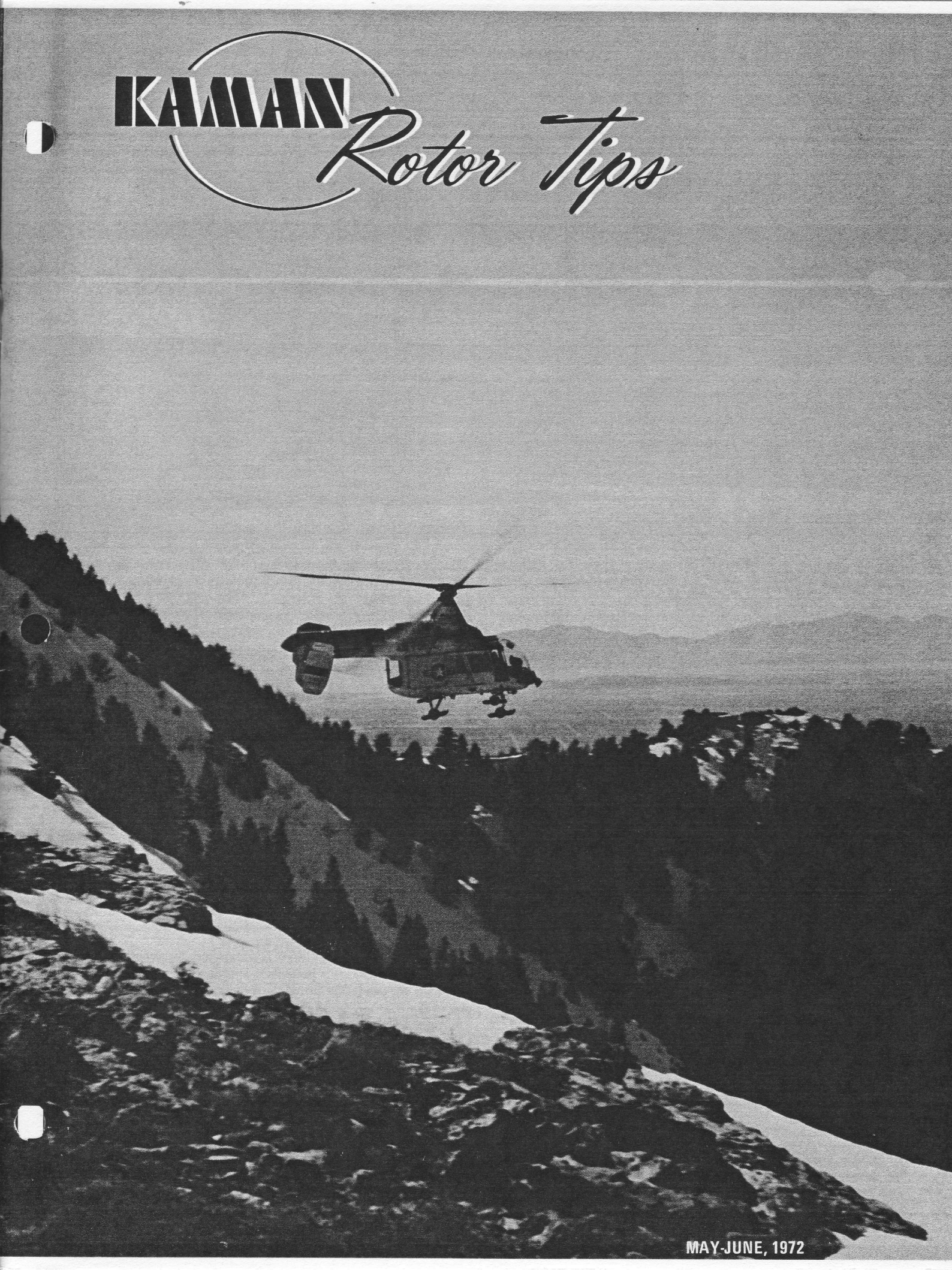
KAMAN Rotor Tips



MAY-JUNE, 1972

KAMAN AEROSPACE CORPORATION

Rotor Tips

Volume VII Number 4

ON THE COVER

An HH-43 from the 1550th Flying Training Squadron, Hill AFB, Utah, on a simulated remote rescue operation. (USAF photo)

CORRECTION – COVER CAPTION
March-April, 1972 issue
The rotor hub and retention shown with the 101 blades on the whirl rig were standard H-2 components, not the simplified 101 rotor hub and retention assemblies.

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FEATURES

DEPARTMENTS

AIR FORCE LOCAL BASE RESCUE HELICOPTER TRAINING

By Major Arlie L. Mustoe
Information Officer
1550th Flying Training Squadron
Hill AFB, Utah (USAF photos)

Prior to 1 July 1971, all basic HH-43 HUSKIE training for the Air Force was performed by Air Training Command at Sheppard AFB, Texas. Advanced training, to qualify the student as an Aircraft Commander, was accomplished by ARRS at Eglin AFB, Fla., or in the operational Local Base Rescue (LBR) detachment. Now all training functions have been combined into one and are accomplished by the 1550th Aircrew Training and Test Wing at Hill AFB, Utah. The 1550th ATTW is part of the Aerospace Rescue and Recovery Service, Military Airlift Command.

Student inputs to the school are conversion pilots from fixed-wing aircraft, pilots transitioning from other helicopters, or pilots newly graduated from the Army Undergraduate Helicopter Training (UHT) program. UHT training is accomplished at Fort Wolters, Texas and Fort Rucker, Ala. and consists of 195 hours in various helicopters.

Conversion students attend the Army schools for a 77-hour course, then move directly into H-43 training. The UHT students, upon arrival at Hill, receive 25 additional hours in the TH-1F, concentrating mainly on Air Force instrument flying techniques and procedures.

Academic ground training, with approximately 45 hours of classroom instruction, is divided into two phases. This includes a comprehensive engineering phase on the mechanics of the aircraft and its systems, and an operational phase covering hoist and sling, search and rescue techniques, navigation and fire suppression training. Students are also instructed and briefed on LBR policies and procedures. Ground training is accomplished in conjunction with the flying phase to allow training at a logical time, just before the student puts it into practice in the air.

Student firefighters receive their qualification training at Hill. This consists of 42 hours ground training, approximately 26 hours flying training, and a flight check covering all areas of training.

The flight training for the pilots, accomplished by the 1550th Flying Training Squadron, is designed to start the student off with basic hovering maneuvers, normal takeoffs, approaches and landings. As he begins to master these, more difficult maneuvers are added. Before long he is accomplishing autorotations, forced landings and emergency fuel control operations.

Rescue Hoist Practice

REMOTE SITE OPERATIONS—A student from the 1550th Flying Training Squadron returns to base after piloting an HH-43 over the rugged mountains east of Hill AFB during his introduction to remote site operations.

RESCUE HOIST OPERATION—An HH-43 crew uses a dummy during rescue hoist training. Following the ARRS tradition, these techniques will later be used to save either civilian or military personnel, and foreign nationals as well as United States' citizens.

Instrument flight training begins after approximately one week of flying and includes, along with GCA and ADF approaches, considerable emphasis on the basics of instrument flying in helicopters. Instrument flights are spread through the remainder of the transition phase, with the student receiving an Air Force instrument flight check in conjunction with his mid-phase transition check.

After passing this first hurdle, the student immediately begins the operational phase. At this time, student firefighters are phased to begin their flying training with the pilots in cargo sling, dummy Fire Suppression Kit (FSK), fire suppression training and rescue hoist training over land and water. A tremendous amount of coordination is required during this phase to schedule these activities for complete and efficient utilization of personnel and aircraft.

The student pilot is introduced to remote site operations and receives much of this training in the mountains east of Hill AFB. Training in search and rescue techniques and navigation is added until eventually the student is capable of performing all the tasks that may someday be required of him on an actual rescue mission. Two more check rides are given during this phase of training. The first covers all areas of fire suppression and rescue hoist training while the final check covers remote search and rescue operations and a review of the student's general flying ability. This final check determines the student's qualification in the aircraft, and will generally determine how he will be utilized when he arrives at his newly assigned Local Base Rescue Detachment.

The HH-43 helicopter graduate of the 1550th Flying Training Squadron can be assigned to any of the fifty seven (57) LBR detachments throughout the world. These detachments are established wherever the USAF fixed-wing aircraft operational use requires the rescue and fire suppression protection provided by the Aerospace Rescue and Recovery Service of the Military Airlift Command.

COORDINATED EFFORT—Student firefighters and pilots together practice cargo sling and FSK hookup, fire suppression and rescue hoist training over land and water. In right photos, an HH-43 pilot is making an FSK pickup. He brings the helicopter forward until it is aligned with the pole so the crewman on the ground can make the hookup. In the photo above, another method—hand signals—is used to guide the HH-43 over the Fire Suppression Kit for hookup.

FIRE SUPPRESSION—Student pilot lands a practice Fire Suppression Kit near "crash" site in preparation for the Local Base Rescue (LBR) operations he will engage in after graduation. Object at right is a simulated fuselage. Later, during advanced training, it will be surrounded by ignited fuel and an actual FSK will be utilized during practice "rescue" of downed pilot.

ON THE LINE—HH-43's are shown on the line at Hill AFB before daily training missions begin.

LAMPS Activities ....

By Bruce Goodale,
LAMPS Program Manager

As reported in the March-April issue of Rotor Tips, the first LAMPS SH-2D detachment to deploy to an operational theater, aboard the USS Belknap (DLG 26) in the Mediterranean, returned mid-March to Norfolk after three months in the Med. This LAMPS Det 1, from HSL-30, NAS Lakehurst, N. J., flew 127 flight hours during the cruise, 23 percent of these at night, and operated on occasion in sea states estimated at 4 to 5; an operational readiness of over 90 percent was maintained on this deployment. The data gathered and the techniques developed by this team will enhance the effectiveness of future LAMPS deployments.

Two other DLG's, the USS Wainwright (DLG 28) and the USS William H. Standley (DLG 32), have taken part in training cruises with their LAMPS aircraft and dets from HSL-30, in preparation for deployment in the near future. The USS Joseph Hewes (DE 1078) was the first of the East Coast DE 1052 Knox-class ships to train with its LAMPS SH-2D aircraft and det from HSL-30, followed by the USS Bowen (DE 1079); these ships have received modifications which enlarged their flight decks and hangars for LAMPS operations. The USS Garcia (DE 1040) and the USS Brumby (DE 1044) from the East Coast, and the USS Bradley (DE 1041) from the West Coast, are soon to be the first of the DE 1040 Garcia class to operate LAMPS.

On the West Coast, the USS Sterett (DLG 31) has been deployed in the Pacific since early January 1972 with LAMPS Det 1 from HSL-31, NAS Imperial Beach, Calif. Its SH-2D aircraft is also being maintained in a condition of high operational readiness, but that operational theater does not provide as much ASW opportunity as was experienced in the Mediterranean.

After completing training cruises on the West Coast, the USS Harold E. Holt (DE 1074) deployed for the Pacific with HSL-31 LAMPS Det 2 in mid-April 1972, the first of the DE 1052 class from either coast to deploy operationally with the SH-2D. The USS Truxton (DLGN 35) and USS Marvin Shields (DE 1066) started their training cruises in mid-April with SH-2D's aboard.

In a related program which might later add to LAMPS capabilities, a Sparrow missile has been successfully launched from an airborne H-2 SEASPRITE test aircraft by Naval Air Test Center, Patuxent River, Md. Air-to-surface launches against simulated targets are scheduled this summer.

Also this summer, two HH-2D's modified as prototypes of the intended Mark II LAMPS configuration, will operate from the USS Fox. These at-sea trials will be conducted by personnel from HSL-31 and the Naval Air Development Center. Meanwhile, Naval Air Systems Command has invited the various helicopter manufacturers to submit up-dated information on their recommended Mark III LAMPS aircraft, effectively kicking off the competition for the follow-on aircraft. Kaman, of course, intends to win this competition.

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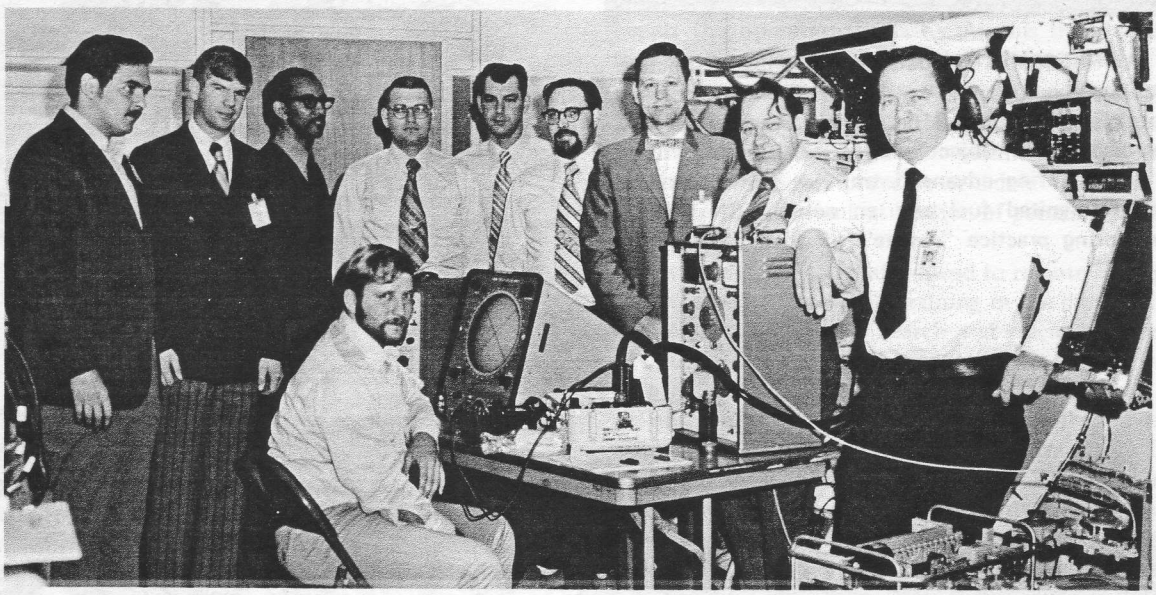


LAMPS TRAINER—Personnel from the Naval Maintenance Training Group, NAS Lakehurst, N. J., and Naval Air Engineering Service Unit, (NAESU) Philadelphia, Pa., recently completed a seven-week course at Kaman Aerospace on the use of the SH-2D LAMPS maintenance trainer. The trainer, developed and manufactured at Kaman, faithfully duplicates most of the avionics equipment installed in the SH-2D. For trouble-shooting or other training purposes, individual pieces of the equipment or systems function in a normal manner or may be made to malfunction by the instructors. The trainer now at Kaman is being sent to NAS Lakehurst while a similar trainer will be built for NAS Imperial Beach. Seated before the radar screen is AX2 George Bond; standing, left to right, AT1 Michael Hotsko; AT2 Stephen Barbee, NAMTG; Bernard Conley, NAESU; AT1 William Hall; AYC Ronald Rogers; AT1 John Stanfield, NAMTG; Max Neal, NAESU; Herman Demulling and Terrence Provost, Kaman instructors.

HC-4, HC-5 REDESIGNATED TO REFLECT ASW ROLE

Unveiling the new letter designation of Helicopter Anti-Submarine Squadron Light THIRTY, NAS Lakehurst, which they just painted on an HH-2D SEASPRITE are, left to right, AMH3 Mike Silevinac, AMS3 Doug Herborn, and AMH Rick Heeren. (USN photo)

At NAS Imperial Beach,Cdr George Crowell, commanding officer of newly designated HSL-31(formerly HC-5),and Cdr Dale Myers, executive officer, about to cut the cake at the reception following the Change of Designation. (USN photo)

NAS Lakehurst, N. J. . . . .

On 1 March, 1972, at exactly 1600, HC-4 was officially redesignated Helicopter Anti-Submarine Squadron (Light) Thirty (HSL-30). The squadron received its new designation in order to better describe its new mission as the East Coast Light Airborne Multi-Purpose System (LAMPS) Squadron. LAMPS, the fusing of the helicopter and destroyer-class ships, provides naval vessels with an "over-the-horizon" anti-submarine warfare and anti-ship-missile defense capability.

HC-4 was originally a portion of Helicopter Utility Squadron Two (HU-2), but on 1 July 1960 was commissioned as a separate squadron (HU-4). In 1965 the squadron was redesignated HC-4 in order to describe its mission as a helicopter combat support squadron.

In an informal ceremony held in the HSL-30 areas, the officers and men of the newly-designated squadron toasted the past success of HC-4 and cut a ceremonial cake inaugurating the new squadron.

HSL-30, under the command of Cdr James M. Lang, has been involved in the planning, development, and execution of the LAMPS program since the concept's inception. The squadron was the first to deploy the new SH-2D LAMPS helicopter and deployed the first fully operational LAMPS detachment aboard the USS Belknap in the Mediterranean Sea.

Cutting traditional cake at NAS Lakehurst are, left to right, AK3 N. T. Bedere, assigned to HC-4 since 1965, thus longest on board; Capt W. G. Nealon, commanding officer of the naval air station; Cdr J. M. Lang, commanding officer of HSL-30; AX1 J. Hanig, assigned to HSL-30 1 March, 1972, newest man aboard. (USN photo)

NAS Imperial Beach, Calif. . . . .

Originally commissioned on 1 September, 1967, Helicopter Combat Support Squadron FIVE (HC-5), has provided fleet replacement pilots and rescue aircrewmen for the Pacific Fleet's helicopter combat support squadrons. In addition, the squadron has trained replacement pilots for all West Coast shore-based search and rescue (SAR) units and provided a comprehensive aircraft maintenance familiarization program for enlisted personnel enroute to helicopter associated tours in Southeast Asia. Operationally, it has provided helicopter support to non-aviation ships in both the First and Seventh Fleets.

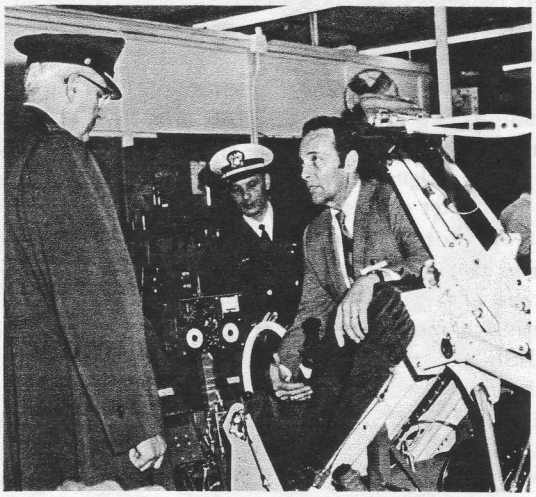
(continued next page)

SH-2D from NAS Imperial Beach displays new "HSL-31" designation while flying over San Diego.(USN photo)

On March 1st, HC-5 redesignated as Helicopter Anti-Submarine Squadron Light Thirty-One (HSL-31). It emerged with a dual mission: to provide operational detachments of pilots, aircrewmen and maintenance personnel for non-aviation ships to the Pacific Fleet under the Light Airborne Multi-Purpose System (LAMPS) concept; and to provide a complete readiness training environment for fleet replacement pilots, aircrewmen and maintenance personnel for LAMPS. By effectively performing its mission in concert with non-aviation combatants, HSL-31 will add a new dimension to Anti-Submarine Warfare and Anti-Ship Missile Defense heretofore appreciated but never realized by any fleet. The merging of a highly specialized helicopter configuration with the Navy's newest and most lethal surface weapon systems, will best ensure this nation's control of the seas through the employment of such a strong and versatile weapons team.

The guest speaker at the HSL-31 ceremony was Rear Admiral Narvin O. Wittman, Force Material Officer, for Commander Naval Air Force, U. S. Pacific Fleet.

Kaman KIMCS Certified By DOD



BrigGen Louis O. Alder congratulates KAC President Jack G. Anderson after presentation of validation letter. On left is Jess E. Sweeley, company vice president and controller. In photo at right, W. N. Stone, KAC vice president, engineering, explains Kaman-developed SAVER seat to General Alder and LtCdr Daniel Smolnik, chief of DCASO, Bloomfield. (Ruggiero photos)

BLOOMFIELD, CONN.—Kaman Aerospace Corporation recently became the first helicopter manufacturer—and the ninth defense contractor—to receive tri-service validation from the Department of Defense for complying with the Department's guidelines on cost and schedule management performance.

A validation letter certifying that Kaman Aerospace Corporation's Integrated Management Control System (KIMCS) satisfies DOD instruction 7000.2 Cost and Schedule Criteria was presented at the Bloomfield headquarters of the Kaman Corporation subsidiary March 3 by BrigGen Louis O. Alder, Comptroller, U. S. Air Force Systems Command, Andrews AFB. It was accepted by Jack G. Anderson, president of Kaman Aerospace.

Application of the Kaman Integrated Management

(continued on page 14)

Program Expanded

MAST
MILITARY ASSISTANCE for SAFETY in TRAFFIC

Secretary of Defense Melvin Laird announced recently that the Military Assistance for Safety in Traffic (MAST) program, which allows certain Army and Air Force units to use their helicopters in civilian medical evacuations, would be expanded to more than the five test sites which recently concluded a 15-month test of the program. The test on the two Air Force installations resulted in more than 100 people saved or assisted.

Approximately 25 Army and Air Force installations will participate in the MAST program. The locations have not been announced because of necessary negotiations between the host base and the local community and because a study must insure that the MAST mission will not interfere with the primary mission of that particular unit.

ARRS began participation in the MAST program in September 1970 when Det 15 and 22, 42nd ARRSq at Luke AFB, Ariz., and Mt. Home AFB, Idaho, respectively, began a test project in cooperation with the Departments of Defense and Transportation.

In the 15-month test program that ended Dec. 1, 1971, these two detachments participated in 37 missions, accounting for 32 lives saved and 73 people assisted.

Both detachments utilized the HH-43 HUSKIES (Pedro) to assist local communities in emergency evacuations, with the primary emphasis on assisting traffic accident victims.

Recently, Det 15 saved the lives of three traffic accident victims in two separate incidents.

Critically-Injured Girl Aided

The detachment received a request from the Arizona Highway Patrol to evacuate an injured girl after the family car in which she was riding had been caught in a rock slide. She had suffered a severe skull fracture when a large boulder penetrated the rear window of the car. The Highway Patrol asked the ARRS unit for help, even though the area was farther than the range of the HH-43 used by the detachment. The crew flew the helicopter to Globe, Ariz., about 90 miles from Luke AFB, where they had stored a fuel cache for such emergencies. They landed, refueled, and flew the remaining 80 miles to the accident site near Blue.

Flying in the darkness over rugged, mountainous terrain, the HH-43 crew landed and picked up the injured girl and her parents, both doctors. On the return trip to Phoenix, the helicopter landed to refuel and the girl was transferred to another Det 15 helicopter at the Safford, Ariz., Airport. The second helicopter then flew the girl to St. Joseph's Hospital in Phoenix, where the night supervisor in the neurological center stated that the immediate evacuation of the girl had been critical, and that the rescue crew had saved her life.

The aircraft commander on the first HH-43 was Capt Cole E. Walker. With him were Maj Ralph L. Gaede, copilot; MSgt Peter J. Lee, medical technician; Sgt Ralph B. Gay, helicopter mechanic. Manning the second helicopter were Capt Jay W. Hansen, aircraft commander; LtCol Zack L. Stockett, copilot; TSgt David Joe, Jr., helicopter mechanic; and Sgt John M. Beier, medical technician.

Traffic Accident Victims Medevaced

Only a few days later, the Flagstaff, Ariz., Highway Patrol asked the detachment for assistance again in evacuating three automobile victims 90 miles west of Luke AFB to a hospital in Phoenix. Assisted by a UH-1 from Luke, the Det 15 HH-43, piloted by LtColonel Stockett, transported the three victims to the hospital in Phoenix. With Colonel Stockett were Maj Thomas M.Lambert, copilot; Sergeant Joe,flight mechanic; and SSgt William L.Dean, medic.

Injured Motorist Rescued After 100-Foot Fall

In an earlier mission, Det 15 answered a call for assistance after a car plunged over a 100-foot cliff when the brakes failed. The man driving the vehicle had suffered face cuts, broken ribs, a possible back injury and a fractured pelvis.

At the rescue site, the HH-43 crew found that the road was raised, with 100-foot drops on each side. Captain Walker made the only approach possible and touched down between two large trees. Due to the unstable landing site, an "engine-running, on-load" was made and a takeoff executed. The rescuee was placed in intensive care after being airlifted to the hospital. With Captain Cole on the hazardous mission were Sergeant Gay, helicopter mechanic; and Sgt Ronald D. Knight, medical technician.

"Save" Credited For Speedy Flight

In another mission, a Det 15 crew medevaced a rider who was seriously injured when he and his horse plunged into the Verde River. The accident victim suffered a shattered pelvis, internal injuries and head cuts when the animal landed on top of him.

The injured man was airlifted to the Scottsdale Baptist hospital. Afterward, the rescue crew was credited with a "save" for their efforts. Manning the HH-43 were Captain Walker, pilot; Sergeant Knight, medical technician; and Sgt Richard J. McGovern, helicopter mechanic.

Scout Rescued From Deep Canyon

During a similar mission, flown earlier, a HUSKIE crew from Det 15 medevaced an injured boy scout who had fallen while hiking in a rugged mountain area 50 miles north of Phoenix. A scoutmaster remained overnight with the injured boy while the rest of the troop went for help. A second scoutmaster guided the HH-43 to the pickup area at the bottom of an 800-foot-deep canyon. The scout was on a sand bar at a bend in the canyon two miles from the mouth.

With the HH-43 rotor blades clearing the canyon walls by only five feet, Capt Troy Irvin landed on the sand bar and the scout and scoutmaster were taken aboard the helicopter. Winds of five to ten knots were blowing at the time. The helicopter lifted to a hover and a very careful turn was made to face the only takeoff route. Rotor clearance remained at five feet until the HUSKIE climbed to 200 feet where the canyon began to widen. The rest of the flight was made without incident.

Manning the rescue helicopter with Captain Irvin were Captain Walker, the copilot; and Sergeant Knight, medical technician.

SEASPRITE ACTIVITIES

HSL-31 Names "Honorary Arch Angel"

Story and Photos by
PHC L. Bernard Moran
PacFltCombatCameraGroup

ARCH ANGEL VISIT—In photo above, Cdr George T. Crowell, commanding officer of HSL-31 (HC-5 at the time), NAS Imperial Beach,Calif.,welcomes Karen Valentine aboard. At right, Cdr Ernest Yeager, explains cockpit of SH-2D LAMPS helicopter to Miss Valentine. (USN photos)

It was a normal Friday morning at Anti-Submarine Squadron Light Thirty-One (formerly HC-5), that is, until Karen Valentine arrived. Miss Valentine, the co-star of the highly successful television series "Room-222," was selected by HSL-31 to be the recipient of their first annual "Arch Angel Award."

"Wow," another first," she said,as Cdr George T. Crowell, the squadron's commanding officer, explained the significance of the award. In October of 1971, he said, the squadron held a contest to see who the most popular television personality was among the men. The winner would be named the Honorary Arch Angel for 1972. Arch Angels is the nickname of the Imperial Beach-based squadron.

At the presentation, Miss Valentine, dressed in a flashing red pants suit, expressed her happiness over being the selectee of the award. While addressing the squadron, she turned to Commander Crowell and said, "Are they allowed to talk back to you?"

Commander Crowell quickly replied, "They can, but they don't."

After the ceremony, Miss Valentine dined with members of the squadron at the enlisted galley, toured the squadron area, posing along the way for pictures for anyone that flashed a camera. One shy, hesitant sailor after clicking several shots said, "Thank you, I know that's a great one."

Signing autographs and maintaining a running conversation with anyone near her, she said to one dependent, "That's okay, I don't mind signing your shopping list, just don't lose it."

Unlike the kookie and amusingly artless character she plays in "Room-222," Miss Valentine is an intelligent, sophisticated young lady. In an industry which is too often identified with the "far out," the "up tight" and "do your own thing," Miss Valentine is a refreshing contrast. Speaking freely about her career, she asserts, "I make no illusions about this business. Of course I enjoy what I'm doing. But I do consider it work and effort."

HH-2D Crew Saves Sailor

A sailor, injured and unconscious after being blown from the deck of the USS J. F. Kennedy, was rescued by an HH-2D crew from HC-2's Det 67 deployed aboard the carrier. Flying plane guard at the time of the mishap, the H-2 hovered over the man in the water and AKAN J. A. Urbanawiz went to his assistance. The HH-2D crewman inflated the man's life vest, checked him for broken bones and then placed the unconscious sailor in the rescue sling. Urbanawiz and the rescuee were then hoisted to the helicopter by ADR2 D. T. Warmkessel. A minute later the helicopter landed on the carrier. Lt(jg) L. E. Hays was pilot on the mission and Lt M. E. Liebman was copilot.

NEW RADAR CONCEPT TESTED ON HH-2D

By D. G. Uitti,
H-2 Project Engineer

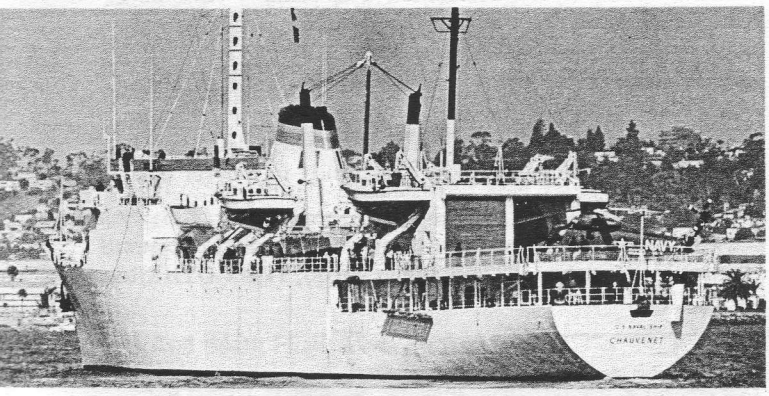
Kaman Aerospace recently completed a contract from the Naval Air Development Center, Warminster, Pa., to conduct a series of HH-2D airworthiness tests for a newly developed radar antenna system, after designing the interface and making the installation. The program provided NADC with a test vehicle to evaluate an off-the-shelf LN-66 commercial radar, manufactured by Canadian Marconi of Montreal, with a new antenna concept developed by the Cubic Corporation of San Diego, Calif. The Cubic components consisted of a large antenna housed in a collapsible radome, and a control system which provided North stabilization, sector scan and an antenna which could be retracted and extended.

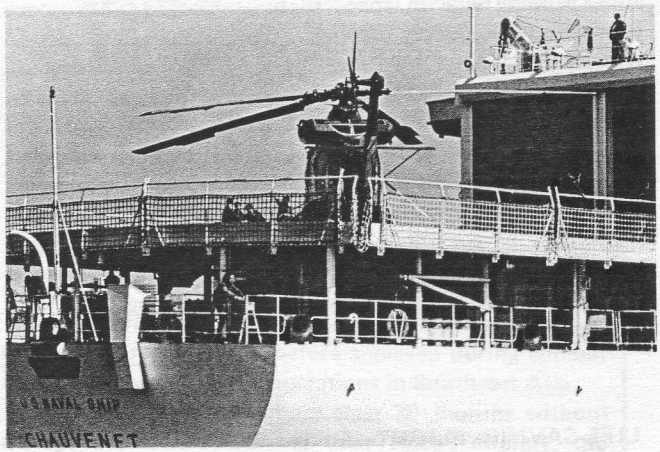
The helicopter installation consisted of a sensor operator's station in the aft cabin similar to the one in the SH-2D. The radome, six-feet, eight-inches in diameter, was installed under the forward portion of the aircraft and extended from the tip of the nose to the wheel wells. Engine bleed air was used to inflate the radome and extend it from a 12-inch retracted position to 52 inches in depth. A three-spool winch was utilized for retraction. When the radome was inflated, the antenna could be extended and rotated for radar search. It was a large aperature antenna designed to significantly increase the LN-66 radar search range to values found only in the more sophisticated, high-cost systems.

Kaman's part in the development was to substantiate the airworthiness of the Government-furnished LN-66/Cubic antenna system. Ground and hover flight retraction-extension cycle tests were followed by flights which established an airspeed envelope limited only by the HH-2D operational torque limits. After the Kaman airworthiness tests, the helicopter was delivered to NADC where qualitative range evaluation tests were made.

Results to date: Radar search range up to 72 miles!

HSL-31 Det Aids Survey Work



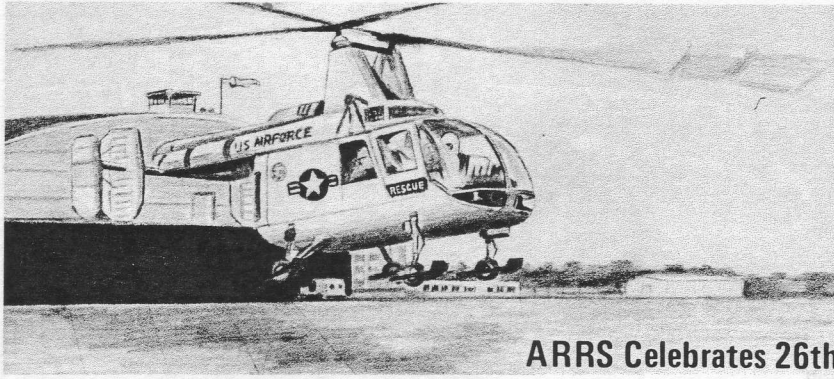


HSL-31, NAS Imperial Beach, Calif., recently sent a helicopter detachment aboard the USNS Chauvenet (T-AGS-29), one of the newest Navy survey ships in the fleet. The Chauvenet, equipped for hydrographic and geophysical survey work, is sponsored by the U. S. Naval Oceanographic Office. The ship is commanded by Capt W. H. Cunningham.

What is the helicopter detachment doing aboard an oceanographic vessel?

The answer is a simple one—HSL-31's MC & G Det A is providing the Chauvenet with air support. While the ship is surveying specific areas in the Pacific Ocean, an HH-2D helicopter will furnish the necessary personnel transportation to insure successful completion of the mission. Survey teams are dependent upon the helicopter for getting them where the ship cannot go. Also, once ashore, the helicopter will fly them food, water, and supplies.

The officer-in-charge of the detachment is Lt Douglas B. Hackett. Other members of the unit are Lt(jg) Michael R. Clapsadl, Lt(jg) David R. Brown, AMSC Larry F. Hopkins, ADJC Antonio F. Delino, AMH2 Frederick F. Black, AE2 Wayne C. Rudisill, ADJ3 Edwin F. Freed, AMS3 Michael T. Measel, AMS3 George Lattuca, ATAN Trent A. Carver, AMSAN Roy L. South, and AN Mark A. Matherne.



HUSKIE HAPPENINGS

ARRS Celebrates 26th Anniversary

The Air Force's world-wide Aerospace Rescue and Recovery Service (ARRS), which has saved the lives of more than 22,000 men and women in combat, accidents and civil disasters, celebrated its 26th Anniversary on March 13th.

Once called the Air Rescue Service, the command was officially established on March 13, 1946, and was a consolidation of existing air-sea rescue forces from World War II. Since that time, ARRS has developed into a global organization with forces around the world which carry out a multitude of humanitarian missions—missions which saw ARRS forces save 730 lives in 1971 alone.

The Air Rescue Service was soon placed under the Air Transport Command—forerunner of the present Military Airlift Command—and its units were located throughout the free world to protect airmen flying primary overwater routes.

In Korea, for the first time, allied fighting men were backed by an organized professional combat rescue force. The Air Rescue Service was the most decorated unit of that war. Nearly 10,000 rescues were made, of which almost a thousand were from behind enemy lines. ARS was equipped with SA-16 Amphibians and H-5 and H-19 helicopters. The SA-16's flew orbits off the Korean coast during strike missions and fighter pilots tried to ditch nearby if they got in trouble.

The command's name was changed in 1966, reflecting an expanding role in space flight support, to Aerospace Rescue and Recovery Service. The Kaman-built HH-43 HUSKIE, followed by longer range helicopters, took on some of the new tasks required of ARRS, replacing H-5, H-6 and H-19 helicopters. The Local Base Rescue concept came of age, and the fast-reaction HUSKIE fit the role.

The epic accomplishments of rescuemen in Southeast Asia read like the drama of a fast action novel. Time and again, they have extracted downed crewmen from seemingly impossible situations. Some rescue crews have made several saves in a single day, literally fighting their way into and out of the pickup area.

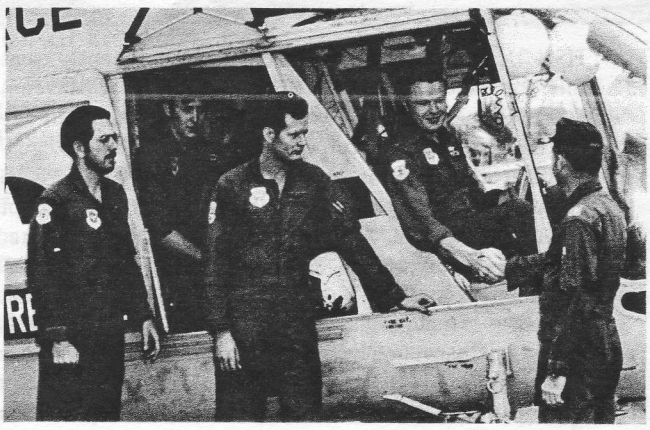
Today's search and rescue (SAR) task force—composed of the HC-130 airborne mission control aircraft, A-1 fighter escorts for suppressing ground fire, F-4 Phantom combat air patrol fighters and long-range helicopters for the pickup—evolved from the contingencies of jungle warfare. The success of this force can be measured by the more than 3,300 lives saved since the ARRS involvement in the war in late 1964. Of these, more than 2,300 were saved under combat environments.

This war has found ARRS units to be the most highly decorated for their achievements—being awarded more than 12,000 individual decorations—including one Medal of Honor and 27 Air Force Crosses. Paralleling this combat rescue success, ARRS units around the world have used the expertise gained from Southeast Asia in their efforts to help people in need.

In 1969, ARRS crews responded to a plea for help from the Tunisian government, and was credited with saving 2,500 people during the massive floods which struck that African nation. ARRS units assisted in aiding the victims of Hurricane Camille. Pararescuemen have been responsible for saving the lives of Russian seamen in four separate missions. Civilian pilots, hikers, campers, etc., have all been the subject of search and rescue efforts by ARRS.

Recently, ARRS has joined forces with the U. S. Army in a joint Department of Defense-Department of Transportation plan that uses military helicopters to evacuate victims of automobile accidents. This Military Assistance for Safety in Traffic (MAST) program has accounted for more than 100 people saved or assisted by the two ARRS detachments participating presently in the program. And ARRS has also grown with America's space program. Since early in the 1960's, ARRS has been called upon to provide a sophisticated recovery capability to recover astronauts and space equipment.

The Aerospace Rescue and Recovery Service continues to live by its motto: "These things we do, THAT OTHERS MAY LIVE!"



LIFE-SAVING FLIGHT—An HH-43F crew from the 31 ARRSq at Clark Air Base, R. P., recently flew an emergency medevac into the rugged Zambales Mountains to save a Negrito woman, near death after plunging from a cliff. Mouth-to-mouth resuscitation and closed heart massage were used to keep the survivor alive. The crew, further hampered by low ceilings and mountain turbulence, delivered her to the USAF Hospital in time to save her life. In the photo, left to right, are SSgt Robert Pierce, medical technician; Sgt Gordon Writt, fire fighter; SSgt Russell Reffitt, helicopter mechanic; and Capt Roderick Cross, aircraft commander. Captain Cross is being congratulated by LtColonel Lucian Gunter, HH-43 Operations Officer.

Speedy Rescue By Det 4

A T-28 instructor and his Vietnamese student whose aircraft caught fire and ditched in the Gulf of Mexico were rescued by an HH-43 crew from Det 4, 44th ARRSq, Keesler AFB, Miss. Eight minutes after scrambling, the rescuemen aboard "Pedro 83" delivered the two uninjured survivors to medical personnel at Keesler. Participating in the rescue were LtCol Delmar G. Worsech, pilot; Sgt Charles E. Johnson, medic; Sgt Michael L. Citro and A1C Charles E. Reed, firemen.

Det 16 Saves Life Of Crash Victim

A civilian who survived the plane crash which killed his companion was medevaced by an HH-43 from Det 16, 43rd ARRSq, McConnell AFB, Kan. The prompt delivery to the hospital was later credited with saving the man's life.

For LtCol William C. Emrie and other members of the HUSKIE crew, the mission began at 2:30 in the morning after word was received that a light civilian plane was out of fuel and attempting to land on a highway approximately 10 to 17 miles from McConnell. Shortly afterward the plane crashed into a pond adjacent to an oil well.

For almost two-and-a-half hours the HUSKIE searched unsuccessfully through the hampering darkness. Returning to the base at 5 a.m. the helicopter was refueled and took off again at first light. Soon afterward, a State Police patrol found the wreckage and the HH-43 was directed to the site. The crash survivor was placed aboard the HUSKIE and taken to the hospital.

Flying with LtColonel Emrie on the mission were Capt Matthew P. Gloege, copilot; SSgt Thomas P. Skaug, helicopter mechanic; SSgt Norman V. Thomas, medical technician.

Williams AFB Det Rescues Two

Two young hunters who had become trapped in waist-deep mud near a lake were rescued by an HH-43 from Det 16, 42nd ARRSq, Williams AFB, Ariz. Maj Dean Ketchum, pilot of the HUSKIE, and his crew were later credited with saving one boy's life. Launching at midnight, the rescue helicopter flew to Pichacho Reservoir to help the Pinal County Sheriff's Office free the stranded youngsters after deputies were unable to reach them. Earlier, a third boy had been able to fight clear of the clinging mud and went for help. As Major Ketchum held the HUSKIE in a hover, SSgt Phillip Myers, helicopter mechanic, used the hoist to pull the boys from the mud.

Other members of the HH-43 crew were Capt Glen McGregor, copilot; Capt Harry Van Dolan (MC), an Air Force doctor; SSgt George Kessel and Sgt Richard Kinsey, firefighters.

SOUTHEAST ASIA

Det 3 Saves Pilots

UBON RTAFB—The crew of an HH-43 Pedro helicopter from Det 3, 3rd ARRGp rescued the two pilots of an F-4 Phantom recently.

The pilots ejected from their jet at 5:05 p.m. approximately 12 miles from this Thailand base after the aircraft developed mechanical difficulties. One landed in a rice paddy while the other pilot parachuted into a tropical jungle. Less than 20 minutes after the crash, the Ubon Pedro had the pilots safely on board in good condition.

The crew of the HH-43 consisted of Capt Richard W. Standish, aircraft commander; Capt Charles T. Jernigan, copilot; SSgt Stewart P. Smith and SSgt Danny J. Chaney, firefighters; Sgt Larry G. Bull, medical technician; and Sgt Harvey B. Long, flight mechanic.

Life And Death Flight Made By Det 12

U-TAPAO AFLD—A sergeant who fractured his neck while diving near an island in the Gulf of Thailand was medevaced to the hospital by an HH-43 crew from Det 12, 3rd ARRGp, stationed here. The accident victim was located after a 15-minute flight through haze and a landing was made on the beach. Minutes later the patient was aboard and on his way to the hospital. Afterward, the commander of the 11th USAF Hospital said the mission had been a life and death emergency and was a definite "save." Capt Dante O. Fierros was pilot of the rescue helicopter and Capt Ralph H. Bell was copilot. Other crew members were Col John R. Hoch (MC), a flight surgeon; Sgt Thomas W. Hooker, helicopter mechanic; and Sgt Frederic A. Praitano, medical technician.

NEW COMMANDER

Col Cecil N. Muirhead, Jr., is the new commander of the 3rd ARRGp. Colonel Muirhead was formerly Director of Safety at ARRS Headquarters. Before that, he served as commander of the 57th ARRSq, Lajes Afld., Azores.

3rd ARRGp Establishes Safety Record

TAN SON NHUT AB—The 3rd ARRGp has established a safety record never before achieved during combat search and rescue (SAR) operations in Southeast Asia.

The unit has flown more than 30 months without a flight accident involving their rescue aircraft, the HH-43 Pedro and HH-53 Jolly Green Giant helicopters and HC-130 Hercules. The 3rd ARRGp units flew more than 125,000 accident free hours during the period, including 28,000 hours in the last year.

SAR operations of the 3rd ARRGp are flown by four squadrons and 10 detachments and out of four forward operating locations. Seven hundred lives have been saved over the 30-month period and 417 of them were under combat conditions.

Safety has been the prime element in the performance of SAR missions, which have been flown in monsoon rains, extreme heat and over treacherous jungle terrain.

Rescuer Logs 3,000 Hours in HUSKIE

By A1C Bill Hendryx

Reprinted from *The ROUNDUP*
Reese AFB, Texas

CAREER MILESTONE—After logging 3000 hours in the HH-43 Maj Thomas C. Seebo, center, is congratulated by his son, 1stLt Thomas C. Seebo II, left, and Capt John G. Taylor, an HH-43 pilot and the information officer for Det 3. (USAF photo)

Three thousand into 11 just won't go!. . .Or will it?

"Yes," says Maj Thomas C. Seebo.

Uh. . .Sir, could you explain how you do that?

"Why sure, son. You see. . ."

And I sat back and took in the long narrative with great interest and admiration. This was obviously a man who took great pride in his work and enjoyed telling others about it.

The solution to the mathematical problem was simple. Major Seebo began flying the Kaman HH-43 HUSKIE 11 years ago with the conception of Local Base Rescue. Today he was to fly his 3,000th hour in that helicopter as commander of Detachment 3, 43rd Aerospace Rescue and Recovery Squadron, Military Airlift Command at Reese. The major is among a select few ever to achieve the 3,000-hour mark in the rescue helicopter.

Major Seebo's enthusiasm for flying the historical hour, however, seemed to take a back seat to the fact that his son, 1stLt Thomas C. Seebo II, would be accompanying him in the flight. The younger Seebo, who was recently assigned as an Instructor Pilot at Reese, had never flown in a helicopter, and his father had never ridden in the Cessna T-37. So they swapped rides.

"It was really quite a coincidence that my son should arrive here at about the same time I hit 3,000," Major Seebo explained, "it was too great an opportunity to let pass."

And so it was. The major and his son are both now stationed at Reese; Major Seebo took his first ride in a T-37, piloted by his son; Lieutenant Seebo had his first ride in a helicopter, as his father flew his 3,000th hour in the HH-43; and to top off the string of "coincidences," Col. Walter H. Baxter III, wing commander at Reese where the Seebos are both stationed, was stationed at Webb AFB, Tex., with Major Seebo in 1961 when the first HH-43 was delivered there on Valentine's Day.

Coincidence?. . .perhaps. Fate?. . .who's to say. One thing is certain. The major seems a dedicated man who sincerely believes in what he is doing. "It's an awkward situation, working in rescue," Major Seebo added, "much like that of a doctor. A doctor's reason for being is to prevent disease and pain, yet disease and pain keep alive his profession. It's the same with rescue work."

When asked why he didn't enter another branch of service where helicopter flying was more widely used, the major explained, "I loved the challenge and progressive-mindedness of the Air Force. . .and I did find it challenging" Major Seebo began flying rescue helicopters at Anchorage, Alaska in 1956 and has been doing so ever since. He first entered the service as an enlisted man and served as a gunnery instructor in the B-29 and as a flight instructor in the C-47 from 1944 until 1947. He then entered the AFROTC program at Oklahoma State University and served as cadet Wing Commander from his sophomore year until his graduation and commissioning in September 1953. The major received his silver wings after completing pilot training at Columbus AFB, Ga. From there he went to San Marcos, Tex., to attend helicopter school.

Among others, Major Seebo's decorations include nine outstanding unit awards and two Presidential Unit Citations, a significant accomplishment in itself.

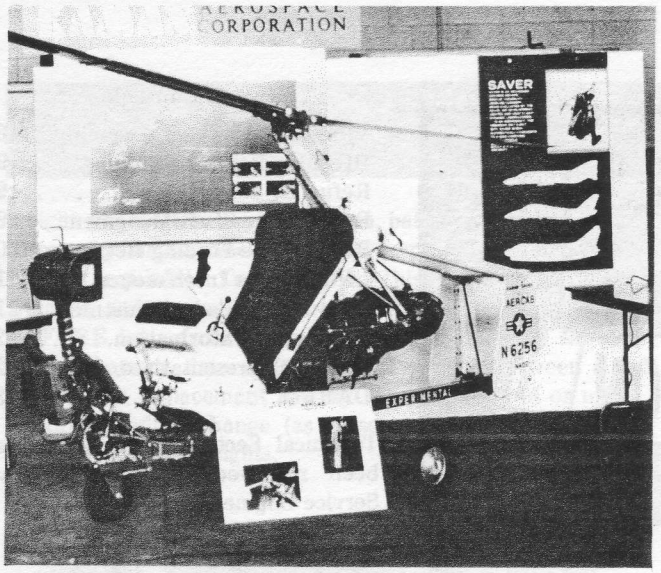
KIMCS Certified - continued from page 8

Control system was demonstrated in the performance of initial phases of the Air Force Airborne Weather Reconnaissance System (AWRS), for which Kaman is under contract to the USAF Electronic Systems Division, AFSC. ESD representatives attended the presentation ceremony.

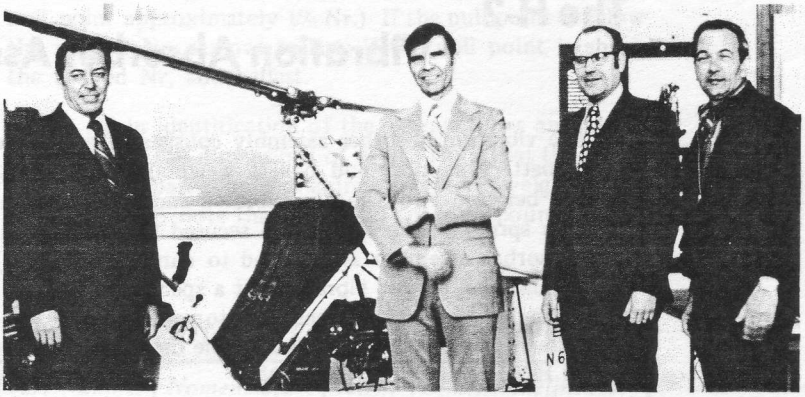
Under Mr. Anderson's direction, Kaman's management began formulation of the Integrated Management Control System in April 1970, prior to Kaman's submission of a competitive proposal for the AWRS contract definition. Kaman won both the contract definition and subsequent prototype fabrication phases for the advanced tropical storm reconnaissance system which is being installed in an Air Weather Service "hurricane hunter" aircraft.

To design and develop the cost/schedule control system, a corporate task force was formed, composed of representatives from all major Kaman departments. Within 18 months the computerized management control system was designed and implemented. It not only met the DOD requirement but also ultimately enhanced and improved pre-existing company department cost, scheduling, budgeting, accounting and reporting procedures. An intensive training program was carried out to familiarize all management and supervisory personnel with the operation of the system.

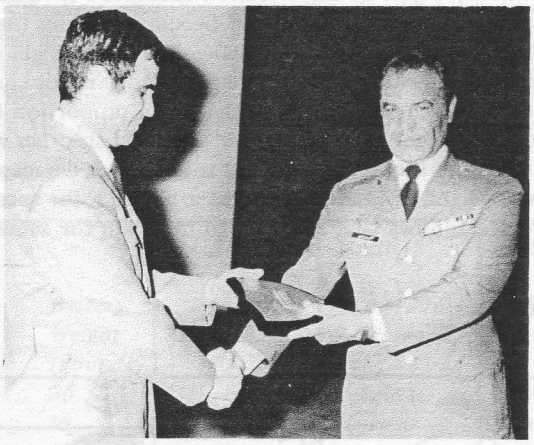
Mr. Anderson said the Kaman Integrated Management Control System has resulted in increased overall operating efficiency and economy in company operations.



SAVER EXHIBIT—Left photo shows the Kaman SAVER (Stowable Aircrew Escape Rotoseat) on exhibition at a recent Navy Helicopter Association Convention, NAS Imperial Beach, Calif. In right photograph, Andy Foster, KAC chief test pilot, helps a young miss into the seat of the advanced escape and rescue device. Foster flew SAVER on its first flight a few months ago. In third photo, left to right, are William R. Murray, KAC vice president, Test Operations/Customer Service; Foster, Robert L. Bassett, supervisor, Customer Operations; and Donald P. Alexander, senior service representative at Imperial Beach. Foster and Bassett visited the SAVER exhibition while on the West Coast to attend a LAMPS training conference. (Photos by Justin Barzda, SAVER program manager)



1000-HOUR PILOTS



In first photo above, Lieutenant A. Mohseni, left, H-43 Squadron commander, receives a Kaman Aerospace Corporation plaque after logging 1000 hours in the HUSKIE. Making the presentation is Gen Sagad Mehdiun, 6th Tactical Fighter Base, Bushehre, Iran. In second photo, Lt Donald L. Morgan, left, and Lt Robert E. Hofstetter, both of HSL-31, NAS Imperial Beach, Calif., show plaques presented by Donald P. Alexander, center, Kaman senior service representative, after flying 1000 hours in the H-2 SEASPRITE. Photo at left shows Horace F. Field, Kaman senior service representative, presenting plaque to Lt Allen Petrie, from HSL-30, NAS Lakehurst, N. J. Three other pilots who passed the 1000 hour milestone during the last few months are: HH-43 – LtCol Roy L. Crawford, 33rd ARRSq, Kadena AB, Okinawa; Squadron Leader Riaz A. Shah, Pakistan Air Force; H-2 – LCdr Harry E. Higginbotham, HSL-30, NAS Lakehurst.

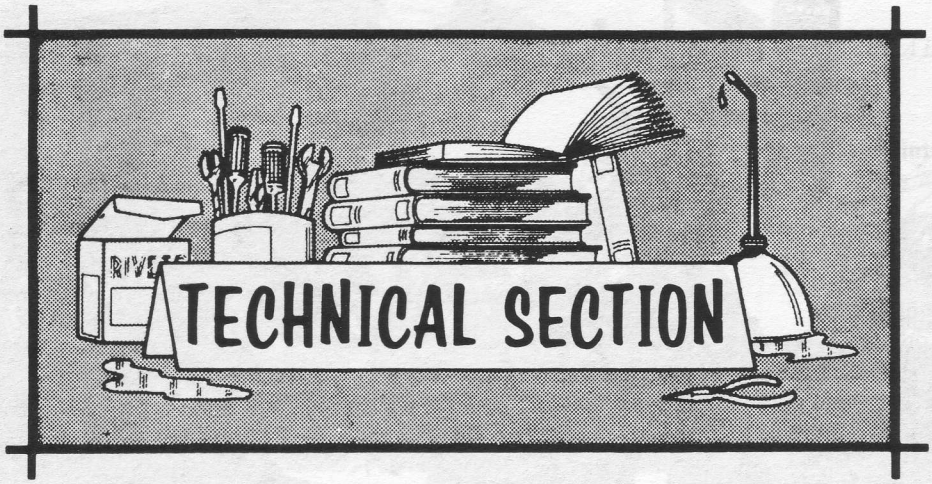


Table of Contents

Technical Section information has been reviewed and approved by Service Engineering.
G. M. Legault, Supervisor

The H-2 Vibration Absorber Assembly

By H. Zubkoff, Service Engineer

The vibration absorber assembly consists of a specific mass (battery support and ballast weights) which is suspended between two sets of calibrated and adjusted compression springs. The springs are secured to the fuselage. The absorber assembly is designed to dampen out (null) rotor-induced 4-per-rev vibrations at a specific rotor RPM; it is not designed to compensate automatically for vibrations incurred at all rotor speeds. The desired null point for all H-2 aircraft is 101-102% Nr.

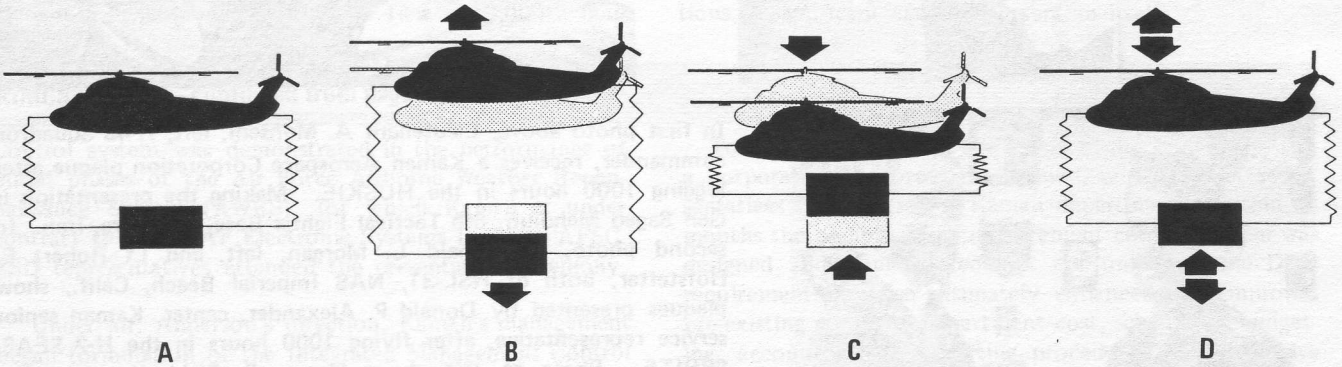
The vibration absorber concept is based on the principal that two vibrations of the same frequency, in opposite phase, will cancel each other out.

Illustration 1 shows how, as rotor-induced vertical forces affect the aircraft, the suspended mass of the vibration absorber reacts and induces a counter force in the opposite direction; the result is a damping of the rotor forces. The frequency of the rotor-induced vibration will vary with changes in rotor RPM; the frequency of the vibration absorber-induced vibrations can be regulated by changing the total weight of the assembly and/or varying the spring rate.

It is thus possible to completely counteract rotor-induced vibrations, at any rotor speed desired, by "tuning" the vibration absorber assembly. Tuning consists of adding or subtracting ballast. Once the total absorber weight for a particular aircraft has been determined, the required weight will not change unless a change is desired in the null point/rotor RPM relationship.

The major part of the vibration absorber's specific mass is the battery. Consequently, it becomes obvious that batteries of varying weights will change the total weight of the absorber installation. If this weight change is not compensated for, the null point will change in proportion to the change in weight. An increase in the total absorber weight will establish the null at a lower rotor speed; decreased absorber weight will set the null at a higher rotor speed. It therefore follows that in order to maintain the same total

ILLUSTRATION 1



View A of illustration 1 shows the rotor, fuselage, springs and vibration absorber assembly at rest. In View B, the VA assembly has started to react to the vertical force induced by the rotors. (The shaded areas indicate at-rest positions.) View C is opposite to View B; notice the springs are at the fully compressed position. Assuming the vibration absorber assembly is properly tuned to the expected rotor RPM, the result would be as depicted in View D. The vertical forces are still prevalent at the rotors and the absorber assembly, but now the fuselage is in the same position as that shown in View A. Moral? Keep that vibration absorber tuned properly!

weight of the absorber installation, battery weights must be known by maintenance personnel (especially when replacement is required). To accomplish this, batteries should be weighed and the weight marked on the battery data decal BEFORE issue from the battery shop. Photo A shows a typical battery data decal. If the weight between a removed and replacement battery varies 0.5-pound or more, a corresponding change (as close as possible) should be made in ballast weights.

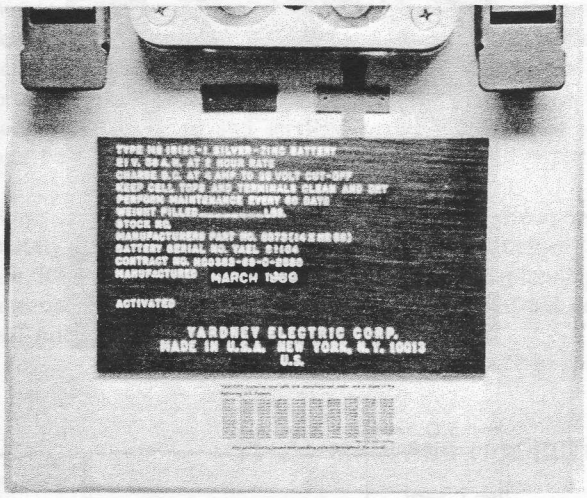


Photo A

Vibration absorber assemblies should be built-up in accordance with Table 1. This will place the null level at, or very close to, the desired rotor speed (101-102%). A test flight must then follow to determine the Nr setting at which the rotor-induced 4-per-rev actually appears to null out; ballast adjustments must then be made as required—add ballast to bring the null level down; remove ballast to bring null level up. When selecting ballast weights, be sure to allow for changes which may be required after the test flight. For example: in Table 1, a battery of 35.5 pounds requires 34.6 pounds ballast. Any combination of weights could have been selected, but to permit ballast adjustment after the test flight, the ballast units, as listed are recommended. This selection of ballast will also provide for future weight adjustment, in the event of subsequent installation of a heavier battery. If the test flight indicates that a change of 1% Nr higher is required, removal of two K631242-11 (0.8-pound each) ballast plates will bring about the change. (A 1.6-pound change will move the null point approximately 1% Nr.) If the null point is below the desired Nr, remove ballast; if the null point is above the desired Nr, add ballast.

To aid in identification of the various tubes and plates, Table 2 lists the dimensions of each. Note that the ballast weights are based on a maximum battery weight of 40 pounds. Also note that (initially) for a 40 pound battery

TABLE 2. - TOTAL BALLAST WEIGHT REQUIRED

Part Number	*Nomenclature*	*Weight*	*Dimensions(inches)*
K631242-13	*Ballast Plate*	*0.4 lb*	*3/32 x 2 x 6-7/8*
K631242-11	*Ballast Plate*	*0.8 lb*	*3/16 x 2 x 8*
K631243-1	*Ballast Tube*	*7.0 lbs*	*1 x 2 x 9-3/4*
K631246-1	*Ballast Tube*	*9.0 lbs*	*1-1/4 x 2 x 9-3/4*
K631758-11	*Ballast Plate, lead*	*9.4 lbs*	*5/16 x 8 x 10*

TABLE 1. - BALLAST-BATTERY WEIGHTS

Battery Weight (Pounds)	*TUBE *K631243-1 7 lbs each*	*TUBE *K631246-1 9 lbs each*	*PLATE *K631242-11 0.8-lb each*	*PLATE *K631242-13 0.4-lb each*	*LEAD PLATE *K631758-11 9.4-lbs each*	*TOTAL BALLAST WEIGHT REQUIRED (lbs.)*
35.3 to 36.3	*None*	*2 tubes (1 each side)*	*8 plates (4 each side)*	*2 plates (1 each side)*	*1 plate (under battery)*	*34.6*
36.4 to 37.8	*None*	*2 tubes (1 each side)*	*6 plates (3 each side)*	*2 plates (1 each side)*	*1 plate (under battery)*	*33.0*
37.9 to 38.6	*None*	*2 tubes (1 each side)*	*4 plates (2 each side)*	*4 plates (2 each side)*	*1 plate (under battery)*	*32.2*
38.7 to 39.4	*None*	*2 tubes (1 each side)*	*4 plates (2 each side)*	*2 plates (1 each side)*	*1 plate (under battery)*	*31.4*
39.5 to 40.0	*2 tubes (1 each side)*	*None*	*6 plates (3 each side)*	*2 plates (1 each side)*	*1 plate (under battery)*	*29.0*

**In the event the part numbers are not stamped into the ballast weights, refer to Table 2 for a dimensional method of identifying the ballast tubes and ballast plates.*

the H-2 requires 29 pounds ballast. If a battery weighing more than 40.5 pounds is installed, ballast weight equal (as closely as possible) to the difference between 40 pounds and the battery weight, must be removed. As a helpful hint, it is suggested that once the optimum weight (battery plus ballast) for a particular aircraft has been determined, that the exact weight be applied with paint to the structure in the vicinity of the absorber installation. This will facilitate future absorber assembly installation.

The absorber assembly ballast which can be added, removed, or changed, consists of rectangular steel plates and rectangular lead-filled steel tubes. Ballast must always be added or removed in like pairs, one on each side of the battery. Never remove or add only one tube or one plate since an unbalanced condition will result. In addition to the ballast tubes and plates, which are installed on top of the absorber assembly, one 9.4 pound lead plate is required UNDER THE BATTERY. Whenever disassembly and removal of the complete vibration absorber and battery installation is required, it is advisable to clearly mark (or otherwise note) the items removed to insure that the same weight is maintained at the time of re-installation. If such data is not available, proceed as follows:

1. Check battery weight and determine required ballast in accordance with Table 1.
2. Install support assembly (5).
3. Install support weldment (7).
4. Install springs (upper and lower; 14) and bolts (15).
5. Install ballast.
6. Torque the bolts (15) to obtain a spring height of 4-1/8 inches.
7. Install battery.
8. Install battery hold-down bracket (1) and spacer (22). Torque bolts (2) to 85-100 pound-inches.

A recent change to Interior Markings Drawing, K686702, adds a stencil to the front of the vibration absorber support assembly as shown in Photo B. Local dets may fabricate and apply the stencil using 1/4-inch high letters and Insignia White paint. Position the stencil as shown on Illustration 2.

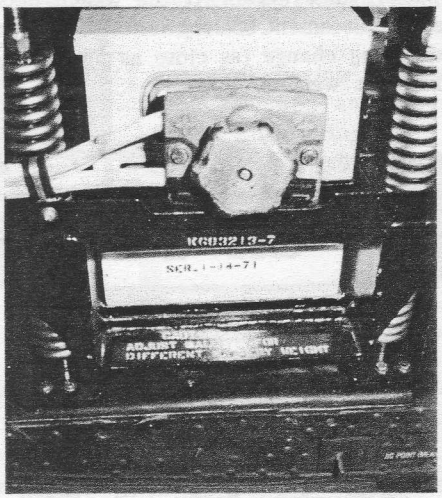


Photo B

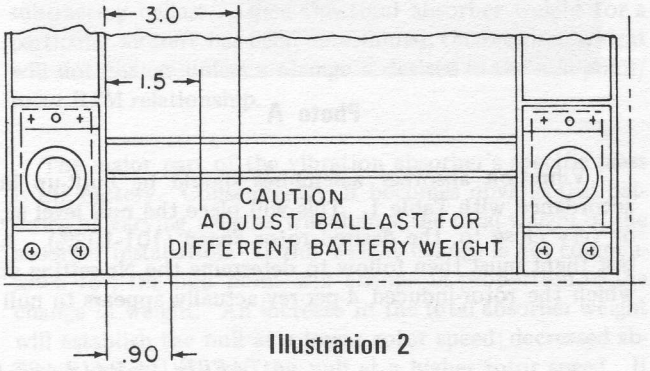
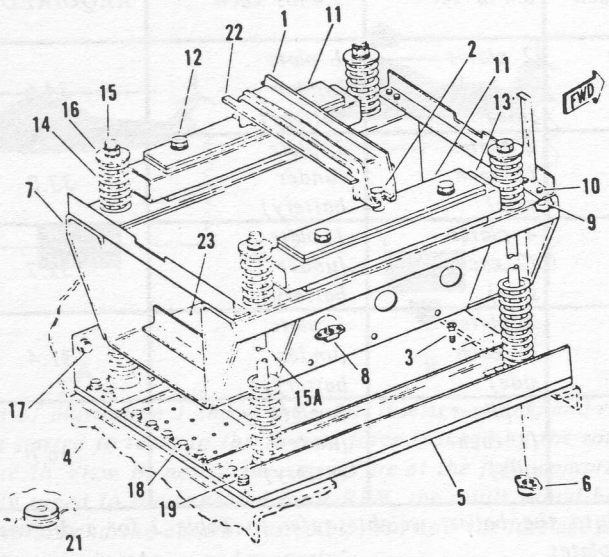


Illustration 2

VIBRATION ABSORBER INSTALLATION



1. *Bracket*
2. *Bolt*
3. *Screw*
4. *Spring guide*
5. *Plate*
6. *Nut*
7. *Support*
8. *Nut*
9. *Nut*
10. *Bolt*
11. *Ballast plate*
12. *Bolt*
13. *Tube*
14. *Spring*
15. *Bolt*
15 A. *Bolt*
16. *Spring guide*
17. *Bolt*
18. *Bolt*
19. *Bolt*
20. *Grommet*
21. *Grommet*
22. *Spacer*
23. *Ballast*

H-2 BATTERY SERVICING

Aircraft storage batteries should be serviced and maintained in accordance with the appropriate section of NAVAIR 17-15BAD-1, and the applicable manufacturer's instructions packed with each battery. Only authorized personnel, instructed in maintenance, precautions, and associated hazards should be assigned to the battery shop.

A possible mission abort can be averted by having a properly serviced battery ready when necessary. Some detachments find it expedient whenever the batteries are removed for cell check or other maintenance to send these batteries to the battery shop and alternate with one that has had proper shop servicing. This system insures that the batteries are inspected and serviced periodically and at least one battery is RFI at all times.

Some batteries, when received from supply require approximately 4 days for "soaking" and conditioning before they are RFI. Due to this time factor, some preplanning is necessary to preclude a mission abort because of a dead or not fully-serviced battery.

N. Hankins, Service Engineer

H-2 REFUELING NOZZLES

Several fuel system malfunctions have been traced to loose foreign objects in the fuel tanks, valves, lines, etc. Investigation of the parts shows that while some are normally used in the fuel system, most of the foreign objects are from areas foreign to the aircraft. For example: a recent malfunction in the fuel transfer system of an aircraft was traced to a bronze machine screw which reportedly fit a refueling nozzle used while pressure fueling the aircraft. The 3/16-inch screw lodged in the inlet port of the aft fuel/defuel shutoff valve. Fortunately, the aircraft landed safely and the valve was not damaged but the incident further illustrated the need for DARFO-like actions.

While it is imperative for mechanics to secure all components on an aircraft (or in an aircraft), it is also imperative to use caution when introducing anything to the aircraft. It is everyone's responsibility to check for clean, secure and operational components. Before a refuel operation, check the refuel nozzle for security of nuts, bolts, screws, chains, etc. Detect and remove foreign objects before these objects cause damage to life and/or property.

H. Zubkoff, Service Engineer

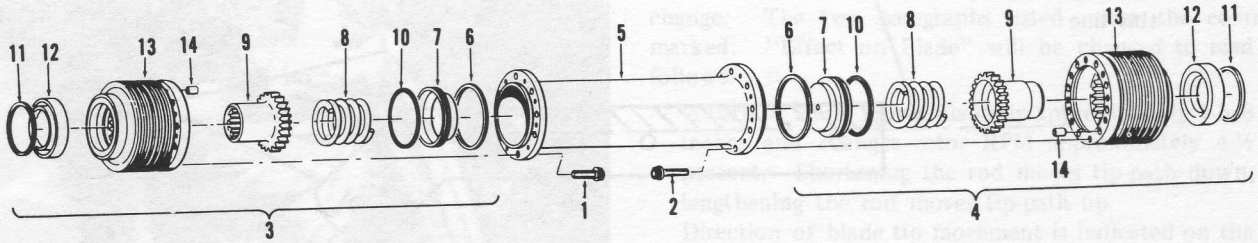
H-2 MAIN AND TAIL ROTOR DRIVE SHAFT AXIAL MOVEMENT

Main or tail rotor drive shafts should not be "chucked" fore and aft because the repeated pumping action between the hub and sleeve forces grease past the coupling seal. As the illustration below shows, two springs are included as integral parts of the main drive shaft installation. These springs are designed to allow driveshaft axial movement. Consequently, if axial force is applied to the drive shaft, it will compress the springs. Continued movement will force grease past the coupling seals.

NOTE: Axial shaft "chucking" by hand should not be used as judgement criteria for a serviceability or "condition" check of couplings.

Experience has shown that the color of the temp tapes is the best indication of coupling condition: IF THE TAPE IS NOT BLACK, THE COUPLING IS SERVICEABLE.

If the tape indicates excessive heat (by turning black), or continued grease leakage is evident, necessary steps must be taken to correct either or both conditions (refer to NA 01-260HCA-2- 4.1). When packing a Zurn coupling with grease, USE THE MINIMUM AMOUNT rather than the maximum amount as called out in the maintenance manual; this will help prevent overpacking and false indication of seal failure by subsequent spin-out of grease. The required amount of MIL-G-81322 grease for each tail rotor coupling is 0.04-0.06-pound, which is equivalent to 4-6 LEVEL standard teaspoons or 1-1/3 to 2 LEVEL standard tablespoons. It is very important that the correct amount of grease be used and that it be evenly distributed on each side of the coupling. It is known that an excessive amount of grease will not only cause overheating but eventually the excess grease will be thrown out of the coupling.



1. Bolt
2. Bolt
3. Sleeve and hub set
4. Sleeve and hub set
5. Spacer
6. Retaining ring
7. Retaining plate
8. Spring
9. Hub
10. Preformed packing
11. Retaining ring
12. Seal
13. Sleeve
14. Dowel pin

R. Trella, Service Engineer

H-2 MAIN ROTOR BLADE FOLDING RETAINING ASSEMBLIES

By W. Wagemaker, Service Engineer

The "101" main rotor blade chord, at the tip end, is ¾-inch longer (increased blade width) than the -209/-309 blades. Consequently, head assemblies on the main rotor blade folding retaining assemblies (K604011), must be modified in order to accept all H-2 main rotor blades. The following procedures detail the modification for both the two-piece plastic head shown in Photo A and the older fiberglass head, shown in Photo B.

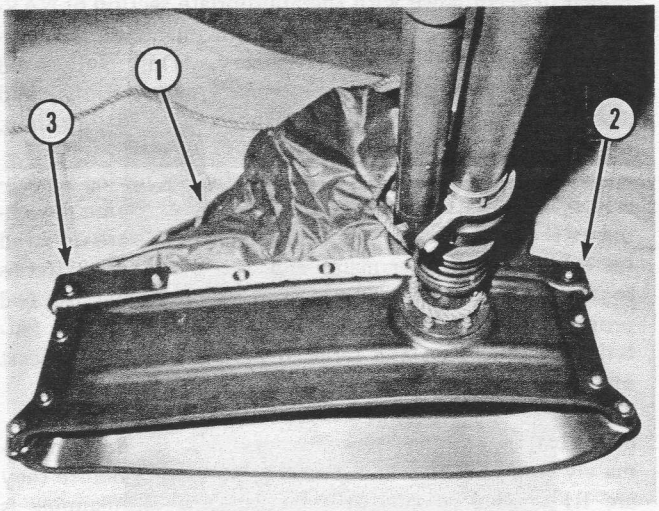


Photo A

1. Head assembly
2. Leading edge
3. Trailing edge

Plastic Head Assemblies:

1. Remove the four screws securing the leading edge halves; install one AN970-3 washer between the halves (one over each screw hole) and reinstall the screws, washers and nuts.
2. Remove the screws at the trailing edge and remove the shim from between the halves.
3. Using the existing shim as a guide, trace the outline and bolt-hole pattern on 1/4-inch thick wood or aluminum. Drill holes with a No. 10 drill and cut the new shim as shown in the accompanying illustration (to the edge of the bolt holes). Discard the old shim.
4. Place the new shim in position between the trailing edge halves and secure with the screws, nuts and washers.

Fiberglass Head Assemblies:

The old fiberglass head assemblies, when used on -209/-309 main rotor blades, have an interference fit in the area shown in Photo B. Modify the heads as follows:

1. Remove the felt from around the leading edge of the airfoil contour in the area shown in Photo B. The material will peel-off in layers; remove only enough (approximately 1/4-inch) to enable the head to fit the "101" blade tip.
2. Remove the four or five screws securing the trailing edges and extract the shim.
3. Remove shim material up to the screw holes as shown in the accompanying illustration. It is not necessary to increase the thickness of the shim.
4. Position the modified shim between the trailing edges and install the screws, washers and nuts.

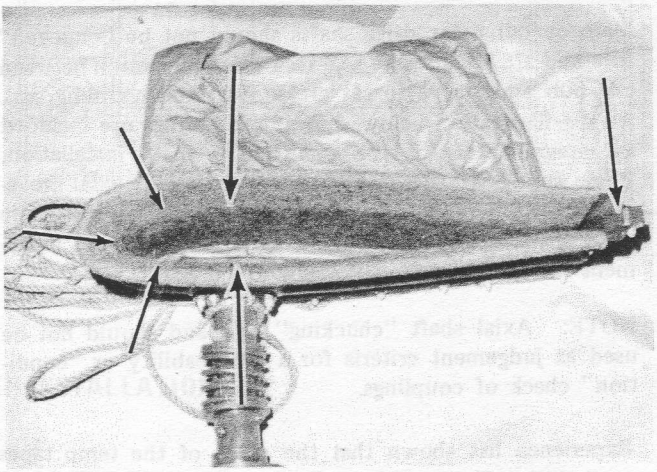
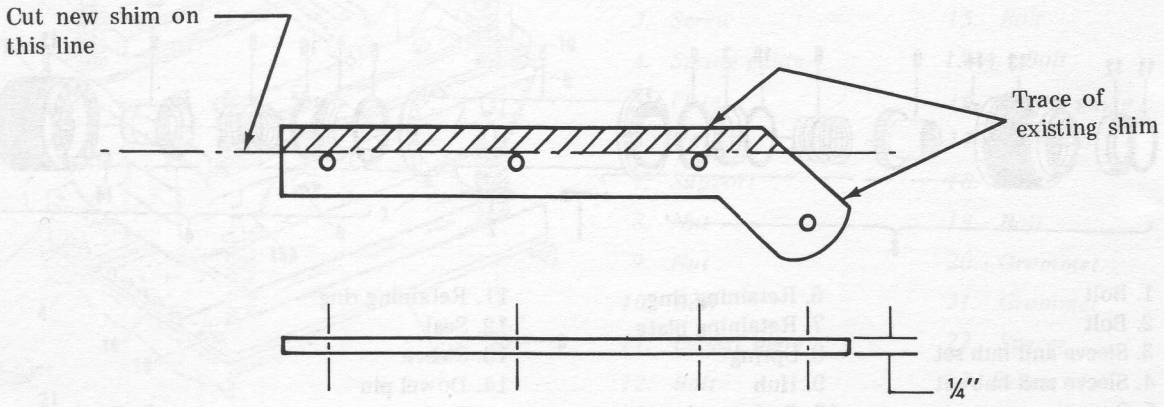


Photo B



SH-2D

LN-66 POWER SUPPLY COVER INTERFERENCE

By N. Hankins, Service Engineer

The LN-66 power supply (item 1 in Photo A) is mounted in the left-hand nose door on SH-2D aircraft. If the unit requires maintenance, the two latches (items 2 and 3) are released and the cover is moved down and forward. If, when removing the cover, an interference exists between the cover and the wire harness clamp (item 4), it is permissible to relocate the clamp by lowering its attaching clip (item 5). The clip, P/N K383076-13, is lowered 0.38-inch (one rivet space). Be sure to install a rivet in the topmost hole as the close-up Photo B shows (LN-66 cover removed).

The accompanying illustration details clip position. For further information, refer to NAVAIR 01-260HCB-4-2, Dated 1 June 1967, Changed 30 November 1971, Figure 109, index number 18.

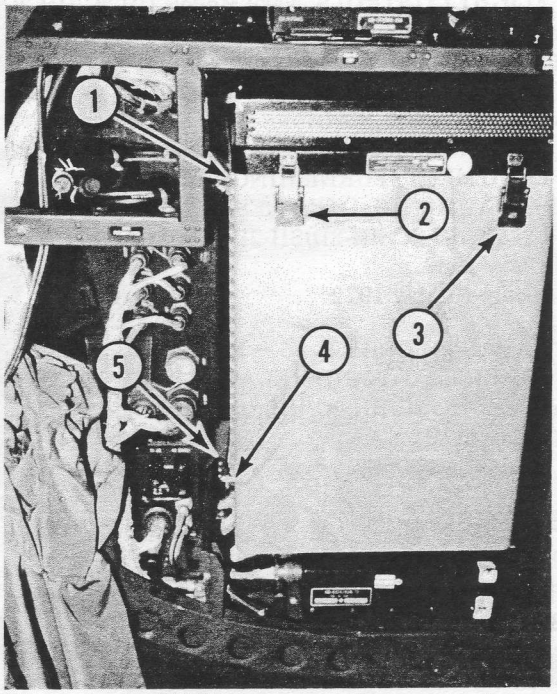


Photo A 1. LN-66 power supply 2. Latch 3. Latch 4. Clamp 5. Clip

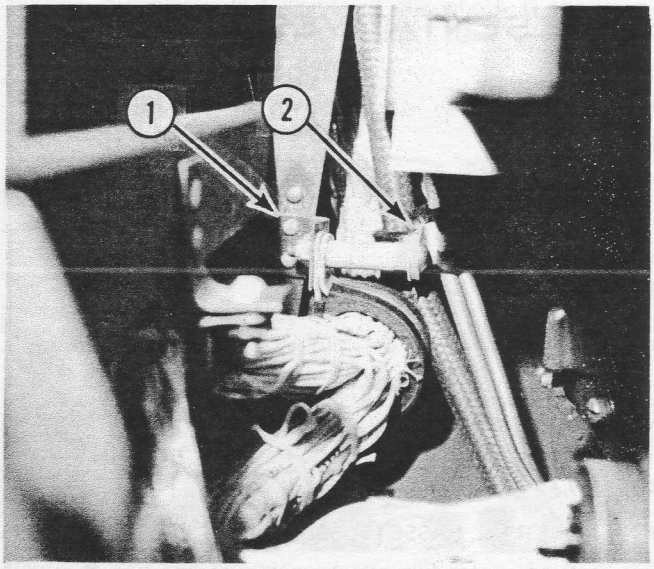
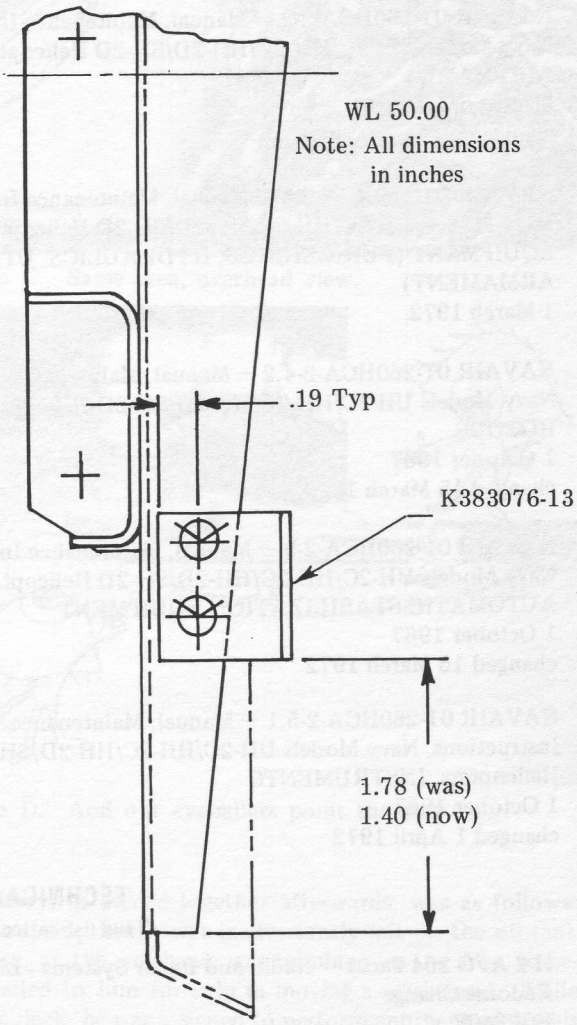


Photo B 1. Clip 2. Clamp



H-2

MAIN ROTOR BLADE ADJUSTMENT FOR AUTOROTATION

Table 4-8, Blade Track Adjustment, (page 94, NAVAIR 01-260HCA-2-2.1, 15 June 1969, Changed 1 August 1971) will be changed to delete reference to the 0.15 percent torque indication because it is impractical to read this small change on the torque indicator. Instead of torque indication, reference will be made to percent rotor RPM change. The two paragraphs listed under the column marked: "Effect on Blade" will be changed to read as follows:

½ turn of clevis moves blade tip approximately 1-5/8 inches and changes rotor RPM approximately 4-½ percent. Shortening the rod moves tip-path down; lengthening the rod moves tip-path up.

Direction of blade tip movement is indicated on the tracking turnbuckle. 1 hole adjustment equals 1/8 inch tip movement. 13 hole adjustment (½ turn flap control rod clevis) moves tip-path 1-5/8 inches and changes rotor RPM approximately 4-½ percent.

W. Wagemaker, Service Engineer

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 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, AIRFRAME
30 November 1971
changed 15 March 1972

NAVAIR 01-260HCA-2-3 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, EQUIPMENT (FURNISHINGS, HYDRAULICS, UTILITIES, ARMAMENT)
1 March 1972

NAVAIR 01-260HCA-2-4.2 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, ROTORS
1 October 1967
changed 15 March 1972

NAVAIR 01-260HCA-2-5 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, AUTOMATIC STABILIZATION EQUIPMENT
1 October 1967
changed 15 March 1972

NAVAIR 01-260HCA-2-5.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, INSTRUMENTS
1 October 1967
changed 1 April 1972

NAVAIR 01-260HCA-2-6 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters, ELECTRICAL SYSTEM
1 March 1972

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

NAVAIR 01-260HCB-4-3 — Illustrated Parts Breakdown, FLIGHT CONTROLS, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters
1 June 1967
changed 1 May 1972

NAVAIR 01-260HCB-4-4 — Illustrated Parts Breakdown, EQUIPMENT (FURNISHINGS, HYDRAULICS, INSTRUMENTS, UTILITIES, ARMAMENT) Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters
1 May 1969
changed 1 May 1972

NAVAIR 01-260HCB-4-5 — Illustrated Parts Breakdown, POWER PLANT AND RELATED SYSTEMS, Navy Models UH-2C/HH-2C/HH-2D/SH-2D Helicopters
1 May 1969
changed 1 May 1972

TECHNICAL DIRECTIVES ASSIGNED

This list reflects directives in-process at KAC.

H-2 AFC 204 Part I — Radio and Radar Systems - LN66 Radome Change
ECP340E

H-2 AFC 190 Part II — Radio and Radar Systems - AIMS In SH-2D Helicopters
ECP339

H-2 AFC 201 — Power Plant - 8F Engine Installation
BEP324

H-2 AFC 203 — Communication System - ARC159 Radio and KY-28 Secure Speech
ECP350

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CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, Supervisor

DARFO! Detect And Remove Foreign Objects before they can cause FOD.

The example of DARFO action shown here was experienced by Mr. C. N. Bergeron, Kaman experimental flight test inspector. As this inspector climbed up onto the aircraft to check the main rotor head, his eyes saw something "out-of-place." . . .DARFO!

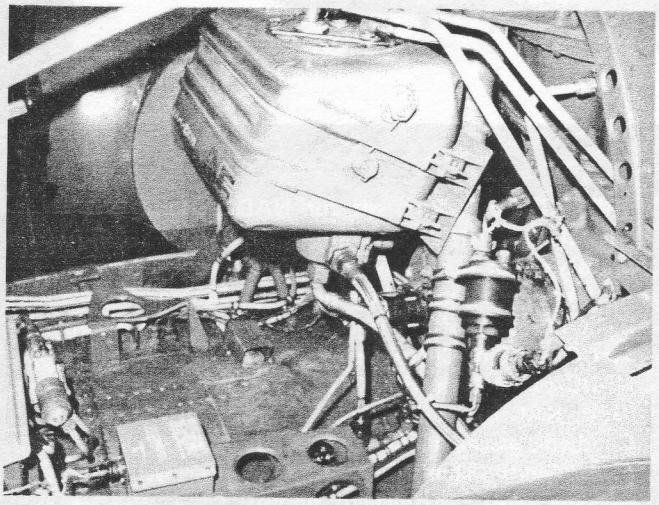

Photo A is the over-all, first view as seen by the inspector. The area is located above and aft of the copilot seat in the vicinity of the auxiliary battery, hydraulic lines and transmission supports. Just visible in the photo is the item which triggered the DARFO action. Can you see it? Hint: it is not a curved item.

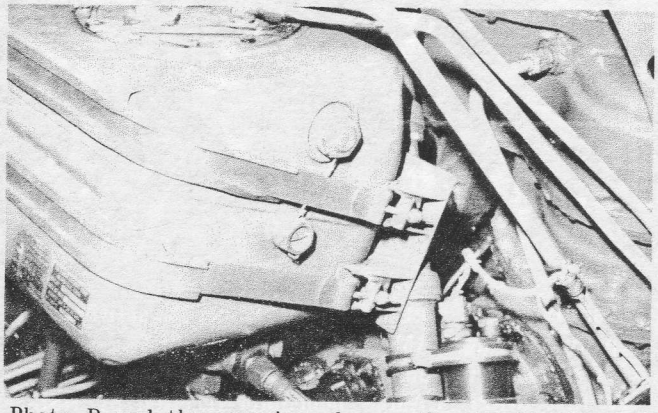

Photo B and the experienced eye will catch the item as DARFO is practiced.

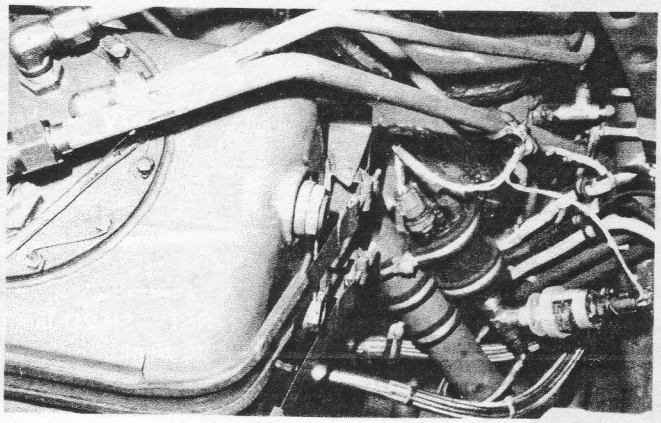

Photo C. Same area, overhead view.

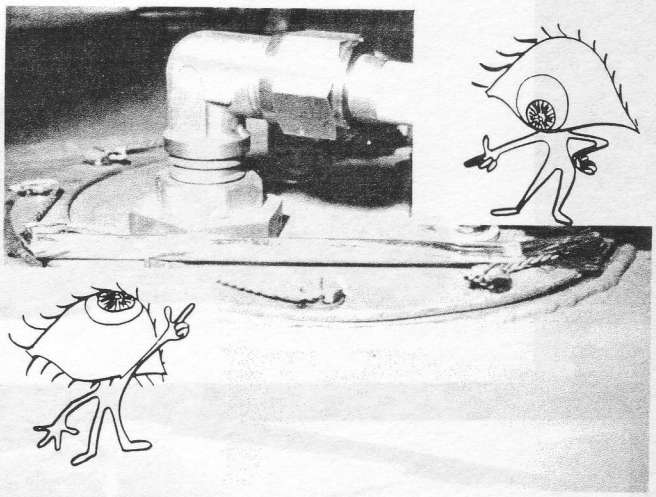

Photo D. And our eyeballers point the way.

The story, as pieced together afterwards, was as follows: The touch-up brush was inadvertantly left on the oil tank because, as the mechanic was touching up the area, someone called to him for help in moving a workstand. While on the deck, he was assigned to perform another task by his superior and a second man was sent to finish the touchup assignment. When the second man looked at the area, he did not see the brush and, since the touching-up appeared to have been completed, he removed the paint cup and cloth wipers and left the area in what he thought was "Foreign Object Free" condition.

What could happen if the brush fell off the oil tank? It could have jammed the flight controls located in the roof. Fortunately, we will never have to find out if it would have actually caused a problem because Mr. Bergeron practiced DARFO.

Have you sent in your idea for DARFO? Do you diligently practice DARFO???

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

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

(Continued from page 6)

ANOTHER LAMPS "FIRST"—SH-2D lands aboard USS Harold E. Holt, first of the DE 1052 class from either coast to deploy operationally with the LAMPS helicopter. (USN photo)

PROTOTYPE—Taking off for NADC, Warminster, Pa., is one of two HH-2D's modified at Kaman Aerospace as prototypes of the intended Mark II LAMPS configuration. At left during preceding delivery ceremony on Kaman flight line are, left to right, W. R. Murray, vice president, Test Operations/Customer Service, KAC; Lt Robert Doane, NADC (TAD from HSL-31); R. G. Weston, C. P. Archambault, KAC mechanics; LCdr Charles Curtis, NADC; J. C. Goodwin, assistant chief test pilot, J. A. Anderson, pilot, F. L. Smith, chief flight test engineer, William Braem, engineer, KAC. (Ruggiero photo)

Named Outstanding Helo Pilot

LCdr Scott F. Milner of HSL-31, NAS Imperial Beach, Calif., was recently named "Outstanding Helicopter Pilot for 1971" by the Navy Helicopter Association. The first annual award of this type, it recognizes a helicopter pilot for his outstanding achievements and abilities in the field of Naval (helicopter) aviation.

LtCommander Milner, a lieutenant at the time he was chosen, accumulated most of his helicopter experience (nearly 2000 hours) in aircraft produced by Kaman. His contributions to the LAMPS program were among the factors considered in making the award. He was the first operational LAMPS officer, joining the program in March, 1970, prior to the D/V 98 Phase A, and was officer-in-charge of D/V 98 during initial Sea Control Ship concept evaluations aboard the USS Cleveland. Earlier, he was a member of the "Iron Barnacle" detachment which operated in Vietnam. At the present time, among his many

squadron duties, LtCommander Milner is active in the rapidly growing LAMPS training program.

In photo, LtCommander Milner is shown after delivering the first SH-2D LAMPS helicopter received by HSL-31 from Kaman. (USN photo)