

# KAMAN

## Rotor Tips



KAMAN CORPORATION  
**25**  
★ 1945-1970 ★

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# Rotor Tips

Volume VI Number 7

## ON THE COVER

SEALITE—featuring versatility, maintainability, reliability and availability in its role of fleet protection—was introduced into the world of aviation recently. Latest addition to the Kaman family, the helicopter was designed for the Navy LAMPS program. Cover by E. M. Enders, Service Publications.

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SEALITE was welcomed into the Kaman family of helicopters during mock-up unveiling ceremonies in September at Kaman's Connecticut facilities. Attending festivities celebrating the birth of this helicopter were guests representing military aviation; and of course, Kaman officials and employees, who are proud to introduce this versatile helicopter into the world of aviation. Though dimensionally a new helicopter, the lighter-weight SEALITE uses the same dynamic systems as her predecessor, SEASPRITE, thereby preserving her heritage as a helicopter already proven by the stresses of sea, salt and storm.

SEALITE is designed specifically in response to the LAMPS requirement of the United States Navy. LAMPS is an acronym for Light Airborne Multi-Purpose System. It is the objective of this system to extend the search and attack capabilities of destroyers and escort vessels by deploying helicopters directly from the decks of these ships. The two

primary missions to be performed by this System are Anti-Submarine Warfare (ASW) and Anti-Ship Missile Defense (ASMD).

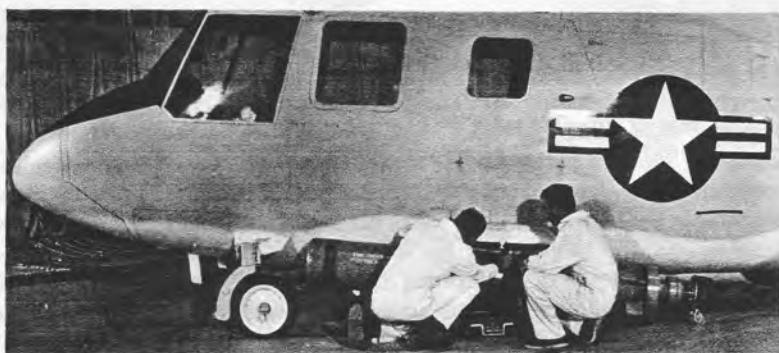
In performing the ASW mission, SEALITE will launch to re-detect a target that has been located initially by the ship's sonar or by some other means; SEALITE will localize the target, identify it and finally destroy it with torpedoes. In performing the ASMD mission, SEALITE will search beyond the ship's radar horizon to locate missile-launching vessels or incoming long-range cruise missiles. It will identify the threat, provide early warning to the fleet, and finally attack the missile, its launching platform, or use Electronic Counter Measures (ECM) to decoy, jam, or destroy the missile.

In addition to the two primary LAMPS missions of ASW and ASMD, the versatile SEALITE is designed to perform a host of other assignments. Configured as a utility transport, seven passengers can be seated in the aft cabin.



**Meeting SEALITE**—Military guests listen attentively as Robert L. Bassett, assistant customer service manager, explains one of the many "designed for the mechanic" features of the helicopter.

**101 Rotor**—The "101" rotor, approved for the HH-2D, will also be installed on SEALITE. Improved performance and stall margins are realized, as well as significant improvements in maintainability, reliability and life. Sixty bearings and 28 parts from the previous H-2 rotor have been eliminated and KAcarb ceramic bearings requiring no lubrication are used.

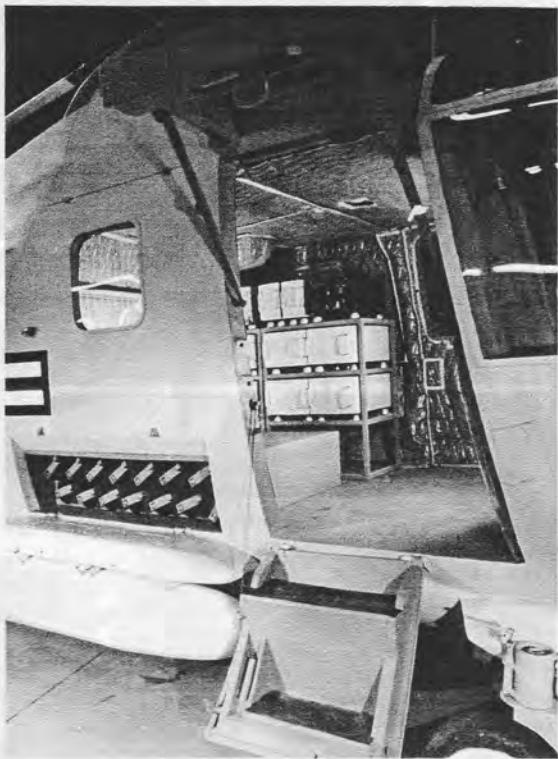


**Versatility**—External stores can be carried on both sides of SEALITE. In top photo left, the helicopter is shown with radome installed and Sparrow missile in place; second photo, missile is replaced with torpedo and radome has been removed; third photo, SEALITE with an auxiliary tank installed. In photo above, "crewman" prepares to lower Kaman-produced forest penetrator rescue seat. The upper portion of the door serves as the rescue hoist boom.

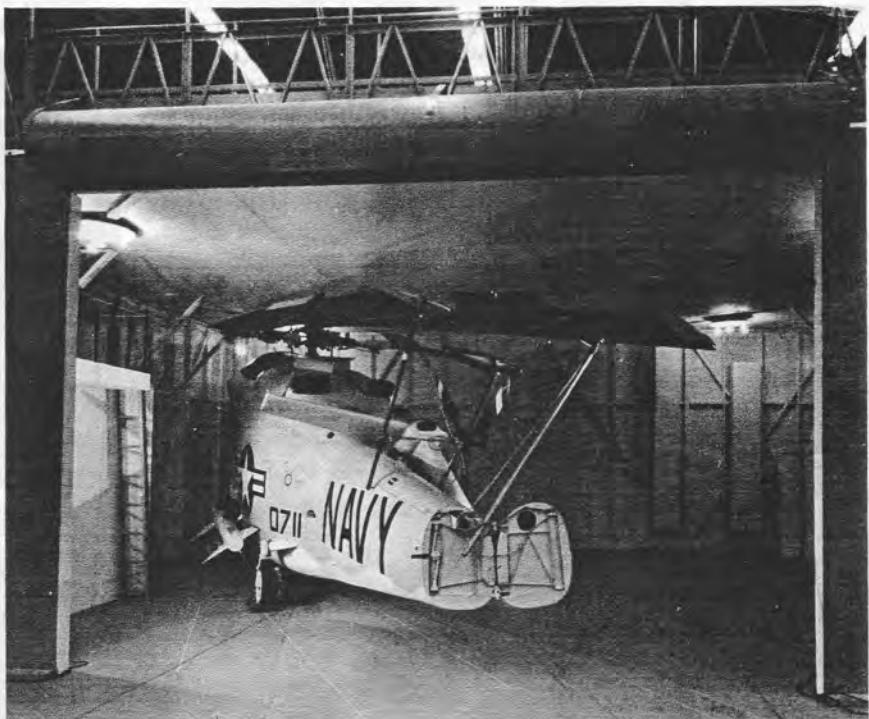
Using the cargo hook, SEALITE is highly effective in the vertical replenishment mission. For medical evacuation, two litters and a medic can be accommodated easily in the aft cabin. SEALITE will continue the SEASPRITE tradition of plane-guard and search-and-rescue, with the rescue hoist located in an excellent position for good pilot visibility, and subsequent ease of access into the cabin by the rescuee. For extended missions, or ferry flights, auxiliary fuel tanks can be mounted on each side of the helicopter. In the cargo configuration, the large cabin (15 inches wider than SEASPRITE) is excellent for internal cargo handling. Because of its compact external dimensions,

SEALITE can be air-transported with relative ease. Considering all of these capabilities—ASW, ASMD, plane-guard, search and rescue, medical evacuation, personnel transport, cargo transport, vertical replenishment, ferry mission and the ability to operate from the small non-aviation ships of the Navy—SEALITE is unquestionably the most versatile helicopter yet to be manufactured.

Completely modern in all respects, SEALITE certainly belongs in the "Now" generation. To accomplish the ASW and ASMD missions, SEALITE has the very latest in high



**Roomy**—SEALITE's cargo and passenger-carrying capacity is clearly illustrated in the photographs. The cabin has a seating capacity for seven persons. Equipment like that shown can be removed or switched in a few minutes to meet changing mission requirements.



**Hangared**—In addition to main blade folding, the tail pylon and nose on SEALITE can be folded to present a short compact package for hangaring on small ships. Two SEALITE's may be housed in the hangar on a 1052-class destroyer escort and room is still available so that maintenance work may be performed.

resolution search and detection radar, sonobuoys, infra-red, and night-viewing equipment. Pilot instruments and controls are the most up-to-date available, laid out in a cockpit arrangement that stresses easy pilot scan and accessibility as well as emphasis on external visibility. SEALITE's navigation and communication equipment are the latest. The light-weight PT6T Twin-Pac powerplant (T400-CP-400) of 1800 shp provides a surplus of power, thus assuring excellent one-engine-out performance. The 101-rotor system on the SEALITE is a proven blade with simplified and

strengthened hub, and simplified controls. Also proven on the SEASPRITE and used on the SEALITE are the tail rotor, tail rotor gearbox, main transmission and all drive shafting. It is this heritage of proven dynamic components that drastically reduces SEALITE development time and introduces cost savings in the logistic program.

What about the "care and feeding" of the new offspring? Designed compactly to fit two per hangar in the smallest of the vessels which will be deployed in the LAMPS program, the SEALITE profile is low and easily accessible to



**Maintenance**—Major emphasis has been placed on ease of maintenance. All SEALITE equipment is accessible through quick opening access panels, many of which also serve as work platforms. At right, a single ground support tool attaches to hardpoints on the aircraft and permits rapid removal of the engine (s), rotor or transmission either in the hangar or on deck.

ground personnel. Tail rotors, gearboxes, drive shaft, engines can all be serviced without the aid of special work stands. Fuel tanks are inter-connected eliminating fuel transfer or tank selection; internal plumbing is comparatively simple with few lines and pumps. Systems are grouped so that electricians and mechanics can work simultaneously without interfering with each other. There are significantly fewer bearings in the retention of the new 101 rotor system, reducing replacement and unscheduled maintenance. It is expected that replacement of tail rotor blades and gearbox may take as little as one-third the time as on the SEASPRITE. To reduce corrosion, aluminum rather than magnesium bell-cranks are used. Special attention has been given the attachment of doors and access panels to assure safety. SEALITE has single-run wiring harnesses to reduce the number of electrical connectors. Each item of electronic equipment can be removed without the need of re-

moving any other component. A separate hydraulic system supplies the ASE to prevent contamination of that system by any other system. SEALITE has many new system changes brought about by both experience and research to assure the highest quality, enhance safety, and produce low operating costs.

All of the above features suggest the high degree of versatility, maintainability, reliability, and availability that SEALITE offers to the Fleet. By achieving these objectives, SEALITE represents 25 years of Kaman expertise in designing, testing and manufacturing helicopters to meet the challenges of the sea. To assist the United States in sustaining its position as the leading naval power in the world, SEALITE will play a role of major importance. In helping to shape this destiny, SEALITE will be especially important in lending indispensable protection, and support "To Those in Peril on the Sea."



**First For HH-2C**—"Cleared to Land" is sounded by LCDR Paul M. Hoffman, air officer, aboard the USS Denver, to Lt William Hanks of HC-7 Detachment Cubi Point, R. P., marking the first operational carrier qualifications of the Navy's new Kaman HH-2C rescue/attack helicopter. Unique in this meeting is the reunion of Lieutenant Commander Hoffman and Lieutenant Hanks who previously made the first deployment, in 1963, of the original HU2K single-engine version. He was attached to HU-2 (now HC-2) detached aboard the USS Independence. (USN photo)



## **SEASPRITE ACTIVITIES**

### **HC-4 Makes 1st Rescue From Carrier**

"Without their help, I probably wouldn't be around today. They saved my life." The speaker was Maj Robert Blackington, a Marine pilot who was rescued from the sea by a UH-2 crew from HC-4's Det 62 deployed aboard the USS Independence.

The rescue—first by an HC-4 detachment aboard a carrier—was made after Major Blackington's A-4 plunged into the water when the controls jammed as the jet was catapulted from the carrier deck. When the helicopter arrived over the survivor, it was discovered that he was encumbered by his parachute. ADJ2 Richard L. Bauske, rescue aircrewman, immediately leaped into the water and went to the aid of the downed pilot. Soon afterward both were hoisted to the safety of the helo.

Others manning the UH-2 were Lt Mariner G. Cox, pilot; Lt(jg) Robert B. Mauterstock, Jr., copilot; and AN Robert Lencsak, crewman. At the time of the rescue, Det 62 was the first HC-4 unit ever to be assigned to a carrier. All previous service had been aboard non-aviation ships. The USN photos, at left, of the rescue scene and the "happy ending" were taken by PH3 Pugerud.

### **Two Rescued By NS Adak SEASPRITE**

A UH-2 crew from Naval Station Adak, Alaska, launched shortly after 2 a.m. to search in the Shagak Bay area for an overdue vehicle containing an enlisted man and his wife. Marine ground patrols had failed to locate the couple after an hour-long search, the temperature hovered just above freezing and a heavy sea fog was moving inland when the SEASPRITE began the search. Shortly afterward the missing vehicle was spotted from 1,000 feet, but approach to the site was restricted by the mountainous terrain, cliffs, deep tundra and fog.

As his crew checked rotor blade clearances, Lt Michael A. Williamson landed the UH-2 in a small clearing surrounded by night-shrouded cliffs and hills. The couple was taken aboard and takeoff was made without incident. Other members of the crew were Lt(jg) Stephen R. Arends, copilot; ADR3 G. M. Larson and AMH2 G. A. Read, crewmen.

In another NS Adak mission, a UH-2 crew flew to evacuate a small boy who had fractured his right elbow. It was feared that the boy might lose his arm if not taken to a medical facility immediately. The 90 NM flight to the island was made over 30°F Arctic waters and Lt Oscar R. Cothran, III, landed in a small level spot surrounded by mountains to make the pickup. On the return trip the boy was treated by Lt James T. Dawsey (MC), a doctor. Other members of the crew were Lieutenant Williamson, AE3 Michael S. Gwin and HN Jerry P. Thelen.



Petty Officer Bauske in water preparing to go to aid of downed pilot.



Survivor at end of cable before being hoisted to UH-2.



Rescued and rescuers. Left to right, Lieutenants Mauterstock and Cox, Major Blackington, Petty Officer Bauske and Airman Lencsak.



**Night Rescue Site**—The "X" in the photograph marks the location from which a downed pilot was rescued by Major Fallows and his crew.

## **HH-43B Crew In Mountain Mission**

*Flying at night amidst snow-covered mountains dotted with tall trees is not an enjoyable experience but helicopter rescue crews have never hesitated to enter these hazardous areas when assistance was needed. For example, take this mission which was flown earlier this year by Det 22, 42nd ARRSq, Mountain Home AFB, Idaho.*

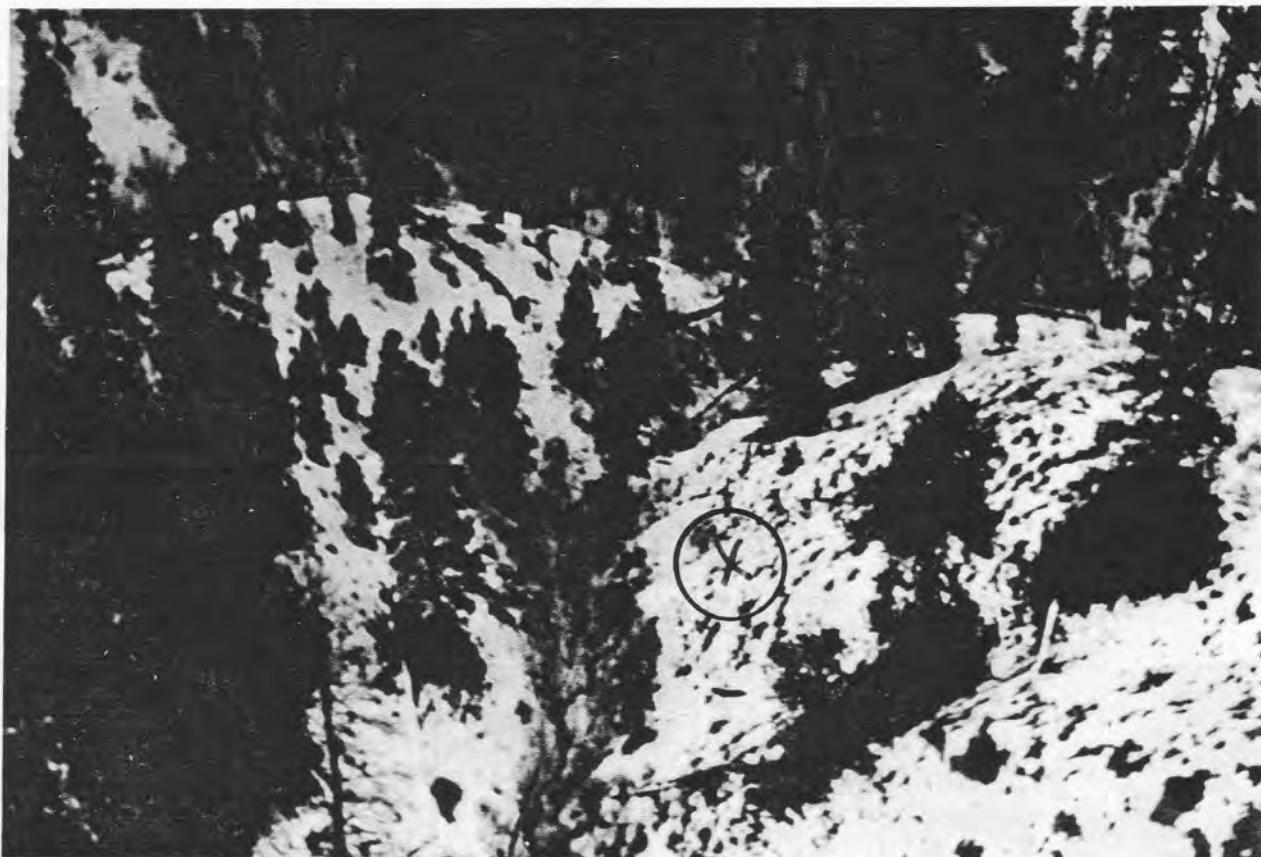
The HH-43B crew from Det 22 scrambled at 9:07 p.m. after receiving word that an RF-4C had crashed in mountainous terrain approximately 30 miles from the base. Aboard the HUSKIE were Maj Thomas E. Fallows, detachment and aircraft commander; Capt James L. Woolace, co-pilot, Capt Rafael B. Armstrong (MC), flight medical officer; SSgt Jerry F. Hibner, medical technician; and TSgt Jimmy L. Ramsey, helicopter mechanic.

The HH-43, designated Pedro 01, "step-climbed" to 8000 feet until it reached the search area and then dropped to 6500 feet when a light snow shower was encountered. The temperature was at the freezing level. Due to the overcast sky and darkness it was difficult to determine terrain clearance or the location of the many trees, some 100 or more feet high, which rose from the mountain slopes.

Shortly before 10 p.m., a beeper signal from the RF-4C survivor was received and Major Fallows began a slow and cautious descent toward it. Although communications were garbled, the rescue crew was able to determine that the downed airman was on the side of a mountain and could see the lights of the helicopter. The HH-43 pilot asked the survivor to light a flare but none appeared. Ap-

parently he either couldn't understand the request or was unable to comply. The RF-4C pilot was, however, able to give the rescue helicopter directions although he said he was hurt and "didn't know if he could last much longer."

Flying between 20 and 30 knots, Major Fallows effected a slow transition from forward flight to hover. Pedro, now at 4800 feet and 2000 feet below the tops of surrounding peaks and ridges, was between two mountain peaks and about 100 yards from the tree-covered mountainside. A minute later the survivor was spotted at the bottom of a draw. Major Fallows headed for a small clearing 150 feet away on a secondary ridge coming off the ridge line above the HH-43. Guided by Captain Woolace and Sergeant Ramsey, the pilot inched the helicopter forward and placed the front two landing gears in the snow. Blade clearance was about 15 feet from shrubs on the slope. After Captain Armstrong and Sergeant Hibner cautiously left the helicopter, Major Fallows hovered the helicopter to provide light for them as they made their way down the 60 degree slope into the draw. The doctor and medic freed the survivor from his harness, and then treated his ankle which had a compound fracture and was bleeding. He had also suffered a possible fractured shoulder.



**Closer View**—This view of the rescue site clearly shows the trees and other hazards mentioned in the Det 22 mission report. (USAF photos)

Meanwhile, Major Fallows continued holding the helicopter in position with the rotor blades only 15 feet from a tall tree. The Stokes litter was lowered and the doctor and medic began placing the survivor on it. It had started to snow, so Major Fallows moved Pedro back to keep from blowing snow on the men below. At a signal, the HH-43 pilot again established a hover over the survivor and Sergeant Ramsey began lowering the hoist cable; then Major Fallows was told to back off—the rotor wash was blowing the parachute over the survivor and entangling the doctor and medic. The shroud lines were cut, the parachute pulled away and the hoist recovery was made without further incident. Due to the strain of prolonged hovering and the

close proximity of the trees, Major Fallows elected to have the doctor and medic climb the slope to the cleared area. They were hoisted aboard a few minutes later. After orbiting the area in an unsuccessful attempt to detect another beeper signal, from the second member of the RF-4C's crew, the HH-43 headed for the base.

At 11:30 p.m. the HH-43 took off again and went up Highway 30 toward Boise to check out a flare sighting. A landing was made on Kuna Road and, after talking to State Police, the crew searched the area where the flare was sighted but to no avail. At 1 a.m. a C-47 advised that a small fire had been seen so Pedro took off and flew to the area to check it out. Again a cautious descent was made over the rugged terrain. After the fire was located, Captain Woolace and Sergeant Ramsey guided Major Fallows to a cleared area, then Sergeant Hibner and SSgt Eusebio Cantu, a fireman, were off loaded. Aided by the floodlight on the HH-43, they searched the site and confirmed that it was aircraft wreckage which was burning. They were, however, unable to find the pilot, a parachute or ejection seat. With Pedro running low on fuel, the two sergeants were hoisted aboard and the HH-43 headed for the base. A landing was made at 2:15 a.m. The next day, search resumed for the second pilot.

*(continued on page 20)*



**A Life Saved**—Survivor is taken from Det 22 HUSKIE after being rescued from mountain side. Left to right are SSgt Frederick Pecotte, HH-43 crewman SSgt Jerry F. Hibner, and SSgt Gus Theodorakis from the flight surgeon's office. (USAF photo)

# International Helicopter Rescue Meeting

Story and Photos  
by MSgt Michael J. Switzer



RAMSTEIN AB, GERMANY—Twenty-two helicopter rescue crews representing six European countries and the United States converged on Ypenburg, Netherlands, recently to compete in the Fourth International Helicopter Rescue Meet.

The week-long event was hosted by the Royal Netherlands Air Force, winner of the 1969 competition. Entered were Air Force teams from the Netherlands, Denmark, United Kingdom, United States, Belgium, Norway and the Federal Republic of Germany. Navy rescue crews from Denmark, United Kingdom, the Netherlands and the Federal Republic of Germany were also entered. The meet

was held to aid in improving international rescue skills and to allow aircrews to evaluate the many "tools of the trade" used by other countries. Success in air-sea rescue efforts has often depended upon international cooperation.

When the final scores were tallied up on the last day of competition, the Royal Air Force, U. K., emerged as the overall team winner, followed by the Belgium Air Force in second and the Royal Netherlands Air Force in third. The RAF also won the meet in 1968. The USAF team, flying HH-43B HUSKIES placed sixth.

Of the three scheduled events: precision navigation, scramble and over-water hoist pick-up, and precision



**Alpha**—Team photo of the USAF Alpha crew from Det 9, RAF Wethersfield, U. K., includes left to right, standing, Maj Juan H. Migia and Capt Richard E. Porter and kneeling is SSgt Richard D. Almond and SSgt Donald P. Ausdal.



**Bravo**—The USAF Bravo crew from Det 12, 40th ARRWg, RAF Woodbridge, U. K., includes, left to right, standing, Maj John H. Larson and Capt Wilson T. Arnold; kneeling SSgt Jack Picklesimer and SSgt Douglas Macy.



**When Rescuers Meet**—At top left, off and running during the 100-meter scramble event is the USAF team from Det 9. Left to right are: Capt Porter, Sergeant Ausdal, Sergeant Almond and Major Migia. In photos at right, during a lull in the competition, USAF rescuers get a few pointers from Capt F. C. Ruis, right, Royal Danish Air Force. Rescuers from all seven participating countries attend the early-morning briefing prior to flying in the navigational meet. In final phase of the Fourth International Helicopter Meet, Sergeant Macy gets down for a closer look as Col Hiram Griffin, 40th ARRWG commander, measures the distance from the bulls-eye.

winching, the USAF crews from the 40th Aerospace Rescue and Recovery Wing, made their best showing in the precision winching event. The Alpha crew from Det 9, RAF Wethersfield, placed second and the Bravo crew from RAF Woodbridge, came in fourth. The Bravo crew missed first place in this event during the final minute of the competition when the weight on the end of their 35-foot winch line went an inch and a half above the allowed eight-foot height and cost them 50 points. This additional 50 points would have given them first in the precision winching and third in the overall crew standings.

Commenting on the competition, Col Hiram Griffin, 40th ARRWG commander, who attended the meet, said, "I'm proud of our crews, they worked hard all the time and I feel sure they gained a great deal of knowledge about the rescue forces and techniques of the other countries. As for the final standings; well, next year is another meet and we'll be looking forward to participating."

Alpha crew consisted of Maj Juan H. Migia, Capt Richard E. Porter and SSgt Donald P. Ausdal and SSgt Richard D. Almond. Bravo crew was Maj John H. Larson, Capt Wilson T. Arnold and SSgt Jack Picklesimer and SSgt Douglas Macy. Team chief for the 40th ARRWG was Maj Herbert A. Lee, assisted by TSgt Harold Schrader. USAF selectee judge was Maj Clyde W. Lemke.



**Royal Host**—After the awards ceremony His Royal Highness, Prince Bernhard of the Netherlands, second from right, stopped by to chat with the USAF rescuers. Left to right are, SSgt Douglas Macy; Mr. Middedorf, American Ambassador to the Netherlands; Maj Juan H. Migia, Col Hiram Griffin, Capt Richard E. Porter and Maj Herbert A. Lee.



# Southeast Asia



**Alert At All Times**—As the alarm sounds, crewmen from Det 3, 38th ARRSq, scramble to their HH-43 Pedro. Photo at right shows a "downed" pilot being rescued during a practice exercise. (USAF photo by Sgt James Replogle)



**Civic Action**—When not engaged in flying their primary military missions, Det 3 personnel participate in Medical-Civic Action Missions. To provide medical aid, a detachment HH-43 transports Thai and American doctors to nearby villages. Two epidemics have been prevented so far by this humanitarian effort. Shown is a group of villagers typical of those who greet Pedro. (USAF photo)

## THESE THINGS WE DO THAT OTHERS MAY LIVE

*By Sgt James Replogle*

UBON RTAFB, Thailand—Two semi-articulated counter-rotating rotors with blades made of various kinds of wood, fiberglass, aluminum, stainless steel and a fiber cover, make the aircraft unique. Pilots, firemen, medical technicians and mechanics working together for a common goal make the job unusual. Together they form Detachment 3, 38th ARRSq at Ubon RTAFB.

The unit flies the HH-43 "Pedro" helicopter in support of the 8th Tactical Fighter Wing. "Our mission," said Maj George L. Schmidt, detachment commander, "is to provide local base rescue including suppression of aircraft fire, aircrew recovery, and medical evacuation."

The Pedro, with the fire suppression kit, intercepts aircraft that are attempting an emergency landing. If an aircraft should crash, the Pedro will land next to it, dropping off a fire suppression kit and two firefighters. Pedro then

utilizes strong rotor downwash to roll fire extinguishing agent across the fire and provide cooling and oxygen for the trapped aircrew. The suppression kit contains about 80 gallons of water, five gallons of foam agent and compressed air. When deployed, it has enough of the foam-water mixture to lay down a cleared area to the cockpit of a burning aircraft.

The mission of the Pedro crews is to get in fast and rescue the downed aircrew. "Our job actually isn't finished there," Major Schmidt said. "The helicopter then acts as a flying ambulance and takes the recovered aircrew to the nearest hospital for medical attention."

Additional capabilities of Detachment 3, and the HH-43 are to transport explosive ordnance disposal teams to a crash site, to pick up bailed-out aircrews in dense jungle areas and to perform emergency medical evacuations from remote sites.



**Det 3 Personnel**—Front, left to right, SSgt Hubert Perkins, TSgt James Cordwell, Maj Larry Schmidt (commander), Capt John Higbie, Capt David Parker, Sgt Richard Holmes, Sgt Lawrence Holt, Sgt Gerald Kent. Standing, Sgt Terry Ourso, Capt John Bouchard, SMSgt Frank Kroupa, Capt John Smith, SSgt William Selke, SSgt Robert Graves, SSgt John Raplee, SSgt Jon McDaniel, SSgt Eric Samuelson, Sgt David Oakes, TSgt Glenn Durham. (USAF photo)

A Pedro crew consisting of two pilots, two firemen, a medical technician, and a helicopter mechanic maintains a 24-hour alert. The rescue crew can be airborne within 30 seconds. "With a unit such as this," Major Schmidt said, "it takes practice to help the men perfect their duties."

The aircrew often practices for their primary mission—fire suppression and aircrew recovery—at a fire pit which has been set up just off the Ubon runway. The helicopter is flown within 50 to 75 feet of the flames and the suppression kit and firefighters are dropped off. Immediately, the firefighters proceed to cut a path through the flames while the helicopter is hovering above and behind them. The crews also practice hoisting men out of the jungle and other emergency situations that they may encounter.

Practice fires are fought both during the day and at night. The late evening drills are designed to enhance the crews' depth perception, which is normally impaired because of inadequate light. Five other Pedro detachments are located in Thailand, and all are self-contained. Like Detachment 3,

most of the units are equipped with two Pedros and must perform their own maintenance. "Our maintenance men perform all tasks except for specialties such as repairs on radios and electronic gear," Major Schmidt said.

The Pedro crews' motto exemplifies the atmosphere in which they live... "These Things We Do That Others May Live."

*Det 3, 38th ARRSq, 3rd ARRGp (MAC)*

*Activated - 15 April 1965*

*Total number of sorties since activation - 6,000*

*Total number of rescues made since activation - 48*

*Total number of aircraft saved since activation - 2*

*Number of sorties this year - 130*

*Number of rescues this year - 4*

*The detachment has been accident/incident free since activation. One HH-43 62-5978, has logged 2,450 total hours and HH-43 60-0258 has 3,100 total hours.*

### 3rd ARRGp RECORDS 3000th 'SAVE' IN SOUTHEAST ASIA

**TAN SON NHUT**—The 3,000th save in Southeast Asia was recorded recently by the Air Force's 3d Aerospace Rescue and Recovery Group. Four aircrew members, three of whom were rescuers shot down while attempting a recovery in the Republic of Vietnam, were picked up within minutes of each other. The fourth man was picked up in Thailand after bailing out of an F-105 Thunderchief.

The three rescuers were on a search and rescue mission in an area of heavy ground fighting. As the rescuers of the 37th ARRSq from DaNang AB closed in on a downed Army helicopter for their third rescue attempt, their HH-3 Jolly Green helicopter took intense ground fire and crashed in flames. One of the survivors of the crash extinguished the flames which had enveloped two other crewmembers. The accompanying Jolly Green, flying in the area as rescue

backup helicopter, lowered a pararescueman and hoisted the three survivors to safety. An Army ground team was dispatched to the area to aid the Army helicopter crew.

The rescue of the F-105 pilot in Thailand was made by an HH-43 Pedro helicopter of the 38th ARRSq, Det 2, Takhli Royal Thai AFB. The pilot bailed out of his aircraft 16 miles north of Takhli. He was picked up minutes later by Capt Lorenzo M. Crowell and his crew and taken to the dispensary at Takhli.

Successful rescue in the two missions brought the total number of lives saved by units of the 3d ARRG to 3,000 since the 1965 activation of the rescue organization in Southeast Asia. Of the rescues, more than 2,000 have been recorded as combat saves, in which capture or loss of life due to hostile forces was imminent.

## Steve Northern Dies In Industrial Accident



Steve M. Northern

Steve M. Northern, a former ARRS pararescueman credited with saving the lives of 52 men, was killed recently in an industrial accident in Los Angeles. Last year, after serving 30 months in Vietnam with the 3rd ARRGp, Northern returned to civilian life where he planned to attend El Camino Junior College. He had recorded more "combat saves" than any other person in aviation history.

While in Southeast Asia, the then Sergeant Northern served as an HH-43 crewman with Det 6, 38th ARRSq, Bien Hoa AB, and later with the 37th ARRSq where he flew in HH-3's and was awarded two Silver Stars for "gallantry in action." One of the most highly decorated pararescuemen in the Nation's history, Northern participated in more than 240 missions in the HH-3 and during his off-duty days flew HH-43 rescue missions with Det 7, 38th ARRSq, DaNang AB. At other times Northern participated in Medical Civic Action Patrol flights, offering medical aid to local Vietnamese villagers. Sergeant Northern received two Kaman Scrolls of Honor for HH-43 rescue missions while flying with Det 6 and was honored again by Kaman with a third Scroll while serving with Det 7.

## Det 6 Crew Aids Mine-Blast Victim

A Vietnamese airman who had stepped on a mine near Bien Hoa AB, was evacuated by an HH-43 from Det 6, 38th ARRSq, which is stationed at the base. When Capt Roy M. Litzen and his crew arrived, it was obvious that the accident victim needed immediate medical attention. A mine field was nearby and rough terrain and swamps on the other side would have delayed a ground party from reaching the airman so Captain Litzen landed alongside the wounded man. Sgt John A. DeBell, helicopter mechanic, and Sgt Rot T. Vogel, pararescuemen, leaped out, placed the victim on a litter and then loaded him aboard the helicopter. As the two sergeants administered first aid, Pedro headed for the hospital at Long Binh Army Post. Copilot on the life-saving mission was Capt Raymond F. Hunger.

## Det 11 Wins Rescue Race

Winning a race with the weather, an HH-43 Pedro crew from Det 11, 38th ARRSq, rescued a pilot who ejected from his crippled F-100 and landed on the jungle-covered side of a mountain. A rain squall was moving into the valley as Capt Kenneth F. Merlin held the Pedro in position over the survivor and the forest penetrator was lowered. The last few minutes of the rescue were conducted in the rain. Had the operation been delayed by even two or three minutes, the rescue would have been possible only after the storm cleared three hours later. Later, Sgt Robert A. Yund, flight engineer, was commended for doing an excellent job of directing the pilot's hover in "less than ideal conditions." Other members of the rescue crew were 1st Lt John A. Hall, copilot and MSgt Derald D. Parks, rescue specialist.

## Det 7 Rescues Downed Marines

Two Marines who ejected from their flaming F-4 were rescued shortly afterward by an HH-43 Pedro crew from Det 7, 38th ARRSq, DaNang AB. One survivor was located in what appeared to be a cistern. He was hoisted to the helicopter on the forest penetrator. To pick up the second survivor, Capt David A. Voight landed the HH-43 on a road near the DaNang perimeter. Other members of the helicopter rescue crew were Maj John A. Tyson, copilot; SSgt Joseph L. Coburn, helicopter mechanic; and SSgt Reginald Ramseur, firefighter.

## Det 13 Crewmen Honored

PHU CAT—An Air Force aeromedical specialist and a helicopter flight engineer have been awarded the Airman's Medal for risking their lives Dec. 5, 1969, to retrieve a seriously wounded security policeman from an active mine field here.

Receiving the Air Force's highest non-combatant award for heroism were SSgts Edward E. Scott of the 12th U. S. Air Force Dispensary and Kenneth C. Meyer, an HH-43 Pedro helicopter flight engineer with Det 13, 38th ARRSq.

The side of Hill 151 was the scene of the incident. Two security policemen on duty had detected noises the previous night, and had gone out at daybreak to investigate. Because of the large area, the two separated to cover the area more effectively. Hearing an explosion, one of the men rushed back to check on the other and found him lying in the center of a mine field about three feet from the hole in the ground caused by a blast. Seeing the man was seriously injured, he called security police operations, and an HH-43 from Det 13 was dispatched to the scene. The wounded policeman was about 300 yards away from the Pedro's landing site. The rough terrain and high winds around the outpost prevented the helicopter from getting any closer.

Sergeant Meyer said, "The victim was lying in the mine field, there was also the danger of the Pedro's rotor down-draft detonating additional explosives. We cautiously worked our way to the victim and did our best to stop the bleeding."

Recalling the events which followed, Sergeant Scott said, "We got the man back to the helicopter as quickly as possible, and LtCol Ernest A. Headberg, the pilot on the mission, decided to take the man to the Army Evacuation Hospital at Qui Nhon.

"We made the man as secure as possible, and during the trip I administered mouth-to-mouth resuscitation and heart massages," concluded the aeromedical specialist.

## 2000 HOUR PILOTS

Maj Ernest L. Neville and Capt Paul D. McComb have each accumulated 2000 flight hours in the HH-43. Both officers are attached to the 3638th Flying Training Squadron at Sheppard AFB, Texas.

So far, only 20 pilots in the U.S. Air Force have attained this distinction. One USAF pilot, Maj Bert E. Cowden, Det 6, 41st ARRWg, Kadena AB, Okinawa, has logged more than 3000 hours in the HUSKIE.

### **Det 8 Medevacs Critically Injured Soldier**

A member of an Army patrol, critically injured after falling from a steep mountain slope into a 30-foot-deep crevice, was evacuated by an HH-43 Pedro crew from Det 8, 38th ARRSq, Cam Ranh Bay AB. SSgt Eugene E. Cramer, medical technician, was lowered on the forest penetrator into the crevice and freed the injured man with the assistance of two members of the ground party. He was secured to a Stokes litter and hoisted to the Pedro.

In order to clear the rocks and trees on the mountainside during the hoisting operation, Capt Peter F. Dineen held a 100-foot hover until the litter was clear. He then backed the HH-43 over an adjoining lake and lowered to a 10-foot hover so the patient could be taken into the cabin. Other members of the Pedro crew were Maj Alfred W. Lamkin, Jr., and SSgt Thomas W. Seibert, crew chief.

### **Det 1 Rescues Pilot From Sea**

A pilot who ejected from his F-100 after the engine failed, was rescued from the sea by an HH-43 crew from Det 1, 38th ARRSq, Phan Rang AB. The downed airman was located in a raft 10 miles from shore and the forest penetrator seat was utilized to make a hoist pickup. Manning the rescue helicopter were Capt Wayne R. Crowther, pilot; Capt John J. Geubtner, copilot; Sgt Donald K. Mayo, flight mechanic; and Sgt Robert P. Jaglowski, medical technician. Flying cover in another HH-43 from Det 1 were Capt Thomas E. Rodgers, pilot; Maj James O. Dritt, copilot; SSgt Donald W. Bruns, flight mechanic; and SSgt Henry L. Jones II, medical technician.

### **NADC Rescue**

The Navy and Kaman teamed up recently to rescue an 11-year-old boy from a rock in the Delaware River.

The mission began when the boy was stranded after a canoeing accident and rescue efforts by ground parties proved futile. An urgent call for help was made to the Naval Air Development Center in Warminster, Pa. A UH-2C SEASPRITE took off in response a minute or two later. Piloting the test helicopter were LCdr R.W. Lloyd and Lt T.E. Payne. Acting as crewman was David H. Robinson of Kaman's Test and Development Department. He had been temporarily assigned to the test SEASPRITE.

As the Navy pilots' held the UH-2C in a hover over the river, Robinson lowered the sling to the boy and soon afterward the small rescuer was hoisted to safety.

### **HC-4 Saves Small Boy**

Christopher  
Dunsin —  
Rescuee



A three-year-old boy, missing for more than four hours in the marshlands south of Ocean Gate, N. J., was located by a UH-2 SEASPRITE crew from HC-4, NAS Lakehurst. The Naval Air Station was called on for assistance after a ground search, which included the use of bloodhounds, failed to find the tot after he wandered away from a family crabbing party.

Minutes after the call for help was received, a UH-2 piloted by Lt Robert Kruse and Lt John Kenny was on the way. The SEASPRITE landed briefly to pick up two policemen familiar with the marshlands and then began the search. After six passes over the area, ADR2 Louis H. Gray, spotted the boy, apparently asleep, lying near a nine-foot-deep lagoon. Lieutenant Kruse held the UH-2 in a "high hover," to preclude possible engine ingestion of debris in the area, and Petty Officer Gray was lowered to the ground to pick up the youngster. He had been awakened by the noise of the helo and was excitedly awaiting his rescuer. Both were hoisted to the UH-2 by AMH3 Ben Sperling and the tiny "survivor" was returned to his family soon afterward. (Trentonian photo)

### **Two HH-43 Pilots Honored By MAC**

Two HH-43B pilots, Maj John S. Lapham and Capt Wilson T. Arnold, have each been cited by Military Airlift Command (MAC) safety officials for 2500 hours of safe flying. Both officers are assigned to Det 12, 40th ARRw, RAF Woodbridge, U. K.



**Navy-Kaman Team**—Blanket wrapped, but apparently none the worse from his experience, 11-year-old Ervin Smith chats with the UH-2C crew which rescued him from a rock in the Delaware River. Left to right are Lt T. E. Payne, D. H. Robinson and LCdr R. W. Lloyd. (USN photo by G. R. Lepone)

# The "Rock's" Head Beagle

Story by Lt R. J. Haggerton  
HC-4

USN Photos by PHAN David Aurand  
USS Little Rock

"Now flight quarters! Flight quarters! All personnel concerned, man your flight quarter stations. Prepare to launch Little Rock helicopter."

A familiar sound?

It is for some 35 helo and ship's personnel who are directly involved with launching this flying machine that rests from time to time on the vessel's stern. And indirectly, it affects many more personnel aboard the USS Little Rock. This wasn't the case in times past, since about the only affiliation helicopters had with non-aviation type ships was an occasional mail or personnel transfer. Helicopter activities have since expanded much further than that and in today's modern Navy, rotary-wing aircraft can serve in any number of capacities in fleet operations.

Part of that participation is shared by Helicopter Detachment 47 aboard the Little Rock. The detachment, commanded by Officer-in-Charge Lt Barry R. Geise, is composed of three officers and eight enlisted men. It is a part of Helicopter Combat Support Squadron Four (HC-4) homebased at NAS, Lakehurst, N. J. The unit is just one of the squadron's many detachments serving non-aviation ships throughout the world.

Basically, the single-engine UH-2B SEASPRITE—also known to the ship's company as "Snoopy 52" (the head beagle)—is provided for the use of Commander Sixth Fleet and his staff on official business. But it's not uncommon for this rotary-wing aircraft to perform other tasks ranging anywhere from replenishment to rescue.

Initial production of the UH-2, which is now the Navy's standard rescue and utility helicopter, began in 1959 with fleet delivery in 1962. The all-weather aircraft is built by Kaman Aerospace Corporation located at Bloomfield, Conn. This four passenger helicopter, which cruises around 130 knots, is unique in that it carries the necessary systems equipment for automatic blade tracking and automatic stabilization of heading, altitude and airspeed. It is, of course, necessary to maintain this sophisticated gear—and for Detachment 47 that amounts to 14 man hours for every hour of flight time.

Here are a few additional det statistics which may prove of interest:

In 1969 alone—not a dull year—Snoopy was winging his way through the skies with mail, cargo and personnel. In this 12-month period, he transferred an estimated 1,200 passengers, over 23,000 pounds of mail and some 14,000



"Snoopy" Arriving—The head beagle, directed by the LSE (landing signal enlisted man), ADR2 David Rotroff, is only four feet away from another successful landing—one of more than 1,000 landings made on ships in 1969. The setting is near Barcelona on a sunny March afternoon. In bottom photo, Snoopy picks up personnel from an oiler. In one year "he" transferred an estimated 1,200 passengers.





New Airframe Change?—No, just barrels of petroleum for the "Rock"—a full morning's vertrep efforts totalled 9,460 pounds.

pounds of cargo. All this activity saved the ship an estimated 1,400 hours, hours which normally would have been consumed by slower methods of transfer. To accomplish these totals, Snoopy flew approximately 420 hours.

And the year didn't pass without a rescue either. On the afternoon of October 19th, while with Task Force 60.1

during the "Lebanon Crisis," the carrier USS John F. Kennedy (CVA-67) requested Snoopy to take off immediately from her flight deck and search for a reported missing crew of an F-4 Phantom. Within 13 minutes from call and some 19 miles distant, Snoopy had the RIO (radar intercept officer) safely aboard. The rescue crew was commended by Rear Admiral J. M. James, task force commander, for their "very professional airmanship."

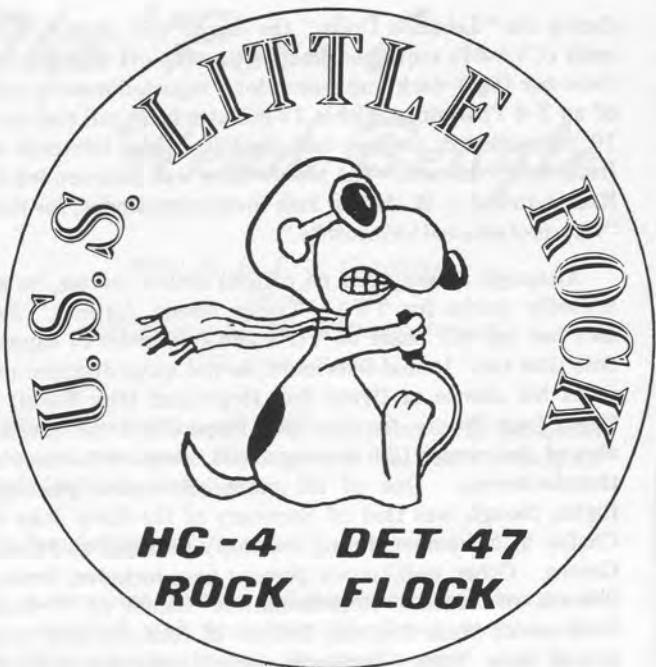
Although Snoopy has no official airline charter, he admittedly works for TWA—"Teeny Weeny Airlines." And he's had his fair share of VIP's and celebrities to support that title too. In mid-December, he was quite disappointed when his chance of flying Bob Hope (and Miss World) to Gaeta from Rome, for the "Bob Hope Christmas Special" aboard the carrier USS Saratoga, was cancelled because of thunderstorms. One of his more memorable passenger flights though was that of Secretary of the Navy John H. Chafee in November during the ship's port call at Athens, Greece. Other well-known persons have included Senator Pearson of Kansas, Representatives Daniel of Virginia, Molohan of West Virginia, Nichols of Alabama and Stratton of New York. Numerous high-ranking military officials have also flown aboard the UH-2.

Launch and recovery of the Little Rock helicopter is no minor operation—it's a team effort. Perhaps it can almost be likened to a two-act play. As the curtain rises, signalled by the 1-MC loud speaker system announcing flight quarters, the characters all take their places (stations) on stage (flight deck) ready to perform as directed by the leading character—the Flight Deck Officer.

Within minutes, the stage comes alive with the gas turbine engine rising to a high pitch and the rotor-blades cutting through the air. By then, it's about time to remove the chains and chocks as directed by another important cast member—the LSE (landing signal enlisted man). As soon as the pilots get the "green light" from the FDO, it's time for liftoff....But the performance isn't over yet. It's merely intermission. When the play resumes, the characters take their places once again to recover the helo. The curtain falls at last with the helo home safely and the "actors" returning to their "dressing rooms."



Request Permission To Come Aboard?—"Snoopy 52" prepares for another landing on his "doghouse" (flight deck) during out-to-sea operations. Note the Russian trawler in the background.



**"Snoopy's" Keepers**—Photo above, easy goes it as a main rotor blade is folded for the day. It's a handy convenience when there is a space shortage. Left photo, ADJ3 Lemay inspects a pitch change link on the tail rotor—a rotor that takes a lot of punishment during day-to-day operations (1679 RPM).



There are many others that were not mentioned, but who play a very important role if necessary. For instance, who could forget the "tin-man" in the hot asbestos suit who in case of fire could quite conceivably save a life; or the lifeboat alongside that would be the first on the scene if the helo's power failed on liftoff.

Indeed, helicopters will continue to be a familiar sight around non-aviation ships as long as there's a surface fleet. As far as Snoopy is concerned, the throngs of shutterbugs and hand-wavers that greet him wherever he goes are evidence of his popularity. He doesn't claim to be a superstar, however; he's simply doing his "thing" as head beagle!



**Det 47 Personnel**—Front row, left to right, AMH2 Robert J. Roller, AE3 Don F. Wormell, ADR2 David A. Rotroff. Rear row, Lt Barry R. Geise, officer-in-charge; AE1 Charles E. Cole, AMH3 Mike Evanicki, ADJ3 Andy R. Lemay, ATN2 Don R. Magee, AMS3 David G. Deyoe, ADJ2 Bill E. Carr, Lt R. J. Haggerton, Lt Allen Petrie.

## **Det 63 Saves A-4 Pilot**

While flying plane guard, a UH-2C crew from HC-1's Det 63 aboard the USS Kitty Hawk rescued a pilot whose A-4 plunged into the sea six miles from the carrier. ADR3 Robert G. Siebuhr, UH-2 second crewman, leaped from the hovering helicopter into the water to aid the survivor. Both men were hoisted to the SEASPRITE by ADJ3 R. M. Hull. Pilot of the rescue helicopter was Lt(jg) D. H. Christian and copilot was Ens John A. Fears.

## **NAS Pensacola Forms Plane Guard Det**

USS LEXINGTON — Only two hours into its first operational flight, the newly formed plane guard detachment for the USS Lexington had already saved the life of a Navy pilot. Flying a UH-2 SEASPRITE, the helicopter crew rescued a pilot who ejected after his A-7 lost power on a catapult launch. Manning the helicopter were Lt Richard C. Kearley, Lt Gene Walker, AMAN R. L. Franklin and ADAN M. S. Bogan.

The NAS Pensacola Flight Operations plane guard detachment was formed with men on temporary additional duty status from Helicopter Training Squadron 8, located at NAS Ellyson Field near Pensacola. The detachment was formed to relieve the training squadron from having to supply plane guard units during carrier operations. Some of the men who were assigned to the detachment from HT-8 on a temporary status have already been permanently assigned.

The unit has six rescue helicopters, six officers and 53 enlisted men.

## **UH-2C Endangered By Flare-Ignited JP5**

A UH-2C crew from HC-1's Det 9 aboard the USS Coral Sea rescued the pilot from an F-4 which exploded and plunged into the sea shortly after a catapult shot. ATN3 W. M. Creech, a UH-2 crewman, was lowered into the water to aid the survivor. After both men were safely aboard the helicopter, one of the flares which had been dropped by the carrier was tipped over by the rotor wash and ignited the fuel slick from aircraft wreckage nearby. The flames rose perilously near to the SEASPRITE so Lt. W. R. Crenshaw immediately broke hover and left the area. Others manning the UH-2 were Lt. D. R. Egle, copilot, and ADJ3 R. M. Cramblit, crewman.

In another incident, a pilot who ejected from a crippled A-7 and landed in the sea, was rescued by Lieutenants Crenshaw and Egle. Crewmen on the mission were AN R. J. Fennell and AE2 S. W. Hall.

## **1000-HOUR PILOTS**

Two Navy and four Air Force pilots qualified recently for the plaque presented by Kaman Aerospace to those logging 1,000 hours at the controls of helicopters produced by the company. Recipients of the award are: UH-2 — Lt William L. Hanks, HC-7, NAS Atsugi, Japan; Lt Thomas L. Olson, HC-2, NAS Lakehurst, N.J.; HH-43 — Maj William E. Cline and Capt David W. Barksdale, 3638th Flying Training Wing, Sheppard AFB, Texas; Maj Edward A. DuChene and Capt Raymond M. Hanson, Det 17, 42nd ARRSq, Davis-Monthan AFB, Ariz.

## **USS FOX CELEBRATES LANDING**

The USS Fox, a guided missile frigate, celebrated an aviation milestone on July 9th while operating with the USS Seventh Fleet. On that date, an HH-2C from HC-7, NAS Atsugi, Japan, touched down on the Fox. It was the 1000th helicopter landing to be made on the non-aviation type ship. Pilot of the SEASPRITE was Lt Robert E. Sloan and copilot, Lt Joseph W. Behunin, of HC-7's Det 104. Coincidentally, Lieutenant Sloan is the same pilot who logged the first helicopter landing aboard the Fox while the ship was undergoing acceptance trials off southern California in 1966. At that time, the Lieutenant was attached to HC-1, NAAS Ream Field (now NAS Imperial Beach), Calif., and piloting a UH-2.

Crewmen aboard the HH-2C were AT2 Phillip T. Poisson and AMS2 Alfred F. O'Malley. The Fox, with her crew of 415 officers and men is currently on her third deployment in support of U.S. efforts in Southeast Asia. On

many occasions, UH-2 missions flown from the deck of the Fox have resulted in the rescue of downed fliers from almost certain capture or death.

*In observance of the 1000th helicopter landing celebration aboard the USS Fox, attention is called to the following quote from the January-February, 1968, edition of Rotor Tips: "The willing help supplied by the ship's company aboard each DLG is another prime factor in making the SAR operations a success....the reward for their untiring efforts is found in the ever-mounting number of downed fliers saved from enemy hands since the helicopters first began operating from the ships many months ago."*

*To the UH-2 crews which make the rescues, detachment personnel who support them and ships like the USS Fox from which these life-saving missions are flown, we extend our sincerest congratulations for a job well done....Kaman Aerospace Corporation.*

**1000th Helicopter Landing** — Following Navy tradition, bakers aboard the USS Fox made a cake to celebrate the "milestone landing" on the ship. Left to right are Petty Officers O'Malley and Poisson, Lieutenant Sloan, Capt Paul Boland, commanding officer of the frigate, and Lieutenant Behunin. (USN photo)





*continued from page 9*

After an exhaustive ground and air search, it was determined that the other occupant of the downed RF-4C had failed to survive. During this operation, Det 22 logged 106 flight hours, flew 212 sorties, carried 298 passengers, and cargo weighing a total of 21,570 pounds. The top left photo shows the landing area near the crash site; the second photo was taken while the HH-43's were being refueled. At top right, a Det 22 takes off with cargo for one of the ground search parties. (USAF photos)



**DET 22 RESCUE TEAM** — As with all ARRS units, Det 22 missions depend on the joint efforts of aircrews and the ground personnel who support them. Front row, left to right, SSgt Gerard J. Bucknall, SSgt Jerry F. Hibner, MSgt Hubert O. Marsh, SSgt Frederick P. Pecotte, Capt James L. Woolace, TSgt Jimmy L. Ramsey, Maj Thomas E. Fallows, detachment commander; and Capt Frank C. Andreus II. Rear row, A1c Vincent P. Gilleran, A1c Tony G. Hook, Sgt Peter J. Thomas, Capt Albert E. Tollefsen, SSgt Gerald D. Reich, SSgt Garry R. Eberhardt, SSgt Sheldon A. Squair, SSgt Heyward W. Allen and Sgt Jesse G. Gamez. Other members of Det 22 are Maj Richard H. Heitz, SMSgt Robert E. MacMillan and SSgt Gene D. Elvington. (USAF photo)

## DET 12 MARKS 1200-HOUR ENGINE CHANGE



**Celebration**—After the turbine engine on one of the unit's HH-43B's logged its 1200th hour of operation, personnel from Det 12, 42nd ARRSq, George AFB, Calif., celebrated the event in a manner worthy of the occasion. Shown are, left foreground and proceeding clockwise, Maj James L. Wissert, operations officer; SSgt Percy Knatt, fireman; SSgt Dean W. Wegener, fireman; TSgt Charles W. Elliott, helicopter mechanic; TSgt Robert H. Waechter, engine specialist; LtCol John W. Ward, commander; SSgt Patrick C. Kerry, helicopter mechanic; SMSgt Joachim Kreinrot, maintenance superintendent. (USAF photo)

On 20 July, TSgt Robert H. Waechter, engine specialist for Det 12, 42nd ARRSq, George AFB, Calif., changed the turbine engine of HH-43B Number 59-1581. With the exception of hot section changes in 1967 and 1969, the powerplant had not been removed from the helicopter since it was installed in February of 1966 with zero time on the log book.

The Lycoming T53-L-1B engine was changed because it had reached the maximum operating time allowed. In commenting on the event, SMSgt Joachim Kreinrot, detachment maintenance superintendent, said, "This kind of performance from an engine is made possible only through

the professionalism and dedication of the unit's pilots and maintenance personnel.

"Strict observance of engine operating limits and an aggressive preventive maintenance program are strong contributing factors to prolong engine life to the maximum. Climatic environment and frequent engine cleaning are additional factors which helped achieve this record."

The 1200th hour was flown by a crew consisting of LtCol John F. Ward, detachment commander; Maj James L. Wissert, operations officer; TSgt Charles W. Elliott, helicopter mechanic; Sergeant Waechter and airborne firefighters SSgt Percy Knatt and SSgt Dean W. Wegener.

## ARRS PILOT HONORED BY AVCO-AWA

Capt Daniel A. Nicholson, USAF, 30, who saved the lives of six men on two rescue operations in Vietnam, was recently named the winner of the 1970 Avco-Aviation/Space Writers Association (AWA) Helicopter Heroism Award. Afterward, the Captain was guest of honor at the Aviation Writers 32nd annual meeting and News Conference in Las Vegas. At a dinner held during the event he was presented with a special sculpture award in recognition of what the judges termed a "selfless concern for his fellow man." Captain Nicholson is currently assigned to the 44th ARRSq, Eglin AFB, Fla. He was attached to the 38th ARRSq, 3rd ARRGp, when the RVN missions were flown.

On his first rescue operation, Captain Nicholson, who flew unarmed, unarmored HH-43B Kaman "Pedro" helicopters during his tour in Vietnam, saved a Marine who had been wounded three times and was in danger of bleeding to death. Although his hovering helicopter took direct hits from enemy groundfire and subsequently lost all its engine oil, he refused to leave the area until the injured survivor was safely aboard.

In the second operation he flew his single-engine Pedro four times through heavy automatic weapons into a steep,

densely-jungled box canyon controlled by the Vietcong. The combat sorties, which took two days to complete, were made to rescue the crew of an Army helicopter which had been shot down trying to extricate a five-man Army Long Range Patrol which was surrounded by three platoons of the enemy. For this action Captain Nicholson was credited with five "combat saves," an action in which the survivor would have met death or enemy capture had he not been rescued.

Captain Nicholson was selected by a special committee of AWA judges which included John J. Corris of TWA, David A. Brown of Aviation Week & Space Technology, and Edgar E. Ulsamer of Air Force/Space Digest. The 57 nominees submitted this year included 46 from American servicemen, five from foreign military units and six from U. S. civilians. A native of Upland, California, the Captain is the fourth winner of the Helicopter Heroism Award which is co-sponsored annually by Avco Corporation and AWA. The award is presented to a pilot, crewmember or other individual for outstanding heroism involving the use of a helicopter in the previous year. There are no restrictions as to the winner's nationality or occupation, or to the type of helicopter.

# HUSKIE HAPPENINGS



## Ravine Rescue By Det 16

An Air Force captain who ejected from a T-37 after it lost engine power, was rescued by an HH-43B crew from Det 16, 42nd ARRSq, Williams AFB, Ariz. The survivor's parachute was detected on a ridge a mile from his downed aircraft and further search located the pilot in a ravine, a half mile away. After the survivor was recovered, the HUSKIE crew flew him to the hospital. Participating in the mission were Maj Bruce M. Purvine, pilot; Capt Ralph E. Wright, copilot; Capt Robert K. Silbert, flight surgeon; Sgt Dennis R. Helferty, medic; SSgt David A. Filut, and Sgt Neil A. Hamilton, firefighters.

In another Det 16 mission an HH-43B crew rescued seven men from a box canyon between San Carlos Lake and Winkleman. The men were stranded after losing their boats in an accident while shooting rapids in the Gila River. Participating in the recovery were Maj Bruce M. Purvine, pilot; Capt William B. Fredenberger, copilot; and SSgt Barron C. Cornell, flight engineer.

## Still A Rescueman

Remember Capt Dave Mullen? He was attached to ARRS and during his eight years as an HH-43 pilot participated in several rescue missions.

It's Mr. Mullen now, but the training he received undoubtedly helped during some unexpected civilian "rescue business" he became involved in a few months ago—result, two lives saved!

**The Rescuemen**—Their search paid off in life for a small boy. Left to right are Capt Dennis D. Olson, pilot; LtCol Roland Speckman, copilot; and Sgt Ozell Conner, helicopter mechanic. Manning an HH-43 HUSKIE from Det 18, 42nd ARRSq, Webb AFB, Texas, they joined in the search for a nine-year-old boy who was lost in desolate Sandhills State Park. He had wandered away from a church group and had been missing for several hours. Aided by a Big Spring police officer, the HH-43 crew began investigating the numerous places a small boy's steps might take him. The rolling sand dunes made orientation difficult but after an hour the child was located lying at the foot of a steep dune. He was helpless and suffering from heat and dehydration, but otherwise uninjured. Captain Olson landed the HH-43, the lad was gently placed aboard and then transported to medical aid. The save was the first for Captain Olson and Sergeant Conner. It was the 14th for Lieutenant Colonel Speckman—his previous saves were all in Southeast Asia. (USAF photo)

Now a law student at Gonzaga University at Spokane, Wash., the former Air Force captain was skating on a pond when the ice broke 100 yards away and children who had been fishing were dumped into the water. Mullen tried to reach them with a two by four but the ice crumbled and he went into the ice water. Mullen then managed to get hold of a 20-foot board which he pushed to one child and, after he was out of the water, got the board to the other child and rescued her. Mullen was then pulled to safety by others who arrived at the scene.

## Det 9 At RAF Wethersfield Inactivated

Det 9, 40th ARRWg, RAF Wethersfield, U. K., has been inactivated. The unit has provided local base rescue (LBR) coverage for the USAFE fighter unit at the base since 1966. Equipped with two HH-43B HUSKIES, the detachment maintained a perfect accident-free flying record while logging more than 2200 flying hours during the 45 months it was in operation.

Det 9 was scheduled for inactivation after the fighter unit was relocated to RAF Upper Heyford. The detachment's two helicopters and related support equipment were assigned to Det 15, 40th ARRWg, Spain. The two additional HUSKIE's at Zaragoza make it the only four-helicopter detachment with the 40th Wing. They will provide LBR support for both Zaragoza and the nearby Bardenas Reales Gunnery Range.



**Lifesavers**—The quick action of an HH-43 crew from Det 15, 42 ARRSq, Luke AFB, Ariz., has been credited with saving the life of a 15-year-old boy after the car in which he was riding plunged into the Salt River Canyon. Maj Ralph L. Gaede flew the HUSKIE to the accident scene and was directed by the highway patrol to the injured youth. The boy was located 1,500 feet from the rim of the canyon and on a 45 to 50 degree slope. Although hampered by variable wind speeds and the proximity of the rocky slope Major Gaede held the HH-43 in a hover above the victim while his crew lowered a litter. The youth was loaded on the litter, hoisted to the HUSKIE and taken to a waiting ambulance. A highway patrol spokesman said afterward that without the aid of the HUSKIE crew, shown at left, it would have taken eight hours to remove the injured boy. Front, left to right, are SSgt Gregory F. Sutherland and TSgt James T. Hines, Jr. Standing, Maj Bobby S. Lay and Major Gaede. (USAF photo)

#### **Det 9 Makes Mountaintop Medevac**

After flying through heavy rain showers, an HH-43B crew from Det 9, 47th ARRSq, Osan AB, Korea, landed at a mountaintop helipad to medevac a seriously-ill sergeant from a remote site 40 miles from the base. During the flight, the rain forced Capt Gary A. Dietze to fly at 100-200 altitudes in order to maintain visual contact with the ground. Other crewmembers were Capt Larry E. Riggard, copilot; TSgt Lindell R. West, helicopter mechanic; and SSgt William Knoblanck, medical technician.

#### **Night Evacuation By 31st**

While on a night training flight, an HH-43 crew from the 31st ARRSq, Clark AB, R. P. was called on to medevac a Negrito attached to the Pacific Jungle Survival School. The patient had been seriously wounded while in a jungle area. After picking up an instructor from the school who was familiar with the mountainous, heavily-forested area, Capt Glenn T. Passey headed for Pad 17 to make the pickup. Ground personnel had set up flares around the pad which was surrounded by 30 to 40-foot trees. Captain Passey landed the Pedro without incident and the patient was placed aboard. Seconds later the HH-43 was airborne and headed for the hospital. Other members of the rescue crew were Capt Mark C. Schibler, copilot; SSgt Alan D. Latourette, medical technician; and SSgt Randall Ross, firefighter.

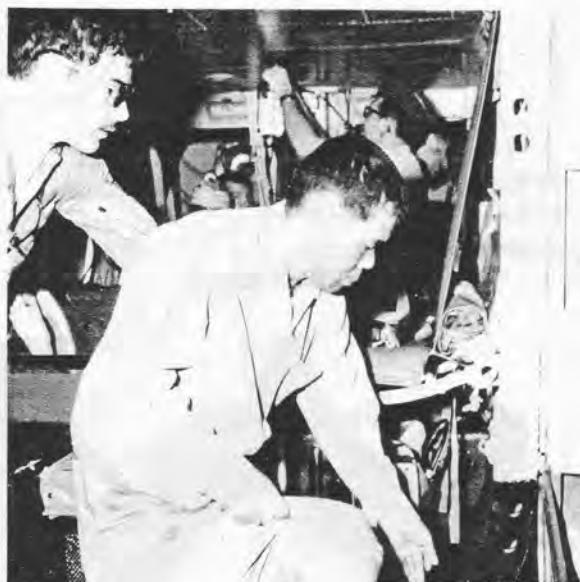
#### **Det 6 Medevacs Three**

A U. S. Marine who had been bitten by an eight-foot-long poisonous snake was evacuated to the hospital by an HH-43B from Det 6, 47th ARRSq (MAC), Kadena AB, Okinawa. Capt Donald R. Berdeaux and his crew launched minutes after the request of assistance was received and headed for the north end of Okinawa. After landing in the village school yard at Ada to pickup a Marine guide, the helicopter continued on to the pickup site in mountainous territory beneath low-lying clouds. The Marine, whose arm was badly swollen, was placed aboard the helicopter. On the return flight, he was treated by Maj P. F. Giacobazzi, (MC), a flight surgeon. Other members of the crew were SSgt John H. Hazzard, helicopter mechanic; Sgt Paul L.

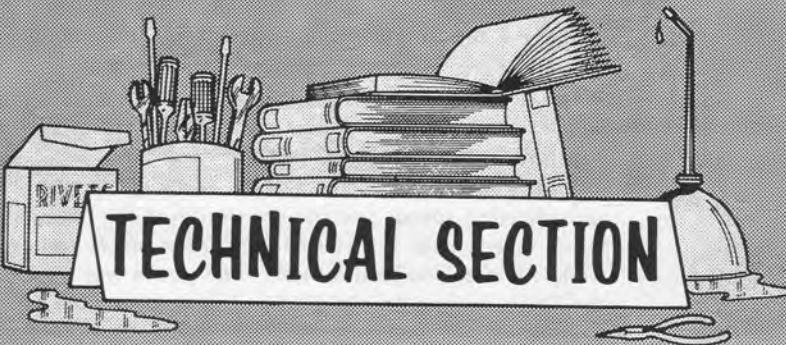
Coile, medical technician; and Sgt Floyd D. Calhoun, fireman.

In a second Det 6 mission, an HH-43 crew flew through wind-driven rain to Ie Zena Shima to evacuate a Ryukyuan suffering with acute appendicitis. On the return flight to Okinawa the patient was treated by Capt James Settle (MC), a flight surgeon and Sgt Robert W. Green, medical technician. Others manning the helicopter were Captain Berdeaux, pilot; Capt Robert M. Garlow, copilot; and MSgt Frank Crummit, helicopter mechanic.

A sergeant, seriously injured in a motorcycle accident on Ie Shima, was evacuated to the Army hospital on Okinawa by an HH-43 crew consisting of Captain Berdeaux, pilot; Captain Settle, flight surgeon; Sgt Roy L. Pinkerton, medical technician; and TSgt Charles E. Maxwell, helicopter mechanic.



**Typical Civilian Medevac**—A relative of a Ryukyuan patient is shown with some of the HH-43 crew members who delivered the ill man to the hospital. Sgt Robert W. Green, medical technician, is on the left; Capt James Settle (MC), flight surgeon, is in the aircraft. The scene has been repeated many times as Det 6 flew its mercy missions on Okinawa and to the surrounding islands. (USAF photo)



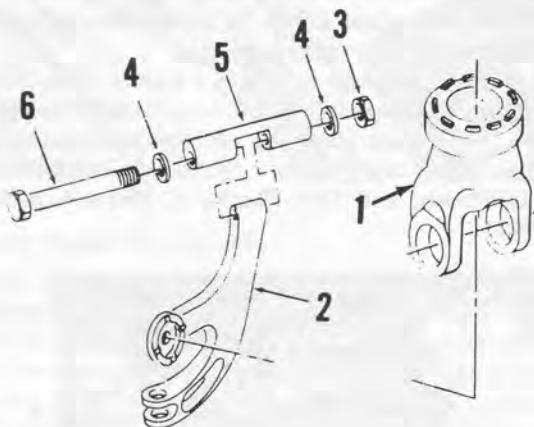
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### TAIL ROTOR BLADE APPLICABILITY

H-2

Tail rotor blade, P/N K614701-1, MUST be used on HH (4 bladed tail rotor) aircraft only. Tail rotor blades, P/N K614001-203; -205; -207, MUST be installed on UH-2 aircraft only. The reason for the restriction is a difference in pitch arm flyweights, made necessary by the addition of the fourth tail rotor blade on HH aircraft. In the event of a directional control failure, the pitch arm flyweights will position the blades in an optimum pitch angle, thereby aiding the pilot in effecting a safe landing. Illustration 1 shows an exploded view of the area under discussion.



- 1. Tail rotor blade hub
- 2. Pitch arm
- 3. Nut
- 4. Washer
- 5. Flyweight
- 6. Bolt

Illustration 1

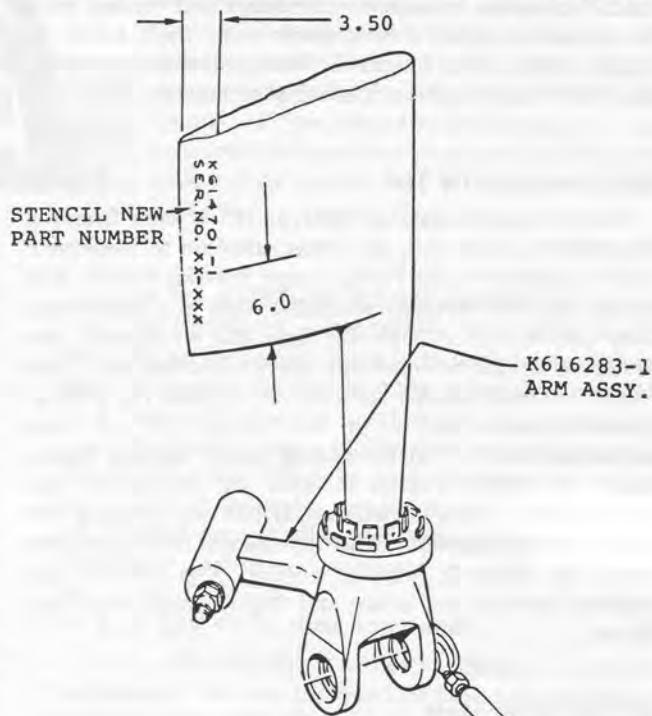


K616709-11  
Flyweight

Photo A

K616288-11  
Flyweight

As can be seen in Photo A, the difference in flyweight size is slight. The only difference between a K614001-207 and a K614701-1 blade is the flyweight and its attaching bolt. (The lighter flyweight has a shorter attaching bolt.) Because of this small difference, either blade may be modified to the other configuration by changing the attaching bolt (6), flyweight (5), and Part Number stencilled on the blade. Modification of a blade should be accomplished only if the required blade is unavailable and appropriate authorization is obtained. Illustration 2 lists the parts required to modify tail rotor blades. The numbers in parenthesis refer to the index numbers in Illustration 1.



Necessary for K614001-207 configuration

- (3) MS20365-624 Nut
- (4) AN960-616 Washer
- (5) K616288-11 Flyweight
- (6) AN6C30A Bolt

Necessary for K614701-1 configuration

- (3) MS20365-624 Nut
- (4) AN960-616 Washer (under head and nut)
- (5) K616709-11 Flyweight
- (6) AN6C25A Bolt

Illustration 2

W. Wagemaker, Service Engineer

# TIMELY TIPS

## JULIET 28 INSTALLATION AND OPERATION

H-2

When the Juliet 28 equipment is installed in an aircraft, the J-1013/AIC-14 equipment *MUST ALWAYS* be set up for operation with carbon microphones. Dynamic mikes can be used in this set-up only when an in-line isolation amplifier, P/N AM3597A, is installed between the headset mike and the AIC-14 intercom system. The J-1013/AIC-14 equipment *SHOULD NEVER BE SWITCHED TO DYNAMIC MIKE OPERATION WHEN JULIET-28 EQUIPMENT IS INSTALLED*. If this is done, it could compromise the secure speech provisions of the Juliet equipment. The in-line amplifier cannot be used in conjunction with carbon mikes. The arrow in Photo A shows the in-line amplifier attached to the helmet mike; Photo B shows close-up of the unit. This information will be included in applicable handbooks by a future change. To order the in-line amplifier, use FSN RM5831-087-1819EX.

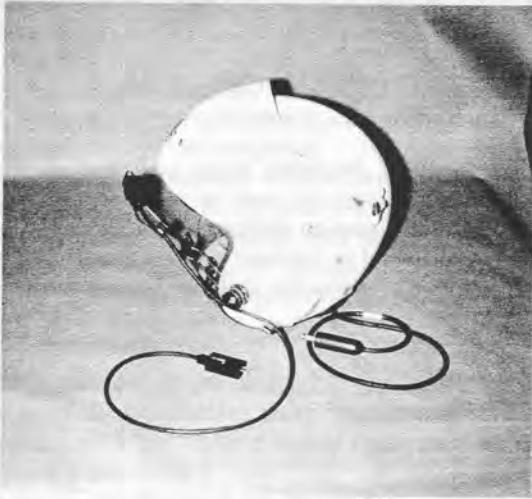


PHOTO A



PHOTO B

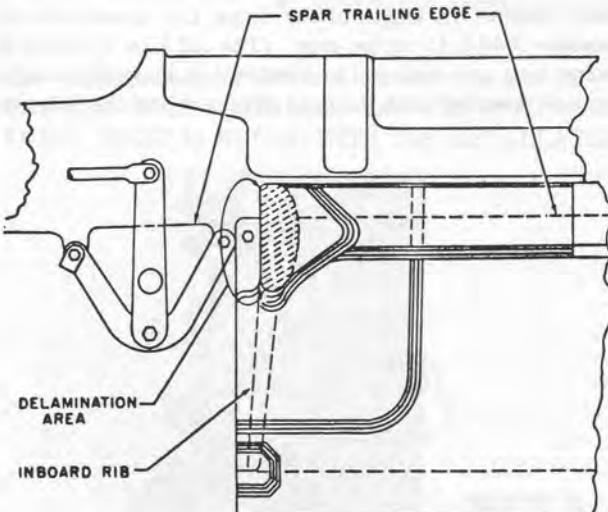
J. McMahon, Service Engineer

## MAIN ROTOR BLADE ALUMINUM DOUBLER REPAIR

H-2

The following information reflects the latest in delamination repair. The information will be incorporated into applicable handbooks by a future Change.

1. Use a feeler gage to check for delamination. Up to 1/3 of the area covered by the aluminum doubler, shown in accompanying illustration, can be repaired as follows:
2. Clean up faying surfaces. Remove corrosion by abrading with No. 180 emery paper (or finer). Using a clean, oil-free cloth, solvent-wipe with Methyl-Ethyl-Ketone (Federal Specification TT-M-261). Dry with clean, filtered compressed air.
3. Mask off area around delamination to facilitate cleaning after bonding.
4. Prepare an adhesive such as: EC 1933; Epon 934; Armstrong A6; or an equivalent epoxy.
5. Apply a thin, even coat between the surfaces and press doublers down into position; tape in place.
6. Cover area with plastic film (such as PVA) to prevent adhesive squeeze-out from sticking to the pressure device which will be used in step 7. Using a suitable tool, squeeze the excess adhesive out from under the doubler. (Start at the secure end and work toward the loose end.) A fillet of adhesive should be evident around the edges of the delamination.
7. Apply light clamping pressure (sand bag or similar device) in such a manner to keep the surfaces to be bonded in full contact.
8. Apply heat—165° F maximum for 3 hours. Note: less heat requires more time to cure. For example: at 150° F, heat for 4.5 hours—*DO NOT EXCEED 165° F MAXIMUM HEAT*.
9. Sand fillets smooth and touch-up paint where necessary. Clean up area.



W. Wagemaker, Service Engineer

## COMBINING GEARBOX COMPONENT LUBRICATION

UH-2

A future change to applicable handbooks will provide the following information: Whenever installing hydraulic pumps and/or AC generators onto a combining gearbox, lubricate the splines and shafts with grease conforming to MIL-G-21164.

J. McMahon, Service Engineer

# QUESTIONS & ANSWERS

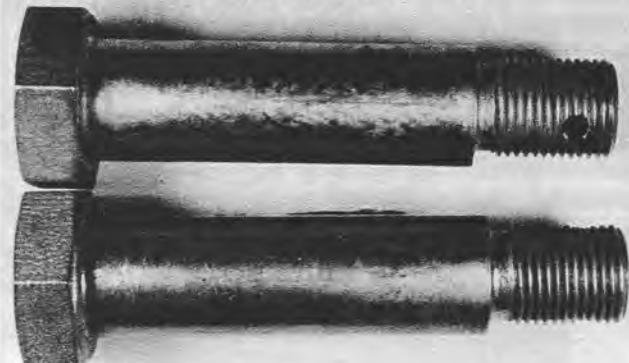
**Q.** (Applies UH-2C; HH-2) MAY SUBSTITUTE BOLTS BE USED TO RETAIN THE RH COMBINING GEARBOX/ENGINE MOUNT ASSEMBLY, P/N K672730-1?

**A.** No. The right-hand engine mount assembly must be attached to the fuselage with the hardware shown in the accompanying illustration. (Figure 4-23 of NAVAIR 01-260HCA-2-4.1 and figure 4 of NAVAIR 01-260HCB-4-6 are presently in process of being changed to reflect the information presented here.) It is very important that the correct bolt, P/N K672770-11, be used, with one wave washer under the head and one flat washer under the nut. Torque the nut to 50 pound-inches, then continue tightening until a cotter pin hole is aligned with a castle slot. (While accomplishing this, do not exceed 200 pound-inches.) Use of the old bolt, P/N K672769-11, or installation of an additional washer with the correct bolt, will result in loading the clevis ears of the jawbone rather than the shoulder of the bolt. (The difference in length is shown in Photo A.) Although both bolts look identical, identification can be determined by the part number which is etched on the bolt-head. If the part number cannot be read, measure the length of the shank; the correct bolt will measure 2.44-2.45 inches long. (The old bolt is 2.35-2.36 inches long and must not be used.) Most illustrations show the bolt installed with the head outboard, but the bolt may

also be installed with the head inboard. (This will make it a bit easier to install, torque and align the nut.) If improper hardware stackup or installation of the wrong bolt is suspected, perform the following check:

Using a wrench, attempt to turn the bolt; if the installation is correct, the bolt (and nut) will turn with application of less than 25 pound-inches of torque. If considerable force is required to move the bolt (or if the bolt cannot be turned), it indicates the jawbone ears have been subjected to a preload due to use of the wrong bolt or installation of additional washers.

Old Bolt, K672769-11

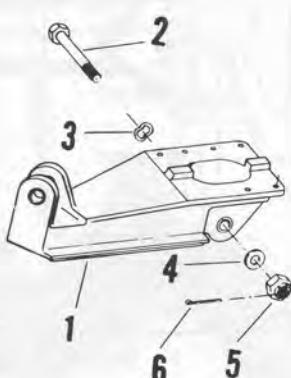


Correct Bolt, K672770-11

Photo A

In the event the preceding check indicates an incorrect installation, the jawbone must be removed and inspected for evidence of clamp-up damage to the ears. If necessary, the jawbone should be replaced. For information purposes, the dimension between the jawbone ears should be 1.455-1.465 inches.

H. Zubkoff, Service Engineer



1. Jawbone, K672730-1
2. Bolt, K672770-11
3. Wave washer, WW519-S18
4. Flat washer, AN960-1016L
5. Nut, AN310-10
6. Cotterpin, MS24665-355

**Q.** (Applies H-2) CAN AN ENGINE OIL COOLER BE USED AS A TRANSMISSION OIL COOLER?

**A.** Yes. Engine and transmission oil coolers can be interchanged to perform either function. Furthermore, these components can be interchanged between aircraft models as follows:

Part Number	Federal Stock Number	Applicability
8532563	RH2935-991-7424BH7 X	UH-2A/B only
K678741-1	(superseded by 8535576)	UH-2C;HH-2
8535576	RH2935-932-1436BH7 X	UH-2C;HH-2

The applicable handbooks will be changed to reflect this information.

H. Zubkoff, Service Engineer

## TECHNICAL SECTION

**Q.** (Applies H-2) WHAT IS THE FUNCTION OF THE H-2 LANDING GEAR LIQUID SPRINGS? HOW OFTEN SHOULD THEY BE SERVICED OR RECHARGED?

**A.** The H-2 liquid springs serve to dampen landing impacts and taxiing shocks, similar to the function performed by conventional type landing gear struts. They also provide an important flexible link between the helicopter and the ground during rotor operation while on the ground. Improper liquid spring performance, coupled with the usual dynamics accompanying an unbalanced rotor condition, can result in divergent ground resonance. It is therefore particularly important to ensure that liquid springs are correctly serviced and functioning properly. After a liquid spring has been properly charged in accordance with NAVAIR 01-260HCA-2-1 subsequent pressure checks are not required. Re-charging, however, is necessary under the following conditions:

1. Leakage indicated by a "flat strut."
2. When the aircraft is transferred or deployed to an area which has a significantly different ambient temperature. (For example temperate to arctic zones.)

When leakage indicated by "no piston extension" is noticed, remove the faulty unit. Install a serviceable liquid spring and charge as required. In cases where the aircraft has been relocated to a different climate, allow the aircraft to adjust to the new temperatures (sit static for a few hours). Once the aircraft has been temperature "soaked," charge the liquid springs in accordance with NAVAIR 01-260HCA-2-1 (UH-2A/B/C — 1,000 HH-2C and HH-2D — 4,000 PSI).

(If the liquid springs are charged in the hangar or in the shop, prior to installation, charging pressures must be in accordance with the "Liquid Spring Compensation Chart" contained in the -2-1.)

Between chargings, visual observation of piston extension will indicate whether the pressure is "in the ball park." With the aircraft fully serviced with fuel (maximum gross weight condition), piston extension should be approximately  $\frac{1}{2}$  to  $1\frac{1}{4}$  inches. (Internal pressure, and consequently piston extension, will vary with changes in outside temperature.) When the aircraft is on the ground in a static condition, the starboard liquid spring will usually be higher than the spring on the port side because of the unequal weight distribution of the rotor system; this is normal. With the rotor engaged, the weight distribution will balance out and liquid spring extension will be equal. Piston extension consistently less than  $\frac{1}{2}$ -inch or greater than  $1\frac{1}{4}$  inches, and/or a pilot "gripe" of unusual ground bounce should constitute valid indicators that liquid spring servicing is necessary.

*H. Zubkoff, Service Engineer*

**Q.** (Applies HH-43) WHAT IS THE MAXIMUM PERMISSIBLE PEDAL DISPLACEMENT IN HOVER, CRUISE AND AUTOROTATION?

**A.** Maximum displacement, measured pedal-to-pedal, is  $\frac{1}{4}$ -inch in hover,  $\frac{1}{2}$ -inch at 95 knot cruise, and  $\frac{1}{2}$ -inch in autorotation at 60 knots. Large (coarse) adjustments for pedal displacement can be made by adjusting both flap clevis rods on one set or pair of blades (LH or RH). Small (fine) adjustments are made at the tracking turnbuckles. A  $\frac{1}{2}$ -turn of the flap rod clevis is equal to a 13-hole adjustment at the tracking turnbuckle; both will result in a 2-inch change in pedal displacement when both blades of one set are adjusted. For further information, refer to T. O. 1H-43(H)B-2.

*W. Wagemaker, Service Engineer*

**Q.** (Applies H-2) WHAT ARE H-2 AIR PRESSURE REQUIREMENTS?

**A.** Recommended air pressure requirements for the H-2 are:

Tail landing gear tire—160 psi

Main landing gear tire—250 psi

\*Rotor brake accumulator—300 psi

\*\*Tail landing gear strut—1,000 psi

\*Servicing dependent on temperature. (Refer to Table 3-2 in NAVAIR 01-260HCA-2-1.)

\*\*Servicing dependent on strut extension. (Should be  $4\frac{7}{16}$  inches between torque arm pivots; refer to NAVAIR 01-260HCA-2-1 for detailed instructions.)

*W. Wagemaker, Service Engineer*

**Q.** (Applies H-2) PHOTO A SHOWS AN H-2 STATIC GROUND WIRE INSTALLED ON THE TAIL WHEEL FORK. WHAT IS WRONG WITH THE INSTALLATION?



PHOTO A

*(please turn to page 29)*

## CURRENT CHANGES

- This list reflects the latest changes to the handbooks. Consult applicable "A" page for changes issued prior to those listed below.
- H-2 Airframe Change 151 — Main Landing Gear, IMPROVEMENT OF DOWTY MAIN LANDING GEAR LIQUID SPRING  
4 August 1970
- Support Equipment Change 1549 — MODIFICATION OF TAIL ROTOR PROTRACTOR, P/N K604403-203 To P/N K604403-205  
14 July 1970
- Support Equipment Change 1550 — MODIFICATION OF PROTECTIVE SHIELD ASSEMBLY, P/N K604026-1 To P/N K604026-101  
14 July 1970
- NAVAIR 01-260HCA-1 — NATOPS FLIGHT MANUAL, Navy Models UH-2A/UH-2B Helicopters  
15 March 1968  
changed 1 July 1970
- NAVAIR 01-260HCA-1B — NATOPS PILOT'S POCKET CHECKLIST, Navy Models UH-2A/UH-2B Helicopters  
15 October 1966  
changed 1 July 1970
- NAVAIR 01-260HCA-1C — NATOPS AIRCREWMAN'S POCKET CHECKLIST, Navy Models UH-2A/UH-2B Helicopters  
15 October 1966  
changed 1 July 1970
- NAVAIR 01-260HCA-2-2 — Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D Helicopters, AIRFRAME  
1 October 1967  
changed 1 June 1970
- NAVAIR 01-260HCA-2-4.1 — Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D Helicopters, TRANSMISSION SYSTEM  
15 December 1969  
changed 1 June 1970
- NAVAIR 01-260HCA-2-5.1 — Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D Helicopters, INSTRUMENTS  
1 October 1967  
changed 15 July 1970
- NAVAIR 01-260HCA-2-7 — Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B/UH-2C/HH-2C/HH-2D Helicopters, RADIO AND RADAR SYSTEMS  
1 October 1967  
changed 1 July 1970
- NAVAIR 01-260HCA-2-8 — Manual, Maintenance Instructions, Navy Models UH-2A/UH-2B Helicopters, WIRING DATA  
1 October 1967  
changed 1 July 1970
- NAVAIR 01-260HCA-2-8.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2C/HH-2D Helicopters, WIRING DATA  
1 October 1967  
changed 1 July 1970
- NAVAIR 01-260HCA-4-4 — Illustrated Parts Breakdown, RADIO AND ELECTRICAL, Navy Models UH-2A/UH-2B Helicopters  
15 January 1967  
changed 15 July 1970
- NAVAIR 01-260HCA-4-5 — Illustrated Parts Breakdown, FURNISHINGS, Navy Models UH-2A/UH-2B Helicopters  
15 January 1967  
changed 15 July 1970
- NAVAIR 01-260HCA-4-6 — Illustrated Parts Breakdown, AIRFRAME, Navy Models UH-2A/UH-2B Helicopters  
15 October 1962  
changed 15 July 1970
- NAVAIR 01-260HCB-4-2 — Illustrated Parts Breakdown, AIRFRAME, Navy Models UH-2C/HH-2C/HH-2D Helicopters  
1 June 1967  
changed 15 May 1970
- NAVAIR 01-260HCB-4-8 — Illustrated Parts Breakdown, RADIO AND ELECTRICAL, Navy Models UH-2C/HH-2C/HH-2D Helicopters  
1 June 1967  
changed 15 May 1970
- NAVAIR 01-260HCB-4-9 — Illustrated Parts Breakdown, Navy Models UH-2C/HH-2C/HH-2D Helicopters, SPECIAL SUPPORT EQUIPMENT  
1 June 1967  
changed 15 May 1970
- NAVAIR 03-40KAM-1 — Manual, Overhaul Instructions, Navy Models UH-2A/UH-2B/UH-2C Helicopters, FLIGHT CONTROL SYSTEM  
15 November 1965  
changed 1 March 1970
- NAVAIR 03-95D-9 — Manual, Overhaul Instructions, Navy Models UH-2A/UH-2B Helicopters, MAIN AND ACCESSORY GEARBOX SYSTEM  
15 October 1965  
changed 1 February 1970
- NAVAIR 03-95D-14 — Manual, Overhaul Instructions, TAIL ROTOR GEARBOX ASSEMBLY, P/N K671302-1, K671302-3, K671302-5, K671652-1  
1 May 1970
- R. H. Chapdelaine, Supervisor, Service Publications

## TECHNICAL SECTION

(continued from page 27)

**A.** In closeup, Photo B, notice how the static ground wire is attached to the tail wheel fork. *Under no circumstances should insulated clamps be used to attach a grounding connection.* Paint on the fork under the clamps should be removed before attaching the bare metal clamps. (The arrows point to where the two original clamps were installed.) The recommended installation, which is shown in Figure 3, NAVAIR 01-260HCA-4-4 and Figure 3, NAVAIR 01-260HCB-4-8, calls out a K683094-3 wire assembly to be used as a static ground. (See Photo C.)



Photo B



Photo C

Some Detachments, when unable to obtain a -3 assembly, have used a flex cable with a ball swaged on the end as shown in Photo D. If this is to be done, check the cable to be sure it is a good electrical conductor. When installing a static ground wire:

1. Remove paint from area on the fork where clamps will make contact. (Refer to Illustration 1 for detailed position.)

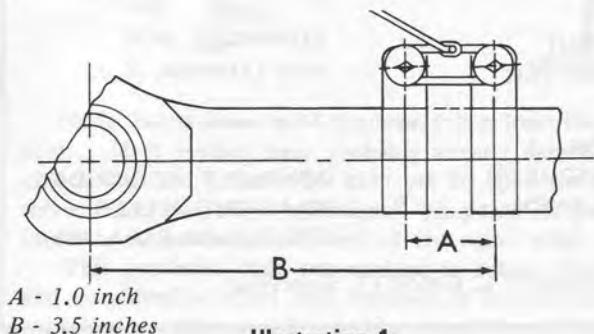


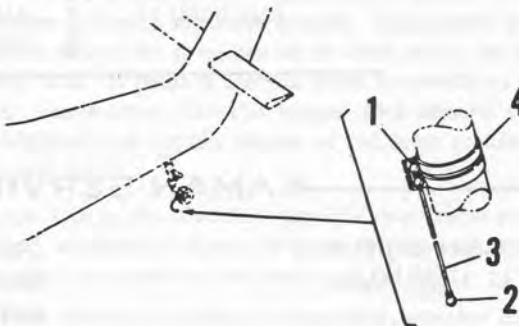
Illustration 1



Photo D

2. Be sure the ground wire is held securely by the two bare metal clamps. (Not only should paint be removed, but also remove the anodize finish.)
3. Be sure bare metal of the clamp is in good contact with the bare metal of the tail wheel fork.
4. If part-substitutions are made, be sure the parts used will provide a positive metal-to-metal contact. Flex cable, if used should be fairly stiff and should not be longer than 15 inches. The length is important because of the proximity of the tail wheel; too long a cable could catch under the wheel. Be sure the ball is securely swaged to cable end and in contact with ground.
5. Be sure to touch up the adjacent area with paint after installation has been completed.

The accompanying Illustration 2 shows the correct breakdown and parts list for the tail wheel static ground. This information will appear in applicable handbook by a scheduled change.



1. Screw, P/N AN526C1032R10  
Flat washer (under head, wire, nut) P/N AN960PD10L  
Self-locking Nut, P/N NAS679C3M
2. Single shank ballend, wire rope, swaging
3. Wire, P/N K683094-15
4. Clamp, center mounting type, bare metal (2 required) P/N TA731D18

Illustration 2

A. Basile, Mechanical Assembler  
UH-2 Production

# TECHNICAL SECTION

## H-2 TBO/LIFE COMPONENTS, HARD CARDS

G. M. Legault, Asst. Supervisor  
Service Engineering

Many components can be interchanged among the H-2 aircraft. Because of this, some question exists as to how TBO (Time Between Overhaul) and retirement times should be handled. The following list reflects the differences between components when interchanged between Models: All hard card times shall be converted to a single entry reflecting only the time usable on that specific model air-

craft. On components coming out of Overhaul, where the aircraft model that the component will be installed on is unknown, UH-2C time should be utilized. The operating activity should then pro-rate the time according to the model aircraft upon which the component is installed. For complete information, refer to NAVAIR 01-260HCA-6 and NAVAIR 01-260HCB-6.

### TBO/LIFE DIFFERENCES

Nomenclature	Aircraft Model	TBO(Hours)	LIFE(Hours)
Main Blades	A/B	None	2400
	C	None	1200
	HH §	None	800
Retention	A/B/C/HH §	800	2000
Hub	A/B	None	800
	C/HH §	None	500
Damper	A/B/C	None	2500
	HH §	None	1250
T. R. Blade	A/B	None	3000
	C/HH §	None	2000
Inter. Gearbox	A/B	2000	None
	C	1000	None
	HH §	2000	None
T. R. Gearbox	A/B	2000	None
	C	1000	None
	HH §	2000	None
Liquid Spring (3283300)-11,-13 (3283300)-15	A/B	1200	--
	C/HH §	600	
	A/B	3200	--
	C/HH §	1600	

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WILLIAM G. WELLS  
NAS Imperial Beach, Calif.

CUSTOMER OPERATIONS SECTION — ROBERT L. BASSETT, Supervisor



*-DARFO! Detect and Remove Foreign Objects! For years we have heard the cry "FOD" or "Prevent FOD." Actually, FOD is after the fact. Also, FOD is usually associated with engine damage. It is damage which has occurred because of the presence of foreign materials. DARFO is a positive action. DARFO includes all aspects of safety—that piece of wire on the deck—that wiping cloth in the aft fuel cell—that oil slick waiting for an unwary foot—that—well, you name it.*

*As DARFO is practiced, FOD will disappear, after all, if there are no foreign objects around, FOD cannot occur. DARFO will enhance safety drives—no foreign objects results in fewer accidents to personnel and aircraft.*

This month's example of DARFO in action was sent in by a Kaman Rotor Tips reader who prefers to remain anonymous.

Photo A shows the interior of a UH-2 cockpit, copilot's side. As the copilot reached for the doorway prior to entering, he noticed an object—DARFO! Can you detect that object???

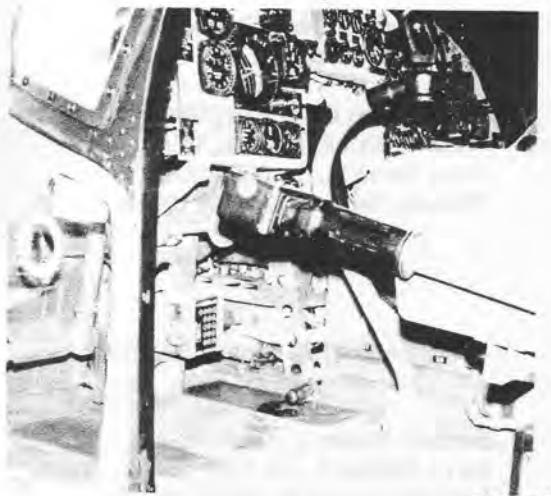


PHOTO A

Photo B is a close-up of the area, taken from the same angle. Most readers have probably already detected the object, but for those who have yet to spot the errant screwdriver, our two "eyeballers" pin-point its position in Photo C (an overhead shot of the same area).

This particular tool was wedged in rather forcefully and considerable effort was required to remove it; however, the screwdriver still could have come loose in flight. The necessity to occasionally lay a tool down while work-

ing in an area is recognized, but the need to remove that item when work is completed cannot be over-emphasized. The practice of wedging a tool to prevent it from rolling away is not acceptable by any standard. The history of jammed controls and catastrophic accidents from tools lodged in aircraft control systems is mute testimony to this fact.

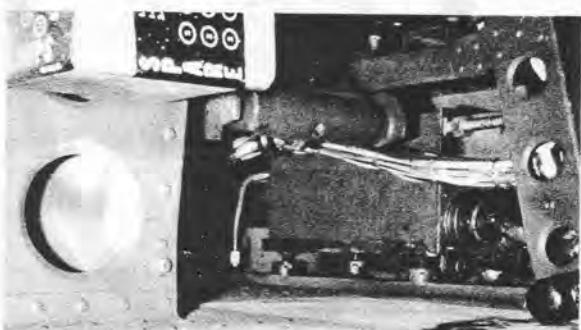


PHOTO B

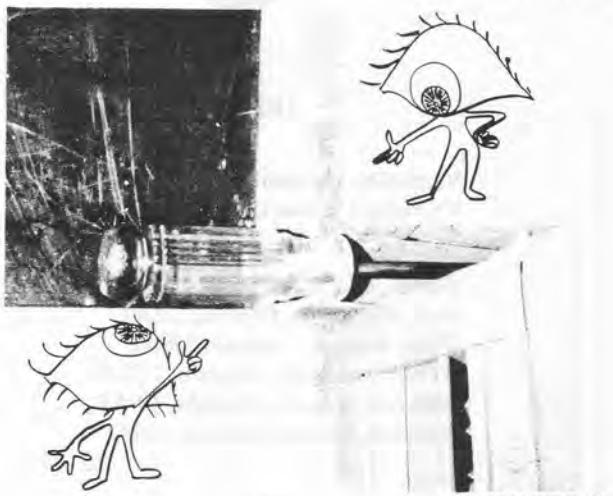


PHOTO C

One detachment spray-paints flight line tools with a fluorescent paint; another detachment etches consecutive numbers on each mechanic's tools. This allows a mech to readily determine if he has all his tools before he leaves the work area. If paint is used on tools, be careful of the color red. Some areas, like the hangar deck aboard ships, are red-lighted and certain shades of red seem to disappear in the red light.

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

*Before closing or sealing a component, whether it be a fuse box or gearbox, practice DARFO! Detect and Remove Foreign Objects. Before leaving your shift or aircraft, inform your superiors or your relief of open areas and loose materials. Take the time to "take one last look around," remember, if we all do our part and practice DARFO, everyone will benefit.*

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

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

**KAMAN** AEROSPACE  
CORPORATION



**1966**

VanMeter, Donald E., Captain, USAF  
Vermey, Carlton O., Captain, USAF

Walker, Jon W., Lt, USN  
Wall, William F., Captain, USAF  
Ware, Bruce K., Captain, USAF  
Welsh, Donald M., Captain, USAF  
Williams, Alma L., Captain, USAF  
Williams, Edward, Captain, USAF

**1967**

Adamson, Derry A., Captain, USAF  
Bachman, Ronald, Captain, USAF  
Berdeaux, Donald R., Captain, USAF  
Bernhardt, Gayl D., Captain, USAF  
Borders, Harry M., Lt, USNR  
Borford, Benjamin W., Lt, USN  
Brubaker, Richard, Captain, USAF

Christianson, John W., Captain, USAF  
Cunningham, William, Captain, USAF

Dillmann, Edward C., Captain, USAF  
Dreibelbis, Ryland R., Major, USAF

Fogg, Henry P., Captain, USAF  
French, Gary L., Lt(jg), USN

Gammon, Jimmy D., Captain, USAF

Hartke, Edwin J., Captain, USAF  
Holley, Keaver III, Major, USAF  
Hubbs, David A., Lt, USNR

Jogerst, David J., Captain, USAF  
Johnson, John R., Captain, USAF  
Johnson, Roger L., Lt(jg), USNR  
Jones, Gerald A., Major, USAF  
Jones, Robert E., Lt, USN  
Jordan, Steward S., Major, USAF

Kayle, Paul W., Lt, USN  
Keith, John T., Lt, USNR

Macharo, Arthur F., Captain, USAF  
Matinfar, Hamid, Major, Iran  
May, Theron J., Captain, USAF  
Mayes, Charles E., Captain, USAF  
McCallister, Charles N., Major, USAF  
McComb, Paul D., Captain, USAF  
McDaniel, Ronald A., Lt, USN  
Meadows, Bobby L., Captain, USAF  
Momii, Isamu S., Captain, USAF  
Moore, Hayden C., Major, USAF

Nadler, Charles P., Major, USAF

Pass, Ronald I., Captain, USAF

Schudgen, Paul, Captain, USAF  
Shriber, Richard, Captain, USAF  
Sloan, Robert E., Lt, USN  
Sovell, James E., Captain, USAF  
Spar, Kenneth L., Major, USAF  
Strayer, Jay M., Major, USAF

Thomassy, Louis E., Jr., Lt, USN  
Thornton, Nicholas P., III, Captain, USAF  
Trainer, Maxie L., Major, USAF  
Tubbs, Ronald C., Captain, USAF  
Turk, Walter F., Captain, USAF

VanGrunsvan, Gerald B., Captain, USAF  
Vincent, Benjamin B., Lt, USN

Wallace, Ellis E., Captain, USAF  
Walther, Glen P., Captain, USAF  
Weist, David L., Captain, USAF  
Williams, Earle D., Captain, USAF

**1968**

Almanzar, Donald, Captain, USAF  
Anderson, Dixon J., Lt, USN

Bennett, Robert J., Major, USAF  
Berry, William L., Lt, USN  
Berthold, Hubert M., Major, USAF  
Bollinger, Joe, Major, USAF  
Boortz, Eugene H., Captain, USAF  
Borland, Melroy, Captain, USAF  
Britton, Delford G., Captain, USAF  
Brosueen, Douglas, Captain, USAF  
Burridge, Charles W., Captain, USAF

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