocean below as the aircraft, about 30 miles off shore, flew parallel to the coast of Maine. Lower left, flight test crew, Capt Barry Allen, Electronic Systems Division observer; Capt Paul M. Rushing, pilot; Capt Gary F. Sanderson, aircraft commander/copilot; and SSgt Donald F. Leveille, flight engineer. Lower right, Kaman's AWRS flight test director Edmund Hanson and scanner/line chief Robert Cartier on the flight deck. Hanson served as navigator for the mission, utilizing AWRS first-of-its-kind inertial/Omega navigation system.

On left, Capt Paul Rushing, pilot, goes on oxygen as Gull 20 climbed above 20,000 feet for a check of the aircraft's pressurization system. At right, Capt Gary F. "Sandy" Sanderson in copilot's seat. Captain Sanderson is a veteran aviator with instructor pilot and flight inspector ratings. He formerly piloted Kaman HH-43 HUSKIES with the Aerospace Rescue and Recovery Service and won a Kaman mission award for a rescue flight in Turkey several years ago.

At left, Mike Bowes checks data from his sound level survey with Capt Barry Allen, ESD observer, and SSgt Don Leveille, aircraft flight engineer. Part of the aircraft modification program involved the installation of sound proofing curtains. Right photo, in the weather observer's (WO's) position near the tail Mike Bowes takes sound readings while Jim Harrington of the Kaman Flight test crew establishes communication with AWRS headquarters through the high frequency single side band (HF/SSB) teletypewriter. The teletype is used to communicate meteorology code signals to ground stations. Radio call sign for the Kaman station is "Scowl."



Robert Gilchrist checked out portions of the airborne weather reconnaissance officer's (ARWO's) equipment. The ARWO, or meteorology officer, is the mission controller on weather reconnaissance flights. All key data is channeled through his equipment for display, recording and analysis.

Acoustic engineer Michael Bowes of Kaman's Research and Development Department and Ray Goguen, using sound meter and recording devices, checked noise levels at several locations through the aircraft.

KAMAN

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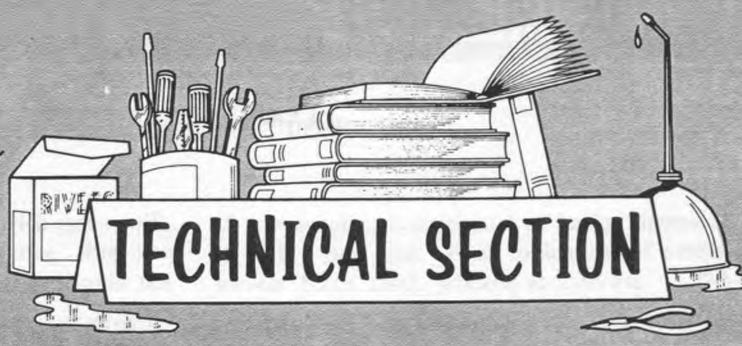


Kaman Rotor Tips technical information is supplied for informational purposes only and does not in any way supersede operational/maintenance directives established by cognizant authorities. The intent of this data will be incorporated, by future changes, into applicable manuals or directives.

G. M. Legault, Manager
Service Engineering

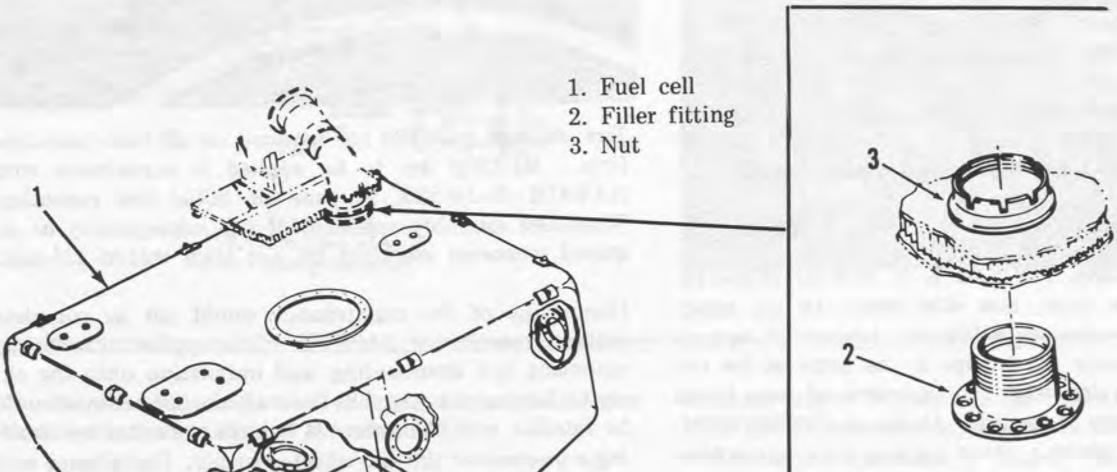
J. P. Serignese, Technical Editor

Table of Contents

H-2

FUEL CELL GRAVITY FILLERS

Field reports indicate thread seizure occurs at the coupling nut and fitting (items 2 and 3 in the accompanying illustration) thus making nut removal difficult. (The nut must be removed in order to remove the right-hand floor panels.) Paragraph 8-69, Step C in NAVAIR 01-260HCA-2-4, 1 October 1967, Changed 30 November 1971, will be revised to include the use of an anti-seize compound conforming to JAN-A-669 (or a suitable substitute) on the coupling nut threads prior to installing the nut onto the fitting. Part numbers are as follows: Nut, K679024-11; Fitting, K679027-11. For further information, refer to NAVAIR 01-260HCB-4-5.



H. Zubkoff, Service Engineer

SERVICE ENGINEERS: N. L. Hankins, J. M. Nenichka, Avionics; R. J. Trella, Drive/Lube; W. J. Wagemaker, Rotors/Controls/Hydraulics; H. Zubkoff, Engine/Airframe/Fuel/Utilities.

H-2

LANDING GEAR TIRES

H. Zubkoff, Service Engineer

MAIN GEAR

New main landing gear tires, manufactured by the Goodyear Tire and Rubber Company, have been introduced into the fleet inventory. The tires are now "standard equipment" on all models of H-2 aircraft. Constructed of nylon, the plain tread, reinforced sidewall, 8-ply rated, tubeless tire replaces all other H-2 tires including the chopped wire, Ice Grip type. The new tire provides the same lateral stability as the previous "steel ply" tire, and greater resistance to cuts. However, prolonged or frequent contact with hydraulic fluid, oil or other solvents will adversely affect the rubber and such contact should be avoided. If contact does occur, the tires should be washed with fresh water. Servicing pressure is the same as the old tires: 250 psi. The part number and FSN are the same: P/N 17.5X6.25-11; FSN RM2620-902-1599BH.

The Photo shows a pre-production tire mounted on an H-2 main landing gear. The eliptical hole (arrow) in the tread area is a wear indicator inspection hole. The tire may be kept in service until one (or more) of the holes is worn flush, provided of course, no cuts or damage is incurred to cause the tire to be rejected beforehand.

Notice the legend "CUT LIMIT" and a 1-inch circle on the tire sidewall. Production tires will have the fraction 3/32 molded within the circle. This indicates that cuts deeper than 3/32-inch below the bottom of the closest wear indicator hole will be cause for tire rejection. (Cuts deeper than 3/32-inch will penetrate the fabric.)

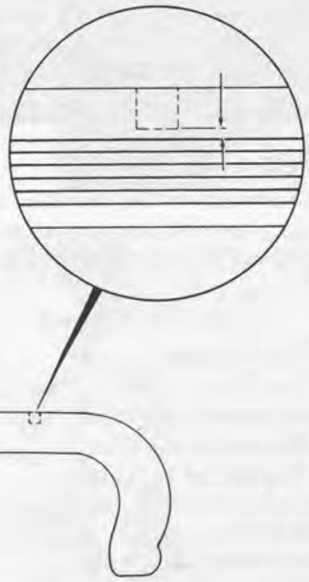
INSPECTION: Tires will require replacement if any of the following damage occurs:

1. Cuts which penetrate the fabric ply.
2. Cuts longer than 1/2-inch which expose but do not penetrate the fabric.
3. Side wall cuts or abrasions which expose fabric cord.
4. Rubber separation or swelling.
5. Tread wear to the bottom of a tread wear indicator hole.

TAIL GEAR

Tail landing gear tires, P/N 5.00 X 5, FSN RH2620-542-1366BH, are tube type, non skid tread, 10 ply rated, type III. Service pressure is 160 psi. Inspection replacement criteria, relative to damage is the same as for the main landing gear tires with the exception of wear limits and the tire slippage inspection. (Refer to INSPECTION, items 1 through 4 above.) Since tail gear tires do not have wear indicator holes, the tread pattern is used as a guide for determining wear limits. Tire replacement will be required when less than 1/32-inch tread pattern remains at any one spot (whether caused by normal use or by skidding). This does not imply that the tire is unsafe. The limit is established so that sufficient tread rubber will remain for buffing during retreading operations.

Arrows in illustration indicate maximum cut depth; further penetration exposes fabric.



Tire slippage markings are required on all helo tube-type tires. Markings are to be applied in accordance with NAVAIR 04-10-506, at time of initial tire mounting. Wheel/tire assembly replacement will subsequently be required whenever markings do not align within 1/4-inch.

Discussions of tire maintenance would not be complete without mentioning SAFETY. This applies to servicing, mounting and dismounting, and installation onto the aircraft. Personnel engaged in tire maintenance actions should be familiar with the potential hazards presented by handling a pressurized tire and wheel assembly. Compliance with the safety provisions detailed in NAVAIR 04-01-506 will aid in reducing the chances of possible injury to personnel or damage to equipment. For example: How many readers know what the air or nitrogen source maximum pressure should be when servicing tires?

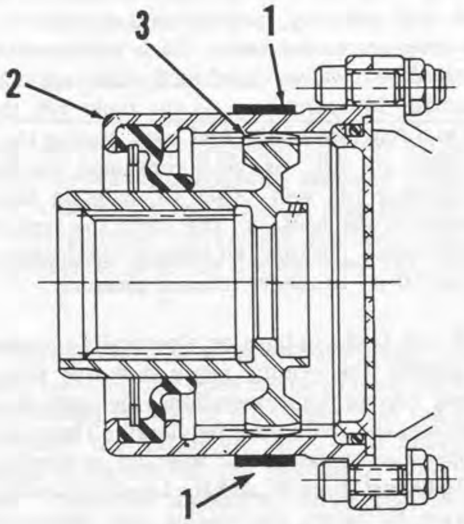
For the answer, refer to bottom of page 25.

H-2 TAIL ROTOR COUPLINGS AND TEMP TAPES

R. Trella, Service Engineer

Tail rotor couplings which are overpacked with grease will, during the first few flights after maintenance, sling the excess grease out. Evidence of grease leakage should not be sufficient reason for coupling disassembly; it is only necessary to remove the excess grease and clean the area. Several turn-ups (or flights) may be necessary until the excess grease has been slung out and the grease quantity within the coupling has stabilized.

The only positive indicator of a tail rotor coupling malfunction is the temp plate indicator dot which will turn COMPLETELY BLACK when an overtemp condition is reached. *This is an important point;* off-white or various shades of grey do not indicate an overtemp condition. Some indicators are grey at manufacture while grey coloration on other indicators may only show the indicators are slowly deteriorating. Temp plates will deteriorate with age and/or exposure to low heat over a long period of time, however, when an overtemp condition is reached, the indicator dot will instantly turn completely black. (Once black, indicators cannot revert to their original color.)



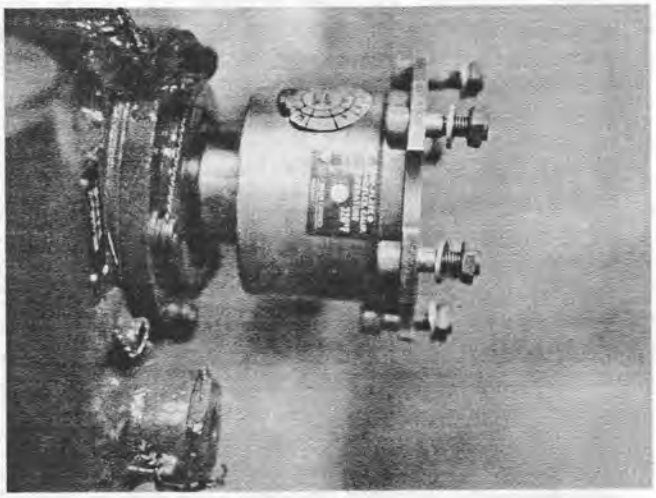
1. Temp plate
2. Coupling sleeve
3. Hub gear teeth

If a temp plate is suspected of having deteriorated, replace it with a new one. If an indication of overheating is observed (black area), proceed as follows:

a. Visually inspect coupling assembly for obvious damage which could cause the temp plate to turn black. ie, seal deteriorated, discolored hub/sleeve from overheating. If obvious damage is not noted, then remove the activated temp plate(s) and replace with one or more new ones.

b. Perform an aircraft ground run-up for approximately 15 minutes and check the temp plates. If no overtemp condition is indicated, perform a 15 minute ground hover. If the new temp plates indicate an overtemp condition, it is necessary to disassemble the coupling and take necessary corrective action. If the temp plate does not turn black, no further coupling checks are required.

The temp plate, P/N 222 (or 224 with MIL-G-81322 grease, AFC 196), item 1 in the accompanying illustration, should be placed so its edge is adjacent to the radius of the coupling sleeve as shown in the accompanying Photo. When installed in this manner, the indicator portion of the temp plate (white dot) is located directly above the hub teeth working area. This information will be incorporated into applicable manuals by future changes.



Q. (Applies H-2) Is the dual pilot solenoid precheck valve float mechanically linked to the solenoid?

A. No. The dual pilot solenoid precheck valve float is not mechanically linked to the solenoid. The solenoid is connected to a poppet which, when the fuel precheck panel switch is activated, blocks the float chamber vent hole. Whenever fuel is flowing into a fuel tank, some fuel is allowed to flow from the fuel/defuel shutoff valve, through a tube (Primary or Secondary) into the pilot valve float chamber where it exits into the tank through a vent hole. (For further information, refer to H-2 Fuel System, Part 1, in the July/August issue of Kaman Rotor Tips.) Blocking the vent hole causes the fuel level (and the float) in the chamber to rise. When the float reaches the FULL TANK level, the float valve closes, blocking the tube. This creates a back pressure build-up in the tube. When the fuel/defuel shutoff valve senses the pressure, it stops fuel flow into that tank.

H. Zubkoff, Service Engineer

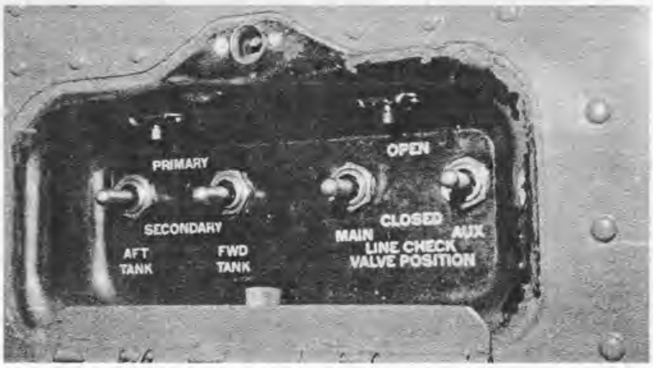
H-2 FUEL SYSTEM-----PART 2

FUEL PRECHECK SWITCHES

LINE CHECK VALVE POSITION SWITCHES

H. Zubkoff, Service Engineer

The July-August 1973 issue of Kaman Rotor Tips presented the first of a series of related articles dealing with H-2 fuel system operation. Part 1 discussed the pressure fueling system and operation of the fuel/defuel shutoff valves and the dual pilot solenoid precheck valves relative to automatic fuel shut off when the tanks are full. Part 2, presented here, will continue with a discussion of other components in the pressure fueling system and operation of the components in suction defueling. Keep in mind that many fuel system components have more than one function. Operation of each will therefore be described relative to its function in the various subsystems.



In addition to the two switches discussed in Part 1, the fuel precheck panel also contains 2 other switches which control the swing check valves. These are the two line check valve position switches on the panel (forward switches) and, as can be seen by the accompanying photo, they are marked OPEN-CLOSED, MAIN and AUX. The switches have two positions, OPEN or CLOSED. The swing check valves, controlled by these switches, are located downstream of the pressure fueling adapter in the main pressure fueling/suction defuel line. The accompanying illustration is a portion of Figure 2-20, Fuel System Schematic, shown in NAVAIR 01-260HCA-2-4, 1 October 1967, Changed 1 February 1973.

The swing check valves allow free flow of fuel in the direction of the arrows (switch closed) and must be electrically-actuated (by the precheck panel switches) to allow fuel flow in the reverse direction (switch open). The valves provide for selective (main and/or aux.) pressure fueling, selective suction defueling, and serve to prevent aft tank transfer fuel from being pumped into the aux tanks instead of to the forward tank.

For normal pressure fueling, the aux swing check valve switch must be at OPEN. For the purpose of standardizing procedures, it is recommended that the main tanks switch also be OPEN, although, if it should remain in the CLOSED position, the main tanks will still receive fuel, since the swing check valve is free-flow in the main tanks servicing direction. (Follow the routing on the illustration, Page 20)

In order to provide for normal fuel system operation, both switches should be placed in the closed position prior to closing the precheck panel door. The closed swing check-valves will then insure normal flow of aft tank transfer fuel from the transfer pumps, through the common transfer/pressure fueling/suction defueling lines, to the forward tank.

The high rate of fuel flow into the main tanks during pressure fueling (250-300 gpm) requires effective, positive tank venting to prevent air pressure buildup as the tanks fill. Each tank assembly, both forward and aft, is composed of two inter-connected cells. Each cell contains two float-operated vent valves (total of 8); they are mechanical and automatic in operation. As the tanks fill, the floats will rise as a function of the fuel level, closing the valves when the tanks are full. As fuel is consumed, the floats will lower, opening the vent valves to maintain atmospheric air pressure in the cells. In the event the vent valve is stuck in the closed position, an integral relief valve will open at 1.0 to 2.0 psi to relieve internal pressure.

Each aux tank contains an electrically-actuated vent valve to provide the venting required during pressure fueling. During normal flight operations, the tanks are pressurized, therefore, the vents must be closed. These aux tank vents (proper nomenclature is: solenoid vent/relief valve) are spring-loaded to close, and electrically-actuated to the open position by either the landing gear switch (when gear is extended) and/or by a microswitch actuated when the precheck panel access door is opened. When the aircraft is airborne with the gear retracted, the valves will close to permit tank pressurization. (If the gear is not raised, aux tank fuel will not be utilized.) The relief valve feature of the vent valve assembly will open at approximately 25 psi to prevent over-pressurization of the aux tank in the event of failure of the aux tank air pressure control feature. The aux tank air pressure control feature will be discussed in a future article under "FUEL TRANSFER SYSTEM."

Part 1 of this series explained the operation of the fuel/defuel shutoff valves as used in the pressure fueling system. The aft tank fuel/defuel valve, in addition to closing when the aft tank is full or when caused to close by the precheck panel aft switch, has one additional feature which will cause it to close; this feature is the lockout valve. The

FUEL PRECHECK PANEL LINE CHECK VALVE POSITION SWITCHES

During pressure fueling and suction defueling, the following will occur when the line check valve switches are positioned as indicated.

PRESSURE FUELING OPERATIONS	
When precheck panel switch is in this position.	This is what happens at the tanks. . . . .
MAIN and AUX to OPEN (for normal pressure fueling).	Main and aux receive fuel.
MAIN and AUX to CLOSED.	Main receives fuel/Aux receives no fuel.
MAIN to OPEN/AUX to CLOSED.	Main receives fuel/AUX receives no fuel.
MAIN to CLOSED/AUX to OPEN.	Main and aux receive fuel.
SUCTION DEFUELING OPERATIONS	
MAIN and AUX to OPEN.	Fuel drawn from main and aux.
MAIN and AUX to CLOSED.	No fuel drawn from main/Fuel drawn from aux.
MAIN to CLOSED/AUX to OPEN.	No fuel drawn from main/Fuel drawn from aux.
MAIN to OPEN/AUX to CLOSED.	Fuel drawn from main and aux.

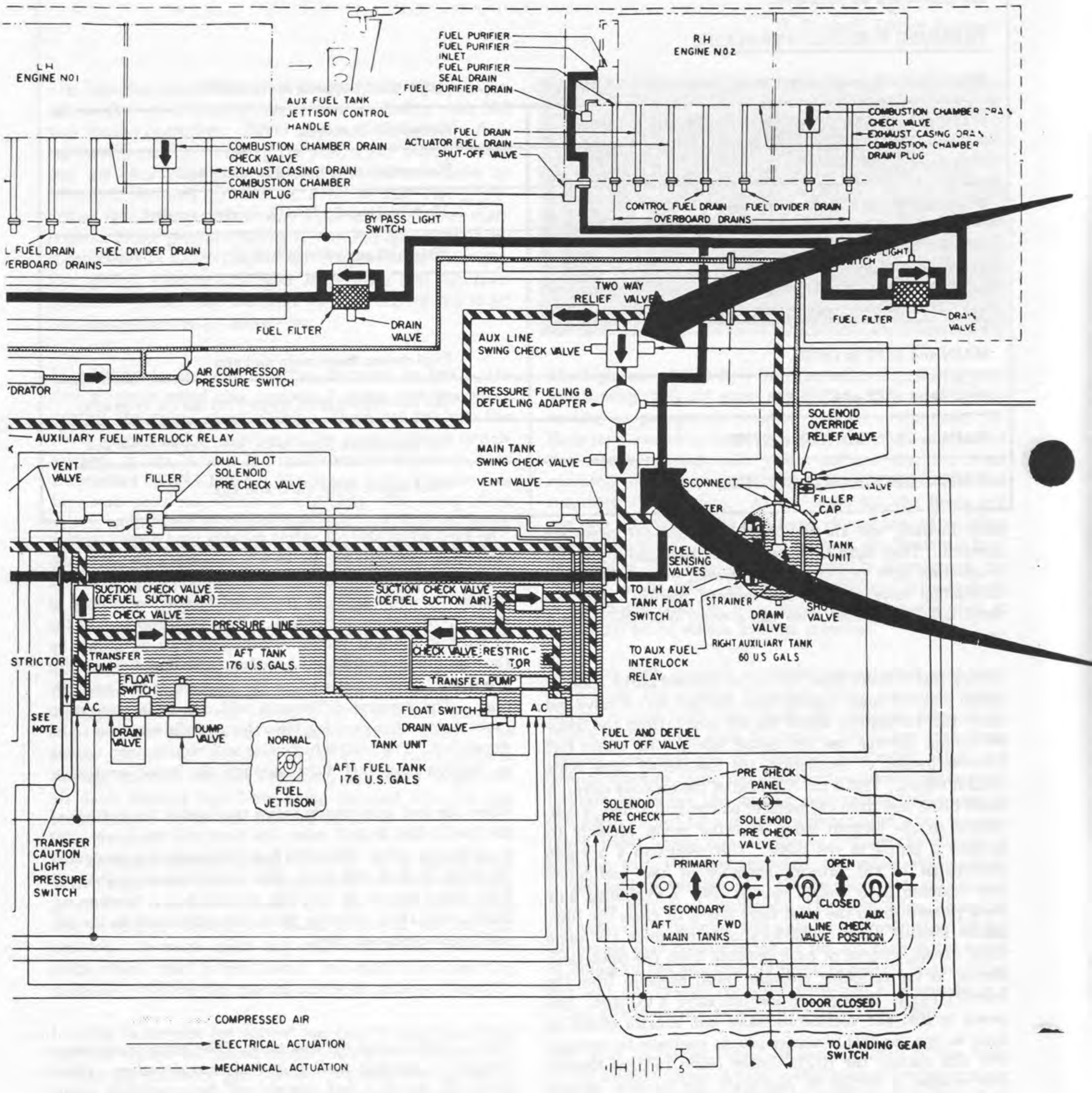
basic forward, and aft tank fuel/defuel shutoff valves are identical. They both have a mounting boss and a port for installation of a lockout valve; however, only the aft tank fuel/defuel valve includes the lockout feature. The forward tank fuel/defuel valve has a cover over the lockout port.

During fuel transfer from the aft to forward tanks, transfer pump pressure could slightly open the fuel/defuel valve and cause fuel circulation within the aft tanks (from the transfer pumps through the fuel/defuel valve). To insure fuel transfer instead of circulation, the fuel/defuel valve must remain closed. This is the function of the lockout valve. A small bleed line from the transfer pumps outlet line, is connected to the lockout valve, allowing pump pressure to actuate a piston in the valve. This results in a pressure differential in the primary chamber of the fuel/defuel valve causing it to remain closed. Part 1 explained how back pressure from the pilot valve reacts to close the fuel/defuel shutoff valve. The lockout valve does the same thing except, instead of back pressure from the pilot valve serving as the actuating pressure, bleed pressure from the transfer pump, through the lockout valve is utilized. The result is that the fuel/defuel valve will remain closed as long as one (or both) transfer pumps continue to operate. For this reason, the HIFR system (Helo Inflight Refuel) incorporates a switch to deactivate the transfer pumps, allowing the aft tank fuel/defuel shutoff valve to open and admit fuel. (The HIFR system will be discussed in a future issue of Kaman Rotor Tips.)

The fuel/defuel shutoff valves are also used during suction defueling. Since all fuel tanks will not empty simultaneously during suction defueling, it is necessary to provide a shutoff in each tank to preclude air entry and loss of suction. With fuel in the tank, a float at the bottom of the fuel/defuel valve is raised, allowing fuel to be drawn up through a hollow shaft in the valve. This fuel flow creates a pressure differential against the plunger at the valve IN port. The pressure differential will cause the plunger to move down, thus opening the valve and allowing fuel to be drawn out. The fuel/defuel valve will remain open as long as suction and fuel flow through the valve continues.

When the fuel level lowers below the float at the bottom of the fuel/defuel shutoff valve, the float will also lower until it closes the valve. When the fuel flow stops, the plunger at the valve IN port will close, thus preventing air in the tank from being drawn up into the suction hose. Suction defueling will then continue from any other tank in the aircraft which contains fuel.

Parts 1 and 2 cover the functions of the major components related to pressure fueling and suction defueling. Other facets of the H-2 fuel system will be covered in future issues of KRT. Requests for additional information, clarification, or a priority presentation of other fuel system areas will be honored.



LH ENGINE NO1
RH ENGINE NO2
FUEL PURIFIER
FUEL PURIFIER INLET
FUEL PURIFIER SEAL DRAIN
FUEL PURIFIER DRAIN
AUX FUEL TANK JETTISON CONTROL HANDLE
FUEL DRAIN
ACTUATOR FUEL DRAIN
SHUT-OFF VALVE
COMBUSTION CHAMBER DRAIN CHECK VALVE
EXHAUST CASING DRAIN
COMBUSTION CHAMBER DRAIN PLUG
CONTROL FUEL DRAIN
FUEL DIVIDER DRAIN
OVERBOARD DRAINS
BY PASS LIGHT SWITCH
TWO WAY RELIEF VALVE
FUEL FILTER
DRAIN VALVE
AUX LINE SWING CHECK VALVE
AIR COMPRESSOR PRESSURE SWITCH
PRESSURE FUELING & DEFUELING ADAPTER
SOLENOID OVERRIDE RELIEF VALVE
AUXILIARY FUEL INTERLOCK RELAY
MAIN TANK SWING CHECK VALVE
VENT VALVE
DUAL PILOT SOLENOID PRE CHECK VALVE
FILLER
FILLER CAP
TANK UNIT
SUCTION CHECK VALVE (DEFUEL SUCTION AIR)
CHECK VALVE
PRESSURE LINE
TO LH AUX TANK FLOAT SWITCH
STRAINER
DRAIN VALVE
TO AUX FUEL INTERLOCK RELAY
RIGHT AUXILIARY TANK 60 US GALS
TRANSFER PUMP
AFT TANK 176 U.S. GALS.
CHECK VALVE RESTRICTOR
FLOAT SWITCH
A.C.
SEE NOTE
DUMP VALVE
NORMAL
FUEL JETTISON
TANK UNIT
AFT FUEL TANK 176 U.S. GALS
FUEL AND DEFUEL SHUT OFF VALVE
TRANSFER CAUTION LIGHT PRESSURE SWITCH
PRE CHECK PANEL
SOLENOID PRE CHECK VALVE
PRIMARY
SECONDARY
AFT
FWD
MAIN TANKS
OPEN
CLOSED
MAIN
AUX
LINE CHECK VALVE POSITION
(DOOR CLOSED)
TO LANDING GEAR SWITCH
COMPRESSED AIR
ELECTRICAL ACTUATION
MECHANICAL ACTUATION

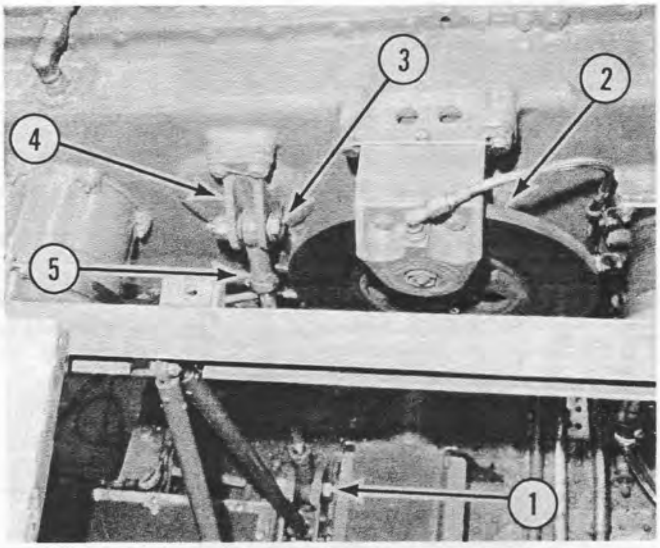
H-2 COMBINING GEARBOX SUPPORT RODS–ATTACHING PROCEDURES

R. Trella, Service Engineer

Recent reports from the field indicate that during combining gearbox installation, the floating bushing, P/N NAS 75-10-015, has been inadvertently omitted from the hardware stackup on the aft upper support rods. (The installation is shown in the accompanying illustration and photo.) Omission of the bushing will result in damage to the hardware, rodends, and gearbox fitting. Also, possible damage may occur to the main driveshaft Zurn couplings. NAVAIR 01-260HCA-2-4.1, dated 1 July 1971, Changed 15 July 1972 will be changed to highlight installation of the bushing and to include the intent of the information presented here.

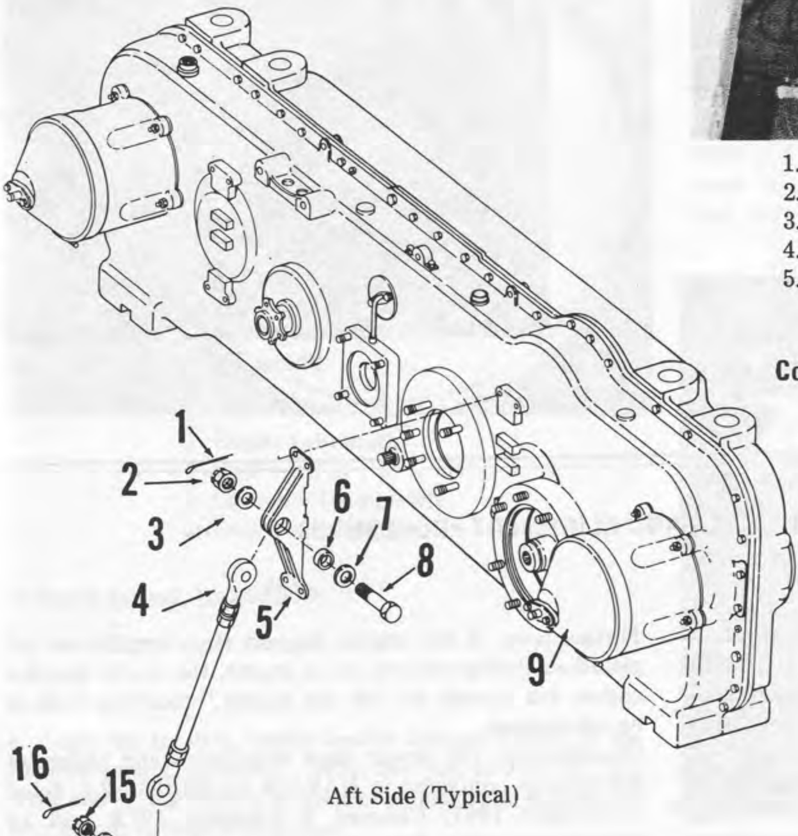
During installation of the rod, pay particular attention to the sequence of hardware buildup. Install washer 7 and bushing 6 onto bolt 8, then insert the bolt FROM RIGHT TO LEFT through the combining gearbox fitting assembly 5. Accomplish this step on both sides of the combining gearbox.

The preceding will result in one bolthead facing inboard (on the left side of the gearbox viewing from aft, facing forward) and the other bolthead facing outboard (right side of gearbox). It should be noted the bolts which attach the support rod to the fuselage fitting (13) will face in the same direction as those which secure the rod to the combining gearbox.



1. Support rod attaching hardware (fuselage)
2. Rotor brake assembly (reference)
3. Support rod attaching hardware (CGB)
4. Combining gearbox fitting
5. Support rod

Correct R/H bolt installation



Aft Side (Typical)

1. Cotter pin
2. Nut
3. Washer
4. Combining gearbox support rod assembly
5. Combining gearbox fitting assembly
6. Bushing
7. Washer
8. Bolt
9. Combining gearbox
10. Bolt
11. Washer
12. Bushing
13. Fuselage fitting
14. Washer
15. Nut
16. Cotter pin

H-2

TAIL ROTOR GEARBOX VENT PLUGS

R. Trella, Service Engineer

Absolutely no substitutions are presently allowed for the vent filler plug installed in the tail rotor gearbox. Installation of a non-vented filler plug will allow a pressure buildup to occur, thus damaging the seals and causing the oil to leak out of the box.

The vent plug, shown in the accompanying photos, is readily identified by observing the part number located on top of the plug. Also, check for the screen flange and vent hole. As shown in photo B, when installed, the flange butts against the gearbox; standard plugs without the flange would butt against the plug head. Check all boxes to be sure the correct vent plug is installed. Part number for the component is A865; Federal Stock Number is: RS4730-804-3655BH6X. This information will be incorporated into applicable manuals by future changes.

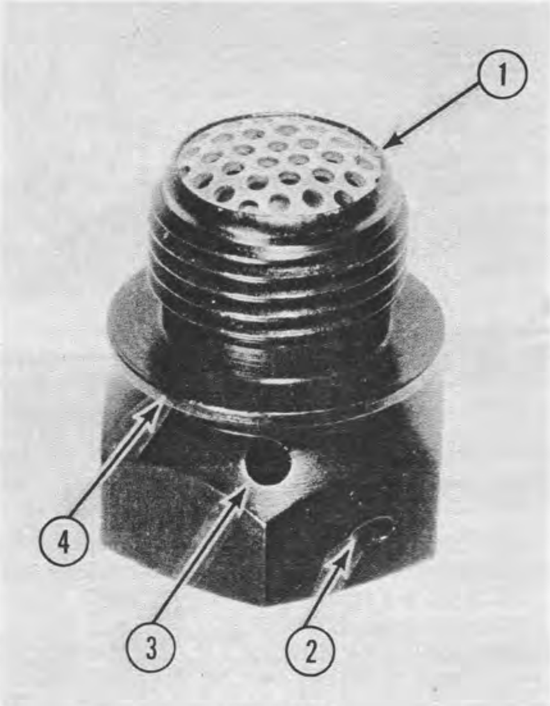


Photo A

1. Screen
2. Lockwire hole
3. Vent hole
4. Flange

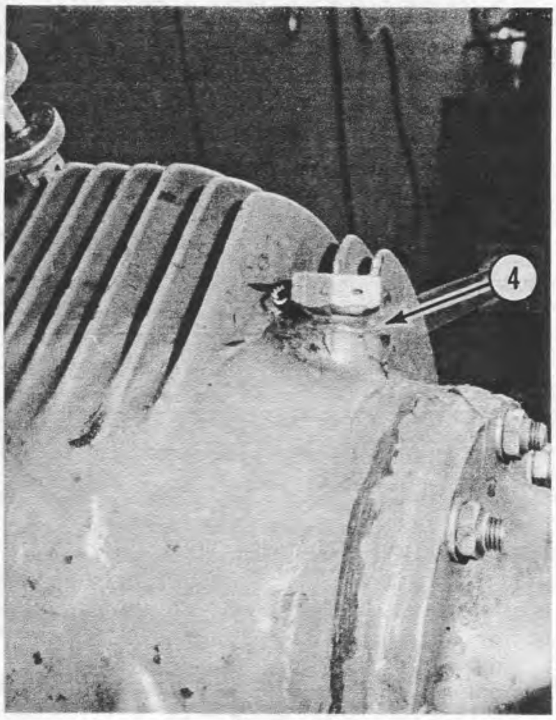


Photo B

H-2

ENGINE INSTALLATION AND ALIGNMENT PROCEDURES

H. Zubkoff, Service Engineer

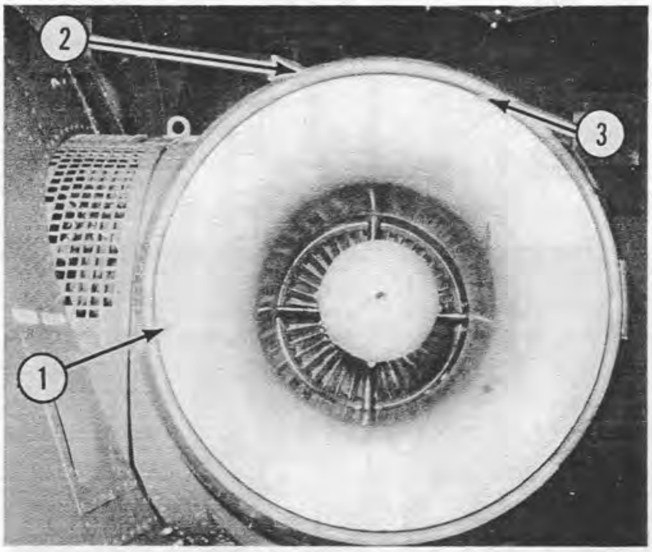
A review of the complete Power Plant Installation procedures has resulted in the recommendation to delete the engine alignment tool, P/N K604519-1, FSN RH4920-988-1906BH7X, from the Fleet inventory. It was noted that the tool is no longer needed because of the closely-held tolerances which resulted in standardized positioning of engine, combining gearbox and engine cowling mounting points. The engine is aligned properly when circumferential clearance exists between the engine bellmouth and the aircraft cowling as shown in Photo A; exact centering is not required. Experience has proven that the angular relationship of the engine to the CGB will always be within the Zurn coupling limits when aligned in this manner. Furthermore, if the engine support strut lengths are not disturbed during removal of an engine, the newly installed engine will usually fit "on the money," requiring little or no adjustment.

Consequently, the power plant installation and alignment instructions contained in NAVAIR 01-260HCA-2-4, dated 1 October 1967, Changed 1 February 1973, will be changed to reflect the tool deletion and subsequent new instructions. Specifically, paragraph 4-19, steps d through j will be replaced with the information presented here. Steps a through c, and k through u will remain unchanged by these instructions. Also, Figure 4-22, page 82, title "'Power Plant to Combining Gearbox Alignment" will be deleted.

Accomplish the procedures listed in Paragraph 4-19 up to and including step c, then proceed as follows: (See the accompanying illustration on page 24).

d. With the forward end of the engine held slightly outboard, carefully guide the engine aft, avoiding contact between the speed decreaser gearbox (SDG) lube oil pump and the end of the CGB. (See Photo B.) Engage the Zurn coupling hub, attached to the SDG output shaft, into the coupling "flashlight" shaft in the CGB. At the same time, guide the engine lower mount adapter fitting into the clevis ears of the engine/CGB mount support assembly. Insert the lower mount bolt to hold the aft end of the engine in position. Install the washer and nut; do not tighten at this time.

NOTE
It may be necessary to lower the engine slightly in order to insert the bolt.



1. Engine bellmouth
2. Nose cowl
3. Clearance (completely around circumference).

Photo A

e. Align the forward engine mount adapter fitting to the forward mount assembly. Insert the bolt to hold the forward end of the engine in position. Install the washer and nut; do not tighten at this time.

f. Engage the upper aft engine mount fitting to the CGB fork assembly. Install the bolt, washer, and nut; torque the nut to 370-744 pound-inches. Install cotter pin.

g. Torque the lower aft and the forward engine mount bolts to 440-950 pound-inches. Install cotter pins.

h. Remove the hoist, sling and lifting adapters.

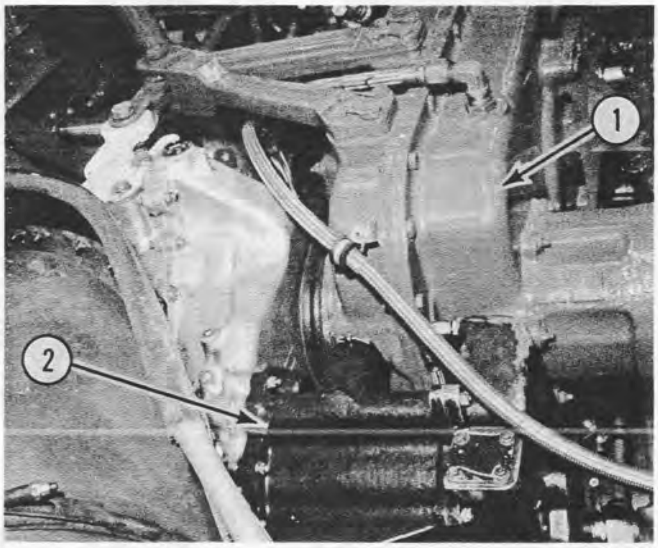
i. Attach the coupling flexible seal cover to the face of the CGB with 3 bolts and washers. Torque the bolts to 25-30 pound-inches.

NOTE
If the forward engine mount strut lengths have not been disturbed, install the nose cowl; check alignment per step j. If the strut lengths have been disturbed, adjust the inboard (diagonal) strut to the nominal length of 14-3/8 inches; adjust the outboard (vertical)strut to the nominal length of 13 inches. Install the nose cowl and align the engine in accordance with step j.

j. Engine alignment: Alignment is accomplished by adjusting the lengths of the forward engine mount support struts.

NOTE
Adjust the front engine mount struts to obtain circumferential clearance between the bellmouth and the nose cowl. This will position the engine within the Zurn coupling maximum mis-alignment limits.

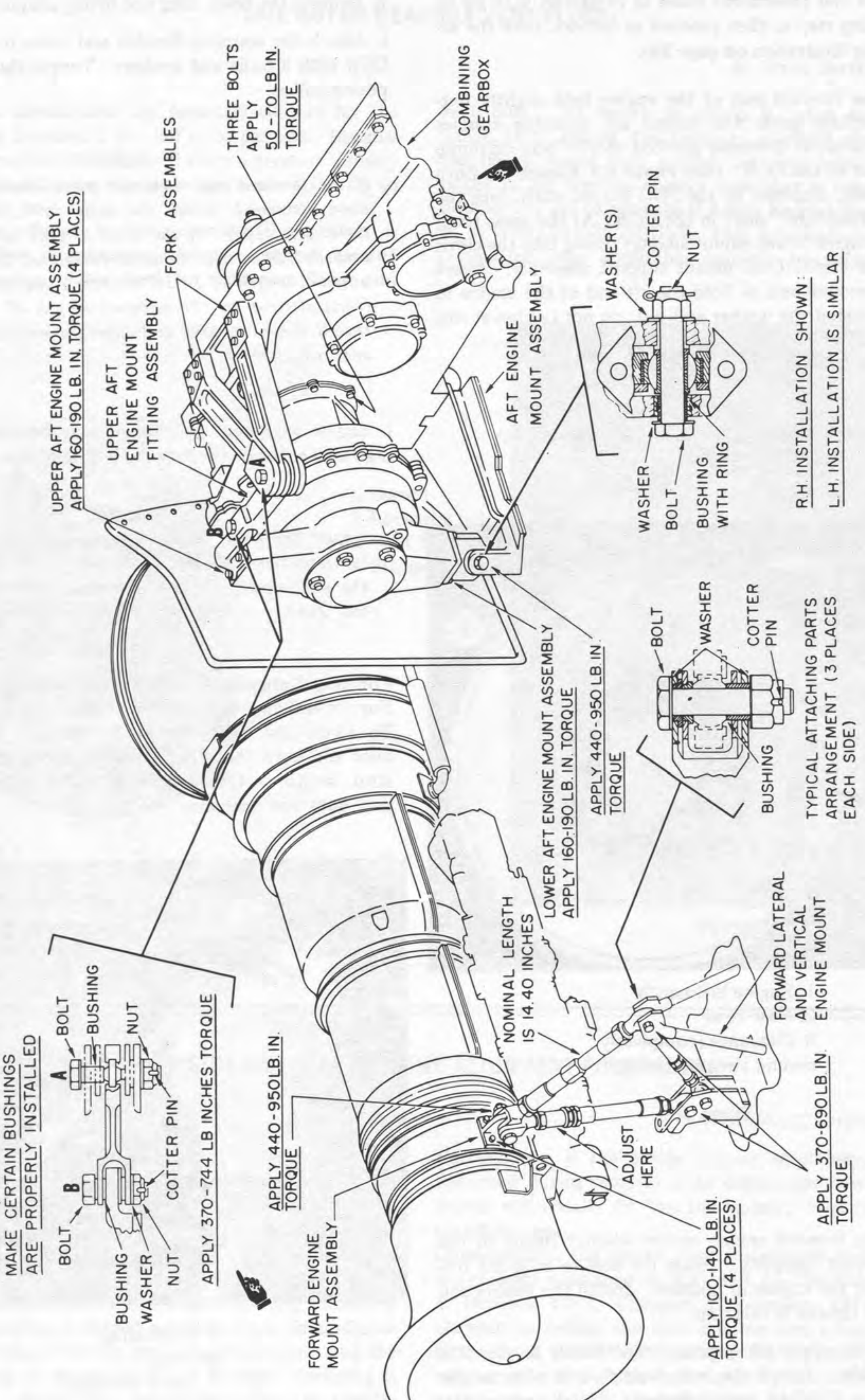
For lateral alignment, adjust the inboard (diagonal) strut. For vertical alignment, adjust the outboard (vertical) strut. To adjust the struts, break the lockwire, loosen the jam nuts and turn the strut housing as required to vary the strut lengths. On completion of adjusting, tighten the jam nuts and lockwire.



1. Combining gearbox
2. Speed decreaser lube oil pump.

Photo B

TYPICAL ATTACHING HARDWARE ARRANGEMENT AND TORQUE APPLICATION



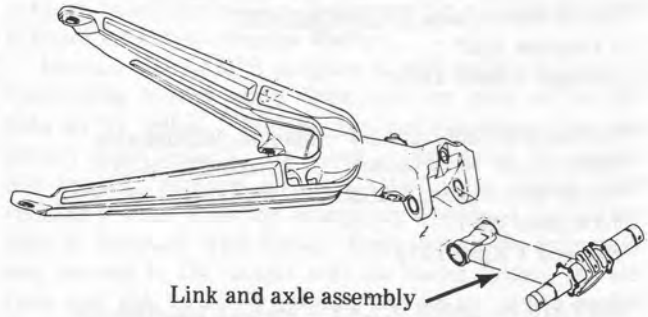
Q. (Applies H-2) Are the main landing gear link and axle assemblies interchangeable?

A. No. The link and axle are *physically* but *not functionally interchangeable.* If the link and axle assemblies are inadvertently installed on the wrong side of the aircraft, the installed liquid spring will be at a slight angle relative to the link member of the link and axle assembly. Because of this angular misalignment, the liquid spring (monoball) bearings, the link clevis lugs, and the main member spring mounting lugs will be preloaded and will ultimately fail.

Prior to installation of the link and axle assembly, check the part number stencilled at the upper forward end of the link member. Be sure that the correct dash numbered part is being used. If the part numbers are not legible, check for correct installation of the link and axle as follows:

Note in Photo A on the forward end of the tubular link member, there are 2 machined flat surfaces; one on each side of the clevis lugs (attach-point for the piston end of the liquid spring). The flat on one side is noticeably wider than the flat on the other side. The wide flat is 1-inch wide; the other flat is 1/2-inch wide. When the link and axle is correctly installed, with -1 on LH side and -2 on RH side, the wide flat will be inboard and the installed liquid spring will be exactly parallel with the tubular link member as shown in Photo B.

The same rule applies to the new, high-strength link and axle assemblies, P/N 3323197-1 (LH) and -2 (RH) installed per AFC 216. After installation, be sure that the *wider flat* adjacent to the liquid spring clevis lugs *is inboard* and that the liquid spring is *exactly parallel* to the link member.



Link and axle assembly

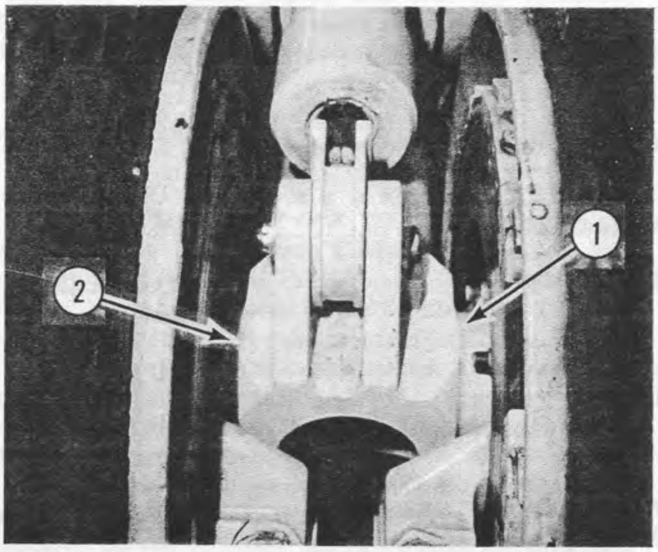


Photo A 1. Wide flat, inboard 2. Narrow flat, outboard

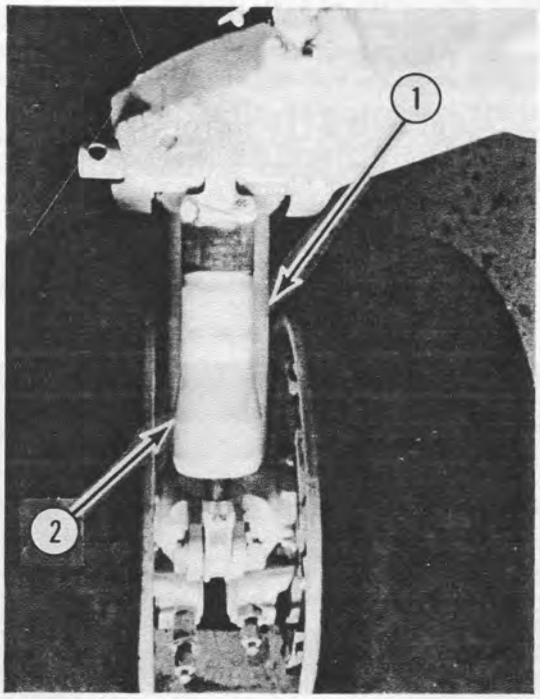


Photo B 1. Tubular link member of link and axle assembly 2. Parallel liquid spring

H. Zubkoff, Service Engineer

The answer to the question on page 16 is:

Maximum pressure for source used to service tires should not exceed 1.5 times tire inflation pressures.

PUBLICATION INFORMATION

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

R. H. Chapdelaine, Supervisor, Service Publications

NAVAIR 01-260HCA-2-2.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/ SH-2F Helicopters, FLIGHT CONTROLS
15 April 1972
changed 1 April 1973

NAVAIR 01-260HCA-2-5.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/ SH-2F Helicopters, INSTRUMENTS
1 October 1967
changed 1 April 1973

NAVAIR 01-260HCA-2-7 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/ SH-2F Helicopters, RADIO AND RADAR SYSTEMS
1 October 1967
changed 1 April 1973

NAVAIR 01-260HCA-2-8.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/ SH-2F Helicopters, WIRING DATA
1 October 1967
changed 1 April 1973

NAVAIR 01-260HCB-1F — NATOPS FUNCTIONAL CHECKFLIGHT CHECKLIST, Navy Models UH-2C/ HH-2D/SH-2D/SH-2F Aircraft
1 April 1973

NAVAIR 05-45RA-1 — Manual, Overhaul Instructions, AUTOMATIC STABILIZATION EQUIPMENT AMPLIFIER, P/N K687703-1, -3, -5, -9
15 March 1969
changed 1 June 1973

NAVAIR 05-45RA-2 — Illustrated Parts Breakdown, AUTOMATIC STABILIZATION EQUIPMENT AMPLIFIER, P/N K687703-1, -3, -5, -9
1 December 1964
changed 1 June 1973

NAVAIR 16-45-274 — Manual, Overhaul Instructions, AMPLIFIER AUDIO, P/N KA25000-1, -3
15 July 1965
changed 15 July 1973

NAVAIR 17-15KL-2 — Manual, Operation and Service Instructions With IPB, FLIGHT LINE TEST SET, K604605-4, -6
15 November 1965
changed 15 July 1973

* * * * * * * * 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 190, Part 3	Radio and Radar Systems, AIMS INSTALLATION	10 August 1973
H-2 Airframe Change 198	Transmission Oil System Installation, IMPROVED CHIP DETECTORS AND OIL LINES	3 August 1973
H-2 Airframe Change 199, Part 2	Combining Gearbox, INTERNAL IMPROVEMENTS, HYDRAULIC PUMP REPOSITIONING, AND OIL CUP REMOVAL	15 August 1973
H-2 Airframe Change 201	Power Plant MODIFICATION OF INSTALLATION TO PROVIDE FOR USE OF EITHER T58-GE-8B OR T58-GE-8F Engines	21 August 1973

"MAD Trappers" Aboard Cook

USS COOK—Several weeks ago, as part of the Light Airborne Multi-Purpose System (LAMPS), an SH-2D helicopter landed aboard the Destroyer Escort USS Cook (DE 1083). It was the final act in preparation for a six-month deployment now underway. Four pilots and 12 enlisted maintenance support personnel form a detachment whose goals include providing an extension of the Anti-Submarine Warfare (ASW) capability of small ships to maintain the pace in the increasing technological advances of nuclear submarine development.

Even though these men become an integral part of the ship's company, the aviation detachment personnel remain somewhat unique because of their specialized skills. As a result they were soon dubbed with their own nickname, the "Mad Trappers," a term which they hope to uphold in full. In explanation, MAD is an abbrevation for one of the various ASW sensors on the aircraft, and "trapping" is terminology for certain ASW search patterns.

The particular helo model which came aboard carries several other ASW sensors including radar, sonobuoys, and other electronic units. It can be adapted to carry one or two ASW torpedoes, yet it retains the ability to carry out other routir missions such as search-and-rescue, vertical replenishment, and personnel transfer.

Conversion of the H-2 SEASPRITE into its LAMPS role began about four years ago as the program gained momentum with initial support and funding. During their relatively brief stint in the Vietnam War the LAMPS detachments were found to enhance the capability of the parent destroyer in every one of her combat functions: Gunfire support, search-and-rescue, fleet escorting, and the designed function of Anti-Submarine Warfare.

Because the LAMPS program is still young, it places a challenging burden upon Cook and her men to use the helo to its fullest. Initially the air/ship integration has proven quite smooth. As a case in point, on the second day aboard, members of the LAMPS team proved their versatility when a medical emergency developed on another ship in company with Cook. Even though the helicopter was secured in the hangar with its blades folded, the aircrew was able to get it airborne and on its way to render necessary assistance in 13 minutes. A doctor was picked up from one unit and transported to the scene of the accident aboard another in minimal time, contributing to the attention of the victim's immediate needs.

Both ship and aircraft are able and willing to cooperate on a teamwork basis. As the cruise continues, this team will continue to develop into one characterized by timely readiness and technological competence primed for the ASW challenge.

LAMPS Display "Fairs" Well At Del Mar Expo

This year, for the first time, the LAMPS program was spotlighted at the Southern California Exposition held annually at the Del Mar Fair Grounds. The display, portraying the many missions of the SH-2D SEASPRITE in connection with LAMPS, was prepared jointly by HSL-31, NAS Imperial Beach, Calif., and Kaman Aerospace representatives attached to that squadron. It received a special Award Trophy from the Expo Administration in the field of Military Displays.

A highlight of the display was the new Kaman SEALAMP helicopter model, representing the company's concept of a modern, high-performance, shipboard-qualified helicopter weapons system for Mark III LAMPS (Light Airborne Multi-Purpose System.) The eight-foot model, which attracted quite a bit of attention, included rotating main and tail-rotor systems, trailing MAD bird, flashing anti-collision lights, and a brief explanation of the Mark III proposal.

On hand to answer questions were two qualified rescue aircrewmen, well trained in the operation of the SH-2D ASW equipment, and armed with Kaman brochures and HSL-31 handouts. A static display of rescue and survival equipment and a fully outfitted dummy helped depict the Search and Rescue of LAMPS. Color photographs depicted the Anti-Submarine Warfare and Anti-Ship Missile

Defense aspect of the SEASPRITE, and a 10 minute movie was shown every hour emphasizing the logistic and sea rescue operations of the SEASPRITE in the Western Pacific.

RESCUE OPERATIONS

Variety of Missions Flown By Pensacola SAR

NAS PENSACOLA, Fla.—The survivors of a plane crash at Wolf OLF, Ala., were picked up by a UH-2C and taken to medical assistance by a UH-2C crew from the SAR Det at this station. The entire SAR effort was completed in 25 minutes.

Lt(jg) John R. Brown was preparing to shut down the helo after a routine photo hop when notified that an aircraft had crashed at the outlying field 12 miles away. The photographer was offloaded and the UH-2C headed for the reported crash site. A few minutes later the helicopter crew spotted the wreckage in a cultivated field surrounded by trees. Lieutenant Brown brought the SEASPRITE to a 55-foot hover to avoid FOD on the ground and HM3 Barrat C. Sturtevant was lowered to check the survivors for injuries. The three men were hoisted to the helo and the survivors airlifted to NAS Saufley Field where an ambulance and flight surgeon were waiting. The UH-2C transported two investigators back to the crash site afterward and then returned to Sherman Field.

The first survivor had been picked up only 10 minutes after the helo scrambled and headed for the crash site 12 miles away. Fifteen minutes after pickup, both survivors were in the ambulance at NAS Saufley 13 miles away.

Others with Lieutenant Brown on the mission were Lt(jg) Pierre N. Charbonnet, copilot, and AT3 Gary Howe, crewman.

Three other missions were also flown by UH-2C crews from the Pensacola Det. A Navy enlisted man who had been scuba diving was medevaced after suffering from the "bends" caused by rapid decompression. The sailor was airlifted to the Naval Coastal Systems Laboratory with LCdr Kaplan (MC), in attendance. Pilot of the UH-2C was Lt Robert E. Rew. The copilot was Lt(jg) Thomas E. Lee and crewman was AT3 Gary L. Howe.

A SEASPRITE crew on duty at NAS Whiting responded to a call for assistance after a crash crew member suffered a leg injury at Middleton OLF, Ala., approximately 50 miles away. After landing at Middleton, the corpsmen aboard the helo placed a splint on the injured man's leg. He was loaded in the rescue helicopter and airlifted to Whiting and a waiting ambulance. Lieutenant Brown was pilot on the mission and Lt(jg) William Deraimo was copilot. Crewman was AT3 Frank Sakuta and corpsmen were HM2 Roy E. Hancock and HM3 Henry G. Carter.

The Pensacola SAR Unit launched the duty rescue helo after local authorities requested assistance in locating a drowning victim. A day had already passed since the accident and, because of strong currents in the area, a search was required of approximately 20 miles of water and coastline.

Within 30 minutes after launch, the crew of "Spartan Angel 747," located the drowning victim near an isolated stretch of shore. Smoke markers and the UH-2C's loud hailer were used to direct the Marine Patrol Boat to the site.

Pilot on the humanitarian mission was Lt Philip C. Jamison. Lt(jg) James A. Adamson was copilot and crewmen were ADJC Marvin Y. Allison, AE1 Mack E. Morris and HM3 Ben C. Hanson.

MAST Det Aids Accident Victim

MT HOME AFB, Idaho—An HH-43 crew from Det 22, 43rd ARRSq, at this base answered a call for assistance after a civilian at an isolated mining town suffered head and spine injuries in a shallow water dive. The night medevac represented the 40th MAST (Military Assistance to Safety and Traffic) mission to be flown in the HH-43 by the detachment. Fifteen actual "saves" were credited to Det 22 as a result of the 40 missions, many of which were flown under hazardous conditions.

The flight to the town, 55 miles from the air base, was over heavily forested, mountainous terrain. The pickup was made without incident and the accident victim was airlifted to St. Alphonsus hospital in Boise.

Manning the HUSKIE on the mercy mission were Capt John R. Ostler, crewmen. Captain Troolin was TDY from Plattsburg AFB, N. Y., at the time. Another MAST mission flown by Det 22, appears on page 37.

Medevac By Oceana SAR

NAS OCEANA, Va.—The SAR det here continues to add to the growing list of mercy missions flown by its H-2 crews. A SEASPRITE launched from the air station a few minutes after notification that a civilian had suffered a heart attack on the fourth island of the Chesapeake Bay Bridge-Tunnel. Enroute the pilot, Lt(jg) John J. Stahl, III, was advised that the heart attack victim had been transferred to the Coast Guard cutter P. T. Brown.

Lieutenant Stahl hovered the H-2 over the stern of the small cutter, the patient was hoisted aboard in a Stokes litter and airlifted to the hospital. The helicopter arrived at the medical facility just 15 minutes after take-off. The incident was just one of several marking the cooperative spirit existing between the SAR Unit and Coast Guard.

Manning the H-2 with Lieutenant Stahl were Lt(jg) Peter O. Hoffoss, copilot; AT1 Robert L. Holmes and AMS3 B. C. Smith, crewmen.

In another mission, an H-2 crew also headed by Lieutenant Stahl conducted an over-water search for a man who had fallen overboard from a vessel in the Baltimore Channel of Chesapeake Bay. Although hampered by low ceilings and marginal visibility, the SEASPRITE flew for more than an hour a few feet above sea level. Then word was received that the man had been picked up by a German merchantman. The H-2 flew to the vessel and hoisted the rescuee aboard in a Stokes litter. He was taken to NAS Norfolk and then to the hospital by ambulance.

With Lieutenant Stahl on the mission were Lt(jg) Thomas B. Stables, III, copilot; AE2 Ted Wicker and AMS2 Shannon E. Ennis, crewmen.

In a third mission, an H-2 crew from the Oceana Unit flew through heavy rain and haze to medevac an injured petty officer from a ship 70 miles off-shore to the Portsmouth Naval Hospital. Much of the 157-mile over-water flight was made under instrument conditions and with lightning in the immediate vicinity.

Despite the hazardous conditions and poor visibility, the pick-up was made without incident. Pilot of the SEASPRITE was Lieutenant Stables and Lt(jg) Johnnie Ford was copilot. Crewmen were Petty Officers Holmes and Smith.

Policemen Rescued By 44th ARRSq

EGLIN AFB, Fla.—Two off-duty policemen on a fishing trip, adrift in a disabled boat in the Gulf of Mexico for more than 32 hours, were rescued by an HH-43 crew from the LBR Unit, 44th ARRSq (MAC), at this base. It was the last mission flown by the unit before deactivation as part of a massive ARRS alignment.

Maj David A. Cochenour and his crew took off in "Pedro 43" after notification that a civilian aircraft had spotted the boat adrift in the Gulf of Mexico. The tiny vessel had been the object of a 1000-square mile search by the Coast Guard and several private planes. When the HH-43 arrived at the scene, an attempt was made to hoist the fishermen to the helicopter but then was abandoned because of the heavy seas and rapid drifting of the small boat. At the rescue crews direction the survivors left the plunging, yawing craft and despite the 20-knot winds were hoisted from the water without incident by SSgt William Ingram, III. Sergeant Ingram used the Forest Penetrator Seat with flotation gear attached to make the recoveries.

Suffering from mild exposure, shock and seasickness, the survivors were examined by A1c Mitchell Watts, the medical technician, and taken to the hospital at Eglin. During the night the temperature had dropped to 50 degrees and there were 30-foot swells in the Gulf. After their rescue the policemen said, "We have never been treated any better by anyone than we were from the time the helicopter picked us up until our departure from Eglin Hospital. We will be forever grateful."

Det 11 Rescues T-38 Pilot

LAUGHLIN AFB, Texas—Quick action by an HH-43 crew from Det 11, 43rd ARRSq (MAC), here was credited with being largely responsible for preventing the death of a pilot whose T-38 crashed and caught fire during final approach to the field.

"Pedro 72," launched with the Fire Suppression Kit a minute or so after notification of the accident. Approach to the crash site was difficult due to telephone lines located in the vicinity. As the crash truck on runway standby was also approaching, Capt Laurence R. Klingbeil elected to place the FSK 150 feet from the burning aircraft. Kit placement and the subsequent landing were extremely difficult due to the sloping terrain, numerous mesquite trees of sufficient size to cause rotor blade damage, and the rocky surface. Only "exceptional" crew coordination allowed a safe landing. An added hazard was the possible explosion of the fuel aboard the downed T-38.

As the HH-43 was landing, MSgt Lawrence Walker spotted a survivor 100 feet from the wreckage and ran to him as soon as the helicopter was on the ground in order to provide emergency medical treatment. Disregarding their own safety, the two airborne firefighters, Sgt Marvin L. Harrington and A1c Troy G. Culp, headed for the T-38 to determine if any other survivors were trapped in the wreckage. Finding none, they aided crash truck personnel in suppressing the fire. When the truck ran out of foam, they switched to the FSK and continued fighting the blaze.

Meanwhile, a flight surgeon, Capt William Collier (MC), arrived on the scene and examined the survivor. The doctor, Sergeant Walker and the downed pilot then boarded the HH-43 for a flight to the Laughlin AFB hospital. After treatment, the survivor was taken to the Brooks Army Burn Center.

LtCol Edwin Ramos, commander of the hospital at Laughlin, said later that the rapid recovery by Pedro was "largely responsible" for preventing the death of the T-38 pilot.

Det 17 Medevacs Youth From Mountain

DAVIS-MONTHAN AFB, Ariz.—A 15-year-old boy was saved from serious injury and possible death by an HH-43 crew from Det 17, 42nd ARRSq (MAC), at this base.

The helicopter launched after a request for assistance was received from a small industrial school for boys at Fort Grant. A ground rescue party had located a runaway who had been missing for three days. He was about three quarters of the way up Mt. Graham, his feet were frostbitten and night-time with sub-zero temperatures was less than an hour away. Aboard the HUSKIE were 1stLt Mark S. Scheibel, aircraft commander and the first undergraduate helicopter trainee to upgrade to that position; Capt Kevin M. Mahan, a Vietnam veteran, the copilot; TSgt Maxie L. Hilligoss, helicopter mechanic; and SSgt Paul E. Keferl, medical technician.

When the HH-43 arrived at Fort Grant, more than 60 miles away, it was met by a helicopter from the Department of Public Safety which had been unable to rescue the boy because the extremely rugged terrain prohibited a landing. The DPS helicopter guided the HUSKIE to the rescue site and returned to Fort Grant.

It was twilight and the temperature was dropping rapidly as the HH-43 hovered over the boy and the two men who had located him. A Stokes litter was lowered, the patient strapped in and then hoisted to the helicopter by Sergeant Hilligoss. When the boy was inside he mustered a weak smile and offered an equally weak hand in thanks to his rescuers before sinking back into the litter.

After the two ground rescuers had been hoisted to the HH-43 on the forest penetrator seat, Lieutenant Scheibel began the flight back to Fort Grant. On the way the patient was examined and made comfortable by Sergeant Keferl.

Guam Det Saves Sailors

ANDERSEN AFB, Guam—Two U. S. sailors who spent 20 hours in the water after their sailboat capsized in six-foot waves off the Guam Coast were rescued by an HH-43 crew from Det 12, 41st ARRWg (MAC), at this base. A forest penetrator seat with flotation collar attached was used to pluck the survivors from the water. They were tired and thirsty after their ordeal, but otherwise in good health.

HH-43 pilot Maj Arthur F. Machado and his crew had joined a Navy P-3 and USAF C-118 in searching for the two sailors when they were reported overdue. After an hour, during which 300 square miles were searched, the C-118 sighted the survivors six miles offshore and directed the rescue helicopter to the area.

Other members of the HH-43 crew were 1stLt Hal S. Schwartz, copilot; SSgt Erskine E. Brewington, crew chief; MSgt Jackie L. Porter, pararescueman; and Sgt Charles E. Sockey, firefighter.

H-2 LAMPS

9TH Integrated Logistics Support Management Conference

The Ninth Semi-Annual H-2 LAMPS Integrated Logistic Support Management Team Conference was held 28-30 August at the East Windsor, Conn., Ramada Inn. The Conference dealt with all aspects of LAMPS program support, however, special consideration was given to changes resulting from the recent introduction of the upgraded SH-2F model.

All participants continue to recognize the helpful part these conferences play in surfacing existing or potential program support problems and providing an effective means of initiating required resolutions.

CHAIRMEN AT WORK–Seated, Mr. Wayne Cerny, left, and Mr. Paul Kavolsky, NAVAIR. Standing, Mr. Robert Myer, KAC.

NEW SPARES MANAGER–At right is Mr. Edward Cunningham, attending his first ILSMT Conference in his capacity as KAC Spares Manager. On left is Mr. Fred Smith, Chief, Test Operations and Customer Service.

Ship Interface Sub Committee

Registration desk and staff.

Spares Sub-Committee

Ground Support Equipment Sub Committee

Publications Sub Committee

Training/Trainer Sub Committee

(Ruggiero, Serignese photos)

KAC VISITORS—Among those introduced to the SH-2F LAMPS helicopter during recent visits to Kaman Aerospace were Fred W. Randall and BrigGen Floyd H. Trogdon, USAF, Office of the Secretary of Defense (I&L). At right, KAC President William R. Murray shows a model of the SH-2F to Mr. Randall and General Trogdon. Other visitors were Col William L. McKeown, USA, Director of the Eustis Directorate, Army Air Mobility Research and Development Laboratories, Fort Eustis, Va.; John W. White, Chief, Technology Applications Division; and W/O T. L. Blanchard, a pilot attached to the directorate. In left bottom photo, Colonel McKeown familiarizes himself with SH-2F controls before demonstration flight with KAC Senior Test Pilot Al Ashley. At right, Mr. White is shown before a similiar demonstration. (Ruggiero photos)

FROM THE READY ROOM

By John Anderson, Test Pilot

An automatic blade tracking system is used in the H-2 helicopter to help maintain a low vibration level environment for the flight crew and aircraft equipment. It further serves as a valuable tool for safely and efficiently tracking the rotor without resorting to the use of a tracking flag or other special support equipment.

The automatic blade tracking system usually requires no attention from the pilot, performing its function automatically throughout the flight. Because pilot action is not normally required, the system is often not thoroughly understood, and a valuable tool is left partially or completely unused when the automatic system fails to work in its usual "silent and mysterious" manner.

The automatic tracking system is thoroughly described in the NATOPS and Maintenance Manuals, but let's look at the main components to be sure that we understand their functions.

MAIN COMPONENTS

A. Accelerometer: The "seat-of-the-pants" or sensor of the system. It detects the vibration and produces an electrical signal proportional to the amplitude of the vibration. Two important points:

1. The accelerometer is sensitive only to low frequency (one per rev.) vertical vibrations.

2. The accelerometer, and thus the tracking system, "feels" the vibration. It cannot "see" the rotor track.

B. Resolver: Determines which pair of blades is out of track. It performs this task by being phased with the rotating system, and since it rotates at the same speed as the rotor, the information from the accelerometer is correlated to the appropriate pair of blades.

C. Actuator Control Unit: (Commonly called the "Amplifier") The "brains" of the system. The control unit selectively sends signals to the appropriate blade tracking actuator (s) to adjust rotor track. It performs this function through signal conditioning circuits including:

1. Phase detection: Determines from the accelerometer signal whether the affected blade should be tracked up or down to match its counterpart.

2. Frequency filtering: Eliminates all but the one per rev associated impulses.

3. Function switching: Turns the system on and off as signalled by the airspeed and landing gear switches, and provides response to pilot commands.

4. Malfunction protection: Monitors strength of the signal, and disables the system if it appears that the out-of-track is not being corrected properly. This "guard-circuit" is actually three circuits. Two, unknown to the pilot, continually monitor the resolved signals of the two blade pairs and disable the system when short term signals exceed the cut-off point, automatically resetting when the signal strength falls back within the cut-off point. A third circuit, having a higher cut-off point, monitors the unresolved signal from the accelerometer and disables the system when that point is exceeded. In this case, a caution light, "AUTO BLADE TRACK," is illuminated in the cockpit and resetting of the system becomes a pilot option.

D. Blade Tracking Actuators: Respond to signals from the Actuator Control Unit and adjust the blade track by varying the effective length of the control linkage to the servo flap.

E. Blade Track Panel: Contains appropriate controls for pilot operation of the system.

USE AS TROUBLE-SHOOTING TOOL

Now that we understand the main component functions, and having reviewed the NATOPS Manual for switch labeling and their relationship to rotor blade identification, let's see how we can use this system as a troubleshooting tool.

When first confronted with a track discrepancy, it is important to determine whether the problem is with the rotor system or in the automatic blade tracking system. They are two distinct systems and must be treated accordingly.

A complete discussion of the broad subject of rotor performance analysis is not possible here, but some basic steps are applicable to troubleshooting almost all cases.

1. Ensure that the rotor system is properly assembled and rigged.
2. Install the FLIGHT LINE CALIBRATION TEST SET, P/N K604616-3.
3. Operate the blade tracking actuators from the cockpit and visually observe that they travel in the proper direction and to the proper limits on both sides of neutral. (Aircraft static) External DC power should be used for this check.

Now you are ready to proceed into flight and evaluate the discrepancy. Once again, some basic steps are applicable to almost all cases.

1. Establish level flight in the 60-80 knot area.
2. With the tracking system in MANUAL, obtain the best possible track using the switches on the Blade Track Panel. Actuate the C and D switches until the C and D meters on the tracking box are at "zero." This should result in elimination of any 1/rev vibration. Now eliminate any split cone by actuating the B/D switch on the Blade Track Panel.

NOTE: "A" blade is the master and does not have a tracking actuator.

If the track is now smooth, leave the tracker in MANUAL and evaluate the rotor throughout the normal flight envelope, varying airspeed, power and attitude. If the rotor stays reasonably in track (some one/rev is acceptable), then you can assume that the rotor system is functioning properly, and direct your attention to the automatic tracking system.

The automatic system can be checked in a short test that brings all of the components into operation, while at the same time supplying you with valuable troubleshooting information.

1. Place the system in MANUAL.
2. With both meters at zero, actuate the C switch "UP" until 30 Ma "UP" is indicated on the C meter. At this time the D meter should indicate 0 ± 5 Ma (Interaction).
3. Place the system in AUTOMATIC and observe the C blade to track to 0 ± 10 Ma on the meter.
4. Repeat steps 1, 2, and 3 for C "DOWN," D "UP," and D "DOWN."

Several things can be learned from this check:

1. Direction of Actuator Travel: The meter should deflect "UP" with "UP" switch actuation and "DOWN" with "DOWN" switch actuation indicating proper direction of travel.
2. Degree of actuator travel: If a minimum of 30 Ma deflection can be obtained, then the actuators should have sufficient authority to perform their function.
3. Resolver phasing: If there is 5 Ma or less or interaction, the resolver is properly phased.
4. Accelerometer outputs: A fairly strong vibration should result from a 30 Ma out of track. With experience you will be able to calibrate your feel and judge a rough measure of accelerometer output.
5. Automatic operation: If the system automatically restores an out of track blade to 0 ± 10 Ma, then the automatic mode is functional.

NOTE: The system will not function correctly if the resolver is not properly phased (Excessive interaction).

6. Guard Circuit: The "AUTO BLADE TRACK" caution light should not illuminate during this check when performed at an airspeed of 60-80 knots.

A final item to check is the automatic switching of the system.

1. Start from a hover and proceed into forward flight. Note that the tracking system starts operating at approximately 50 knots, by observing the annunciator on the Blade Tracking Panel.
2. Ensure that the system switches to OFF when airspeed is reduced to approximately 25 knots.

Having accomplished these short tests in flight, you should be able to assist maintenance personnel by describing the area of malfunction, rather than just writing on the yellow sheet – "Auto tracker inoperative," or 1/rev vibration."

Pilot comments, coupled with ground testing in accordance with Section V of NAVAIR 01-260HCA-2-6, should provide quick, accurate solutions to automatic tracking system discrepancies, thus keeping maintenance test flights to a minimum.

Another report from the Ready Room may be found on page 38. It deals with the Lateral Coupler.

500th Landing

On 17 July, Lt John F. Farr, pilot and detachment Officer-in-Charge, and Lt Robert W. Phillips, copilot, of HSL-30 Det 7, made the 500th landing of a LAMPS helicopter on the USS Bowen's flight deck. Bowen's Commanding Officer, Cdr H. K. Fiske led the welcoming party and, along with members of Det 7, congratulated the crew.

Bowen has been involved in LAMPS operations since June, 1972, and since February, 1973, has been engaged in operations for the validation of reduced mannings for the LAMPS helicopter detachment. From February to July, 1973, the Bowen and LAMPS Det 7 has participated in the major fleet ASW operations: LANTCORTEX, NORLANTEX, SEACONEX and TRANSLANTEX.

DET CUBI

The following article gives a brief description of Det Cubi and important part it plays in supporting LAMPS and other H-2 detachments deployed in WestPac. No story about Det Cubi would be complete, however, without mentioning LCdr Charles Kiseljack whose dedication and hard work was responsible for laying the groundwork from which the present organization emerged. USN photos by PH D. P. McMurry

LCdr Brian Shoemaker and KAC rep Bill Wells discuss location of aircraft in need of technical assist.

On February 8, 1973, Det Cubi was commissioned and began to coordinate parts and offer "Tech Assists" whenever required. With LCdr Brian Shoemaker as Officer-in-Charge, ADJ1 Charles Pennington, AMH2 George McCormack, AK2 Anthony Kraisinger, and AZ3 Billy Justice formed the original nucleus for Det Cubi. With Kaman Aerospace personnel in the LSR, Avionics, and Mech/Airframes billets they began to support the widely deployed H-2 LAMPS detachments. Experience has shown that, due to the comparatively small size of these detachments, personnel with a wide range of experience in all phases of maintenance were not always available. Det Cubi was formed, therefore, with the idea that a forward beach unit with highly qualified Tech Assists and LSR/Supply personnel readily available would fill this need and, consequently, greatly reduce the NORM/NORS time for deployed units. In the past, requests for information and/or Tech Assist had been available on a limited basis. Many times, however, there was a long delay in getting requested information, parts, and technical assistance.

After only nine days in Cubi, ADJ2 Pennington made the first Tech Assist; on 20 minutes notice he was on the way with Mr. Bill Wells, a KAC rep, to assist a detachment in Kaohsiung. This quick response reduced the down time on the aircraft and enabled the ship to continue its assigned mission. This type of action reduces the number of schedule changes required and helps maintain our fleet ASW/ASMD forces in the highest state of readiness possible.

AMS3 Terry Goodpaster inspects tail rotor gearbox.

HSL-31 Det Cubi personnel inspect SH-2D. At right is Donald Lockridge.

AX2 Steven D. Powers, middle, and KAC rep Donald Lockridge watch as Donald Delaney, also a Kaman rep, operates controls on hydraulic test stand.

Det Cubi furnishes support for other H-2 units as well as the LAMPS detachments. One of these is the HSL-31 Marine Coast and Geodetic Survey detachment deployed on the USNS Chauvenet. Pictured above are one of the numerous vertical replenishment operations which aided the ship in accomplishing its mission. (USN photos by ADJC James S. Moore)

While this was only one of the many Tech Assist requirements since Det Cubi was formed, it demonstrates the potential of a forward stationed support unit for the widely deployed H-2/LAMPS Dets. The KAC and military personnel are available for instantaneous response to any Det requirement. Many times Det Cubi has been responsible for limited NORS time for the Dets by coordinating parts and detachment travel in order to effect an expeditious rendezvous.

One further benefit of the forward stationed unit is that during short in-port periods the deploying detachments have fresh, relaxed personnel to aid them in their maintenance and supply requirements. This lessens the burdens on the detachment and allows them adequate time to perform the highly needed maintenance on the aircraft.

While Det Cubi has grown somewhat, with additional personnel in the Avionics/Electrical branch, it is still a small forward supporting unit used to provide supplementary assistance to the deployed units. The time is rapidly approaching when 12 to 15 detachments will be deployed at a time, and Det Cubi will be on call more often. This will entail assigning several more highly dedicated professional personnel to maintain and support the Navy's newest and highly effective ASW/ASMD Weapons System.

In short, Det Cubi is responsible for increasing the availability of the deployed aircraft, thus enabling seagoing detachments greater flexibility in the performance of their vital mission.

6th To Receive Coveted Award

USAF PILOT LOGS 3000 HOURS IN HH-43

On 18 May, 1973, Maj William F. Glover logged his 3000th flying hour in the HH-43. Major Glover has been flying the HH-43 since 1961 and has been an H-43 instructor pilot at Hill AFB, Utah, since June 1971. He is currently serving as the 1550th Aircrew Training and Test Wing H-43 Standardization Pilot.

Major Glover has served two years in Southeast Asia since being assigned to the H-43: January to May 1965 at Nakon Phanom Royal Thai AB, Thailand, and February to September 1968 at Tahkli Royal Thai AB, Thailand.

The photograph shows Major Glover, right, after landing from the flight on which he passed the 3,000 hour mark. He was met by a fire truck and members of the 1550th Flying Training Squadron, and then presented a bottle of champagne by LtCol Richard F. Burdett, left, squadron commander. He also received a 3000-hour-pilot's plaque from Kaman Aerospace in recognition of his accomplishment. (USAF photo)

OCEANA SAR HELPS COAST GUARD

SAR HELO—The UH-2C helicopter flown by the Search and Rescue Detachment of the Oceana, Va., Naval Air Station. The unit also flies the HH-2D.

Reprinted from the
JET OBSERVER, **NAS Oceana, Va.**

Story and photos by PAC P. M. Short
U. S. Coast Guard

Rescue Coordination Center watchstanders are singing praises of the search and rescue (SAR) unit at Oceana Naval Air Station in nearby Virginia Beach.

According to the Coast Guard, the Oceana SAR Unit has been a tremendous help by responding to rescue cases with a real "can do" spirit.

The Coast Guard's Norfolk SAR sub-region rescue center at the Fifth Coast Guard District Office in Portsmouth coordinates assistance cases in waters of Maryland, Virginia and North Carolina. The only Coast Guard aircraft available in the district are based at Elizabeth City, N.C., 40 miles to the south. Sometimes the Coast Guard forces are spread pretty thin, or time is so important that even a few minutes can mean the difference between life and death.

The rescue center calls on the Oceana SAR Unit to assist. In a recent case, an Oceana "Seasprite" helicopter, piloted by SAR unit officer-in-charge Lt Curt Frandsen, saved the life of a Newport News, Va., fisherman. Lt Frandsen, and his crew of co-pilot Ens Charles Wirt, PO1 Richard Holmes and P03 Barry Smith, plucked the man from the mast of his capsized fishing boat in Chesapeake Bay.

The Oceana detachment logged about 50 search and rescue cases during 1972. Most of them were at the request of the Coast Guard with the remainder mercy flights to evacuate sick crewmen from Navy ships. The nine pilots and 30 enlisted men of the unit also fly photographic and logistical missions in their HH2D and UH2C helicopters and Oceana's C-1A fixed wing aircraft.

Lt Jack Rollinson, assistant chief of search and rescue for the Fifth Coast Guard District, says of the unit: "Sometimes we'd really be helpless if they weren't there and willing to assist us. They always seem ready to fly and deserve all the credit they can get."

Besides assisting in search and rescue cases the unit also recently:

Searched four hours at treetop level in nearby Dismal Swamp for a dangerous escaped criminal.

Airlifted rare blood for a critically ill young girl in the Portsmouth Naval Hospital.

Ferried fire extinguishing agents from a Coast Guard Station in Norfolk across Chesapeake Bay entrance to combat a boat fire at Cape Charles, Va.

The SAR Unit at Oceana not only lives up to the air station motto, "Service to the Fleet", they go it one better with service to humanity.

READYING FOR A FLIGHT in a UH-2C helicopter at NAS Oceana are pilot Lt(jg) Billy Bonner, left, and co-pilot, Lt(jg) Warren R. Eckert.

DECKED OUT LIKE A CREATURE FROM OUTER SPACE is search and rescue (SAR) aircrewmen Petty Officer First Class Richard L. Holmes, from NAS Oceana SAR detachment.

Latest Oceana Missions

Latest missions flown by the Oceana SAR Unit involved a medevac from a small fishing boat. A UH-2C launched three minutes after notification that a man had collapsed aboard a chartered fishing boat northeast of Cape Henry, Va. LCdr Louis H. Petterson was pilot of the rescue helicopter. Others aboard were Ensign Wirt, copilot; AMS1 William L. Ruddick and AME2 Timothy J. Patrick, crewmen; HM3 H. W. Douglas, hospital corpsman.

The SEASPRITE crew located two cruisers matching the description given but the ill man was not aboard. After receiving a more detailed description of the fishing boat, the helicopter "overflew" three more boats. Once the chartered vessel was spotted, LtCommander Petterson held the UH-2C in a hover as Petty Officer Patrick was lowered to the deck. The evacuee, who showed no sign of respiration or pulse, was hoisted to the helicopter in a Stokes litter and taken to Virginia Beach General Hospital. Enroute the corpsman worked steadily to revive the patient, but he was pronounced dead at the hospital. The SAR helo returned to the fishing vessel, hoisted Petty Officer Patrick aboard and returned to the air station.

In the second mission, an H-2 launched shortly before midnight after two pilots ejected from a crippled A-6B and landed near ALF Fentress Field, Chesapeake, Va. Both downed airmen were picked up by a crash vehicle and taken to the field. From there the SEASPRITE transported them to NAS Oceana where they were met by an ambulance and taken to the dispensary.

Manning the H-2 were Lt(jg) Thomas B. Stables, III, the pilot; Lt(jg) Peter Hoffoss, copilot; Petty Officer Patrick and AMS1 William L. Ruddick, crewmen.

Imperial Iranian Police Save Civilians

HH-43's Fly Medevacs In Iran

In missions similar to those flown in the United States under the MAST program, Iranian HH-43's medevaced a mountain climber who had fallen into a ravine and two persons seriously injured in an automobile accident. The HH-43's were manned by personnel from the Imperial Iranian Police, Aviation, Mehrabad AFB.

The mountain medevac was made at the 10,000-foot level in mountains north of Tehran. A teenager had fallen 20-feet while climbing near a Boy Scout Camp. Although 30 to 35-knot winds were sweeping across the boulder-strewn area, 1stLt Hassan-Yazdanian, landed without incident and the victim was placed aboard. The take-off was also made without incident despite the high winds and rugged terrain. Ten minutes later the HH-43 arrived at the hospital. Crewman on the mercy mission was A1c Hassan Golfeshan.

The other mission began after an automobile accident on the Ghom highway. A Police helicopter, standing by to control traffic going to an air show, responded to a call for help. Lieutenant Yazdanian quickly flew the HH-43 to the area and picked up the two accident victims who had suffered numerous and serious injuries in the crash. On the flight to the hospital in Tehran, the injured were treated by the medical technician, M.St. Ahmad Rampour. Others manning the helicopter were 1stLt Bijan Rafiee, the copilot; and A1c Abolhassan Hadadi, helicopter mechanic.

Det 22 Aids Two Under MAST Program

HH-43 crews from Det 22, 43rd ARRSq, Mountain Home AFB, Idaho, have added two more missions to the growing number carried out under the Military Assistance to Safety and Traffic (MAST) program.

A 45-year-old man who fell 35 feet from the top of a water tower was evacuated to the hospital by an HH-43 piloted by 1stLt Eric A. Vranek. Other members of the crew were 1stLt Jerry W. Emery, copilot; SSgt Richard G. Robbins, helicopter mechanic; and TSgt Alpheus L. Morrison, medical technician.

The accident victim, who suffered back injuries, was airlifted from Rocky Bar, Idaho, a town located in a valley with 9,200-foot mountains nearby. The HUSKIE landed on a dirt road and the patient was placed aboard after being examined by Sergeant Morrison. He was then taken to the base hospital. The latter part of the flight, at 9,000 feet to avoid turbulence, was at night.

The second mission was credited with saving the life of a critically-ill, premature baby. Manning the HH-43 with Lieutenant Vranek were 1stLt Jeffrey L. Schefelker, the copilot and TSgt Jimmy L. Ramsey, helicopter mechanic.

The helicopter first landed at a Boise, Idaho hospital to pick up a doctor, nurse and incubator. The HH-43 then flew to Ontario, Ore., more than 80 miles away, and landed on the lawn of the hospital there. The infant, suffering from cardiac and respiratory problems, was placed aboard and taken to the Boise hospital.

Speedy Pickup By Pensacola Det

At 1413, the SAR Alert crew at NAS Whiting Field, Fla., was notified that a T-28 Trojan had crashed at Middleton, one of the outlying fields. A UH-2C, designated "Pedro 163," launched from Whiting at 1415 and headed for the area, 42 miles away near Evergreen, Ala. At 1437, Pedro 163 was over the crash. A minute later, the helo landed and took the two downed airmen aboard. The survivors were returned to NAS Whiting without incident.

Pilot on the mission was Lt Henry B. Edwards. Lt(jg) Kerry J. Sullivan was copilot and crewmen were AT3 Frank G. Sakuta and HM3 John C. Bruno. The SAR Alert crew at Whiting is attached to the SAR Det at NAS Pensacola.

FROM THE READY ROOM

By Al Ashley, Senior Test Pilot

The lateral coupler automatically corrects for the lateral trim change that occurs with collective changes.

Without the lateral coupler and with ASE OFF, the SH-2F will roll to the left when collective is lowered requiring right cyclic stick to maintain wings level.

When collective is raised the helicopter will roll to the right requiring left cyclic stick to maintain wings level. The amount of cyclic stick required to maintain wings level increases with airspeed to approximately 2 inches at 140 knots and then only when collective is displaced appreciably from a trim point. The reason for this trim change is an effective cyclic input caused by the change in main rotor flapping angle as collective is raised or lowered.

In order to minimize pilot effort when flying ASE OFF, a lateral coupler was developed and installed to automatically put in approximately the right amount of lateral cyclic to maintain wings level when large collective changes are made.

The most economical means of implementing the lateral coupler was to use certain existing ASE components with as few modifications as possible.

Since movement of collective generates the trim change, collective position is the prime ingredient for the lateral coupler recipe. Collective position is sensed by the collective Linear Variable Differential Transducer (existing ASE component). The amount of cyclic correction required varies with airspeed so the airspeed transducer (existing ASE component, modified) is used to change the coupler output as airspeed changes. An added module in the ASE amplifier chassis processes these signals and causes the ASE lateral servo valve to respond in the proper direction (left or right) and the proper amount.

In order for the lateral ASE servo valve to respond to these coupler signals, the hydraulic actuator (Boost) must be on and the ASE servo valves unlocked (coupler switch ON). When the coupler switch is placed to OFF, the ASE servo valves are locked and prevent both the ASE and lateral coupler signals from moving the valves. The ASE engage switch will automatically go to OFF when the coupler switch is turned off.

The following are questions most often asked by pilots checking out in the SH-2F with a few of my own thrown in:

Q. How does the coupler know which way to put in cyclic to keep wings level since no attitude gyro is involved?

A. The majority of flying in level cruise flight requires near 50% collective. The sign (±) of the output signal from collective is changed when going above 50% collective and reversed when going below 50% collective so that when collective is moved above 50%, left cyclic is introduced through the coupler and when lowering, collective below 50%, a right cyclic correction is introduced.

Q. Does the lateral coupler operate in a hover?

A. No. The coupler signals are a multiple of collective position and airspeed. In a hover there is zero airspeed, therefore zero times whatever collective signal is still zero.

Q. Has the lateral ASE servo valve been modified in any way?

A. Yes. The total travel (authority) of the valve has been increased approximately 50% (from 11% to 15% of total stick travel) because it is being shared by the ASE as well as the lateral coupler.

Q. When re-engaging the lateral coupler in flight, why do procedures call for going to 43% torque?

A. As previously stated, the output signal from collective changes sign at about 50% collective, therefore a null in coupler output occurs here. In a properly rigged helicopter, 50% collective usually results in near 43% torque on a standard day at sea level. In the absence of a stick position indicator this is close enough to minimize engagement transients.

Q. Can the helicopter be flown with a malfunctioning coupler?

A. Yes. It is conceivable that a malfunctioning coupler could go unnoticed when flying the normal way (ASE ON). Flight with the coupler turned off is no big thing if you can fly with ASE OFF. About the only thing you'll notice is the need to add about an inch of lateral stick when making large collective changes to climb or descend.

Q. Is the lateral coupler on during the rotor engagement cycle?

A. Normally the switch is on but we delay ASE servo valve unlock until the generators come on the line. This is to ensure enough RPM for adequate hydraulic pressure. This is also true if you turn up with external A/C power applied.

Q. Does the fact that pitch and yaw ASE servo valves are unlocked along with the lateral servo valve when the coupler is engaged cause any significant problems?

A. No. All three valves are being operated by the ASE amplifier for the normal mode of operation (ASE ON). With just the lateral coupler engaged and ASE OFF only the lateral valve is being operated. The others, even though unlocked are held at null by electrical current.

Q. What do I look for when performing a lateral coupler ground check prior to flight?

A. Observe the main rotor disk as you cycle the coupler switch off and on a couple of times. There should be no significant movement in the rotor disk as the switch is cycled. On occasion it will be normal to see a momentary small deflection (approx 1 inch) as the switch is cycled which is usually caused by a servo valve not perfectly nulled. If a permanent deflection of approximately 2 inches or more is seen, it may indicate a hardover servo valve either due to a malfunctioning valve itself or some component of the coupler system. In any case it should be looked into. An easy way to verify a hardover is to get stabilized in a hover with ASE OFF and then cycle the coupler switch. If the helicopter experiences any cyclic or even directional inputs as the ASE servo valves are unlocked (coupler switch OFF), the cause of the input should be investigated.

Q. What is the best way to check lateral coupler operation in flight?

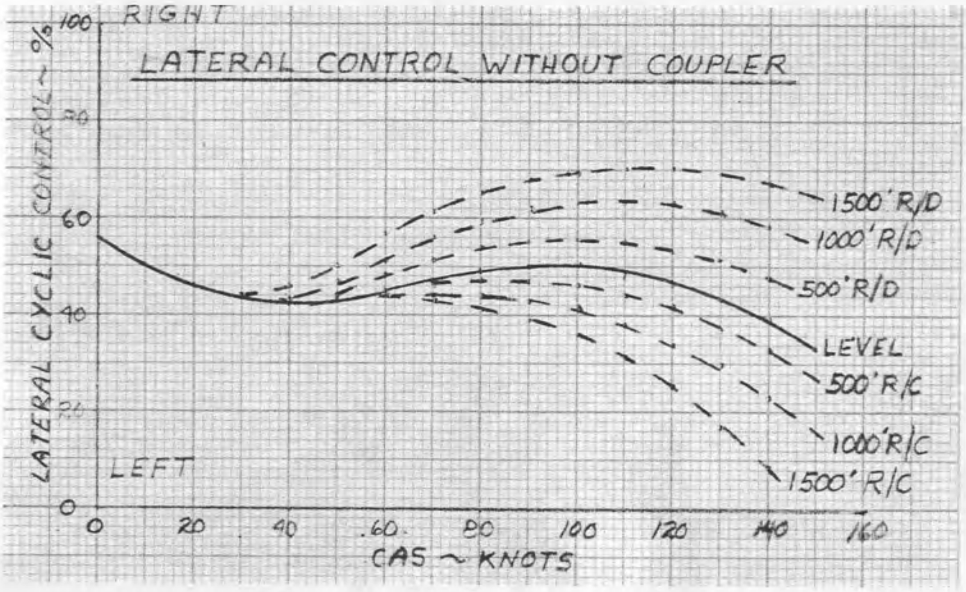
A. Get stabilized and trimmed up at a comfortable airspeed (100 knots) with ASE OFF, coupler ON. Lower collective approximately 3 inches while maintaining pitch attitude with aft cyclic. The coupler will maintain wing position within 6°. In order for this check to be valid, pitch attitude must be held precisely. Repeat this same maneuver with the coupler off. Roll attitude will be near 20° - 30° depending on how much collective was used for the check. Repeat the same maneuver for climbs. When the coupler check is performed in this manner whether it is operating or not will be readily apparent.

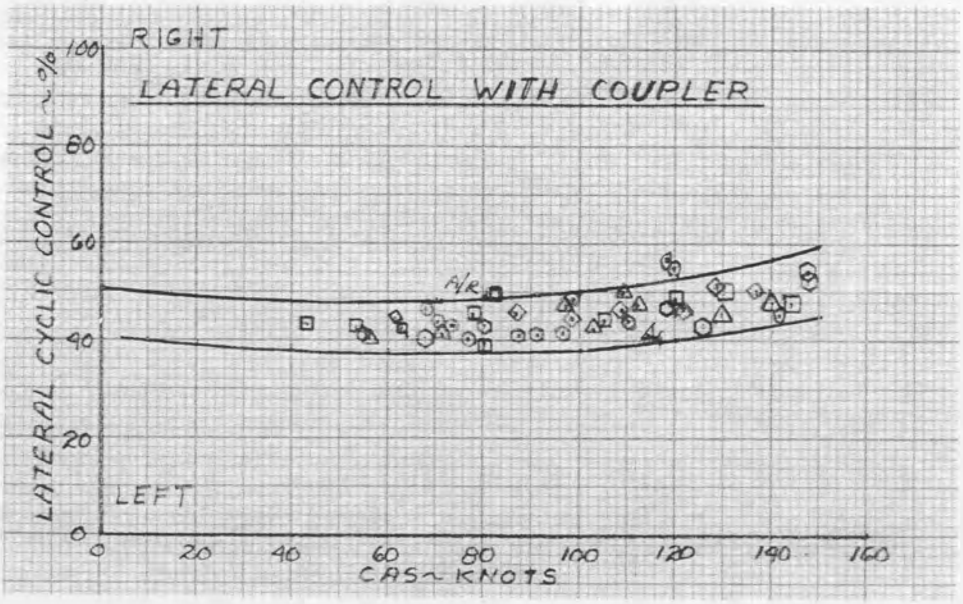
Q. While flying along with ASE engaged, I experience abnormal control system behavior. What is the first thing I should do in an attempt to isolate the problem?

A. Turn off ASE first. If the problem persists, turn off lateral coupler. This will lock up ASE servo valves preventing spurious electrical signals from whatever source from moving the ASE servo valves.

Q. What is the total authority of the lateral ASE servo valve in terms of stick travel?

A. Total authority of the lateral ASE servo valve is ± 1.68" of stick. The reason for the limited authority is to ensure adequate control remaining to overcome a servo valve hardover should it occur.





VADM G. E. MILLER HONORED BY KAC

Shown during plaque presentation are, left to right, Norman Myers and Horace Field, III, KAC Service Representatives, Lt Gordon Peterson, Officer-in-Charge of Det 31; and Admiral Miller. (USN photo)

VAdm Gerald E. Miller's contribution to the helicopter community was acknowledged by Kaman Aerospace Corporation recently in a brief ceremony aboard the USS Springfield (CLG-7), flagship of the Sixth Fleet. Presentation of a plaque which recognized Admiral Miller's ". . .active leadership in expanding and diversifying the role of the helicopter while serving as Commander of the Second and Sixth Fleets of the United States Navy" was made by Horace F. Field, III, KAC Senior Service Representative; and Norman M. Myers, Service Representative. At the time both were serving at NAF Naples, Italy.

Admiral Miller reported to Offutt AFB, Neb., as the Deputy Director, Joint Strategic Target Planning Staff, since presentation of the plaque in June. During Admiral Miller's assignments as Commander of the Second and Sixth Fleets, detachments from HC-4/HSL-30 provided services with UH-2A/B and, later, HH-2D helicopters. One of the most dramatic displays of the versatility and capabilities of the helicopter occurred during Admiral Miller's assignment as Commander Sixth Fleet. In Tunisian Disaster Assistance Operations from 28 to 31 March 1973, over 1000 Tunisians were rescued by helicopter units of the Sixth Fleet. Two hundred and eighty of those rescued were saved by an HH-2D attached to HSL-30 Detachment 31 aboard the Springfield. Officer-in-charge of the detachment is Lt Gordon I. Peterson.

"Springfield Native Reenlists"

AMS1C Dick Lavigne, right, takes his Navy oath of reenlistment from Capt V. O. Harkness, Jr.

Story by Lt G. I. Peterson, USN
Photo by PH3 J. Greco, USN

"The opportunity was too good to pass up," was the way Dick Lavigne referred to his Navy reenlistment ceremony in a helicopter high above the USS Springfield (CLG-7), flagship of the U. S. Sixth Fleet in the Mediterranean. Petty Officer Lavigne, an Aviation Structural Mechanic First Class, is a native of Springfield, Mass., the guided missile cruiser's namesake.

Captain V. O. Harkness Jr., Commanding Officer of the Springfield, had the distinction of giving the oath of reenlistment to Petty Officer Lavigne while his ship participated in a NATO exercise off the southern coast of Sardinia. Petty Officer Lavigne is an aircrewman assigned to the ship's helicopter detachment, HSL-30 Support Detachment 31, and supervises maintenance on the unit's helicopter.

Petty Officer Lavigne is a career petty officer in the Navy and has many exciting and challenging tours of duty under his belt. He first enlisted in 1958 and since then has served in a wide variety of fixed-wing and helicopter squadrons. He spent four years off Vietnam flying combat search and rescue missions and was decorated with the Air Medal for heroism under fire during a rescue over North Vietnam. In addition to the Air Medal, Petty Officer Lavigne has been decorated with the Navy Commendation Medal, the Purple Heart, the Vietnamese Air Gallantry Cross, and the Good Conduct Medal. He also received a Presidential Unit Citation during his tours of duty in Southeast Asia.

Before reporting aboard the Springfield's helicopter detachment on June 1, 1973, Petty Officer Lavigne was assigned to the Naval Air Facility, Naples, Italy. He lives in a small community near Naples with his wife and three children. Enlisted reenlistment ceremonies have been held underwater, on top of aircraft hangars, and in many other unusual places. But for Petty Officer Dick Lavigne, the memory of his reenlistment while flying above the ship named for his hometown will have lasting significance.