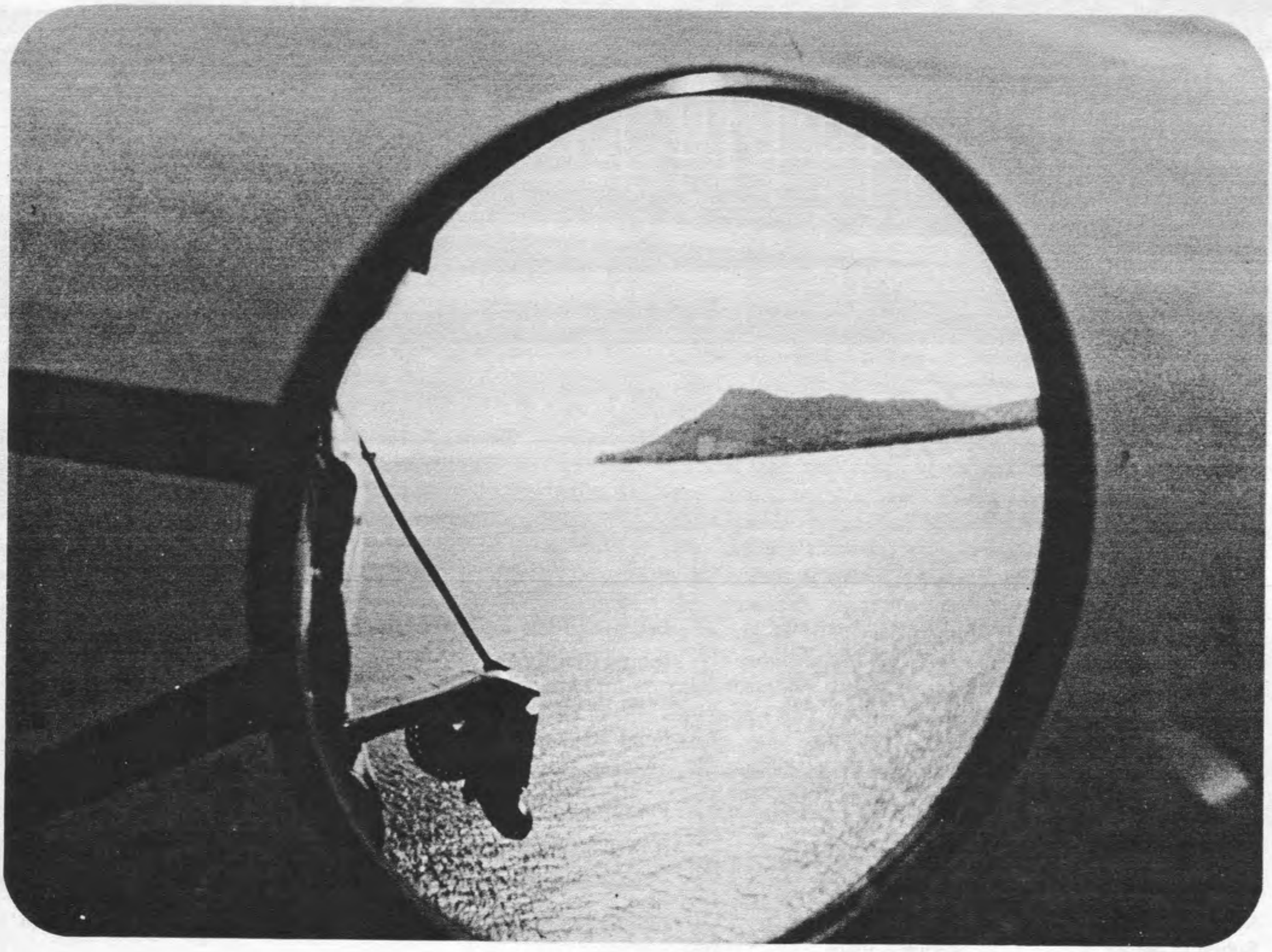
KAMAN *Rotor Tips*



May-June, 1974

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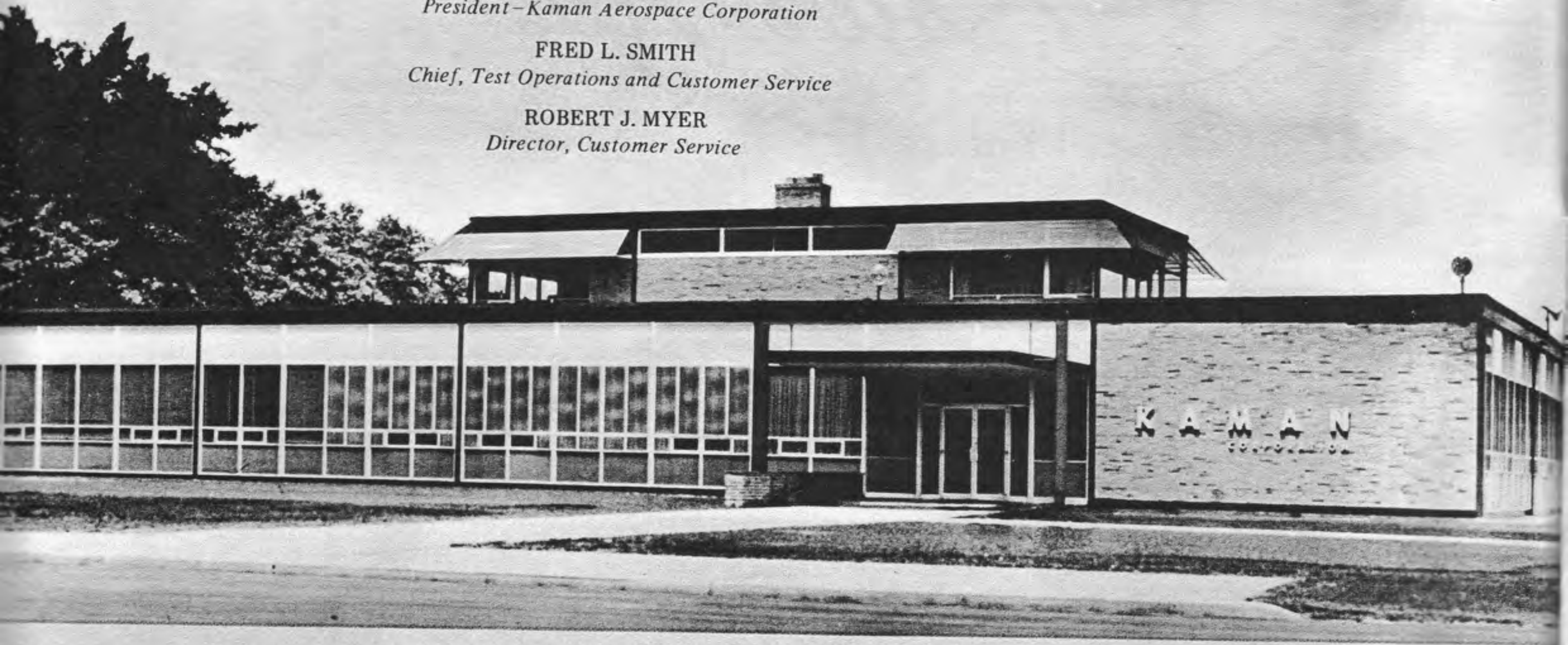

Rotor Tips **Dan A. D'Amelio** *Editor* **Barbara R. Thompson** *Assistant Editor* Volume VIII No. 4

On The Cover

The MAD Bird and Hawaii's Diamond Head are reflected in an SH-2F mirror. The photo was taken by Lt(jg) Michael Skahan while he was on deployment with Det 8, HSL-33. See story on the next page.

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Features

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The first SH-2F in WestPac making an approach.

Volleyball game while transiting the Indian Ocean.

Det 8 Sails Halfway Around the World

Rotor Tips reported in the March-April issue the successful WestPac deployment of HSL-33's Det 8 aboard the USS Bagley. In this follow-up article, further details of the six-month deployment are reported.

Det 8, sailing aboard the USS Bagley with the first SH-2F to deploy to the Pacific, traveled more than halfway around the world. During the six-month cruise, the crew clocked about 250 flying hours and made over three hundred safe landings on the ship.

The crew's first liberty port was Pearl Harbor, but after one day at that port, the det was called out to sea again to provide plane guard duty for the USS Midway. Then enroute to Yokosuka, Japan, calendar inspection became due. With Chief Donald Garman supervising the inspection, the "bird was up and singing in no time."

The port visit to Yokosuka was stretched out a few extra days to avoid typhoons. During the delay in sailing, Lt Don Morgan, OINC, flew with his crew to NAS Atsugi to be with HSL-31 Det 32 friends. But the visit was cut short when orders came for the crew to be on board the following day. Bucking 12-15 foot swells and 25-30 knot winds, the Bagley departed for Subic Bay.

The ship also dropped anchor in Hong Kong, Keelung and Pusan, but the most exotic port call came during the det's Indian Ocean/Red Sea deployment—Massawa, Ethiopia. After a three-day visit in Ethiopia—loaded down with a collection of spears, boar tusks and witch doctor herbs—the crew felt ready to challenge the men back in the squadron to a "friendly game" of volleyball.

In addition to Lt Morgan and Chief Garman, other crew members were Lt(jg) Michael Skahan, Lt(jg) Charles Erickson, AT1 Robert Byrnes, ADJ2 Lester Ottem, AX2 Steven See, AE3 Richard Gilbert, AW3 Richard Cain, AW3 Ted Cote, AMS3 William O'Neill and AEAN Patrick Christian.

A scene from Massawa, Ethiopa. (USN photos)

10th ILSMT Conference

KAC President William R. Murray addresses conference attendees.

The Tenth H-2 LAMPS Integrated Logistics Support Management Team Conference was held April 2-4 at the Ramada Inn in East Windsor, Ct. Some 100 persons attended the conference; attendees included representatives from Navy Operations and KAC.

The major aim of the three-day conference was to review the current program support position and to establish any related action requirements. The conference began with KAC President William R. Murray welcoming the attendees and noting that, after about one year in operation, the upgraded SH-2F is "doing quite well." Sounding the same theme, H. F. Burden, NAVAIR, then spoke of the LAMPS H-2 readiness, squadron build-ups and aircraft deliveries, and he stated, "We're on schedule."

Attendees were updated on program status by many cognizant operating activity representatives. Special interest was shown in Cdr T. J. Moore's presentation regarding the very successful USS W. S. SIMS/HSL-32, Det 4 SH-2F LAMPS Mediterranean deployment. (Refer to KRT Mar.-Apr. '74)

Also speaking in the opening session was Cdr R. S. Walsh, PM-15. He acknowledged that there are problems but he pointed out that the LAMPS program is "on track." Cdr Walsh emphasized that it was a working conference. H-2 LAMPS ILSMT Conference Chairman, Mr. Wayne Cerny, and his assistant, Mr. Paul Kovalsky, also gave program overviews and instructed attendees on conference objectives and desired sub-committee activities. The attendees then divided into pre-established sub-committees.

In addition to the basic LAMPS ILSMT Conference, several other special committee meetings were held. One covered recent changes to the ASQ-81 Magnetic Anomaly Detection system and related support considerations. Another involved implementation of the recently established Rapid Action Minor Engineering Change system, (NAVAIR Notice 5215), for accomplishment of fleet sponsored improvement changes in the SH-2.

After a busy 3-4 days, attendees expressed confidence that their work had further enhanced the already-successful SH-2 LAMPS program.

In above photo, O. F. Polleys, KAC Program Manager, W. Cerny, H-2 APML, NAVAIR, Conference Chairman. At right, R. Field, KAC,H. Burden,NAVAIR,and D. Uitti,KAC.

At left, B. Albani, KAC; W. Cerny, H-2 APML, NAVAIR; and R. Myer, Director, Customer Service, KAC. Above, ASQ-81 Ad Hoc Committee, chaired by P. Kovalsky, NAVAIR.

Cdr R. Walsh, PM-15 (sitting, foreground) and KAC staffers, M. Henry; J. Serignese, Service Engineering Technical Editor; and A. Migli, Security.

Spares Sub-Committee, co-chaired by C. Brown, NAVAIR, and F. Di Fonzo, ASO.

Publications Sub-Committee, chaired by B. Johnson, NAVAIRTECHSERVFAC.

At left, Ground Support Equipment Sub-Committee, chaired by E. J. Hardgrove, NAVAIRENGCEN. Above, GSE Calibration Sub-Committee.

Below left, Ship Interface Sub-Committee, chaired by Cdr Kershner, NAVSHIPSYSCOM. Right, Training/Trainer Sub-Committee, chaired by R. Carter, NAVAIR. (photos by N. Ruggiero)

Team Conducts Icing Tests on SH-2F

(photo by T. Gale)

(USN photo by PH2 E. Earhart)

Icing tests on the SH-2F were conducted during January and February, 1974, by a team from the Service Test Division of the Naval Air Test Center, Patuxent River, Md. The tests included both hover work in the National Research Council of Canada (NRC) Ice Spray Rig and flight in natural icing conditions. Rig tests were conducted down to temperatures of -22° C and natural icing tests down to -11° C. The primary objective of the tests was to investigate the icing characteristics of the 101 rotor blades and a bullet nose starter designed by NAVAIRSYSCOM. In the above photo at left, the SH-2F hovers in the NRC Ice Spray Rig. At right, members of the 1974 SH-2F Icing Team: ADJ2 Nick Rose, crewman; Lt Dan Welch, project pilot; ADRC "Van" Vandermolen, maintenance chief; and Milt Mills, KAC Field Representative.

Kaman to Study Tethered Rotary-Wing Drone for Army

The possibility of using an unmanned, tethered, rotary-wing, aerial platform for battlefield surveillance missions is being investigated by Kaman Aerospace Corporation under a study contract awarded by the U.S. Army Air Mobility Research and Development Laboratory, Fort Eustis, Virginia.

A wide variety of rotary-wing configurations, together with their respective ground support requirements, will be studied. One concept advanced by Kaman is depicted in the sketch on this page, which shows the deployment and operation of a tethered, rotary-wing drone vehicle for battlefield surveillance and target acquisition. The unmanned vehicle, which serves as a platform for a variety of sensors, is launched and retrieved from a 2½-ton truck. Long-duration fuel supply is provided by tanker at the left. A command-control van is shown lower center.

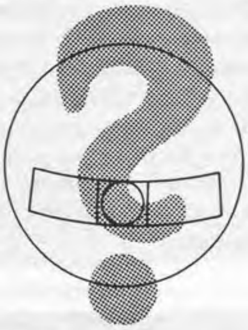
Kaman Aerospace has been active in the design and development of tethered and free-flying, remotely piloted, rotary-wing vehicles for the U. S. Army, Air Force and Navy for more than 20 years. The company developed the world's first remotely piloted helicopter in 1953 and successfully flew the world's first pilotless helicopter in 1957. Also in 1957, Kaman developed the first electrically powered helicopter. Since then, the company has continued to produce remote and automatic flight control systems for rotary wing vehicles used as aerial targets. These control systems also have been applied to boats and armored vehicles.

Kaman is also conducting independent design studies and mission analyses of rotary wing, remotely powered vehicles that may be used in the U. S. Army's aerial observation and designation system.

FROM...

THE READY ROOM

Al Ashley, Senior Test Pilot



Very often the question is asked, "Why does the H-2 fly with the ball out of the center in balanced flight?" The answer, of course, is that the ball *will* be centered in balanced flight and the resulting sideslip is characteristic by design.

A single rotor helicopter flying in wings level, co-ordinated equilibrium flight normally flys in a sideslip. This sideslip is required to balance the side force contribution of tail rotor thrust and fuselage/main rotor side forces.

The sideslip angle required to achieve this balance in sideforces is called the inherent sideslip angle.

Left sideslip is normal to our H-2 series helicopters due mainly to the four degree left tilt of the main rotor shaft and the resulting sideforce imparted to the fuselage. The degree of sideslip, of course, will be modified with tail rotor and main rotor thrust changes that occur throughout the flight envelope.

The benefits derived from tilting the rotor shaft to the left are particularly significant during landings aboard small ships where high sink rates at time of touchdown are likely to occur. The laterally level landing attitude results in a more favorable distribution of landing gear loads and virtually eliminates the ground resonance inducing fuselage and control motions characteristic of some other helicopters. Another important benefit is a level hover attitude enhancing those missions where extensive hovering is required.

In forward flight with the helicopter in balanced flight (wings level, ball centered, not turning), the inherent left sideslip can be treated simply as a crosswind from the right with navigational corrections as necessary. The Doppler Navigation System is not adversely affected as it computes drift whether caused by wind or, in this case, inherent sideslip, or combinations thereof. It isn't often that zero wind conditions occur; therefore, the inherent sideslip angle can be instrumental in cancelling or reducing a wind vector as often as adding to it.

For certain missions, it may be desirous to cancel the inherent sideslip angle by trimming the helicopter to fly right wing down slightly (3-4° above 70 kts.). The ball will then be out of the center, indicating an "off level" condition. Remember, the ball simply acts as a carpenter's level in non-turning, unaccelerated flight.

Commander-in-Chief, Pacific Fleet, Given LAMPS Brief

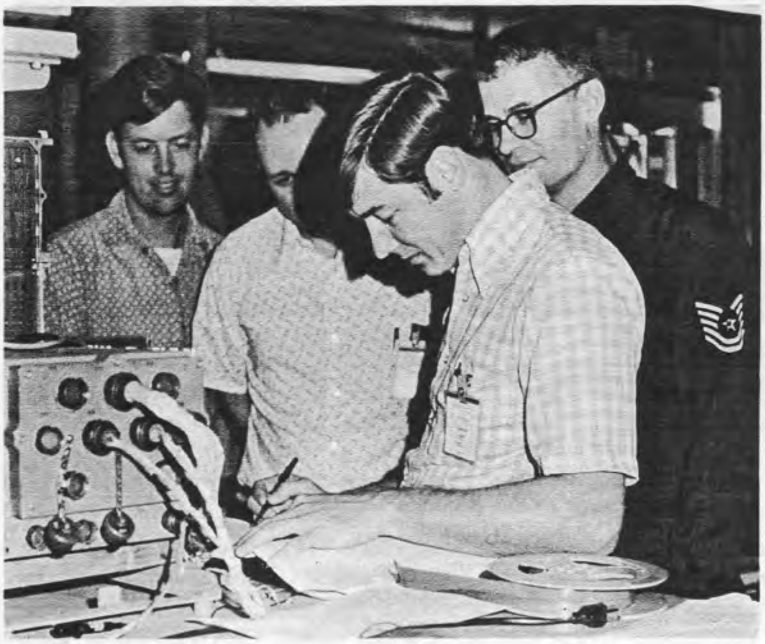
Adm Maurice Weisner, USN, Commander-in-Chief, U. S. Pacific Fleet, recently received a LAMPS indoctrination aboard the USS Reasoner (DE-1063). Reasoner is one of the many LAMPS configured destroyer escorts assigned to the Pacific Fleet.

During the time Admiral Weisner was on board the Reasoner, he received a thorough briefing on the SH-2F's ASW/ASMD equipment and mission capabilities. Conducting the briefing were Cdr M. Belto,C.O. of HSL-33, LCdr D. Wellmann, Lt L. Khinoo, AW1 R. Eastwood and ADJ1 J. McClain.

LAMPS briefings, such as the one given to Adm Weisner, have been increasing in number for HSL-33. Indoctrination flights and briefings on SH-2F's were held at the squadron for Capt J. Evans, past COMASWWINGPAC, and Capt A. Monger, Chief of Staff, COMNAVAIRPAC. During a recent cross country flight, Cdr Belto flew the LAMPS helo to Washington, D. C. and took VAdm William Houser Deputy CNO (Air Warfare), and RAdm Carl Seiberlich, Director of Aviation Programs Division in CNO, on demonstration flights; and RAdm M. Woods, COMCRUDESPAC, received an SH-2F update briefing and flight while aboard the USS Kirk.

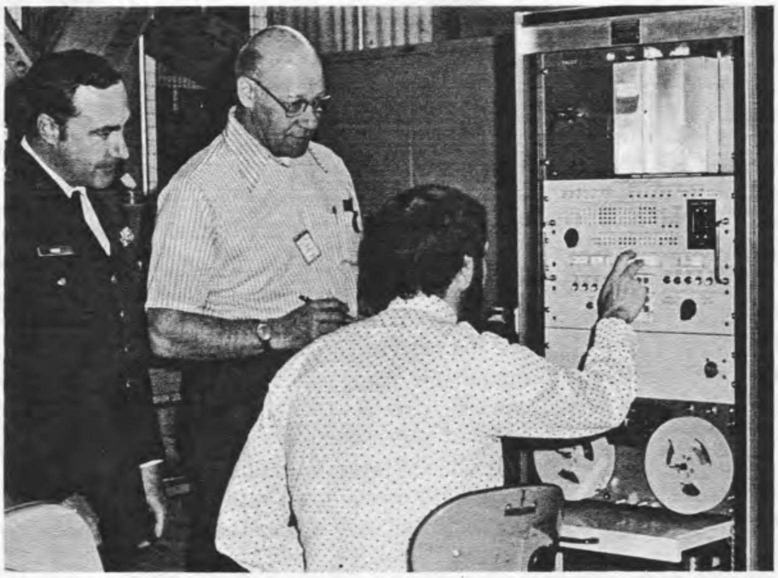
LAMPS briefings and flights also have been conducted by HSL-33 dets for military officials from Japan, Korea and the Netherlands.

AWRS Publications Team Completes Review

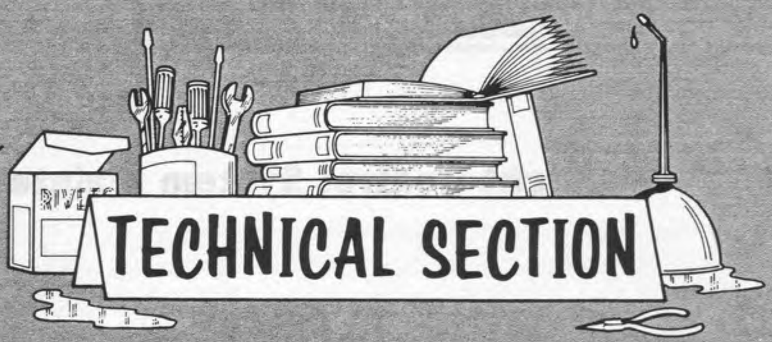


An AWRS Publication Review was held recently at Kaman's Bradley Field facility. The review was conducted by an Air Force Verification team consisting of representatives from Air Weather Service, Air Training Command, Warner Robins, Sacramento Air Material Areas, and the Electronics System Division. The team members were charged with the responsibility of verifying the remaining undelivered Technical Orders relating to the Airborne Weather Reconnaissance System (AWRS). The TOs covered a variety of maintenance and operations data from organizational through intermediate level maintenance. Developed by Kaman Aerospace Corporation for the Air Force, AWRS is a new atmospheric sensing system designed to provide more accurate weather forecasting. Work has begun on a similar system for the National Oceanic and Atmospheric Administration.

In top photo, SSgt Tim Renn, Air Weather Service (foreground), is shown performing tests on AWRS equipment. Looking on are SSgt Joseph Walling, AWS; SSgt David Useforge, Air Training Command; and TSgt James McQueen, AWS. At right, Chris Hausmann, Kaman Aerospace Corporation (with back to camera), explains the working of the Control-Display Unit to MSgt Lawrence Magee, AWS; and Fred Herford, Sacramento Air Material Areas. Below, participants in the AWRS Publications Review: Robert Grisar, KAC; MSgt Lawrence Magee, AWS; SSgt Tim Renn, AWS; SSgt Joseph Walling, AWS; SSgt David Useforge, ATC; Fred Herford, SMAMA; TSgt James McQueen, AWS; Richard Galloway, SMAMA; Capt Wayne Chenard, ESD; and Joseph Sanky, KAC.



KAMAN Rotor Tips



Published by the
Customer Service Department
Kaman Aerospace Corporation
Bloomfield, Connecticut 06002.

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Table of Contents

G. M. Legault, Manager
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J. P. Serignese, Technical Editor

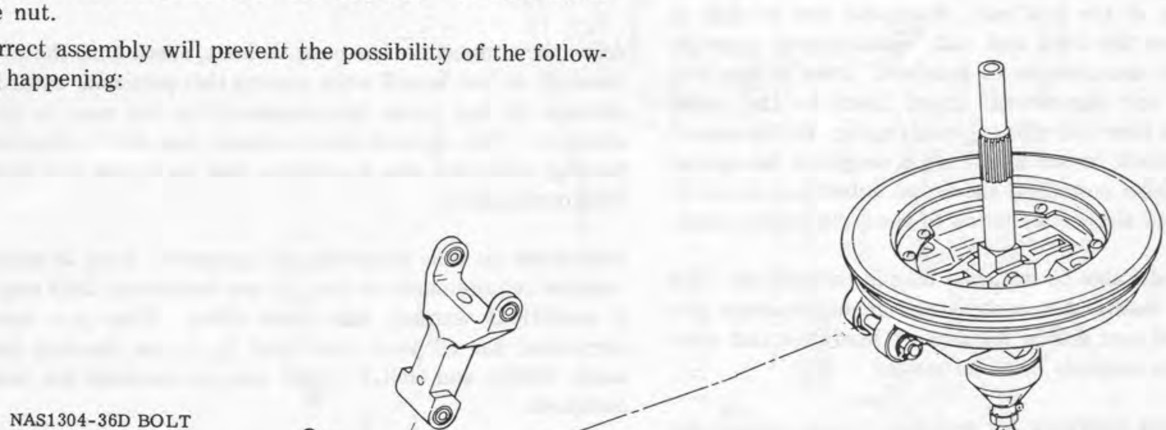
H-2 AZIMUTH ARM INSTALLATION HARDWARE

W. Wagemaker, Service Engineer

A recent investigation revealed an incorrectly installed NAS1304-36D bolt/hardware stackup on the K660006-5 azimuth arm assembly. As seen in the accompanying illustration, the correct stackup calls for one AN960-416 washer under the bolthead and "As Required" washers under the nut.

Correct assembly will prevent the possibility of the following happening:

1. A false torque produced by the nut bottomed out on the grip of the bolt.
2. Threads of the bolt extending into and wearing on the internal surface of the arm assembly bushing.



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

H-2 Flight Control System Maintenance Concerns

By W. Wagemaker, Service Engineer

H-2 flight control maintenance concerns were highlighted recently in a tour by a team from Kaman. The information presented was a compilation of material gathered from inspection forms, overhaul shops, line mechanics, and U. R's. It is presented here as part of the continuing program to highlight maintenance concerns and ensure safety on H-2 aircraft. All of the following information is covered in maintenance handbooks or MRC's.

GENERAL CONSIDERATIONS

The following items are general considerations which apply while working on any type of flight control system. Remember this: ALL CONNECTIONS IN A FLIGHT CONTROL SYSTEM ARE CRITICAL—GUESSWORK CAN BE FATAL. Proceed cautiously and carefully while considering the following.

When replacement of rods or cranks is required, take a minute or two to look over the installation before disconnecting anything. Check and note the position and quantity of hardware and components. For example, look for the direction of the bolthead; determine the number of washers under the head and nut; measure and note the length of rod assemblies to be removed. Prior to installing replacement rod assemblies, adjust them to the noted length to save time and effort during rigging. Before removing cranks, check to see if one leg is longer or has special markings. Either condition should be noted and the information used to aid in installation of the replacement crank.

It is always advisable to station a man in the cockpit. This will prevent inadvertant control movement, decrease personnel hazard and aid in removal of hardware and components when controls must be moved.

Check removed hardware for possible re-use. Always discard nuts and bolts if condition is questionable. Prior to installing replacement components, check to ensure that bushings and spacers are in place BEFORE inserting the bolts. Check the Illustrated Parts Breakdown (IPB) for hardware part numbers if any doubt exists to the identity of the parts.

Be sure proper torque is applied to the connection. Undertorque results in a loose connection with subsequent wear and control looseness, or "slop" and overtorque can deform a clevis, bind the controls or cause other material failure. The maintenance handbooks MUST be referenced for the torque value of all installations. After installing and tightening bolts properly, ensure that the washers under the bolthead and nut do not turn. (If washers turn or are loose, it is an indication that the nut has bottomed on the threads.) If side play exists, it is possible a bushing may have been omitted or a slip-fit bushing may be frozen in the ears of the crank. Discovery of any of the preceding conditions is reason for disassembly of the connection to determine the cause.

After the connection has been secured, check that the rod assembly is free to roll while moving that particular control through its full range (accomplished by the man in the cockpit). The rod-roll check ensures that no mechanical binding exists and also guarantees that no rigging pins have been overlooked.

Remember to lube faithfully and properly. Keep in mind that the requirements of the -2-1 are minimums; Dets may, if conditions warrant, lube more often. When you have accounted for all your tools and Q. C. has checked the work, THEN and ONLY THEN can you consider the task complete.

LOWER CONTROLS (NON-ROTATING)

(Refer to Illustration 1 for overall view.)

The non-rotating controls in the H-2 helicopter consist of the pilot and copilot cyclic and collective sticks, directional pedals and the connecting cables and linkage to the azimuth assembly and tail rotor. Detailed rigging requirements can be found in NAVAIR 01-260HCA-2-2.1. Some precautions to be observed when performing maintenance of the lower controls are as follows:

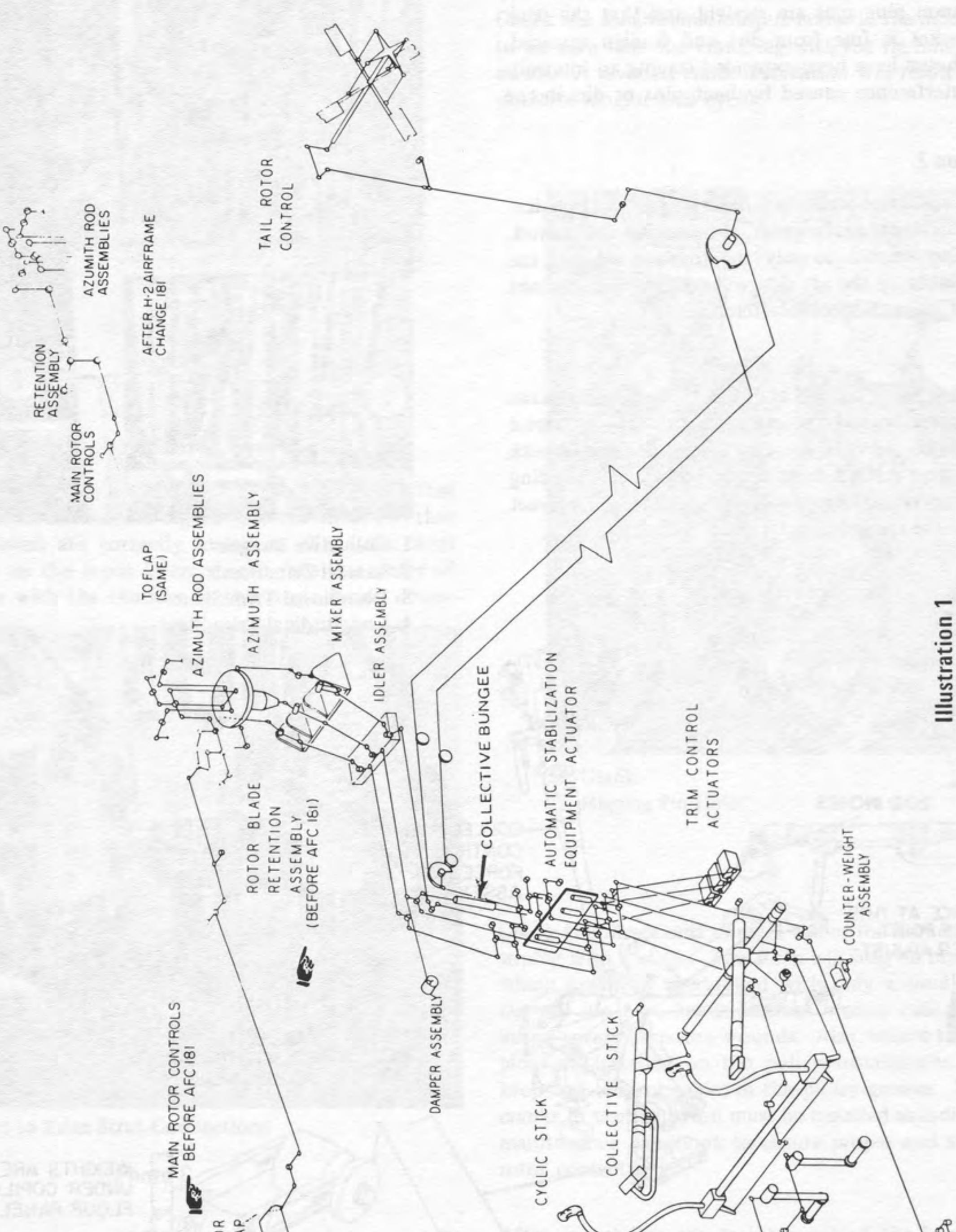


Illustration 1

See Photo A.

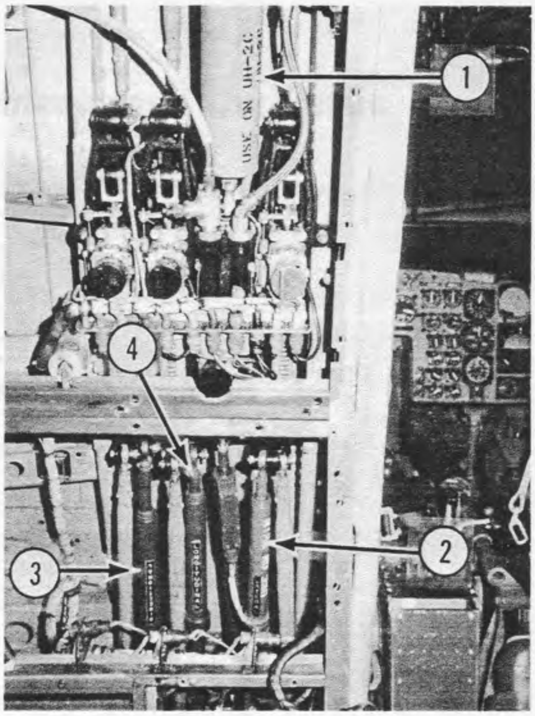
Disconnect the collective bungee assembly and/or the cyclic and directional trim strut assemblies to relieve the spring force. If necessary to replace the cyclic stick, ensure that the cannon plug pins are straight and that the stick mounting socket is free from dirt and foreign material. (Many man-hours have been expended tracing an intermittent radio interference caused by bent pins or dirt in the socket.)

See Illustration 2.

Balancing of collective sticks is rarely required at Organizational level maintenance; however, if balancing is required, be sure to add weights to only the forward side of the bracket. Weights on the aft side will contact the adjacent bulkhead and cause control interference.

See Photo B.

When installing the lateral and longitudinal trim strut assemblies, care is required to ensure that the lower rodend which attaches to the trim actuator arm is positioned with the dog leg facing AWAY from the actuator arm. Binding controls and restricted trim response results from incorrect installation of the rodends.



1. Collective Bungee
2. Lateral Trim Strut
3. Directional Trim Strut
4. Longitudinal Trim Strut

Photo A

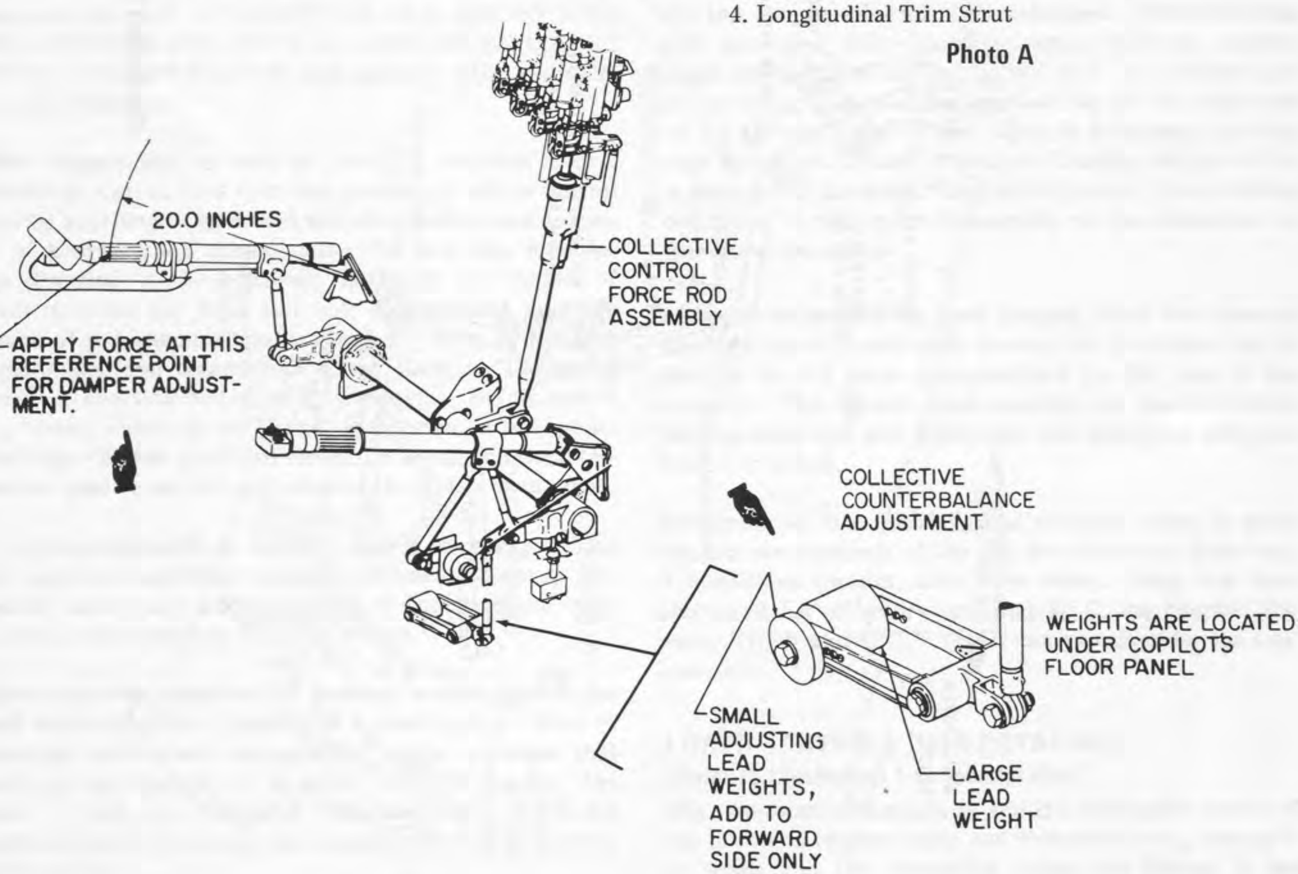
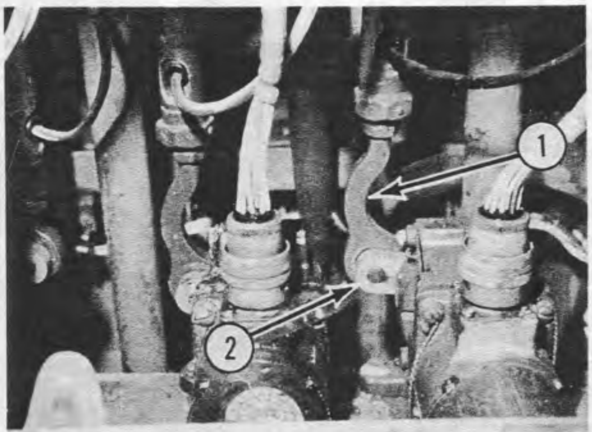


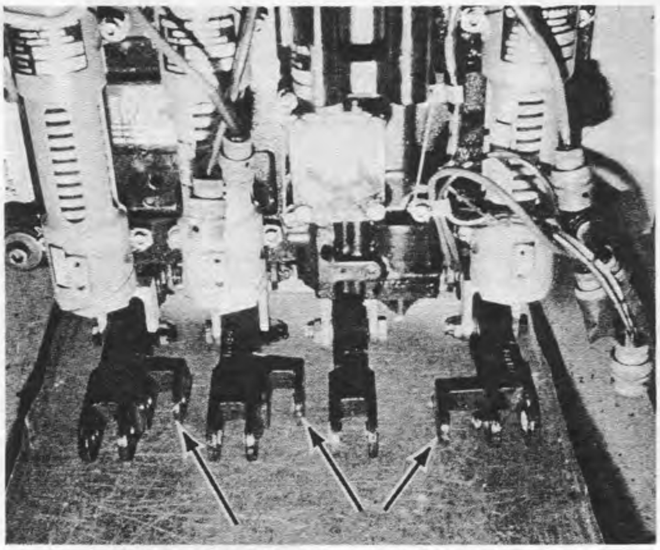
Illustration 2



1. Dog Leg
2. Actuator Arm

Photo B

See Photo C.
Before installing a new boost actuator, check to ensure that the actuator has been bench rigged (per the MIM) and that the input levers are correctly installed. The trim strut connections on the input levers should face the center of the actuator with the chamfer in the clevis facing down-

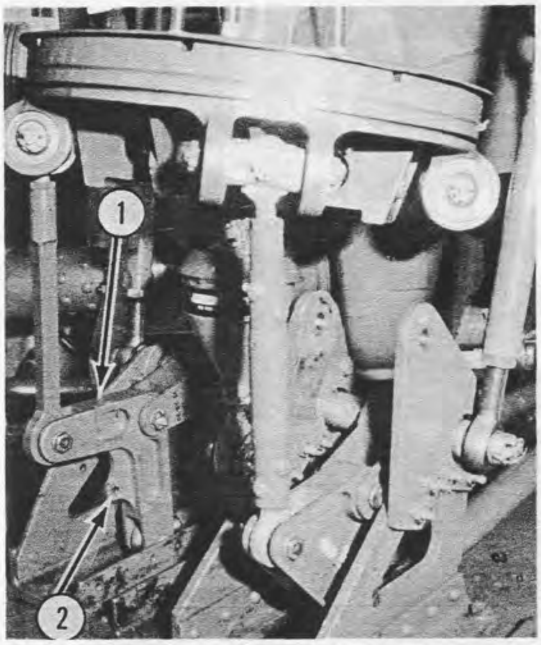


Arrows point to Trim Strut Connections

Photo C

ward. (Restricted control movement will result if the clevis is installed upside down.) After installing the boost actuator, check that the unit is securely mounted to the bulkhead. Looseness is usually caused by bottomed mounting bolts (failure to install washers under the boltheads or nuts) and results in shifting of the actuator rather than movement of the controls. Each model of the H-2 helicopter has a different collective bungee assembly and the spring loads are different. When replacing a bungee, be sure it is the correct one for your aircraft, otherwise, an up or down collective load will result, a situation guaranteed to make people nervous. . . .

See Photo D.
Check the longitudinal output crank in the mixer assembly to be sure that the crank leg with the rig hole is pointing down. A reversed crank installation will result in an oversensitive longitudinal cyclic.



1. Crank
2. Rigging Pin Hole

Photo D

Check the directional control cables for broken strands by wiping with a cloth. The cloth will snag on broken strands which might be overlooked with only a visual inspection. Do not use bare hands because broken cable strands can inflict severe puncture wounds. Also, ensure that the clevis pins are installed on the pulley installations. The pins keep the control cables in the pulley groove. The control cranks in the tail pylon must be installed as indicated in the maintenance handbook to ensure proper and adequate tail rotor control.

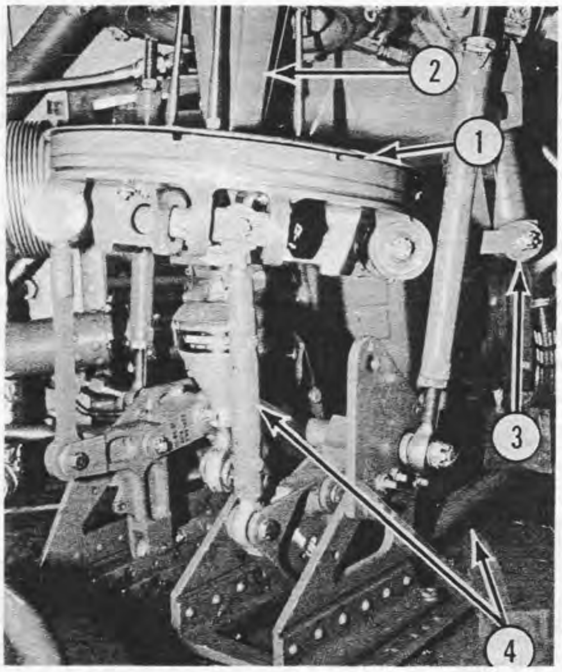
After completing any maintenance of the lower controls, an interference check is a must. One man should actuate the controls through their full travel range to avoid the possibility of jam loads and to ensure that any interference will be detected.

EXCEPTION: Controls should not be actuated when the main and/or tail rotor blades are folded unless control rods at the main rotor hub turret and tail rotor spider are disconnected.

AZIMUTH CONTROL

See Photo E

The azimuth control installation is the heart of the flight controls, and it consists of the azimuth assembly, azimuth spindle support (part of the main gearbox), the anti-rotation link and the input and output linkage. Basic rigging consists of setting the collective height and flatness (mixer assembly pinned) and adjusting the lateral and longitudinal input rods to provide azimuth tilt. MIM's must be used to ensure correct rigging for the particular model H-2 being maintained.



1. Azimuth Assembly
2. Azimuth Spindle Support
3. Anti-Rotation Link
4. Input and Output Linkage

Photo E

REMOVAL

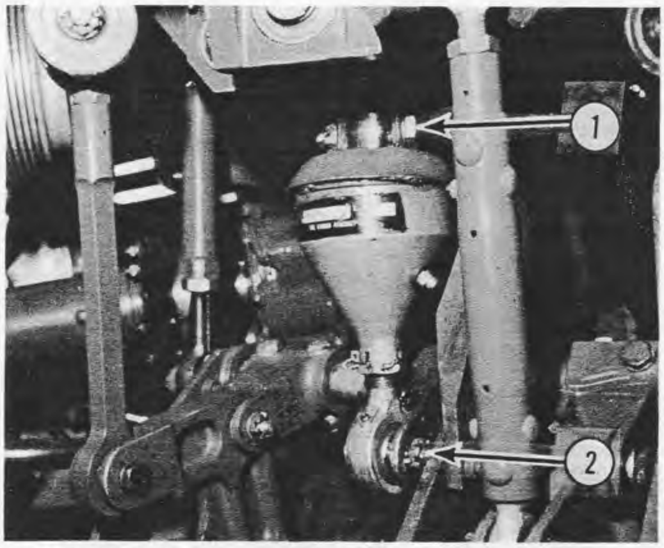
Azimuth removal can be facilitated if the following items are removed in the sequence indicated.

1. Unscrew the azimuth-to-hub rods from the azimuth bar and trunnions after first disconnecting the rodends from the cranks at the turret. Remove the rod assemblies up through the top of the rotor shaft.

2. The lateral and longitudinal input rods are disconnected at the azimuth and the anti-rotational link at the gearbox.

See Photo F

3. Remove the collective thrust rod assembly by disconnecting it from the collective input crank on the mixer and the lower end of the spindle. When removing the collective thrust rod/spindle bolt and nut, it is necessary to support the remainder of the azimuth to prevent it from dropping out of the spindle support.



1. Spindle Bolt
2. Collective Input Bolt

Photo F

4. After removing the azimuth from the aircraft, remove the rodends from the azimuth bar and trunnion bars and retain them for re-installation onto the replacement azimuth.

INSTALLATION PREPARATION

Before installing a new/overhauled azimuth, check:

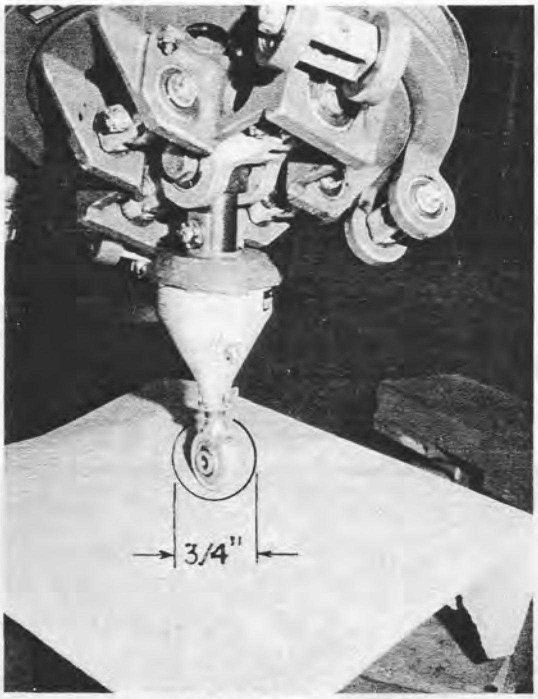
1. Azimuth bar and all trunnions for free movement with no binding.

See Photo G

2. Azimuth collective thrust rod assemblies for freedom to move 15 degrees in all directions. When measured at the end of the rodend, movement will be at least 3/4-inch from one extreme to the other. Insufficient movement is an indication of an incorrectly assembled thrust rod assembly and is a safety of flight concern. No attempt should be made to dissassemble the azimuth; return to overhaul.
3. Large bearing for free rotational movement.

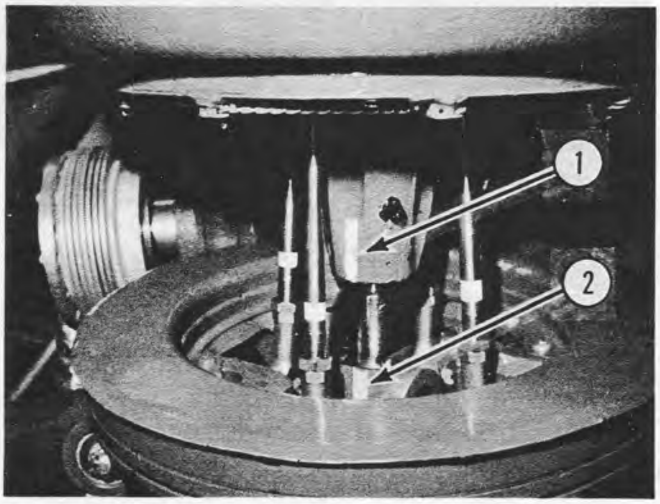
See Photo H

4. Azimuth spindle for paint mark in line with the roll pin in the upper end of the spindle. If stripe not visible, apply as shown in the photo. .
5. Spindle shaft for burrs or mechanical damage which could have occurred in transit. Stone-out any raised metal, do not use file.
6. Azimuth link for handling damage.
7. Visually inspect all hardware for security.
8. Lubricate the assembly using MIL-G-81322 grease in the large bearing, anti-rotation link arm bearing, and in the spindle support fitting in the gearbox. Use only MIL-G-7711 grease in the collective thrust rod bearing (MIL-G-81322 presently under evaluation). Lubricate the rodends at the azimuth bar and trunnions with MIL-L-7870 oil.



Circle represents 3/4-inch movement

Photo G



1. Spindle Support Paint Stripe
2. Spindle Paint Stripe

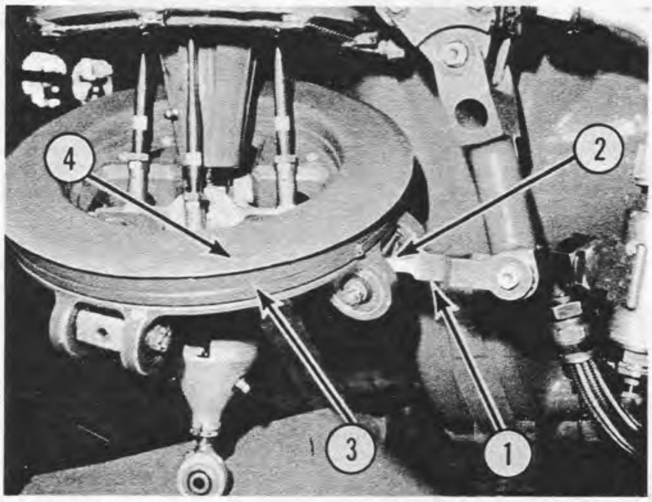
Photo H

INSTALLATION

1. Attach rodends to the azimuth bar and trunnions. A special torque of 90-150 inch-pounds is required after incorporation of Airframe Change 194. Standard torque of 30-40 inch-pounds is required prior to AFC 194. Be sure that bushings are in place in the azimuth bar and trunnions and boltheads are positioned as shown in the MIM.
2. Remove the collective thrust rod assembly from the lower end of the spindle and retain the hardware.
3. Check the position of the master spline in the spindle support on the gearbox. The location should be marked with a paint stripe on the outside of the spindle support. If no mark is evident, add one. **See Photo H.**
4. When installing an azimuth in a new gearbox, ensure that the spindle can move up and down freely in the spindle support on the gearbox. If a slight interference exists, it is permissible to use sandpaper or crocus cloth to carefully open the bushing bore. Do not file or use emery paper, and do not elongate the bushing.
5. Be sure that correct torque is applied to all connections. This is very important for proper component operation.
6. After installing azimuth-to-hub rods, perform an interference check. Rods must not contact hub components.

MAINTENANCE

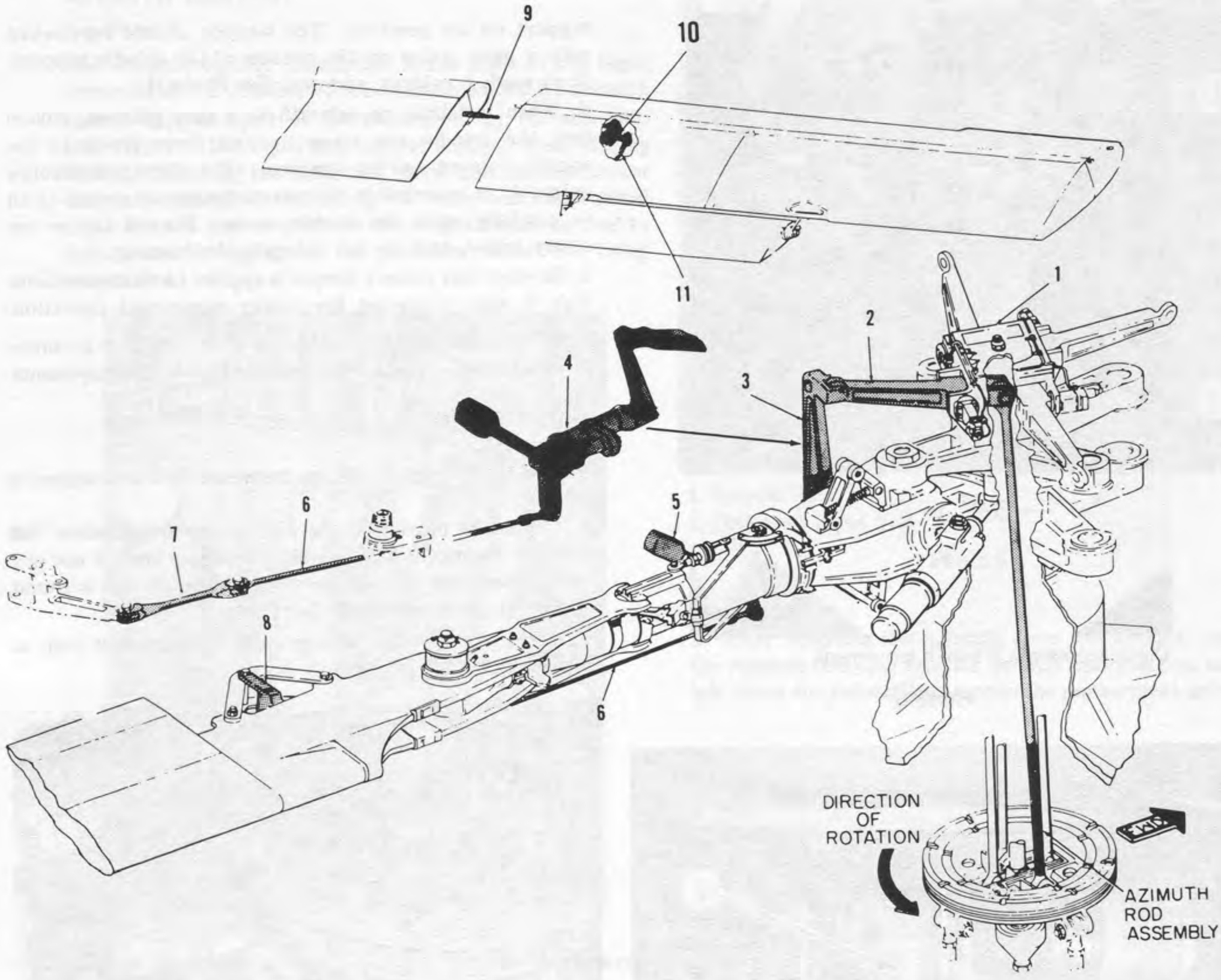
Installed azimuths should be inspected and maintained as follows:
1. Check the bearing in the end of the anti-rotation link arm for security. The bearing outer race should not protrude above the face of the arm. If protrusion is found, replace the arm assembly. **See Photo I.**
2. Check the link for wear/grooves from contact with attaching trunnion.



1. Link
2. Bearing (end of link). Measure relative movement between Items 3 and 4.

Photo I

3. Check the azimuth-to-hub rodends in the azimuth bar and trunnions for wear/looseness and connecting hardware for security. If looseness is detected, the connection must be disassembled and worn hardware replaced.
4. Examine the anti-rotation link attachment to gearbox for security. Check the gearbox attaching lugs for cracks.
5. Check for excess wear between the spindle and the spindle support. Maximum relative movement (backlash between the spindle and spindle support) allowed, when measured at the outer ring, is 5/8-inch.
6. Be sure all lube requirements are met. △



1. Turret and control assembly
2. Pitch control beam
3. Link assembly
4. Connector assembly
5. Crank assembly
6. Main rotor control rod assembly
7. Control rod assembly
8. A-frame crank assembly
9. Blade control rod assembly
10. Flap control L-crank
11. Flap rod assembly

Illustration 3

ROTATING CONTROLS

See Illustration 3.

This part of the system, in addition to the tail rotor pitch links and blades, consists of the azimuth-to-hub rods, turret beams, retention control links, shoestring rods, the rotor blade control links and cranks, and the rotor flap installation. It is important to use identical rigging methods on each blade control linkage in order to achieve the smallest possible differences between rotor blades. The following points will be helpful in minimizing differences.

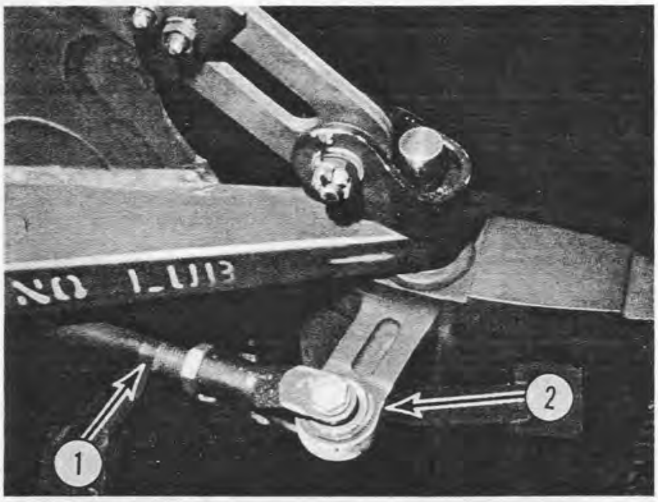
MAIN ROTOR BLADES

1. Before replacing a main rotor blade, rotate the blade to the forward left quadrant of the helicopter and apply the rotor brake. Pin the mixer to prevent the blade controls from moving. Push the blade to the full lead stop (damper will bottom) and measure the flap angle. The angle should be measured with the protractor positioned as close as possible to the inboard end of the flap as practical and with the blade and flap trailing edges pushed up. (Blade against the static down pitch stop.) Record the flap angle and remove the rotor blade. Install the replacement blade, position it full against the lead stop with blade and flap trailing edges up, and set flap to the same angle as noted on removed blade.

2. The shoestring rod assembly in the "101" system consists of two links joined at the fold pin with a shoulder bolt. Be sure that the bolt is not binding and can turn freely after installation. In this particular installation, the bolt MUST turn freely after application of the correct torque to prevent damage to the rod when blades are folded.

See Photo J.

3. Check that the chordwise rod which attaches to the flap horn is free to swivel (has rod roll) and that the flap horn bearing inner race is properly clamped in the clevis.



1. Chordwise Rod
2. Flap Horn

Photo J

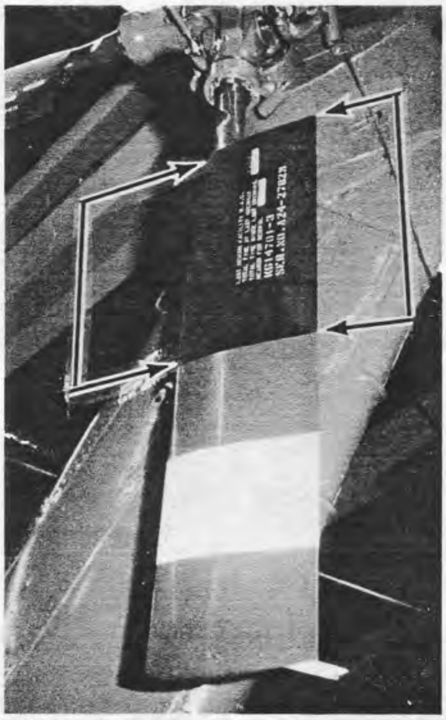
4. Be sure the flap horn bearings are installed with the flange on the inboard side of the flap horn.
5. Keep the blades and flaps clean to assist in detecting defects in blade surfaces such as cracks, corrosion, etc.
6. Be sure time-limited components are replaced as specified in the PMIC's. For example, the bearings (P/N K659458-15 and -17) in the retention feedback idle crank (P/N K659143) are replaced each 100 hours. All other crank pivot bearings on the standard UH/HH/SH-2D retention are replaced at 400 hours except those with AFC 176, KACARB pivot bearings. If necessary to replace KACARB pivot bearings, be sure to consult the MIM.

TAIL ROTORS

1. Check to ensure that tail rotor blades installed are correct for the aircraft and that they are not installed backwards. (It has happened!)
2. When installing tail rotor blades be sure they are shimmed in accordance with the MIM, otherwise, loss of grease and subsequent flapping bearing/pin failure will result.

See Photo K.

3. Inspect blade skin surfaces for cracks. Pay particular attention to the area of the blade from the spar toward the trailing edge on either side of the blade within approximately 15 inches from inboard (grip) end of blade. It is extremely important that the blade surfaces be clean when conducting the inspection in order to detect even the slightest crack.
4. Check for evidence of corrosion in the tip cap area.



Pay particular attention to area between arrows.

Photo K

TRACKING

1. The automatic inflight track system compensates for minor differences between rotor blades and can also be used as a trouble-shooting aid. For example, if one blade track actuator continually requires reset to neutral, then wear or looseness in that particular blade control linkage or in the linkage on the opposite blade should be suspected. While checking, inspect the linkage from the azimuth to the flap for wear.
2. When making a track change, first note the position of the tracking actuator and adjust the flap in the same direction as indicated on the actuator. Make adjustments in 1/2-turn increments at the flap clevis to avoid overshoot and be sure to check the safety hole in the clevis after making the adjustment.
3. When track appears good and the pilot complains of main rotor vibrations, check the fold pins, blade locking mechanism, retention-to-hub shimming, and lead-lag pins for proper adjustment, torque and security.

H-2 ENGINE STARTER REQUISITIONING

The following information, recommended by General Electric Company, Lynn, Massachusetts, will be incorporated into applicable manuals by future changes. When ordering starters for T58GE-8B and T58GE-8F engines, the Lear Siegler starter, P/N 20069-008, will be called out as the primary part number. The General Electric starter, P/N 2CM270D3, will be used as an alternate. Applicable part numbers and stock numbers are:

Component	Part Number	Federal Stock Number
Primary	20069-008	2RH2840-871-9240DH
	20069-010	2RH2925-176-3826DH
Alternate	2CM270D3	2RH2925-703-7522DH
	2CM270D5	2RH2925-225-5386DH

According to GE, the 2CM270D3 (and/or the D5) starters impose higher torque loads than the 20069-008 and 010. The higher torque load is not needed on H-2 aircraft; furthermore, the cumulative effect of high impact torque loads, which occur concurrent with starter jaw engagement at time of engine starts, could adversely affect the front frame accessory drive section.

R. Collier, Logistics Representative

SONOBUOY COMPONENT REPLACEMENT

The following is a listing of components normally used and/or expended when launching sonobuoys from SH-2 aircraft. This information is provided to assist detachments and supply officers when ordering replacement components.

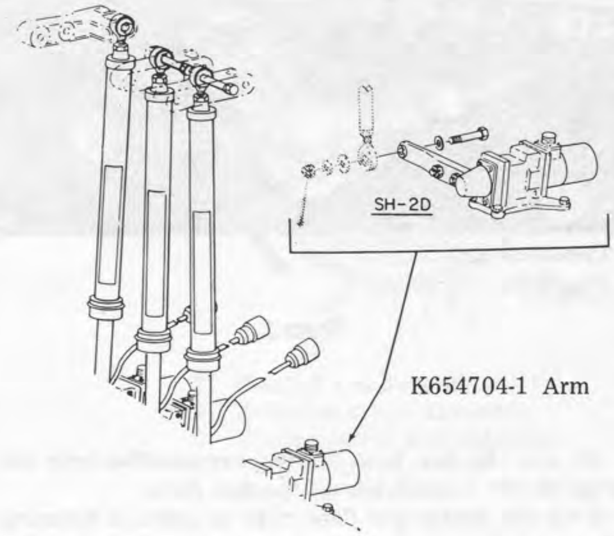
Part Number	Federal Stock Number	Nomenclature
JAU-1/B	1377-433-9543M723	Cartridge Activated Device (CAD)
8623	RM5845-067-8775BH	Sonobuoy Container, Ship Launch
8623-3	RM5845-067-8796BH	Insert, Muzzle

H. Zubkoff, Service Engineer

Q. (Applies H-2) Is the 1506 rotary trim actuator interchangeable among all models of H-2 aircraft?

A. The 1506 actuator can be used in every model of H-2 except the SH-2D. The SH-2D incorporates a K654703-1 actuator (FSN 2RH1680-078-8598BH). The K654703-1 actuator consists of a standard 1506 actuator modified by adding a K654704-1 extension arm as seen in the accompanying illustration.

N. Hankins, Service Engineer



ASE AMPLIFIER INTERCHANGEABILITY

N. Hankins, Service Engineer

The following list reflects the latest information concerning automatic stabilization equipment amplifier applicability.

Part Number	Federal Stock Number	Aircraft Applicability
K687703-1	2RH6615-880-1239BH	UH-2C Only
K687703-3	2RH6615-461-1630BH	HH-2D Only
K687703-5	2RH6615-086-0050BH	SH-2D Only
K687703-9	2RH6615-292-5394BH	SH-2F Only

NOSE DOOR ANTI-CHAFING CUSHION

As observed in Photo's 1, 2, and 3, large wire bundles extend from the LH and RH nose door electrical components into the forward fuselage tub area. These bundles have a tendency to chafe against the radius of the aft outboard nose door frames just above the lower nose door hinge. To protect the wire bundles from chafing against the bare metal, a rubber cushion, P/N K633065-651, is bonded over the frame radius extending to both surfaces of the frame on either side of the radius. The positioning of the anti-chafing cushions is determined by observing the path of the wire bundles with the nose doors open.

In the event local manufacture is desired, the cushion material is MIL-C-3133, Type SB42LFF cellular rubber sheet. Dimensions are 0.12 inches thick, 1.50 inches wide, and 5.0 inches long. Bond cushion to nose door frame using MIL-A-5092 adhesive Type 3 or a suitable substitute. This information to be incorporated into applicable manuals by future changes.

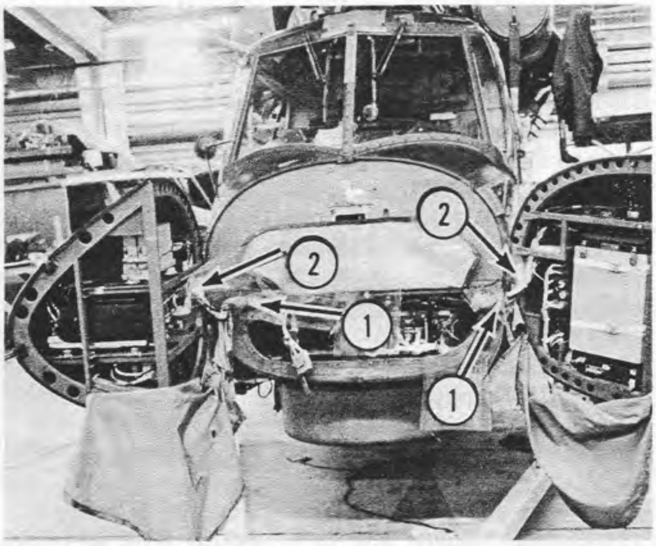


Photo 1

1. Wire bundles extending from nosedoors to forward fuselage tub.
2. Areas of interference.

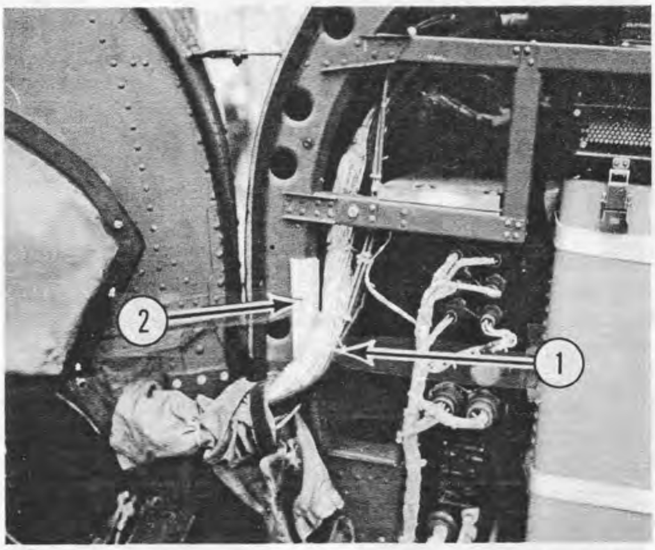


Photo 2 LH Nose Door

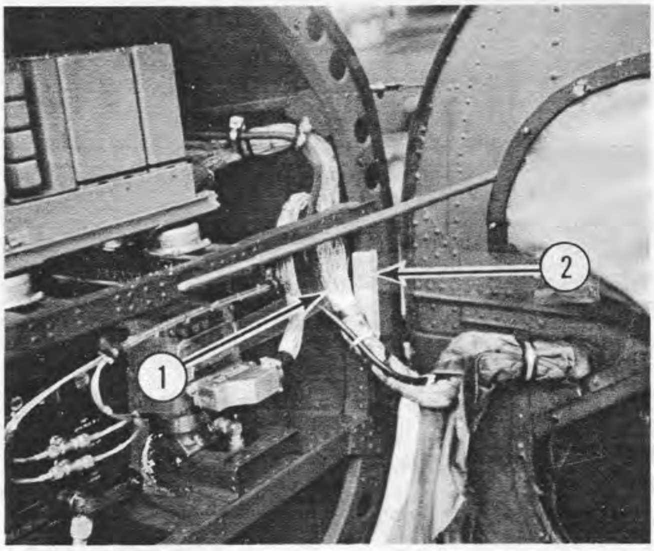


Photo 3 RH Nose Door

H. Zubkoff, Service Engineer

ASQ-81 REELING MACHINE AND CONTROL PANEL INTERCHANGEABILITY

Texas Instruments Incorporated, P. O. Box 6015, Dallas, Texas, 75222, has recently made several changes to the ASQ-81 reeling machine P/N RL-305, and as a result have changed the part number to RL305A. The change also necessitated modifying the reeling machine control panel with a resultant part number change from C6984 to C6984A. It is important to remember that P/N C6984 control panel can *only* be used with P/N RL305 reeling machine, and P/N C6984A control panel can *only* be used with P/N RL305A reeling machine. This information will be incorporated into applicable manuals by future changes.

N. Hankins, Service Engineer

PUBLICATION INFORMATION

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

R. H. Chapdelaine, Manager, Service Publications

NAVAIR 01-260HCA-2-4.2 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters, ROTOR SYSTEM
1 April 1973
changed 1 February 1974

NAVAIR 01-260HCA-2-6 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2F Helicopters, ELECTRICAL SYSTEM
1 March 1972
changed 15 December 1973

NAVAIR 01-260HCA-2-7 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters, RADIO AND RADAR SYSTEMS
1 October 1967
changed 15 December 1973

NAVAIR 01-260HCA-2-8.1 — Manual, Maintenance Instructions, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters, WIRING DATA
1 October 1967
changed 15 December 1973

NAVAIR 01-260HCB-1 — NATOPS FLIGHT MANUAL, Navy Model UH-2C Helicopter
1 September 1972
changed 1 July 1973

NAVAIR 01-260HCB-1B — NATOPS PILOT's POCKET CHECKLIST, UH-2C Helicopters
1 July 1973

NAVAIR 01-260HCB-4-5 — Illustrated Parts Breakdown, POWER PLANT AND RELATED SYSTEMS, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters
1 May 1969
changed 15 December 1973

NAVAIR 01-260HCB-4-6 — Illustrated Parts Breakdown, TRANSMISSION SYSTEM, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters
1 June 1967
changed 15 December 1973

NAVAIR 01-260HCB-4-7 — Illustrated Parts Breakdown, ROTORS, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters
1 April 1973
changed 15 December 1973

NAVAIR 01-260HCB-4-8 — Illustrated Parts Breakdown, RADIO AND ELECTRICAL, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters
1 June 1967
changed 15 December 1973

NAVAIR 01-260HCD-2-7.1 — Technical Manual, Maintenance Instructions, Organizational, Navy Models SH-2D/SH-2F Helicopters, ELECTRONIC SUPPORT MEASURE SYSTEM AN/ALR-54
15 February 1974

NAVAIR 03-25KAM-1 — Manual, Overhaul Instructions, MAIN LANDING GEAR SYSTEM, Navy Models UH-2C/HH-2D/SH-2D/SH-2F Helicopters
15 September 1965
changed 15 January 1974

NAVAIR 03-95D-22 — Manual, Overhaul Instructions, MAIN GEARBOX ASSEMBLY, P/N K674877-1, -3
15 December 1969
changed 15 January 1974

NAVAIR 03-95D-30 — Manual, Overhaul Instructions, MAIN GEARBOX ASSEMBLY, P/N K671802-1, -3, -5, -7, -105, -107
15 November 1970
changed 15 December 1973

NAVAIR 17-15BF-67 — Technical Manual, Maintenance Instructions with IPB, Intermediate, PORTABLE HYDRAULIC TEST STAND, P/N K604844-1
1 January 1974

TECHNICAL DIRECTIVES RELEASED

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

SEC/AFC No.	TITLE	RELEASE DATE (KAC)
H-2 Airframe Change 184, Amend 1	Fuel System, REPLACEMENT OF FUEL TRANSFER PUMPS AND MAIN FUEL FILTERS, AND INSTALLATION OF AN IN-FLIGHT REFUELING LIGHT	30 January 1974

First Woman H-2 Plane Captain at HSL-32

H-2 plane captain Judith Booth

AA Booth is congratulated by Cdr Powell. (USN photos)

HSL-32 has a new H-2 plane captain—AA Judith A. Booth. Having met all the qualifications and requirements, she was recently designated an H-2 plane captain at morning quarters by the CO of HSL-32, Cdr William Powell. Miss Booth is believed to be the first woman plane captain in the H-2 community.

According to an HSL-32 line division officer, AA Booth is "an exceptionally hard worker who performs all her assigned duties with a distinct sense of pride and professionalism.

"Becoming an H-2 plane captain is not an easy task—even for a man. Once designated an H-2 plane captain, an individual assumes a tremendous amount of responsibility and ultimately the flight safety of the air crew. The H-2, like most helicopters, has critical moving parts and exacting tolerances, which must be examined by the plane captain."

Why did AA Booth request line division? "It was a challenge to work on the line and to gain the respect of the men," she said.

A native of Windsor, Conn., Miss Booth took her basic training at RTC Orlando, Fla., and reported directly to HSL-32. She has a twin sister who is also thinking about joining the Navy. When her military commitment is over, AA Booth plans to apply for a job at the company which builds the H-2 — Kaman Aerospace Corporation.

KAMAN VISITORS—Cdr William Powell, CO, of HSL-32, and LCdr Henry Clay were visitors to Kaman Aerospace Corporation at Bloomfield, CT. LCdr Clay was OINC of the HSL-32 detachment which successfully completed the recent W. S. Sims/SH-2F LAMPS Mediterranean deployment. In right photo, LCdr Clay, Cdr Powell and Fred Smith, Chief, Test Operations and Customer Services; left photo, Peter Kulas, plant supervisor, KAC; Jack Goodwin, KAC test pilot, Cdr Powell and LCdr Clay. (photos by N. Ruggiero)

NATOPS Conference Updates SH-2D

The cap shown in the photo belongs to conference participant Chief A. H. Blood, HSL-31, who left it on SH-2F that brought him to Kaman. Spotted by Kaman photographer N. Ruggiero, the cap left on the helo symbolizes the shirt-sleeve work sessions of the conference.

The SH-2D/SH-2F NATOPS Flight Manual Review Conference was held at Kaman Aerospace Corporation in Bloomfield, Conn., March 4-8. Conference attendees included Navy personnel from Norfolk, Imperial Beach, Washington, D. C., and Patuxent River.

KAC President William R. Murray greeted attendees, stating that this was the first NATOPS conference of "any size" involving the 2F model. Then Cdr Daniel Bilicki, HSL-30, stressed the importance of the NATOPS Flight Manual in terms of providing current performance data and operating procedures for safe and effective operations. LCdr Robert Smith, HSL-30, then took over as Conference Chairman.

By the time the conference ended, four days later, attendees had approved 194 Agenda Items for changes in the manual and put in 600 man-hours of work.

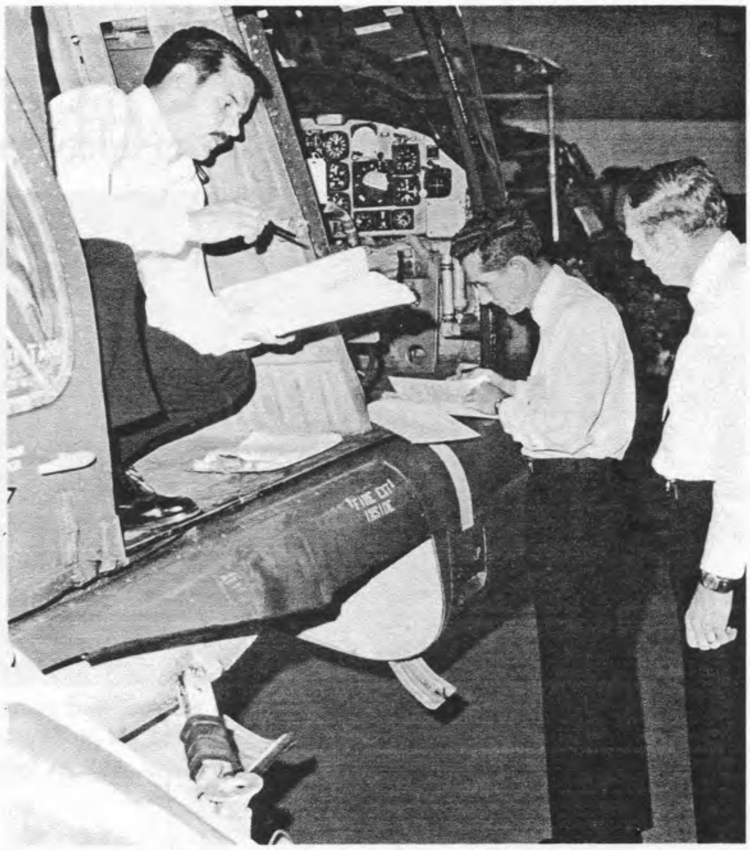
Conference participants W. J. Blews, Technical Writer, KAC; G. L. Wood, Technical Writing Group Leader, KAC; G. I. Canfield, NAVTACDOCACT, Washington, D. C.; and Cdr D. R. Bilicki, HSL-30.

Conference attendees, in the group left of the MAD Bird, standing: R. H. Chapdelaine, Manager, Service Publications, KAC; R. J. Myer, Director, Customer Service, KAC; LCdr C. Duffie, NATF, Lakehurst, N. J.; F. A. Foster, Chief Test Pilot, KAC; AWC B. R. Taggert, HSL-30; AW2 R. D. Liley, HSL-32; J. Anderson, Test Pilot, KAC; LCdr R. A. Smith, HSL-30; and Lt R. L. Kaler, HSL-32; kneeling, Chief A. H. Blood, HSL-31; J. Blews, Technical Writer, and J. Goodwin, Asst. Chief Test Pilot, KAC.

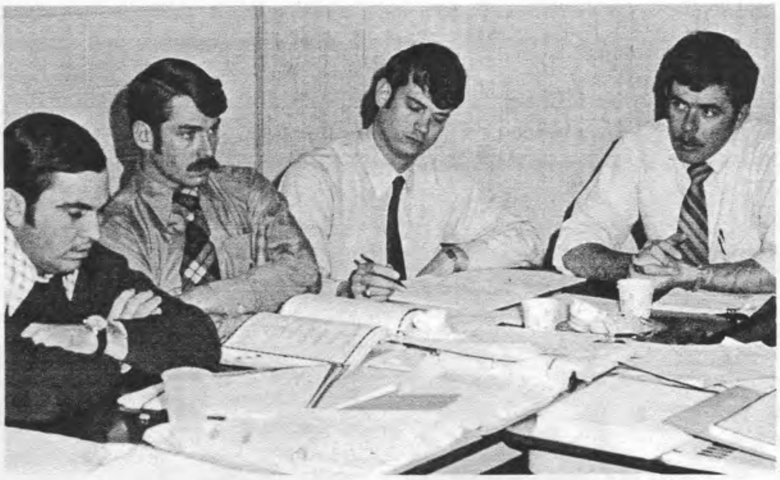
/SH-2F Flight Manual

First NATOPS Conference

of 'any size' on SH-2F



Updating the SH-2D/SH-2F Flight Manual are NATOPS conferees Chief A. H. Blood, HSL-31; AW2 R. D. Liley, HSL-32; and AWC B. R. Taggart, HSL-30.



Conferees at work: Lt J. M. Bailie, HSL-30; Lt M. J. Coumatos, NATC, Patuxent River, Md.; Lt T. P. Eargle, NATC; and Lt E. K. Dinsmore, NATC.

Conference attendees, in the group right of the MAD Bird, standing: G. L. Wood, Technical Writing Group Leader, KAC; Lt T. P. Eargle, NATC; A. D. Ashley, Senior Test Pilot, KAC; Lt E. K. Dinsmore, NATC; Lt D. E. O'Connell, HSL-31; G. I. Canfield, NAVTACDOCACT, Washington, D.C.; and Lt J. C. Adamson, AIRTEVRON ONE, Patuxent River, Md.; kneeling, Lt J. M. Bailie, HSL-30; Cdr D. R. Bilicki, HSL-30; Lt M. J. Coumatos, NATC; and LCdr J. H. Long, COMNAVSAFCEN, Norfolk, Va.

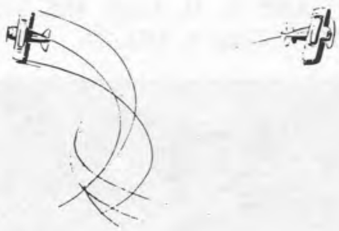
AVIATION SAFETY AWARENESS

US Air Service NATOPS 1920 Vintage

Never get out of the machine with the motor running until the pilot relieving you can reach the engine controls; and pilots should carry hankies in a handy position to wipe off goggles.

Hedgehopping will not be tolerated and above all no spins on back or tail slides will be indulged in, as they unnecessarily strain the machine.

If an emergency occurs while flying, land as soon as possible.



If you see another machine near you, get out of its way.

Before you begin a landing glide, see that no machines are under you.

In case the engine fails on takeoff, land straight ahead – regardless of obstacles.

Please note: Many of the gentlemen who believed and abided by the foregoing rules lived to a ripe, old age.

Will someone say that about you 50 years from now? Today's NATOPS and your cooperation can make it possible.

Reprinted from APPROACH

RADM J. D. Ramage, COMNAR/COMNAVAIRESFOR

NAMTD 1070 Graduates First Training Class at Norfolk

The first graduating class trained by NAMTD 1070 at its new Norfolk station: AT1 J. T. Stanfield, AT2 M. L. Keeney, AMSI D. A. Gayer, AT2 R. C. Broughton, AT2 G. A. Henderson, AMSI C. V. Mullins, AMS2 R. C. Mock, AE1 W. L. Boyer, and Instructor AEC H. A. Morris.(photo by AN F. Davidson)

Naval Air Maintenance Training Detachment 1070 graduated its first training class since the detachment relocated last summer with HSL-30 from Lakehurst, N. J., to Norfolk, Va.

The detachment's first class conducted at Norfolk was a FRAMP "Instructor Training" course. The course qualifies FRAMP instructors for the training of fleet personnel and, in addition to the mechanics of learning, the course includes practice teaching. The class consisted of students from HSL-30, RVAW-120, NAMTD and VAW-78.

Det 1070 has 15 instructors and serves the fleet with H-2 LAMPS maintenance training with quotas coordinated by HSL-30 FRAMP Division. The detachment is tasked with instructing a total of 14 courses.

Confusion Too Difficult to be Borne

by Lt(jg) Cathey Dykes
HSL-33 PAO Officer

Steve and Ray Borne are the look-alikes in HSL-33.

Brothers have always been in the public eye at one time or other. All of us have heard of the Marx brothers, the Mills brothers, and even the Smothers brothers. Now confusion has come to the world of NAS Imperial Beach with the Borne brothers.

The Borne brothers have a lot more in common than just their last names. Ray and Steve are both working in the same rate, AW, and they are identical twins. It's this last fact that makes life interesting and a bit confusing for their squadron.

While Ray was deployed in the Western Pacific, Steve wondered if he could pass for his brother, especially since Ray was supposed to play on the squadron football team, and Steve liked football. So, Steve played in a squadron game and everyone was cheering "Ray" on. Most of his squadron mates thought Ray was at sea; no one knew he had a twin. How come he was the only one back from his detachment? What confusion! This took place in November 1972, when Steve reported aboard HSL-31 on the "brother duty" plan. When HSL-33 was formed in July of last year, guess who filled two billets in 33's AW shop?

Confusion is now at a minimum at HSL-33 these days, since Steve is currently with LAMPS Det 7 aboard the USS O'Callahan. However, Ray also will be WestPac bound this summer and the Borne brothers stand a good chance of seeing each other in some Far East port. While there, the brothers may use their look-alike qualities to good advantage. Sailors have always wished they had an alibi when the going gets rough, and when you're a twin, who says it isn't possible for a Borne to be in two places at once?

STRICKEN PRIEST—A Catholic priest from the Island of Ischia is assisted by Navy Chief Corpsman Ernie LeClerc before transfer to an Italian ambulance at the Naval Air Facility, Naples, Italy. In the background is the UH-2C Seasprite that was flown by LCdr Russell Thompson on the 40-mile round trip through turbulent winds to pick up the priest. It was the third such mercy mission this year for NAF copters.

HSL-33 Det Medevacs 220 miles

An SH-2F was flown 220 miles over water—for a time out of contact with ship or shore—to get a man suffering from appendicitis to a hospital.

While returning to Subic Bay Naval Station from Singapore, LAMPS Det 10/USS Brewton was advised that an accompanying ship, the USS Preble, had an emergency appendicitis case. After the destroyer squadron doctor decided that operating on the stricken man on a pitching and rolling deck would be more risky than moving him to a hospital, Lt R. Doane, OINC, and Lt(jg) R. Smith calculated that a 220-mile launch point would be the maximum safe distance for a flight directly over water. Both ships then increased their speed to 25 knots to arrive at the predetermined launch point as rapidly as possible.

The LAMPS helicopter crew picked up the patient from the Preble and, after returning to the Brewton to top-off with fuel, headed for Cubi Pt. Flight-following was provided for approximately 80 miles, then the helo was on compass alone. With fuel consumption critical, precision DR (dead reckoning) navigation was necessary during this portion of the flight. The SH-2F continued towards its destination until TACAN (navigational aid) lock-on provided an accurate fix verifying that the aircraft had maintained the required track. Once communications were established with shore facilities, an immediate landing was made, and the patient was transferred to an awaiting ambulance.

During the flight, AW2 R. Wilson provided assistance to the medical personnel on board the aircraft.

Relaxing after their 220-mile medevac are AW2 Wilson, Lt(jg) Smith and Lt Doane. (USN photo by PH2 Hull)

Squadron Completes First Rescue

HSL-33 successfully completed its first rescue since the squadron was established in July, 1973. The rescue helo was Det 7's SH-2F, piloted by LCdr Vincent Secades, OINC of Det Cubi.

While preparing for takeoff on a routine parts delivery mission to the USNS Chauvenet, LCdr Secades, Lt(jg) Scott Olin and AW3 Norman Bevel were alerted by Cubi Pt tower that a naval aircraft had crashed at sea near the entrance to Subic Bay. The SH-2F crew proceeded immediately to the area and, after a brief search, located the two survivors lying several hundred yards apart on the rocky beach of Brande Island.

LCdr Secades had to maneuver the helo in close quarters between a rocky cliff and some trees. Within moments the two survivors were hoisted aboard the SH-2F and enroute to the Subic Bay Naval Hospital where they were examined and released.

Said one of the survivors later, "I was thoroughly impressed by the professionalism that the crew showed and the speed in which they reached us. From the time I hit the water until I reached the hospital it couldn't have been more than 10 or 15 minutes."

HSL-31 Hosts Midshipmen

Seventeen Midshipmen from the University of New Mexico at Albuquerque received an indoctrination of LAMPS from HSL-31. The briefing was part of their aviation field trip to Naval Air activities in the San Diego area.

Lieutenants Gary Lee and "Arch" Archambo conducted a tour of the new SH-2F helicopter.

Midshipman Robert Savage, formerly an Electrician's Mate, said the tour was helping him decide what area of Naval Aviation he was most interested in. Savage is studying under the Navy Enlisted Scientific Education Program (NESEP). The class is made up of both NROTC and NESEP students.

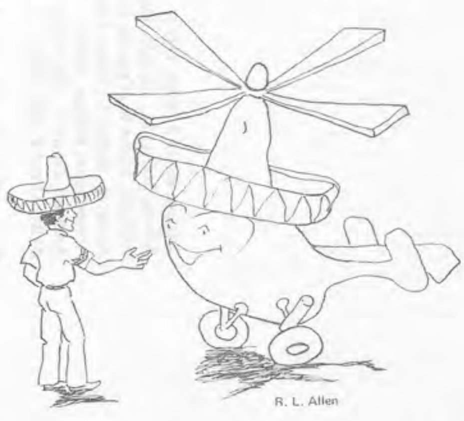
Leading the group on the field trip was Lt Terry Gibson, Navigation and Naval Operations officer at UNM. Gibson was formerly assigned to HC-5 as a helicopter pilot.

Adm Steele Views SH-2F

HSL-33 Det 10 recently demonstrated some of the new SH-2F capabilities to VAdm G. P. Steele, Commander Seventh Fleet. VAdm Steele visited various ships during a scheduled missile exercise.

Due to the small decks involved, a LAMPS aircraft provided transportation. VAdm Steele, a frequent passenger in his own HH-2D, remarked that the new Foxtrot model was "an extremely smooth-flying aircraft." While sitting in the sensor's seat, he had a clear view of an SH-2F in flight as HSL-33 Det 7 flew wing.

Det 10's flight crew of Lt(jg) Ron Smith, Lt(jg) Rick Creighton, and AW2 Roger Wilson also witnessed the missile demonstration. In the photo, Capt J. Wissler, CO of NAS Cubi Pt, assists VAdm Steele with his flotation equipment as Lt Culverson, CDO, stands by. (USN photo)



PEDRO MEETS PEDRO—Well, not quite, but would you believe Sgt Pedro Gonzalez of the 601st Photo Lab? "Pedro" is also the call sign for local base rescue helicopters. Shown in cockpit is the new commander of Det 12, 40 ARRS, Maj John Flournoy. The HH-43 crew was recently honored for being the best detachment maintenance section in ARRS.

SCROLL OF HONOR

Adkins, Kevin J., SSgt, USAF
Albers, Robert M., Captain, USAF
Albright, James W., Captain, USAF
Ambrose, Arthur L., MSgt, USAF
Amendolare, William, USAF
Arellano, Daniel L., Sgt, USAF
Avila, Alfred P., Sgt, USAF

Barnes, Floyd M., SSgt, USAF
Bauer, James F., Captain, USAF
Bayless, Bruce D., A1C, USAF
Beard, Mark, A1C, USAF
Belina, John L., Captain, USAF
Blair, Don, Captain, USAF
Brewington, Erskine E., SSgt, USAF
Brewton, Jerry M., 1stLt, USAF

Cantey, James L., Major, USAF
Castlen, Joseph, Sgt, USAF
Chadwick, Archie, ADJ1, USN
Christensen, Duane D., Sgt, USAF
Codner, Noel S., TSgt, USAF
Cook, Darvan E., Major, USAF
Covington, Donald W., SSgt, USAF
Crawford, Roy L., LtCol, USAF
Crenshaw, O. G., SMSgt, USAF
Crouch, Lawrence, Sgt, USAF

Daniel, Robert L., AT1, USN
DeLoma, Harold D., Sgt, USAF
Dickinson, John D., Lt, USN
Doege, Larry B., Captain, USAF

Eudy, Donald H., Captain, USAF

Fallows, Thomas E., LtCol, USAF
Filut, David, SSgt, USAF

Gaede, Ralph L., Major, USAF
Gay, Ralph B., Sgt, USAF
Gilloon, J. B., 1stLt, USAF
Grice, Kenneth E., Captain, USAF
Griffin, J., HM3, USN
Grooters, Ronald D., Lt, USN

Hamby, Henry G., Captain, USAF
Heller, Walter J., SSgt, USAF
Higginbotham, Harry E., LCdr, USN
Hill, Russell G., 1stLt, USAF
Holloway, Thomas M., Sgt, USAF
Hughes, Leonard B., Captain, USAF

Irizarry, Thomas, Major, USAF

Jackson, Harold W., Jr., Captain, USAF
Jamison, Philip C., Lt, USN
Jerome, Ronald T., SSgt, USAF
Johnson, Larry, Sgt, USAF

Kaltenbaugh, Orie E. , Captain, USAF
Kessel, George, SSgt, USAF
Ketchum, Lowell D., Major, USAF
Kinsey, Richard, Sgt, USAF
Kolar, Michael J., Sgt, USAF
Kondash, Michael J., SSgt, USAF
Kramer, David R., 1stLt, USAF
Kubotsu, D., Sgt, USAF

Lee, Peter J., MSgt, USAF
Lockard, Bedford T., TSgt, USAF
Loftus, Walter L., Sgt, USAF
Looney, Dennis, SSgt, USAF

Mangum, George S., Major, USAF
McClellan, Howard D., TSgt, USAF
McGovern, Richard J., Sgt, USAF
McGregor, Glynn A., Captain, USAF
McKnight, Theodore, Captain, USAF
Milton, Jerry L., SSgt, USAF
Myers, Philip, SSgt, USAF

Newman, David C., SSgt, USAF

O'Leary, Michael S., Lt, USN

Palmer, Philip T., HM2, USN
Pearman, Paul L., Captain, USMC
Perdue, B. L., Sgt, USAF
Pierce, H. L., Major, USAF
Pierce, R. K., Sgt, USAF
Powers, William B., SSgt, USAF
Proctor, B. D., TSgt, USAF

Reeves, Robert R., Major, USAF
Reott, Robert J., Sgt, USAF
Robbins, Richard G., SSgt, USAF

Schmidt, Michael F., Captain, USAF
Schwartz, Hal S., 1stLt, USAF
Schrimpf, George E., Captain, USAF
Sheets, Ricky C., SSgt, USAF
Sheffield, Cleveland, Jr., Sgt, USAF

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