NAVAL AVIATION

NEWS

OCTOBER 1976

NAVAL AVIATION NEWS

FIFTY-EIGHTH YEAR OF PUBLICATION

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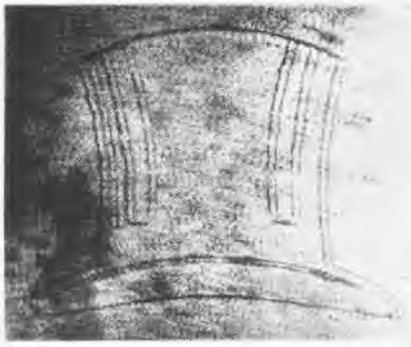
COVERS -- Front, Harry Gann filmed AH-1J Huey Cobra from HMA-16 landing on USS Tulare (LKA-112). Back, plane captain Terry Wilkinson of VA-93 shoulders the load symbolic of his job -- tie down chains -- aboard USS Midway. PH2 Chester King took this and the related pictures for the story on pages 14-15. Ghost-like figure here is that of ABHAN Don McMinn working in the steam from USS Saratoga's catapults. PH1 Duncan Campbell was the photographer. See "At Sea with Saratoga," beginning on page 8.

editor's corner



The Concrete Hat. PHCS(AC) Bob Lawson photographed what appears to be the *Tophatter* squadron (currently VF-14) insignia. Explains Lawson, "It's inscribed in the sidewalk next to hangar 309 here at North Island. The hangar was built circa 1934 and VF-1B (VF-14 predecessor) was located in this hangar area at the time. I'm trying to get NAS to save the thing and would like to find some information about it." *NANews* will relay any word.

Old Songs. Commander Cliff Ruthrauff asked *NANews* if anyone has kept the words and/or music of old Naval Air type barroom ballads. *NANews* doesn't know but is asking its readers for help. So, if you remember "Turnin' at the 90" or "Take Down Your Blue Star Flag, Mother," and such, let us know and we'll put the word out and try to keep the songs alive.

Family Affair. Retired Cdr. Charles Hood of the Early and Pioneer Naval Aviator's Association, "The Golden Eagles," sent us word on a three-generation Naval Air family. In 1916, E. Traver Smith left Yale in his sophomore year and joined the Navy. He became Naval Aviator #126, completed further training in England and, in France, piloted Sopwith *Camels* with the Royal Naval Air Service, Squadron 13.

Although this Smith eventually became a rancher in Big Timber, Montana, an offspring became Naval Aviator #12946. Traver Clinton Smith departed Yale in his third year and helped form Yale Unit #1 which trained at Floyd Bennett Field and Jacksonville. He became a flight instructor and also a Patrol Plane Commander in Air-Sea Rescue operations.

Now, there's Theodore H. Smith. He graduated from Boston University last year, earned a commission in the Coast Guard and is now in the helicopter pipeline, en route to becoming another Smith with golden wings.

Saving Oil. "As a step forward in the oil conservation policy of the Government, Navy planes will map the Naval Petroleum Reserves Numbers One and Two in Southern California, provided for in a project recently approved by the Secretary. In addition to being important from a conservation standpoint, this work will be of great value to the Geological Survey of the Department of the Interior in the geological and topographical surveys of this region.

"Planes from the naval air station at San Diego will be used in this work by Navy photographers employing specially constructed cameras for aerial mapping. Photographic aerial mosaic maps will be made of both of the reserves, and will show with accuracy and the greatest possible detail the exact progress of drilling and of the development work being undertaken for the purpose of extracting oil for the use of Navy ships. By showing each well in its relation to all others, a complete check on the conditions in the oil fields can be obtained and will provide information necessary to insure the most scientific and least wasteful methods of drilling for the oil." From the Weekly News Letter, Bureau of Aeronautics, June 28, 1924.

Feet Dry, Finally. "Big Red," USS *Saratoga*'s mascot, was as happy as his human shipmates to see Mayport

again. The registered fighting cock who usually perches on the signal bridge to observe flight operations, issued a triumphant crow when CV-60 returned to Florida in late July after a seven-month Mediterranean deployment. A bit rambunctious in nature, Big Red was restricted aboard ship for the duration of the cruise. *Sara*'s Skipper, Captain R. F. Dunn, intends to approve liberty for Big Red, under escort, of course.

NAVAL AVIATION NEWS did you know?

AV-8B Harrier

Deputy Secretary of Defense William P. Clements, Jr., has approved the basic flight demonstration phase of Navy's proposed program for developing the AV-8B *Harrier*. The AV-8B is designed to meet Marine Corps light attack aircraft requirements. It is an improved version of the AV-8A V/STOL aircraft developed by the United Kingdom and operated by the Marine Corps and the Royal Air Force. The newest *Harrier* is scheduled to enter the Marine Corps inventory in the early 1980s.

The program should result in an airplane with approximately double the performance of today's *Harrier*, primarily because of aerodynamic improvements in the wing and intake areas and the addition of lift improvement devices. It will also incorporate better electronics, including an angular rate bombing system, and various reliability and maintainability changes.

AV-8As are being modified as prototype AV-8Bs. If approved for full scale development, the AV-8Bs would be produced by McDonnell Douglas Corporation, St. Louis, with Hawker Siddeley Aircraft, Ltd., as the principal subcontractor.

The United Kingdom has already decided to start production of another version of the *Harrier*, the *Sea Harrier*, for use by the Royal Navy. If the United States goes ahead with full production of the AV-8B, two versions of the original *Harrier* will be in production. Each will be separately funded by the respective governments but there will be mutual cooperation in the procurement of supplies and services, and in the exchange of information.

VATOL RPV

A 500-pound remotely piloted demonstration vehicle (RPV) with vertical attitude takeoff and landing (VATOL) capability has been designed and constructed by the David W. Taylor Naval Ship Research and Development Center in Maryland. It has started its first flight test phase of tethered hovers at the Center. The tethered hover flights evaluate the vertical hover capabilities of the RPV. A crane is used to support the vehicle in a vertical position while an attached control cable allows commands for translation fore, aft and sideways, rotation about the vertical axis and some vertical motion to measure liftoff.

During the flight, measurements are taken of the engine front and rear bearing temperature, engine rpm, exhaust gas temperature, midcourse guidance system pitch and roll angle readings, engine speed command, and radar altimeter readings of altitude. The RPV is controlled from an umbilical cable through which the ground controller can command an emergency stop in case of malfunction.

NAVAL AVIATION NEWS did you know?

Lamps, MK III

Much time and effort have been spent trying to make ships able to see even further over the horizon. A current effort is the LAMPS MK III (light airborne multi-purpose system) program. The program uses helicopters to seek out and destroy a potential enemy while it is still far from the ship and well over the horizon. "Development of LAMPS began in 1968 prompted by the sinking of an Israeli destroyer by a missile-firing patrol boat during the 1967 Arab-Israeli War," explained LCdr. Don Wright of NATC Patuxent River's Rotary Wing Aircraft Test Directorate. LAMPS helicopters are designed to locate such a craft and attack it before it can launch its missiles. In addition to meeting this type of threat, the Navy has long advocated airborne ASW capability.

Tests begun at NATC this past summer use two YSH-3J *Sea Kings* as test beds to evaluate the latest weapons systems for the future LAMPS MK III helicopters. These tests are a coordinated effort of NavAirSysCom, NATC, NADC Johnsville and VX-1.

NATC has been involved in the development of LAMPS since 1968 when it tested a prototype of the H-2D. This later evolved into the LAMPS MK I mission system, now operational on many fleet ships using SH-2D and SH-2F *Seasprites*.

Range Tactical Data Center

Completion of the range tactical data center at the Chesapeake Test Range (CTR), NATC Patuxent River, will provide a significant increase in the range's instrumentation capability to test advanced naval weapons systems in a data link environment. Because of this increased capability, NATC will be able to support intercept vectoring, collision avoidance, command and control, and message extraction testing.

In a fully operational status, the range tactical data center has the capability of using precision range tracking instrumentation in conjunction with the usual search radar inputs.

Phoenix Missile

Commander Bud Dougherty, X.O., and LCdr. John Manning, VF-14, have successfully fired the 100th *Phoenix* missile from an F-14 *Tomcat*. The episode simulated an enemy cruise missile being launched at an aircraft carrier and the defense of the carrier against the attack.

After the target drone had been detected by the radar of a VAW-125 *Hawkeye*, the *Tomcat* was then vectored to an attack heading, climbed to 15,000 feet, acquired the simulated threat at 32 miles and, with a closure rate of over one and one-half times the speed of sound, fired the *Phoenix*. A successful kill, the missile struck the target drone 65 miles from USS *Kennedy*.

Night Attack Weapon System

The night attack weapon system under development at the Naval Weapons Center, China Lake, has demonstrated accuracy and effectiveness, day or night, against both stationary and moving targets.

In three flight tests conducted so far, direct hits were scored on a stationary M-53 self-propelled gun, a moving M-48 tank at night, and on a moving seaborne powered target boat at the Pacific Missile Test Center — three tests, three hits, directly on the engine compartment of each target vehicle.

The night attack missile consists of a modified air-to-surface *Maverick*

with TV guidance components removed and replaced by a long-wavelength, non-imaging guidance unit jointly developed by NWC and Raytheon Corporation. The avionic components of the night attack weapon system comprise a forward-looking infrared (FLIR) sensor, and a boresight computer/aim-point correlator for automatic in-flight alignment of the seeker with the FLIR.

In a typical attack operation, the automatic boresighting of the missile(s) with the FLIR would take place while en route to the target. This aligns the missile seeker to follow the FLIR along the same approximate line of sight. Nearly any kind of terrain or structure can be used to accomplish the boresight before the specific target area is reached.

In the target area, the operator uses the FLIR for acquisition and identification of the target. When the target is acquired, he manually positions crosshairs on it in the FLIR cockpit display and initiates automatic seeker lock-on. The boresight computer/aim-point correlator then mathematically correlates the video information from the non-imaging IR seeker with the information taken from the central portion of the FLIR displayed scene. The seeker is now locked on, tracking the target, and the missile can be launched at will. Once launched, the missile homes in independently on the target, leaving the aircraft free to evade defenses, attack other targets or leave the area.

Three additional flight tests are scheduled in the near future. These will test the night attack weapon system against various land and sea targets, including one designated tank out of a closely-spaced grouping. The concept is under consideration by DOD for tri-service utilization.

Edward S. Gravlin

grampaw pettibone

Bent Bird

An instrument instructor (senior type) with his lieutenant student departed an East Coast air station in a T-33 for what was scheduled as a local instrument training flight.

The initial portion of the flight was, in the words of the pilot, routine in all respects for approximately one hour and 20 minutes. At about this time, while still some 20 minutes north of home station, the pilot asked his dual pilot if he would like to do some aerobatics but he declined, stating that he was not familiar with the airspeeds and aircraft limitations.

The instructor then asked the dual pilot if he objected to his doing a couple of rolls. As there was no objection from the junior pilot in the rear seat, the pilot turned east to clear the airways and picked up about 350 knots at an altitude of 12,000 feet. The pilot pulled the nose above the horizon and entered a roll to the left, but about halfway through the roll he became completely disoriented and the nose fell through.

After checking instruments, he became rudely aware that the aircraft was in an extreme nose-down attitude with airspeed building fast. He immediately chopped the power and attempted to pull the nose through, but when excessive G force was applied naturally, the aircraft began to shudder. Stick pressure was relaxed and a gentle recovery accomplished at an altitude between 2,000 and 3,000 feet.

The dual pilot was unable to recall if the attempted roll was to the right or left as he became disoriented when this episode began and blacked out completely during the recovery. After regaining consciousness, he had a good case of vertigo. It took several seconds before he was aware the aircraft was in a climbing turn and several minutes before he was fully aware of what had happened.

The pilot was disoriented during the

entire maneuver and although he didn't black out himself during recovery, he did find it difficult to hold his head up. After taking a quick inventory, the pilot climbed the tired little aircraft to 6,000 feet and headed toward home.

While the dual pilot was looking around trying to get his bearings, he discovered the port aileron to be badly wrinkled and immediately notified the pilot. He also informed him that he had a severe pain in his neck and back and asked how many Gs they pulled during recovery. The pilot reported that his accelerometer showed 5.5 positive Gs and, after checking, the dual pilot reported the rear cockpit accelerometer showed 10 Gs.

Aware that the aircraft had been structurally damaged during the flight, the pilot requested a straight-in approach to the runway and the landing was accomplished without further incident. After landing the aircraft was inspected; the airframe was damaged to such an extent that it was classified as a strike.

Grampaw Pettibone says:

Great jumpin' Jehosaphat! This wasn't a close shave, it was a narrow escape. With a G or two more, the little bird would most likely have shed a wing and these guys would have been helpless in their semi-conscious state. Even if these T-33s are tired old dogs, that's no reason to whip 'em this way.

There's certainly no mystery as to why the dual pilot blacked out. His G-suit hadn't been refitted since wearin' it over heavy winter gear. It's plain to see that a loose fitting G-suit is of little or no value to anyone.

Now there's nothin' wrong with aerobatics, provided the hop is briefed so everyone knows what's going on. This flight was scheduled as instrument training for the lad in the rear cockpit. What he learned about instruments on this hop could be put in that well known thimble. Although he was exposed to a rather unusual maneuver, he really didn't learn a lot about aerobatics either. (July 1964)

Retracted Rollers

Two pilots departed an East Coast air station for a syllabus familiarization and demonstration flight in an E-1B (WF-2). It was the first E-1B flight for the pilot in the right seat and also his first flight of any type in approximately 30 days.

After takeoff the instructor pilot climbed to altitude and pointed out distinguishing landmarks in the local area. He then demonstrated the different characteristics of the aircraft in both the clean and dirty configurations. The pilot in the right seat practiced stalls, recovery and slow flight for several minutes, then proceeded toward a military field in the local area for practice touch-and-go landings.

The instructor pilot contacted the tower and received permission for practice landings. The tower directed the pilot to plan his approach for right

ILLUSTRATED BY Osborn

traffic to the duty runway and a full flap touch-and-go landing was made. The instructor demonstrated 2/3 flap landings, then informed the tower that they would depart the pattern and switch pilots.

After the pilots changed positions, they returned to the field, so the pilot who was under instruction could practice a few landings. The tower cleared the pilot into a left pattern for touch-and-go landing. He shot three full flap landings and one 2/3 flap when the tower advised him to plan his next approach for right traffic to the runway due to GCA traffic.

Both pilots were concerned with the GCA traffic during the approach. At the 180-degree position they advised the tower that gear was down. They were cleared to land. The approach was normal with good speed and line-up, but at touchdown both pilots realized the landing gear was not down. After the aircraft came to a stop, all switches were secured and the pilots evacuated.

Grampaw Pettibone says:

Now doesn't a thing like this really frost you? Here are two well-qualified and supposedly professional pilots who let an interruption in their routine get them into this embarrassing mess. The pilot in the left seat had over 3,000 hours total time and over 500 hours in a similar bird. It's pretty clear that he allowed a right-hand pattern and concern for other traffic to get him so thoroughly confused that he just plain forgot to put his rollers down.

It's obvious that they both failed to use the check-off list. There is no directive that requires a wheels watch for multi-piloted aircraft, but there could very well be with any more tricks like this. It's mighty hard to figure why a guy will continue an approach when he has interrupted his routine or is overly concerned about conflicting traffic.

There's really nothin' old fashioned about taking it around—A Real Pro will. It's the guy who cons himself into complacency that sets himself up for trouble and creates work for the AZs. (April 1964)

Memo From Gramps

Every once in awhile I run into a great story involvin' one of our older birds. I'm sure that this story will bring back many memories of the old days of prop flying across the North Atlantic. Would you believe that it occurred in 1976?

A C-117D *Skytrain* was being ferried from Goose Bay, Newfoundland, to Keflavik, Iceland. After a weather check and briefing, the crew preflighted the aircraft and climbed aboard. The forecast called for "no significant weather" en route with winds light and variable. Time en route was estimated as seven hours at 9,000 feet with a true airspeed of 185 knots. The *Skytrain* had ten hours of fuel on board.

The first part of the flight was without incident.

Approximately 100 nautical miles west of Prins Christians Sund, Greenland, the C-117 encountered broken clouds and light rime icing. Two hours later the icing became heavy and severe turbulence occurred. The pilot requested and was cleared to 11,000 feet. But this proved ineffective in alleviating the ice formation. The heavy ice accumulation now forced the pilot to descend to 600 feet where he was able to maintain flying speed. The *Skytrain* continued to encounter severe turbulence. The outside air temperature indicated two degrees C. and the ice began breaking loose. The navigator observed the ground speed decreasing from 190 knots to 125, due to strong headwinds, and reduced true airspeed. The aircrew's calculations confirmed that there was insufficient fuel to reach Keflavik. The pilot transmitted an emergency distress call and reversed course. He continued to maintain communications with Iceland. Following the distress call, a C-130 was launched from Keflavik.

Despite the increase in ground speed, due to the course reversal, and considering the fuel remaining, the crew determined that Narssarssuaq, Greenland, was the only available airfield within range. It was a daylight-only field with no instrument approach.

Fifteen minutes prior to ETA, the aircraft climbed to 11,000, the minimum altitude from Prins Christians Sund to Narssarssuaq. Since both ADF radios were inoperative, Loran provided the only navigational information. The navigator "steered" the aircraft to Narssarssuaq and the pilots spotted the portable airfield lighting through a break in the undercast. The ensuing landing was without further incident. All communications with Narssarssuaq had to be relayed through Keflavik.

Grampaw Pettibone says:

Great gallopin' gremlins!! Here is a case of a crew following the procedures and, through no fault of their own, windin' up in trouble!

It really does my old ticker good to see one of our drivers make a quick response to a serious emergency and carry his decision to a successful conclusion. Good job, LCdr. G. W. Woy, pilot, LCdr. D. F. Sherrod, copilot, Lt. Jim Lifgren, navigator, and crew!! The turbulence on this flight was so bad at times that almost all aboard suffered from airsickness. I'm sure that the flight crew is as grateful as I am to the 100 townspeople of Narssarssuaq who responded to the emergency siren to ensure that the airfield was ready and lighted for our aircraft.

AT SEA WITH

If any single scene symbolizes Naval Aviation, it's the flight deck of an aircraft carrier. The expenditure of energy by the human and hardware population aboard the CVs has been well chronicled since the first generation of flattops got underway. Then, as now, men and machines mixed and moved in unusual but productive harmony. The action may involve a placid endeavor like transferring mail, shown here. It could also focus on loading the steam-charged catapults with powerful airplanes. On these pages PH1 Duncan Campbell has recorded USS Saratoga's flight deck team at work in the Mediterranean.

SARATOGA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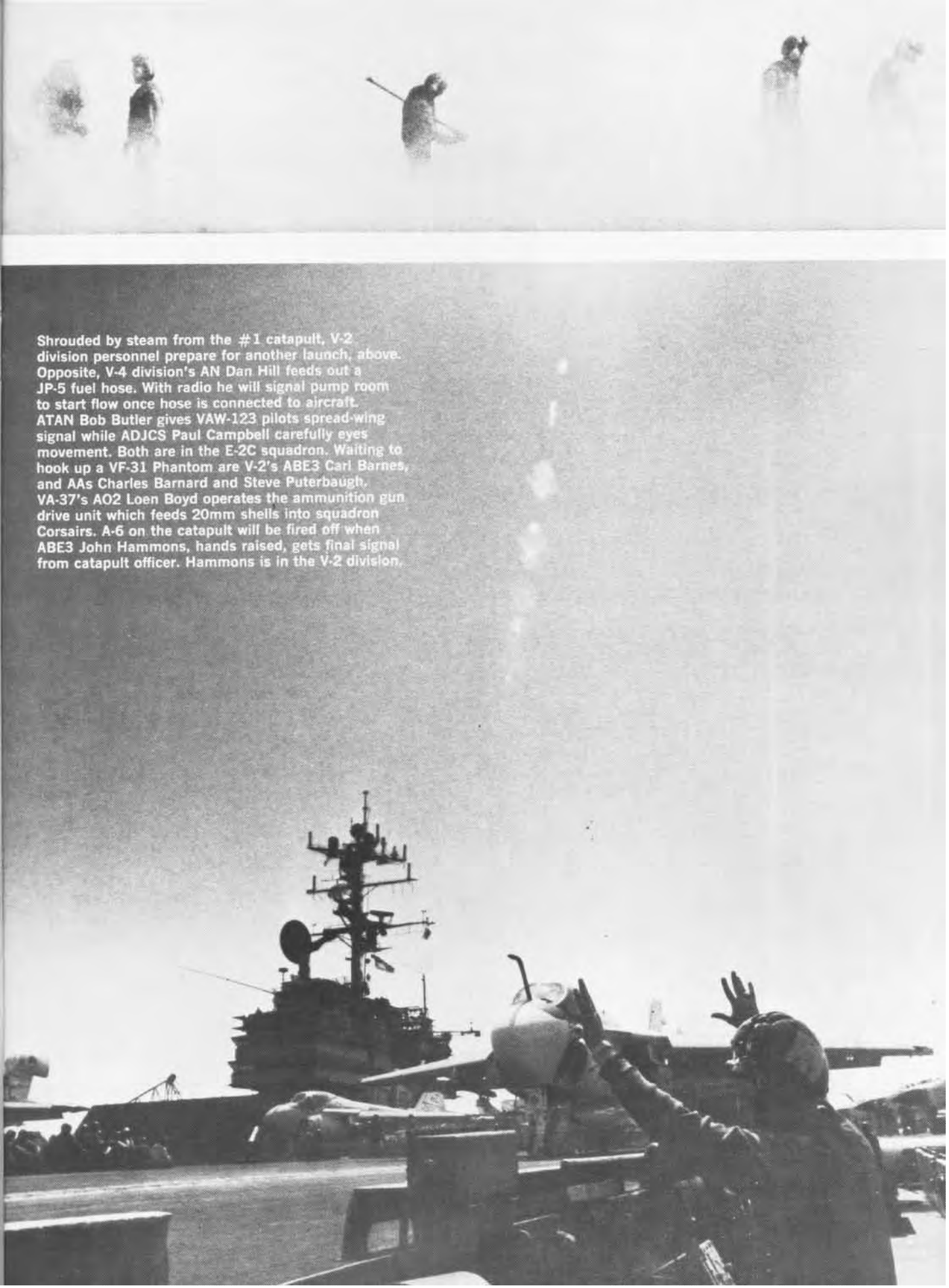
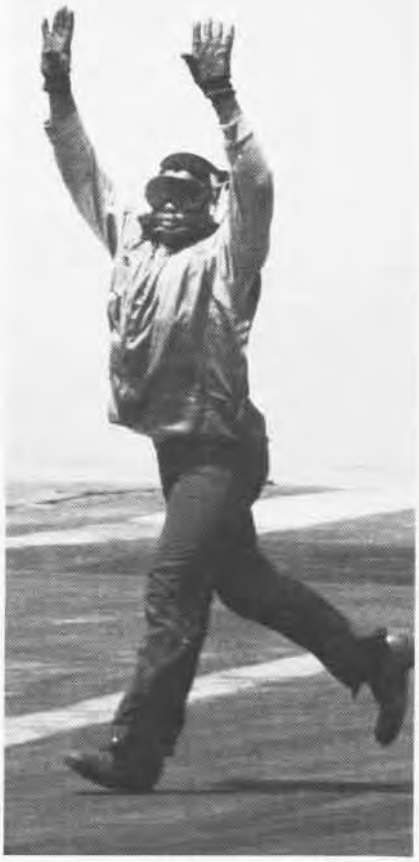
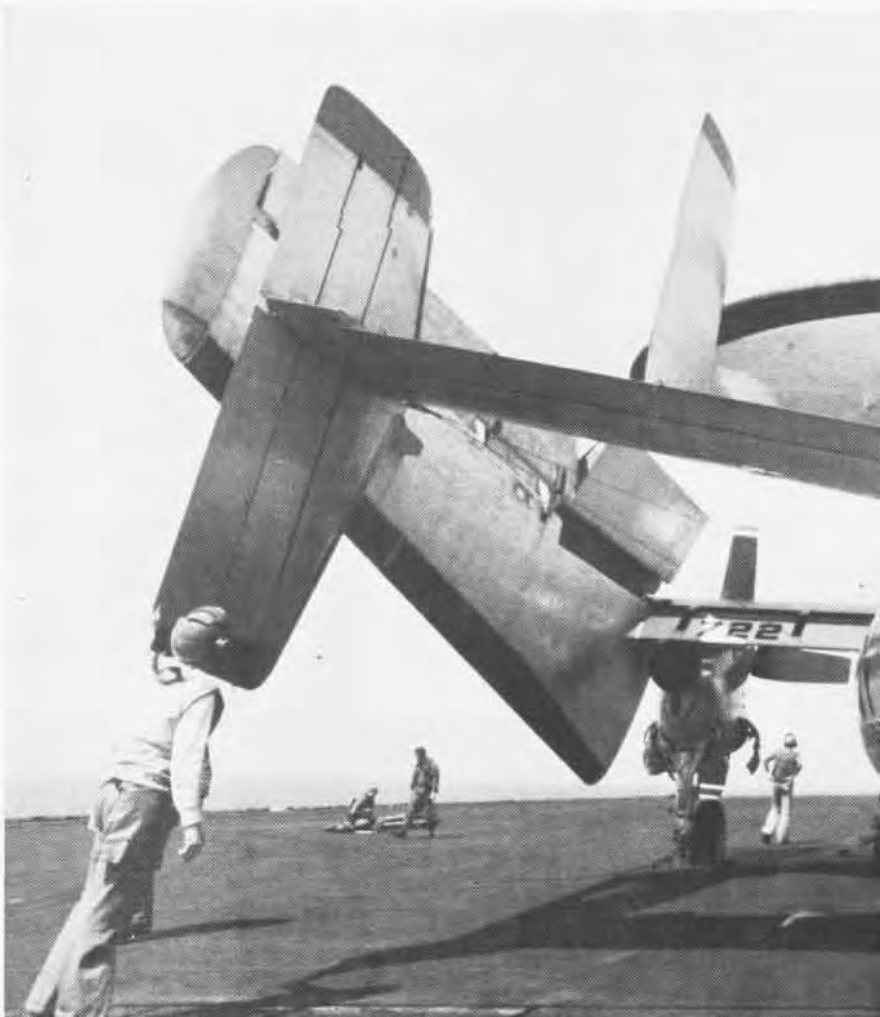


Shrouded by steam from the #1 catapult, V-2 division personnel prepare for another launch, above. Opposite, V-4 division's AN Dan Hill feeds out a JP-5 fuel hose. With radio he will signal pump room to start flow once hose is connected to aircraft. ATAN Bob Butler gives VAW-123 pilots spread-wing signal while ADJCS Paul Campbell carefully eyes movement. Both are in the E-2C squadron. Waiting to hook up a VF-31 Phantom are V-2's ABE3 Carl Barnes, and AAs Charles Barnard and Steve Puterbaugh. VA-37's AO2 Loen Boyd operates the ammunition gun drive unit which feeds 20mm shells into squadron Corsairs. A-6 on the catapult will be fired off when ABE3 John Hammons, hands raised, gets final signal from catapult officer. Hammons is in the V-2 division.



Top, AN Dan Crosswhite of Sara's V-4 division hefts a fueling hose while ANH3 Bob Young of V-1 "stops" an aircraft. Young's job is to signal planes out of the gear and pass them to another flight deck director. AA Barnard hooks bridle to Phantom, above.



Left, VAW-123 Hawkeye is all angles and curves as crew conducts preflight inspection. Top center, muscle and teamwork are musts for this V-2 crew as they ready shuttle for approaching F-4. Above, ABHAN Don McMinn waves precision signals to an Intruder as it taxies onto the catapult. ABE3 Barnes, jet blast deflector in the background, stands by to hook up a Phantom. VF-103's ADJ3s Greg Hogan and Bill Robison and ADJ1 Jim Russell apply caulking compound to seal possible leaks in fuel lines on an F-4.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Man at Work

Like his Saratoga counterparts, Airman Terry David Wilkinson is young and works on the roof. He's 22 and a plane captain in USS Midway-based VA-93. A carrier veteran once said a good plane captain is to a flyer what a first class secretary is to an executive — indispensible. An exaggeration perhaps. Still, Terry Wilkinson has a good reputation. He works hard at maintaining it and his squadron A-7 Corsairs. Opposite, in a short span of operating time, he can tighten up a tie-down chain, fill out a maintenance card, "dive the duct" and signal a pilot to begin post-start checks. These are only a few of his multitudinal duties as a wearer of the brown jersey. It's a physical job, being a plane captain. It takes brawn to hike a heavy sack of tie-down chains across the deck. But, more importantly, it takes brains, savvy, endurance and desire. The flight deck demands it.

Submitted by Ltjg. William Rodway Photos by PH2 Chester M. King

1910 The General Board recommended to SecNav that, in all new designs for scouting vessels, space be provided for airplanes or dirigibles.

The Chief of the Bureau of Steam Engineering, because of "the rapid improvement in the design and manipulation of airplanes and the important role they will probably play," requested authority to requisition an airplane for USS *Chester* and the services of an instructor to teach officers to fly "the machine."

The Chief of Bureau of Construction and Repair suggested to SecNav that one or more airplanes be obtained to develop their use for naval purposes. In the absence of specific funds for their purchase, he recommended that specifications for the battleship *Texas* be modified to require contractors to supply one or more aircraft as part of their obligation.

1911 Capt. Chambers, in a letter to Glenn Curtiss, discussed heavy oil (diesel) and turbine engines, similar in principle to those that some 30 years later made jet propulsion practical.

Lieutenants T. G. Ellyson and J. H. Towers, flying an A-1 from Annapolis, Md., to Fort Monroe, Va., to test aircraft durability on a cross-country flight, were forced down by a leaking radiator near Milford Haven, Va., after covering 112 miles in 122 minutes.

1912 The Davis recoilless aircraft gun, designed by Cdr. Cleland Davis to fire a large caliber shell from aircraft, was given initial tests at Naval Proving Ground, Indian Head, Md.

Lt. J. H. Towers flying the Curtiss A-2 remained in the air over Annapolis 6 hours, 10 minutes, setting a new American endurance record for planes.

Tests of a Gyro 50-hp rotary motor were completed at the Engineering Experiment Station, Annapolis. Navy's first recorded attempt to utilize laboratory equipment in evaluating an aircraft engine.

1913 Initial trials of Navy's first amphibian flying boat were completed at Hammondsport, N.Y. Aircraft was A-2 hydro-aeroplane in which pontoon was replaced with a flying boat hull with three-wheel landing gear.

Board appointed by SecNav submitted comprehensive plan for organization of Naval Aeronautic Service. It included an Aeronautic Center at Pensacola for flight and ground training and for study of advanced aeronautic engineering. It also included assignment of a ship for training in operations at sea, for testing equipment, and the assignment of one aircraft to every major combatant ship. It recommended expenditure of $1,297,700 to implement the program.

1916 Acting Secretary of War recommended appointment of a joint Army-Navy Board to consider requirements for developing lighter-than-air service.

Bureau of Steam Engineering asked Navy Yard Philadelphia to develop radio direction finder for use on aeroplanes. It specified that the apparatus be light and use wave lengths of 600 to 4,000 meters.

1917 The first power-driven machine was started at the Naval Aircraft Factory, 67 days after ground breaking.

The 12-cylinder Liberty engine successfully flew for the first time in a Curtiss HS-1 flying boat at Buffalo, N.Y. This and other demonstrations led to adoption of both engine and plane as standard service types.

Special courses to train men as inspectors of aeronautical material were added to the ground school curriculum at MIT with 14 men enrolled.

First organization of U.S. Naval Aviation Forces, Foreign Service was put into operation when Capt. H. I. Cone relieved LCdr. K. Whiting and took command of all Naval Aviation Forces abroad.

1918 Some of earliest recorded stores-dropping missions were flown by Marine Corps pilots when they made repeated low-level runs under enemy fire to deliver 2,600 pounds of food and supplies to a French regiment surrounded by German troops near Stadenburg.

The NC-1, first of the NC flying boats, made its initial flight at NAS Rockaway.

The first raid-in-force by the Northern Bombing Group in WW I was made by eight planes of Marine Day Squadron 9 which dropped 17 bombs on German-held railroad junction at Thielt, Belgium.

A pilotless N-9 training plane, converted to an automatic flying machine, was launched at Copiague, L.I., and flew a prescribed course although the distance gear failed to land the airplane at the preset range of 14,500 yards. Plane was last seen over the Bay Shore Air Station at an altitude of 4,000 feet, flying eastward.

1921 A compressed-air turntable catapult, in its first successful test, launched an N-9 from a pier at the Philadelphia Navy Yard.

1922 The first carrier takeoff in the U.S. Navy was made by Lt. V. C. Griffin in a Vought VE-7SF from USS *Langley* in the York River.

LCdr. G. deC. Chevalier made the first landing aboard *Langley*, underway off Cape Henry.

1924 Rigid airship ZR-3 was delivered to NAS Lakehurst after an 81-hour, 5,000-mile flight from Germany, under command of Dr. Hugo Eckener.

Rigid airship *Shenandoah*, commanded by LCdr. Z. Lansdowne, landed at NAS Lakehurst completing first round-trip transcontinental cruise that covered 9,317 miles in 258 hours of flight.

1925 Because of the need for upper air data to improve weather forecasting, BuAer asked aircraft squadron flagships to take upper air soundings twice a day when at sea.

1926 The first fleet demonstration of dive-bombing tactics, by VF Squadron 2 in F6C-2 Curtiss fighters, was made in a simulated attack on the heavy ships of the Pacific Fleet as they sortied from San Pedro.

1933 Naval Aircraft Factory was authorized to develop and manufacture a special abdominal belt for use by pilots as anti-blackout equipment in dive bombing and other stress-related type maneuvers.

A contract was issued to Consolidated for an XY3Y-1 flying boat, the beginning of Navy sponsor-

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ship of PBY *Catalina* series of flying boats.

1939 Naval Aircraft Factory was authorized to develop radio-control equipment for remote-controlled flight testing of aircraft.

1940 SecNav placed all divisions and aviation squadrons of organized reserve on short notice for call to active duty and authorized calling up fleet reservists as necessary. Bureau of Navigation announced plans to mobilize the available squadrons.

SecNav approved General Board recommendations to equip 24 submarines to carry aviation gasoline for delivery to seaplanes on the water.

1941 "Special Project Dog" was established in Utility Squadron 5 to test and operate radio-controlled offensive weapons and train personnel in their use.

VP-82 received first of a full complement of PBO-1s at NAS Norfolk. This was the beginning of landplane use by patrol squadrons during war and first move toward elimination of flying boats from patrol aviation.

1942 Westinghouse Electric and Manufacturing Company was authorized to build two 19A axial flow turbojet power plants, first jet engines of wholly American design.

1943 Navy accepted its first helicopter, a Sikorsky YR-4B (HNS-1) at Bridgeport, Conn.

1944 Battle for Leyte Gulf began. A number of U.S. ships were lost, including *Princeton*. Among those damaged were *Intrepid, Franklin, Belleau Wood, Lexington, Essex* and *Cabot*.

1945 BuAer established a committee to evaluate the feasibility of space rocketry, signaling first attempt to establish an earth satellite program.

1946 Naval Air Missile Test Center, Point Mugu was established to test and evaluate guided missiles and components.

First live test of an ejection seat took place when Ltjg. A. J. Furtek ejected from a JD-1, 6,000 feet over Lakehurst, N.J.

1948 Transport Squadrons Six and Eight were ordered from their Pacific bases to Germany to take part in Berlin airlift Operation *Vittles*.

1949 An exchange program to indoctrinate selected Air Force, Navy and Marine pilots in operational and training activities of each other's service began with exchange of 18 pilots from each service for one year.

1951 Helicopter ASW squadron, HS-1, first of its kind in the Navy, was commissioned at NAS Key West.

1955 *Saipan* with HTU-1 aboard conducted disaster relief operations at Tampico, Mexico.

Automatic meteorological stations, set adrift in the hurricane lanes north of Puerto Rico, provided continuous weather data on tropical storm *Janet*. This was first step toward monitoring surface weather in uninhabited areas.

1956 Sixth Fleet ships and aircraft evacuated U.S. Citizens during Suez crisis.

Seven Navy men landed an R4D *Skytrain* on the ice at the South Pole, first to stand on the spot since the Royal Navy reached it in January 1912. They set up navigational aids.

1957 HMR-262 and *Lake Champlain* arrived at Valencia, Spain, to aid thousands made homeless by a flood.

1960 DOD announced establishment of joint service program under Navy management to develop prototype of operational vertical takeoff and landing aircraft.

1961 End of the lighter-than-air era as Fleet Airship Wing One and patrol squadrons ZPs 1 and 3, last operating LTA units, were decommissioned at NAS Lakehurst.

1962 Navy carriers and aircraft began operations to counter threat posed by Cuban Missile crisis.

1964 Operation *Sea Orbit* ended as *Enterprise, Long Beach* and *Bainbridge* returned to the U.S. The task force, the world's first composed entirely of nuclear-powered ships, completed a 65-day, 30,216-nautical-mile, round-the-world cruise without taking on fuel or provisions.

1968 HS-5 helos from *Essex* recovered astronauts Walter M. Schirra, Donn F. Eisele and R. Walter Cunningham at end of first manned *Apollo* flight.

1969 Agreement reached between Naval Air Systems Command and United Kingdom for purchase of vertical takeoff and landing aircraft, the Hawker Siddeley *Harrier*, for the Marine Corps.

1970 *Okinawa* and HMM-164 provided medical assistance and relief supplies to thousands of Filipinos after Typhoon *Joan*. Over 399 tons of food and supplies were airlifted.

After typhoon *Kate* 1st MAW carried out rescue and relief operations in South Vietnam, for over 9,000 refugees.

1971 First sea control ship squadron, HS-15, was commissioned at NAS Lakehurst. Squadron was to devise tactics to protect convoys and vessels beyond protective range of carriers.

1973 BIS trials of the S-3A *Viking* began at NATC Patuxent River.

Midway and embarked CVW-5 put into Yokosuka, Japan, marking first home-porting of carrier task group in a Japanese port. It was also the beginning of concept of an air wing being completely supported by, and based continuously on, a carrier.

Third nuclear-powered aircraft carrier, *Dwight D. Eisenhower*, was launched at Norfolk. Keel of fourth nuclear carrier, *Carl Vinson*, was laid.

EJECT

The *Invader* was level at 5,000 feet, airspeed 250 mph. As the aircraft approached NAS Lakehurst, the man in the specially modified aft cockpit again checked his harness, belts and buckles. All was ready. For Ltjg. A. J. Furtek this would be his 17th "leap" from an aircraft. More significant, it would mark his and the U.S. Navy's first airborne ejection attempt.

As the JD-1 approached the blimp landing circle, the go-ahead was given. All the ground and dummy tests by the Naval Aircraft Material Center had been completed. Now a human being was to be shot up and away in a milestone test of an escape system.

Furtek reached over his head and with both hands grasped the face curtain. Erect, tense in his seat, he pulled the fabric shield forward and down over the upper part of his head. Beneath him, a pair of 600-grain charges exploded. This awesome slapping force powered a 40-inch piston upward. Ltjg. Furtek, now a bullet, was on his way.

In the next precious seconds, he recognized something was wrong. The automatic devices failed to disengage him from the seat, which would have permitted smooth and expeditious opening of the parachute. Later it would be learned that a fastener on the 28-foot chute attached to the seat had fouled.

Furtek tumbled downward Four thousand. Three thousand. Two thousand feet. Twenty-three eternal seconds passed. Finally, by 1,500 feet altitude, Furtek had disengaged himself from the seat. He pulled the rip cord of his own parachute. As the drogue chute blossomed, pulling along the main canopy, he felt a sharp wrenching sensation in his back. His body was briefly thrown into a quarter-turn lateral twist. But the main chute filled with wind and he fell safely to earth.

The U.S. Army Air Corps actually beat the Navy into the air by way of the ejection seat. Earlier in 1946, Warrant Officer Larry Lambert ejected from a P-61B *Black Widow* over Wright Field, Ohio. He, too, had to resort to manual operation rather than the automatic method intended. Still, neither of these courageous parachutists was the first to eject from an aircraft.

Late in World War II, at least 60 Luftwaffe pilots had been saved by ejection seats. In fact, a German parachutist named Busse was the first to test the method. The British were also leaders in the field. England's Martin-Baker Company spearheaded ejection seat development in the postwar years and after. In fact, Furtek was using a Martin-Baker seat in the JD-1.

Furtek's bravery was as impressive as his ambition. "Chubby," as he preferred to be called (his first name was Adolph), was assigned to the parachute experimental unit at Lakehurst. He volunteered for the ejection seat test but was turned down. "You're too heavy," he was told.

The 200-pound former chief went on a diet and in two weeks' time lost 20 pounds. He asked again to make the flight. "You don't have enough jump experience," he was advised.

He then proceeded to make two, sometimes three, jumps every day until he had made 16 jumps. Again he volunteered. This time he was accepted. A forerunner in the vital field of developing aircraft escape systems, Ltjg. A. J. Furtek became a part of the Naval Aviation heritage.

NAVAL AVIATION 65 in '76

Oct. 30, 1946

Opposite, dummy package is ejected from JD-1 similar to Furtek's, near El Centro, Calif., during tests in the late 1950s. Top, Furtek, smiling after leap. Above, actual sequence of 1946 test. Left, Furtek shows how face curtain worked.

De H

Depending on who's telling the story the DH-4 was either one of the outstanding WW I aircraft or one of the worst. Probably the truth, as is often the case, lies somewhere in between.

Originally designed by DeHavilland as a day bomber for the British Royal Flying Corps in 1916, the D.H.4 was selected for adaption to the U.S. Liberty engine and mass production in the U.S. for the Army Air Service after this country entered WW I in 1917. While production never reached the levels the planners anticipated, DH-4s were the only U.S.-built combat aircraft to reach combat, and over 3,000 were completed before WW I ended.

The first Naval Aviation use was by Marine squadrons of the Northern Bombing Group in France which flew their initial missions in October 1918. In fact, the majority of the 363 DH-4 series aircraft which eventually ended up in the Navy inventory were used by the Marines. And, like the first, they all originated from Army-contracted WW I production.

By the end of the war, the Army had developed a number of improvements to the design, the most obvious of which was exchanging the location of the pilot and the gas tank, putting the pilot and observer/gunner together behind the gas tank. As aircraft were needed for the small number of units that were operational in the postwar period, the DH-4s were rebuilt into the DH-4B configuration and used for general purpose military aircraft. Much of the rebuilding for Navy and Marine use was done by the Naval Aircraft Factory. By the mid-Twenties, this rebuilding became almost a complete replacement of the original airframe. In some, the wooden fuselage structure was completely replaced by a steel tube structure. Those with this feature which were built by Boeing were designated DH-4M1 for the Army and given the O2B-1 designation by the Navy. Updating of the DH-4Bs and increasing their fuel capacity resulted in the DH-4B-1s. Increased fuel capacity incorporated in a few O2B-1s by NAF resulted in O2B-2s.

Used by Navy observation and utility squadrons and by the Marines for general military duties with their observation squadrons, the DH-4B series aricraft were also used at Pensacola for advanced training. As new aircraft were purchased from the mid-Twenties on, the DH-4B types were gradually replaced, finally being phased out in 1929.

avilland

DH-4B ambulance

DH-4s

DH-4B-1

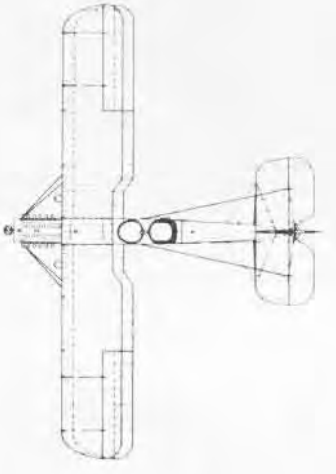
DH-4B

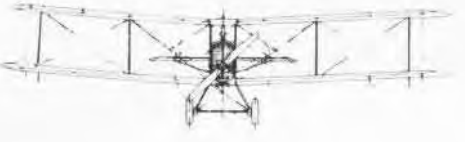
DH-4B

Span		42' 5½"
Length		30' 1"
Height		10' 6"
Power plant	Liberty 12	400 hp
Max speed		124 mph
Service ceiling		15,800'
Range		359 miles

Armament

1 or 2 fixed .30 machine guns
1 or 2 free .30 machine guns
Various small bombs
on under wing racks





BYE-BYE

The moans were heard across the land, on the seas and in a thousand cockpits high above. After 63 years in, *brown shoes were* out*—terminated by top authority.*

In 1913, regulations directed that "high laced shoes of tan leather" be worn by Naval Aviators. Nine years later the color was changed to russet which, according to Webster's, means yellowish or reddish brown.

At the end of WW II, material shortages led to SecNav's approval of black shoes for optional wear by the flyers. By 1948, the browns were restored to full status. Of course, the non-aviation Navy community also wore browns with certain uniforms. Through the years, though, the world of brown shoes was populated by the flyers and the supporting personnel of Naval Aviation.

The russet footwear was a tradition. And traditions do not die easily.

BROWN SHOES

At Norfolk, VRF-31 conducted ceremonies led by Lt. Broadus Miller. He spoke of Joe B. (for Buster) Brownshoes, the dearly departed. "Buster Brown," he said, "has served Naval Aviation with Pride and Desenex. He was the major vehicle in operation gold bricker and silver skates. Joe never failed to release himself from the surly bonds of the deck and surge to the familiar heights of the nearest desk." Finally, sighed the Lieutenant, "Joe B. Brownshoes has danced his last step."

Captain M. G. McCanna, ComNavAirLant Chief of Staff, broke ground for the final resting place of a pair of brown shoes at NAS Norfolk. Captain J. E. Paganelli, Flag Secretary, and Master Chief Boatswain's Mate W. B. Miracal headed the observers. That's a pair of bronzed footwear mounted on the stone alongside a commemorative plaque.

Meanwhile, at sea with *Saratoga* in the Mediterranean, all hands turned out for a special, one-time-only catapult launch. CV-60's Engineering Department Repair Division designed and constructed a vehicle which housed a symbolic array of brown shoes. VA-105 painted the craft. Captain J. R. Cannon, Chief Engineer — and senior Surface Warfare Officer (black shoe) — was acting catapult officer. He executed a launch signal worthy of Nureyev. With a resounding thuuwack, #401 raced down the track and darted into the air. For an instant it seemed that an intangible force of tradition would keep it aloft and flying. Alas! Destiny took hold. #401, its well-worn cargo inside, plunged ignominiously into the deep.

Helicopter Mine Countermeasures Squadron Twelve said goodbye to the browns at its Norfolk headquarters. Choked with emotion, a contingent of flyers produced a tombstone, though improperly dated, complete with a final and urgent request, "Feet Don't Fail Me Now."

At the NAS Alameda O'Club, VA-304 hosted the Brown Shoe Ball. Period uniforms were worn by Lieutenant Commanders Dave Ashworth, Ted Person and *Firebird* skipper, Commander Dave Boaz. LCdr. Jeff Greenwood, far right, seems to be wearing the cover from another branch of the service. But where are the brown shoes, folks?

In the land of the rising sun, brown shoes fell in perhaps the most elaborate ceremony yet reported. At Naval Air Facility, Atsugi, Japan, the CPO Club was the scene. As anyone in his right Navy mind knows, when the Chiefs take on a project, they do it with skill and finesse regardless of the solemnity involved.

CPO Ron Graves began his eulogy, "Let it be understood—he had sole! He was a shining example, ready to kick whenever necessary."

Mrs. Leah Holmes, who portrayed the brown shoes' widow, was shrouded in black. A death certificate was issued and the deceased was listed as "Shoe, Brown Oxford Boot."

CPO Gene Kelly's testimonial comforted the bereaved. The brown shoes would "have eternal rest in that great shoe factory in the sky." "Perhaps," added Kelly, "your brother, white shoes, will join you there soon."

Rear Admiral Gordon J. Schuller, Commander Fleet Air Western Pacific, addressed the mourners. The Admiral is six feet, four inches tall and wears a 14D shoe. "No one," he said, "feels a bigger loss than I."

LCdr. Pat Cooper's "Ballad of the Brown Shoes," sung to the tune of "Streets of Laredo," is quoted in part:

Play the bell lowly and beat
the drum slowly,

Burn that damn NavOp in
a pile so neat,

Write up my report chit,
and by God I'll sign it;

If I can't wear my brown shoes,
I'll work in bare feet!

Near ceremony's end, friends filed by the casket. Many placed their own brown shoes alongside those of the departed. At the gravesite the widow was comforted by Admiral Schuller as a Marine rifle squad filled the air with 21 sharp reports from its weapons. Fortunately, the widow plugged her ears against the drum-shattering fusillade.

The sexton said, "From grass to cowhide to shoe to dust. God giveth and Washington taketh away. Let him R.I.P.!" At which point the casket slid into the grave.

A lengthy reception was held in the CPO club parlor at the fervent request of the family.

West Coast carrier USS *Coral Sea* interrupted operations briefly for her goodbye to a tradition. Captain Joseph F. Frick led a Brown Brogan Honor Guard for the occasion. A wreath-like collection of shoes was carried across the deck by a barefoot trio — watch out for those padeyes, gents — including a mournful skipper, a bespectacled Commander Carl Erie and Lt. Mike Prince. Chaplain Donald Alexander administered the eulogy which attested to the brown shoes' proud story. Somewhat incongruously he also alluded to the debauched life symbolic of brown shoes.

Capt. Frick heaved the wreath off the fantail. One observer claimed he saw the tongues of the shoes sticking out in a final gesture of defiance. A single brown shoe was flown at half-mast for the remainder of the day. It was to be bronzed and presented to the Naval Aviation Museum.

Captain Roy C. Janiec, Commanding Officer of the Naval Air Reserve Unit at Point Mugu, was another mourner. A distant relative of Smilin' Jack, he girded himself in vintage flight gear featuring brown boots which had climbed the wing of many a Sopwith *Camel*. He presented a plaque, commemorating the demise of the russet-colored footwear, to the NAS C.O., Captain LeRoy M. Kraft. Captain Kraft immediately directed that the plaque be displayed in an ostentatious place in the Officers Club.

For a hint of hope, see page 40.

Me and My FLIGHT JACKET

By Lt. Richard P. Shipman

Caught! Apprehended by the law with the goods on me. Forced to appear before the authorities and answer for my transgressions. I had tried to wear my flight jacket through the gate at NAS once too often.

Deep down, I knew the day would eventually come. Ever since I joined the Navy, my beautiful brown, warm, furry flight jacket and I have been in a continuous struggle to remain coupled. For years I have anguished over the regulations – those that put wearing your flight jacket in other-than-flight-line-spaces in a category slightly less criminal than showing up for an official call in your birthday suit. I suppose it was this frustration that eventually led me from the straight and narrow. To determine where I went wrong, I have to go back to where it all began.

I remember the day well. Bursting with pride, I marched down to flight-gear issue at NAS Pensacola to draw the coveted symbol of Naval Air — "Jacket, flying, man's intermediate, type G-1," but known to me as *Identity*. My leather flight jacket was to me what it was to John Wayne, Robert Taylor, and all the other famous flyers. Over the years these men were seldom seen, in even casual circumstances, without their jackets. Yes, I thought, I'm on my way to becoming a real aviator.

I soon journeyed to Saufley to begin my pursuit of Golden Wings. I could hardly wait for the cold weather to set in. At that young age, I was oblivious to the workings of the real Navy. I had no stockpile of illegally procured — excuse me, cumshawed — items to barter with the riggers. Therefore, I took my precious symbol to the local tailor. He affixed the distinctive patches: one American flag, one Naval Aviation patch, one VT-1 emblem and, of course, the leather name tag purchased from the little lady in the trailer just off base.

Thus emblazoned, my jacket and I made our initial trip together. It was the first day of autumn. That the temperature was in the 70s mattered not. I proceeded to the club to imbibe a spirit or two and to celebrate my entry into that exclusive society of flight jacket wearers.

Imagine my chagrin then, when upon entering, I was abruptly and rudely confronted by a SerGrad instructor. "Ensign, is that your flight jacket?" he questioned loudly.

"Yes, sir!" I replied proudly.

"Well, let me tell you something, pal. That flight jacket should be worn on the flight line only. If I catch you wearing it around here again, I'm going to confiscate it."

I could scarcely believe this threat. Was my beautiful flight jacket destined for confinement to the flight line? How would the dolls on base identify me as a pilot rather than an ordinary person? Sigh. . . . Loyal, obedient and faithful, I retreated to my room and sadly shed my symbol.

Being basically optimistic, I refused to be discouraged. I determined then and there that a happy future in Naval Aviation and jacket wearing were still my destiny.

I packed the jacket tenderly and soon set forth for basic jet training. I quivered with the anticipation of wearing my jacket in the airplane. Certainly no one could question my symbol in the cockpit. The cold winter morning finally arrived for my first jet hop. The jacket was tucked under my arm as I marched to the flight line. I donned the complex paraphernalia required of jet aviators. I struggled into my G suit and stepped into my torso harness, planning to slip it over my symbol. Horrors! The harness wouldn't fit over my jacket! Nor would the jacket go over the harness. Had I known the jacket was incompatible with modern-day jets, I might never have signed up for the program.

With little attempt to hide my disappointment, I swapped my symbol for a set of long johns and continued through training. Flight-line-only regs pertained at Meridian, too, so my jacket was relegated to my room. But I wore it when I wrote letters home.

As the date of my designation approached, I grew optimistic again. Surely attitudes would change when I joined the fleet. Cold weather and my orders to an embarked squadron arrived simultaneously. I proceeded to my new home in the carrier.

Here, at last, I would be able to wear my warm, furry jacket without molestation. I leapt from the COD and donned my symbol. I then proceeded to the wardroom for check in and room assignment. There I encountered a senior naval officer.

"Hey, airedale," he growled. "Don't you flyboys know flight gear isn't allowed in the wardroom?"

I squelched several rejoinders and stared at him in bafflement.

"Well now you know."

I shrugged off this encounter. But the fact remained that I couldn't wear my jacket between the ready room and the wardroom. Since it was so highly pilferable, I didn't want to leave it hanging in the ready room. I figured

that, once again, I'd better put it away.

It remained there until I completed my tour and received orders to a training command squadron. Here, I thought, I would have another chance. Now abundantly adorned with I've-been-there patches, my jacket would be put to good use. It would assuredly identify me as a fleet flyer, certainly not a plowback. Perhaps I was naive. Was it possible that anything would be different at this next location?

My first indication that nothing would be different was the cold-weather lecture given by the flight surgeon in anticipation of winter. Instead of the usual "wear your long johns" and "pack a snow shovel in your survival vest," he opened his remarks by promulgating the base commander's edict against wearing flight jackets anywhere but on the flight line. Furthermore, the POD, posted on the rostrum where the flight surgeon spoke, glossed over such things as marijuana abuse and impending pay scale changes so that major attention could be given to the penalties of wearing articles of flight clothing — flight jackets specifically — through the gate.

By now I was a salty, fleet-experienced lieutenant. I was not about to shiver my way to work while my warm, beautiful jacket lay next to me in the car. I was determined to beat the system.

My next ploy was the "half-masted-jacket technique." Basically, this required that I pull the jacket off my shoulders to a point below the window level of the car. This afforded the appearance of legality while helping me keep warm. The method was easy to implement and it was even easier to return the jacket to its natural state after passing through the gate.

There was a drawback. Since the jacket was pulled down around the rib level, it severely restricted arm movement. Although I could maneuver the auto, my ability to salute was restricted. When the gate guard snapped off a salute which was returned rather half-heartedly by a set of fingers that barely reached chin level, the groundwork of suspicion was set. I was forced to develop another technique.

Next I removed the jacket just before I arrived at the gate. I was completely legal going through the air station portals. Beyond that, I was relatively comfortable since the car was usually heated up by the time I disrobed.

Unfortunately, this method led to automobile control loss while removing the jacket. Being an experienced *Skyhawk* pilot, I was used to cramped quarters. If I could remove an H-1/H-2 chart from my nav bag lodged in the lower right-side console of the aircraft, I could certainly negotiate getting my jacket off in a car. Ultimately I became a victim of complacency, as Grampaw Pettibone might say.

One cold day, my car struck a chuck hole at the precise moment I was divesting myself of the symbol. The vehicle careened into a nearby ditch. The jacket did keep me warm until I was hauled from the ditch by the tow truck.

Since I was the squadron safety officer, I realized that unplanned departure from a prepared surface was not conducive to the image of a safe driver. I therefore discontinued ploy number two.

Resourcefulness, cunning and initiative are traits inherent in Naval Aviators. After only one or two chilly days driving to work I therefore arrived at technique three.

I simply donned a regulation rubber raincoat and put it over my flight jacket. Not only was my flight jacket undetectable by the gate guard, it afforded an extra layer of protection! I did feel a bit foolish flapping along in a raincoat on a clear sunny day in South Texas. But when questioned I responded with a positive voice, "I'm ready for any change in the weather."

Sigh. The axiom "crime never pays," was yet to affect me. As I was crossing the parking lot to the hangar, a staff officer stopped me. "Hey, buddy, you in the Navy?" he asked.

I glanced around and saw a fire hydrant and some rolling tumbleweed and concluded that the inquiry was directed at me.

"Yes, sir," I replied. "I'm on my way to fly a hop right this minute."

"Well, I just wanted to let you know that you're out of uniform. You don't have any rank insignia on your raincoat."

Lo and behold, I had worn my raincoat with civilian clothes the last time it had rained and had forgotten to replace the shoulder devices.

"Besides, why are you wearing a raincoat on a sunny day?" he continued.

I envisioned the penalty for unauthorized flight jacket wear — hack, grounding, orders to the wing staff, or all of the above. I had to think quickly.

"Being a naval officer, I cannot tell a lie, sir," I replied. "I'm wearing this raincoat to conceal a round-neck T-shirt."

He smirked and said, "Well, don't let me catch you again. If I see you wear that raincoat any time it isn't pouring cats and dogs, I'll take appropriate action!"

I was out of ideas. Fortunately, South Texas winters are not very long. The following autumn I received orders north, where I prepared to do battle again.

It was bitter cold the day I drove to work to check aboard my new command. I was reluctant to wear my flight jacket, what with the importance of first impressions and all. But the frost on my car and my numb nose convinced me that I must. Besides, being new, I figured everyone was allowed a brief grace period and a warning or two before any drastic punishment was imposed.

I learned later that a purge was on, flight jackets were the target. Consequently, I was abruptly motioned to the side by the gate guard as I entered the base. I was told to remove my jacket. Tears welled in my eyes as I pulled my arms from the symbol. I handed it over and wondered if the guard wanted my wings, too.

That night I drove home with heavy heart, stripped of my *identity*. I was not unlike the Foreign Legionnaire, stripped of his epaulets before the assembled platoon. I pulled into a gas station and couldn't help but notice a long-haired motorcyclist pull up, sporting one of the thousands of official Navy flight jackets seen every day on civilians. I rolled down my window to pay for the gas and heard a conversation between the gas pump operator and the easy rider.

"That's a good looking jacket you got there. I bet it's really warm."

"Yeah, it's great. Really comfortable. The chicks love it. I wear it all the time."

Anybody know where you sign up for the Hell's Angels?

PEOPLE PLANES AND PLACES

Almost all marriages have their ups and downs, but John and Jean Rummel plan to have many of theirs in Navy airplanes. The reason? Ltjg. John Rummel, an NFO with VP-48 based at NAS Moffett Field, married Ens. Jean McCaig, one of Navy's woman pilots. Just goes to prove that aviators are attracted to NFOs.

Crew Four of VP-6 sighted two stranded fishermen late Tuesday afternoon, July 27, 26 miles southwest of Barbers Point. The men, Lt. Bruce R. Kemp, USN, and Richard Caldwell, had been adrift since early Sunday morning in a 20-foot boat. Crew Four and its sister crew, Eleven, had been searching the area for nine hours. After the rescue, crew member PO3 Mark Tozer was commended for spotting the small white craft from 1,000 feet in a sea of whitecaps. About 17,000 square miles of sea had been scanned by radar and visual means.

Two new naval reserve force squadrons have been established at NAS Norfolk. They are VR-56, commanded by Capt. Raymond Traub, and HAL-4, commanded by Cdr. T. G. Sholl. This brings Norfolk's total number of reserve squadrons to four. The other two are VAW-78 and VC-12.

The last fully operational *Essex*-class carrier, *Oriskany*, was decommissioned and placed in mothballs September 30. *Oriskany* has been in reserve since April 15 preparing for decommissioning. She will be towed to Bremerton, Wash., in early October.

The *Bulldogs* of VMA-223 have begun a one-year deployment to Iwakuni, Japan. The A-4M squadron replaces VMA-211 and the A-4E. The *Bulldogs* were organized in 1942 as a fighter squadron and flew against the Japanese over Guadalcanal. The squadron was also deployed in Korea and Vietnam.

For the past 10 months, the station operations and engineering squadron at Cherry Point has had the distinction of being the only Marine Corps unit to fly the C-9B *Skytrain II*. The C-9, a dual purpose passenger and cargo plane, is a modified commercial DC-9 which has a 93-foot wingspan. It is 119 feet long and is powered by two Pratt & Whitney JT8D-9 engines. Thus far, the squadron's two C-9s have been flown 2,134.6 flight hours, transporting 33,553 passengers and more than one million pounds of baggage and 457,175 pounds of cargo.

VP-62's six-week stay in Bermuda last summer led off a five-month reserve VP commitment in support of Commander Task Group 84.3 and as part of the total force integration of reserve and fleet ASW assets. The *Broadarrows* will be followed by aircrews from VPs 64, 66 and 68, with mid-Atlantic operations ending in late November.

On July 21, while *Kennedy* was steaming toward Mayport, Fla., from the Puerto Rican training area, a VF-14 *Tomcat*, using close control from a VAW-125 E-2C, intercepted a Russian *Bear* at 35,000 feet, 60 miles from *JFK*. After 45 minutes of joint picture taking and two low passes by the carrier, the *Bear* continued on its routine reconnaissance mission.

As it entered its 10th consecutive accident-free year with 71,000 flight hours, VP-40 was recognized for its excellence in maintenance functions among PacFlt P-3 squadrons by being presented the CNO Maintenance Award for the cycle ending December 1975.

These VF-142 *Tomcats* from *America* were filmed in formation by an NAF Washington-based VFP-206 *Crusader*. Commanded by Cdr. R. K. Maughlin, VFP-206 is one of two light photographic reconnaissance squadrons in the naval reserve.

Only days after reporting aboard *Kennedy* with VA-72, AMHAN Gerald F. Olk was working as a trainee in the squadron's line crew. While diving the duct, he turned up a metal clip from a flashlight which had lodged in the compressor section of an A-7B's TF-30 engine. His alertness saved the engine from probable damage and possibly averted a major accident.

In a bicentennial-flavored ceremony aboard Boston-berthed *Old Ironsides*, AMC Jerry E. Francis was piped over the side of the vintage warship, otherwise known as USS *Constitution*, to close out a 20-year career.

Two HMS *Ark Royal* pilots on a practice bombing run from Norfolk to Tangier Island on Maryland's Eastern Shore made an emergency precautionary landing on June 7 at Webster Field, Patuxent River. It was the first operational jet landing at the field. After an overnight delay, Lt. Dave Owen, RN, and Flt. Lt. Mike Kennedy, RAF, said goodbye to their hosts, the Naval Electronic Systems Test and Evaluation Detachment, and headed back in their *Buccaneer* S.Mk 2D to Norfolk where *Ark Royal* was in port.

The newest member of CVW-3, VS-22, became the first East Coast S-3A *Viking* squadron to complete a deployment when it returned to the States aboard USS *Saratoga* from a seven-month cruise in the Med. The first translant of the S-3A was made by two VS-22 aircraft flying from NAS Cecil Field to the flight deck of *Sara*. During its deployment the squadron flew over 2,500 accident-free hours and earned the Hook 'Em trophy for exceptional ASW performance.

During operations at the Atlantic Fleet Weapons Range, Roosevelt Roads, the *Swordsmen* of VF-32 participated in the firing of all missiles carried by the F-14A *Tomcat*. A total of two *Phoenix* missiles, four *Sparrows* and seven *Sidewinders* were expended.

Awards and records. For a combined total of 1,500 *Midway* traps, the following VA-93 pilots became centurions within a 60-day period: Cdr. Bill Dougherty, Raven One (200), Cdr. Wally Wright, Lieutenant Commanders Bill Counts and Les Kappel (300), Lt. Bill Roberson (200), and Lieutenants junior grade Bob Thomas (200), Tony MacDonald, Mike Brady, Bill Rodway and John Cotton.

Ranger cat crew No. 3 had the honor of firing the 200,000th cat shot from the 19-year-old carrier.

VF-2 recently marked three years of accident-free flying which included two

training cycles and a forward deployment in the F-14A. The *Bounty Hunters* logged over 7,300 flight hours, over 1,400 day traps and 600 night traps aboard *Enterprise*.

VA-75's C.O. and flight crews received centurion certificates for 4,400 landings aboard *Saratoga*. Single centurions were Cdr. Dave Osburn, Lieutenant Commanders Mike Concannon and Chuck Wolfram, Lieutenants Randy Bazemore, Bill Fallon, Jim Clark and Paul Hederstrom, Lieutenants junior grade Tom Kelly, Derek Holmquist, Burt Miller, John Pfrimmer, Mike Arnett, Mike Barrett, Mark Banus and Chuck Lee. Double centurions were Cdr. Mel Seidel, C.O., Lieutenant Commanders Mike Luecke and Bruce Kastel, Lieutenants Andy Dusenberry, Jim Wilson, "Benny" Suggs, Walt Hunter, Lee VanDeman, Don Tippett and Herb Phillips, and Ltjg. Lou Pengue. Triple centurion LCdr. L. S. Mullin and quadruple centurion LCdr. Bruce Cook completed the list.

On July 6, *Coral Sea* was presented the Meritorious Unit Commendation for her role during the Mayaguez crisis in 1975. On July 9, the landing of an F-8 *Crusader* by Lt. John Peck marked the carrier's 260,000th arrested landing.

America's 124,000th trap was made when LCdr. G. G. Fisher, Lt. Rick Hartman and Ltjg. T. C. Gardner brought a *Rook* EA-6B aboard. LCdr. James C. Kennedy, VAQ-137, logged his 500th arrested landing.

The annual A-6 *Intruder* derby at NAS Whidbey Island was won by VA-52. Individual honors went to VA-52's LCdr. Pete Rice and Lt. Bud Langston; to Lt. Paul Kenney and Ltjg. Gary Floor, VA-165; and to VA-128's Lieutenants Dan Markley and Carl Roed. Cdr. Lyle Bull, C.O. of VA-196, received the Senator Henry M. Jackson Award for leadership. Lt. Jack Ekl was named outstanding fleet replacement pilot for the past fiscal year and Ltjg. George Shaffer the outstanding fleet replacement bombardier-navigator.

Changes of command:

ComSixthFlt, *America*, Gaeta, Italy: VAdm. H. D. Train II relieved VAdm. F. C. Turner.

LAtWing, PacFlt: RAdm. R. P. McKenzie relieved RAdm. W. H. Harris.

2nd MAW, Cherry Point: Maj. Gen. R. E. Carey relieved Maj. Gen. R. H. Spanjer.

CVW-9, Lemoore: Cdr. A. A. Less relieved Cdr. H. F. Lynch.

VT-29, Corpus Christi: Cdr. L. D. Persels relieved Cdr. Antonio Apap.

VA-75, *Saratoga*: Cdr. D. L. Osburn relieved Cdr. M. L. Seidel.

VS-37, San Diego: Cdr. B. D. Nordwall relieved Cdr. B. C. Marshall.

VAW-115, *Midway*: LCdr. D. R. Layton relieved Cdr. C. E. Ward.

HMH-462, Futema: Lt. Col. W. J. Smith relieved Lt. Col. Misha Rader.

HT-18, Whiting Field: Cdr. J. E. Thompson, Jr., relieved Cdr. M. R. Butts.

ComResTacSupWing, New Orleans: Capt. P. P. Schwarz relieved Capt. J. R. Denning.

VAW-125, *Kennedy*: Cdr. H. R. Dombrowski relieved Cdr. R. C. Gentz.

VAW-78, Norfolk: Cdr. John Summers relieved Cdr. Ralph Mehringer.

SERE

By Lieutenants
S. P. Brooks and J. O. House

As the lecturer concluded his SERE — survival, evasion, resistance, escape — talk on mountainous terrain, a pilot was heard remarking, "Those spooks are always giving SERE lectures. Why do we need SERE training anyway? All our flying is done in CONUS."

Another pilot answered, "Hey, pal, you ever go trout fishing in Georgia or North Carolina? That's some pretty remote and rugged terrain and there's a lot more in the USA, too."

What would happen if a pilot were forced to eject over the mountains of northern Georgia?

To find the answer, the VA-205 *Green Falcons*, NAS Atlanta, chose two pilots to act as survivors in the Blue Ridge Mountains.

The exercise was to be conducted during a reserve drill weekend. The objective was to determine if aviators are prepared for CONUS ejections, and also how much of the Vietnam experience they remember.

After successful ejection, the scenario had the pilots in mountainous terrain, with enemy troops in the area. Each survivor had the contents of an ejection-seat pan, a survival vest, a parachute and normal flight clothing. On the ground, a small group of aggressors pursued them. The *Green Falcon* A-7Bs were the aircraft while HML-765 helicopters would provide pickup.

The survivors' precise location was pinpointed with the use of signal mirrors. While the A-7s were locating the two men, aggressor forces simulated AAA fire using pencil flares. The A-7s suppressed the AAA with low-angle bombing assisted by the survivors who acted as forward air controllers.

The survivors independently made their way to a hilltop, a suitable helicopter landing zone, under constant harassment by aggressor rifle shots. This added realism to the pickup, and made it more difficult. The aggressors also transmitted conflicting statements by radio to the rescap aircraft.

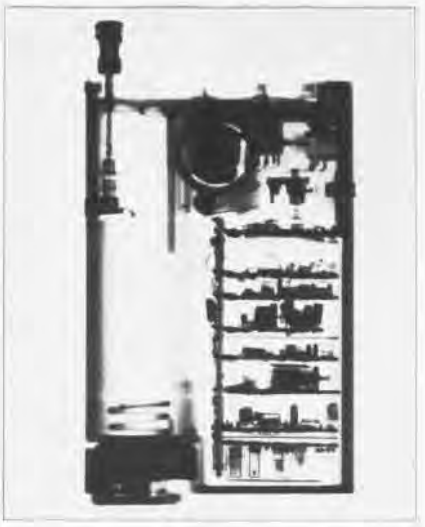
After positive identification, the on-scene commander directed the rescue helicopter to the pickup point where the survivors had ignited smoke flares to pinpoint their location and to provide wind direction. Both downed aviators were successfully rescued during the morning attempt, but one pilot was "captured" prior to pickup during the afternoon exercise.

Following this phase of the exercise, the pilots spent a night in the woods. They constructed a shelter using their parachutes, fished and foraged for food until it was too dark to see. They also ate the food available from their seat pans and survival vests. Both men reported spending a comfortable night despite a 30 degree temperature. Their flight suits, insulated underwear and flight jackets were adequate.

Overall, the exercise was deemed useful for safety and operational readiness training. VA-205 plans to conduct similar exercises on a continuing basis. The main advantage derived was the exposure of pilots to a forest-like environment which many have not been exposed to since basic survival school.

Mayday! Mayday!

By E. L. Johnson and
P. J. Bartley, Jr.



Two F-8 *Crusader* pilots have just completed a high-speed, low-level bombing attack against a military target in North Slobovia. Flying in close formation, they pull their aircraft up through a thin layer of gray clouds; ground antiaircraft fire explodes all around them. Suddenly, one of the F-8s takes a hit. . . .

Just off the coast, the guided missile frigate USS *Lookout* steams in support of U.S. air operations. A few miles away, several carrier-based A-4 *Skyhawks* are returning from a bombing strike.

A call from the hit pilot's wingman crackles through radio receivers aboard *Lookout:* "Mayday! Mayday! Mayday! This is White Cloud Two. My playmate has been hit and has ejected; he has a good chute. I'm bearing zero one zero, six zero miles from you [*Lookout*]."

From *Lookout:* "White Cloud Two, this is Blue Fish. I hold your position. Recommend you remain in the area and try to keep your playmate in sight.

Left, AN/PRC-90 radios with half-wave and quarter-wave type antennas. Above, X-ray view of AN/PRC-96 revealing circuit boards and other components.

I'll have a rescue helicopter en route immediately."

A four-man helicopter SAR team is launched from *Lookout*. The A-4s' assistance is requested because of enemy ground movement in the area. White Cloud Two watches as his playmate's chute disappears through the dense green foliage below.

As the aircraft circle over the area, a signal is received from the downed F-8:

"White Cloud Two, this is White Cloud One. Do you read me?"

Silence. . . .

"White Cloud Two, this is White Cloud One. Do you read me? I can't talk much longer. . . . They're getting closer."

Silence. . . .

"Hey, Rick, if you read me. . . ."

While this is a fictitious case used to illustrate a point, it was very real to many pilots in Southeast Asia who found themselves downed in enemy territory with an inoperative survival radio. Regardless of the law of averages, if it happens once in combat, it's once too often.

Although radio communication has been available in aircraft since the dangling wire days of 1911, it was during WW II and Korea that the lack of communication with downed pilots became obvious. What happened to a pilot who had to abandon his plane because of combat damage or nonhostile systems failure . . . who survived the egress . . . who landed successfully in water or on land . . . and who, regardless of injuries received, had to direct rescue forces to his loca-

tion? No radio provisions had been made for such an emergency.

Once a pilot left his plane, his communications were cut off except for a signal mirror, whistle, pistol, rescue light, dye marker and flares. All the things that tell friend and foe alike his position. Rescue efforts were difficult and quite often unsuccessful. The pilot had to survive on his own, sometimes deep within hostile territory.

The aircrew survival transceiver problem did not go unnoticed. From the mid-1950s through the early 1960s, before the conflict in Southeast Asia erupted, experiments were being conducted with prototype survival transceivers. As a result of these experiments, the AN/PRC-49 was issued to the fleet in '60 and '61. The National Aeronautics and Space Administration was also developing its version of a survival transceiver to use with future *Apollo* moonshots.

Transceiver Requirements

1. Simple to operate: an injured pilot should have no difficulty using it; a pilot evading hostile troops should not be impeded in his movements or have his location revealed during operation of the transceiver.

2. Capable of performing under extreme environmental conditions: each transceiver case must be secure and watertight.

3. Small and light: space and weight are critical.

4. Have sufficient power output so that they can be detected by airborne direction-finding equipment; radio batteries must have adequate operating life to permit repeated transmissions and the best possible antenna should be used.

With the outbreak of hostilities in Southeast Asia, several programs were established to design transceivers. The development of new survival transceivers from 1966 to the present has been one of the most important single items of survival equipment.

Survival transceivers were phased in and phased out. The AN/PRC-49 series, which had been introduced in the early 1960s, the RT-10/60 (mid-Sixties), and the AN/PRC-63 and the AN/PRC-90 (1968), were used as aircrew survival transceivers in Southeast Asia. The AN/URT-33, also introduced in the mid-Sixties, was used specifically as a radio beacon. It was designed to activate automatically when an aircrewman ejected. Today only the AN/PRC-90 and the AN/URT-33 are used by Navy pilots.

These transceivers, however, did not perform as well as expected in Vietnam for a number of reasons. A general study of recovery problems of Navy combat pilots was initiated by the Office of Naval Research. Results of this study were published in June 1973 as Task No. NR 105-667, after questioning 104 aircrewmen who had been downed and successfully recovered.

Significant problems regarding survival transceivers, beacons and communications in general were revealed; the radio was confirmed as the primary piece of rescue signaling equipment used. In cases where the radio was damaged or thought to be inoperative, rescue times were increased and sometimes severely complicated.

It was against this background that the Quality Engineering Center (QEC), of the Naval Weapons Station, Yorktown, Va., was tasked by Naval Air Systems Command (NavAir 414C) to investigate survival transceiver problems in FY-75. Initially, the Center obtained baseline data on the 10,000 new production AN/PRC-90s that were being delivered to the Navy by a new company. A representative sample of these was selected and quality and reliability evaluations were performed.

These tests revealed problems in receiving and transmitting. Speaker and microphone pressure sensitivity and air leak problems were also detected.

The new AN/PRC-90s have the same operating characteristics as the older transceivers. They are factory-set to transmit on the 243-Mhz military distress frequency and have an emergency-beacon swept-tone signal and a modulated continuous-wave (MCW) signal. Additionally, the AN/PRC-90s provide two-way voice communications on specific crystal-controlled frequencies of 243 Mhz and 282.8 Mhz. The transceivers are equipped with quarter-wave antennas and mercury cell batteries, BA-15681Us.

After evaluation, the Center determined, with a 95 percent confidence level, that at least 9 percent but no more than 27 percent of the transceivers represented by this sample would not function in at least one mode of operation, i.e., either not receiving or transmitting on 282.8 Mhz or 243 Mhz. If this random sample was indicative of the 10,000 radios procured by the Navy, then at least 900 but no more than 2,700 would not be operationally effective.

Based on the number of unsatisfactory material condition reports generated by users of the AN/PRC-90 and the failures-per-unit-tested, it was estimated that the upper limit of 27 percent more accurately reflected the actual stockpile condition.

During the evaluation it was learned that between 75 and 93 percent of the sample stockpile did not meet one or more specific requirements set by the military. Failings varied from radio to radio. In summary, transceivers manufactured by the new company had been built with marginally reliable components, without adequate quality control procedures. QEC recommended and NavAir concurred that a complete review of the manufacturer's quality control procedures and manufacturing techniques be undertaken and a 100 percent screening of the Navy stockpile of AN/PRC-90s, manufactured under the new contract, be initiated.

The Center's subsequent evaluations revealed two pressure-related problems that were associated with altitude: speaker and microphone pressure sensitivity, and air leaks around the backplate. The first pressure-related problem occurred in all transceivers because of the type of seal that was used to weatherproof the speaker and microphone. The seal was constructed of a non-porous material that did not permit an equalization of internal/external pressures during a change in atmospheric pressure due to altitude or weather conditions.

This non-porous seal became taut whenever the outside pressure differed from the atmospheric pressure on the day it was sealed at the manufacturer's plant. This reduced the sound pressure transfer across the seal and resulted in almost a total loss of receiver audio and extremely low modulation of the transmitter. The older AN/PRC-90s, manufactured by another company, were not affected. These transceivers had been weatherproofed with a porous seal which permitted air transfer, but not water. However, the non-porous seal was being used as a replacement part for repairing those older transceivers. As a result, the same problems occurred.

The second pressure-related problem, air leaks around the backplate, was detected in 25 percent of the

AN/PRC-90s. These leaks allowed the pressure inside the transceiver case to equalize at the low pressure end of a depressurize-repressurize cycle. When the units were repressurized, the force, exerted on the backplate by the internal/external pressure differential, sealed the case. This resulted in the internal pressure of the case being much lower than the outside pressure, and the resulting pressure differential caused the push-to-talk button and the MCW button to depress.

The transceivers were inoperative until the pressure was, once again, equalized. Usually the pressure differential occurred at an altitude of 11,600 feet for the MCW button and at 27,000 feet for the push-to-talk button. A retrofit, consisting of a modified backplate with an orifice air vent, was proposed. Also proposed was the screening of existing stock transceivers.

QEC continued to evaluate additional samples of the new transceivers. After the two recommendations had been implemented by NavAir, the quality of the transceivers improved. The manufacturer's quality control procedures and manufacturing techniques had been reviewed and changed. This by no means provides the pilot with a perfect radio. It does, however, provide a considerable improvement over the condition of the transceivers that were first evaluated by QEC Yorktown.

The Center was later requested to investigate another problem with the AN/PRC-90. An SH-3A helicopter from HS-10 had been lost at sea during a routine training flight. There were three AN/PRC-90s aboard the SH-3A which the aircrewmen reported were either non-operative or extremely weak.

Yorktown obtained these three transceivers. They had not received the retrofit and had quarter-wave antennas. An extensive electrical performance evaluation was conducted. Results indicated the three transceivers showed only a slight deviation in mean electrical parameter readings from an earlier evaluation of a representative stockpile sample. Batteries for each were providing approximately 12 volts under loaded conditions. QEC considered electrical performance to be typical and reflective of the stockpile of new AN/PRC-90s.

The three transceivers were not unusual. One example of the typical operational performance was power output. The greatest variation in power output was less than one decibel lower than the mean power level of all other AN/PRC-90s previously evaluated. (peak envelope power level 28.02 dbm, 634 mw). Based on a thorough evaluation, QEC determined that when the aircrewmen went down their transceivers were operating as effectively and as efficiently as possible.

The Center investigated two causes for this problem affecting the entire stockpile of AN/PRC-90s: the antennas and the batteries. Some transceivers had already been fitted with half-wave antennas. The effective range of the AN/PRC-90, therefore, would be extended by the half-wave antenna: 3 db gain over the quarter-wave. (Effective radiated power would be doubled.) However, just installing another antenna was not sufficient.

Each of the new AN/PRC-90s fitted with the half-wave antenna would have to be evaluated to determine if the antenna and the output stage were matched, i.e., to ensure that the impedance of the LC-type matching network of the AN/PRC-90 was, in fact, properly matched to the impedance of the half-wave antenna and the output stage of the transceiver. If there was a mismatch, then the operational performance of the AN/PRC-90 would be drastically reduced.

The second cause of an "extremely weak" transceiver is the battery. How much power output? How long will the batteries be capable of transmitting? The AN/PRC-90 uses ten 1.35-volt mercury cells, connected in series, to form a type BA-1568/U battery. This produces a terminal voltage of 13.5 volts. The voltage marked on the battery case is 14 volts; however, this cannot be achieved. One-half volt can be significant.

When the AN/PRC-90 transmits in any of its three modes, loaded, the voltage drops to approximately 12 volts, due to internal impedance of the battery. This occurred with the SH-3A's transceivers. Although specifications state it will effectively operate between 10 and 14 volts, tests show that with only 12 volts present and the radio loaded, the transmitted output power is reduced by 40 percent, when compared to having a full 14 volts available. Lack of proper voltage, therefore, could reduce the possibility of a rescue force being able to detect the downed pilot on search-aircraft direction-finding equipment, such as the AN/ARA-50. The BA-1568/U provides approximately 16 hours of operation. The power capacity of a mercury cell is much less than some of the newer type cells.

These two conditions, reduced range and on-air time, would give the downed pilot the impression that his survival transceiver was "non-operative." Regardless, the end result is the same. The pilot is not rescued; he has to spend more time exposed to the elements and possibly evading hostile forces. It should be further emphasized that if only 12 volts were present, the continuous wave power output would be 60 percent of the power output if the full 14 volts were available. This is valid regardless of the wavelength of the antenna.

The Center is presently investigating different types of batteries that will provide at least 16 hours of operation at a loaded terminal voltage of 14 volts. To date, there have been no conclusive results.

In order to perform more engineering analyses on survival transceivers, the Center has designed and developed an automated test system for survival transceivers, the TE-3131. Completely computer controlled and programmed, this system will provide more technical information on the actual performance of a survival transceiver. It is capable of testing any survival transceiver/beacon, regardless of design.

As presently designed, the TE-3131 is subdivided into four major configurations: tranceiver test, battery test, antenna range test and data evaluation systems. In the transceiver test system, all of the switching mechanisms, electronic stimuli and measurement capabilities that are required to complete a technical profile on the performance of a transceiver are present. When a transceiver is hooked up to this system, it is, effectively, "on-the-air" in a realistic environment.

The four systems of the TE-3131, taken collectively, are capable of gathering a complete technical profile on any survival transceiver. The data, along with supportive information from the fleet and repair facilities, is used to predict the quality and reliability of Navy stockpiles of survival transceivers. The four systems will be able to answer some of the technical concerns raised in this article. Battery capabilities and antennas are two of the more important.

While these tests have not resulted in the instant flick-of-the-wrist communications of TV's *Star Trek*, they are a giant step toward a 100 percent effective survival transceiver.

ENLISTED
RATING
SERIES

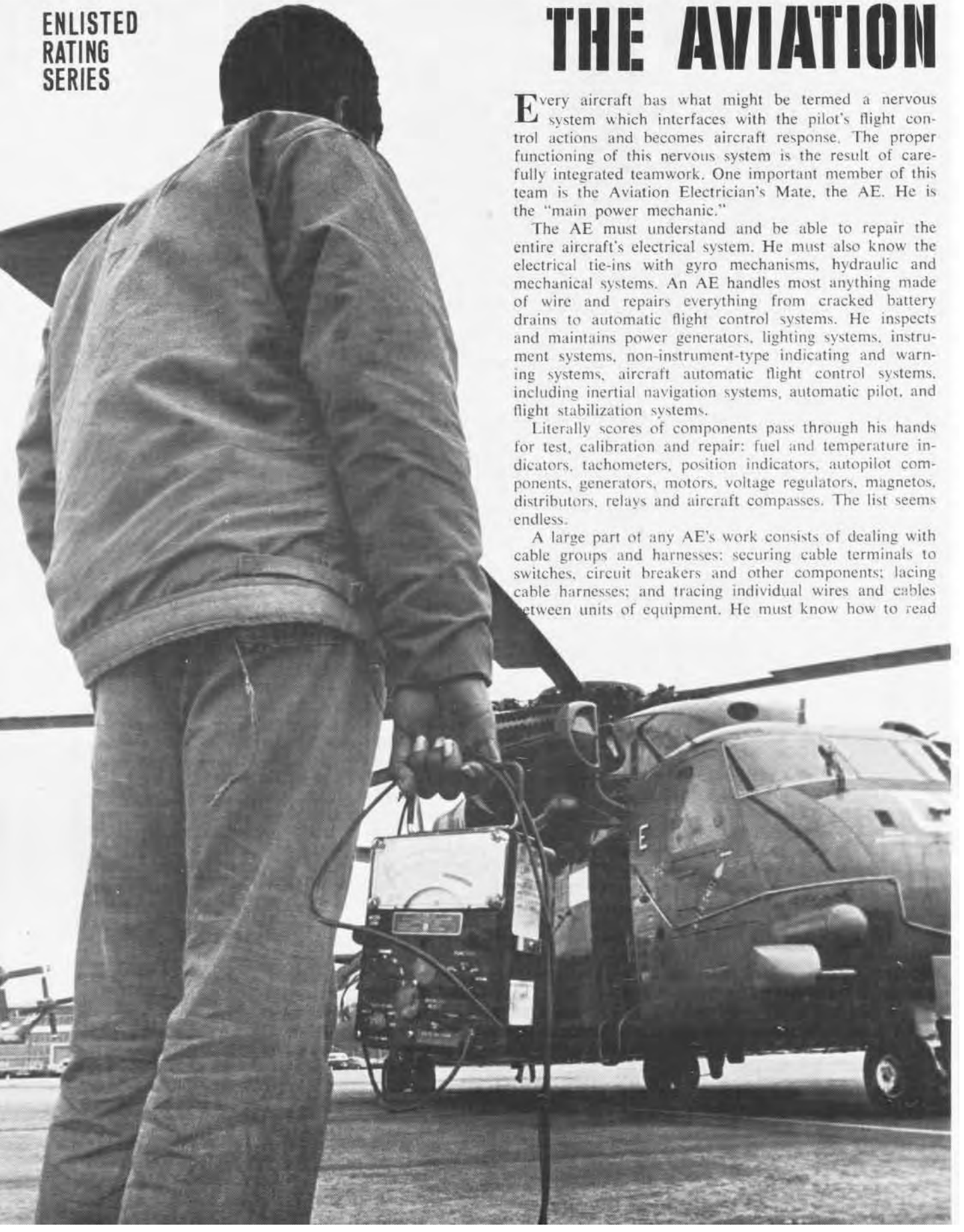
THE AVIATION

Every aircraft has what might be termed a nervous system which interfaces with the pilot's flight control actions and becomes aircraft response. The proper functioning of this nervous system is the result of carefully integrated teamwork. One important member of this team is the Aviation Electrician's Mate, the AE. He is the "main power mechanic."

The AE must understand and be able to repair the entire aircraft's electrical system. He must also know the electrical tie-ins with gyro mechanisms, hydraulic and mechanical systems. An AE handles most anything made of wire and repairs everything from cracked battery drains to automatic flight control systems. He inspects and maintains power generators, lighting systems, instrument systems, non-instrument-type indicating and warning systems, aircraft automatic flight control systems, including inertial navigation systems, automatic pilot, and flight stabilization systems.

Literally scores of components pass through his hands for test, calibration and repair: fuel and temperature indicators, tachometers, position indicators, autopilot components, generators, motors, voltage regulators, magnetos, distributors, relays and aircraft compasses. The list seems endless.

A large part of any AE's work consists of dealing with cable groups and harnesses: securing cable terminals to switches, circuit breakers and other components; lacing cable harnesses; and tracing individual wires and cables between units of equipment. He must know how to read



ELECTRICIAN'S MATE

Photos by PH3 Flynn Adams

wiring diagrams and blueprints.

AEs don't always work on airplanes. On most aircraft carriers they perform more motor rewind work for other ships than they do for their own. Except for tenders, smaller ships just don't have the facilities.

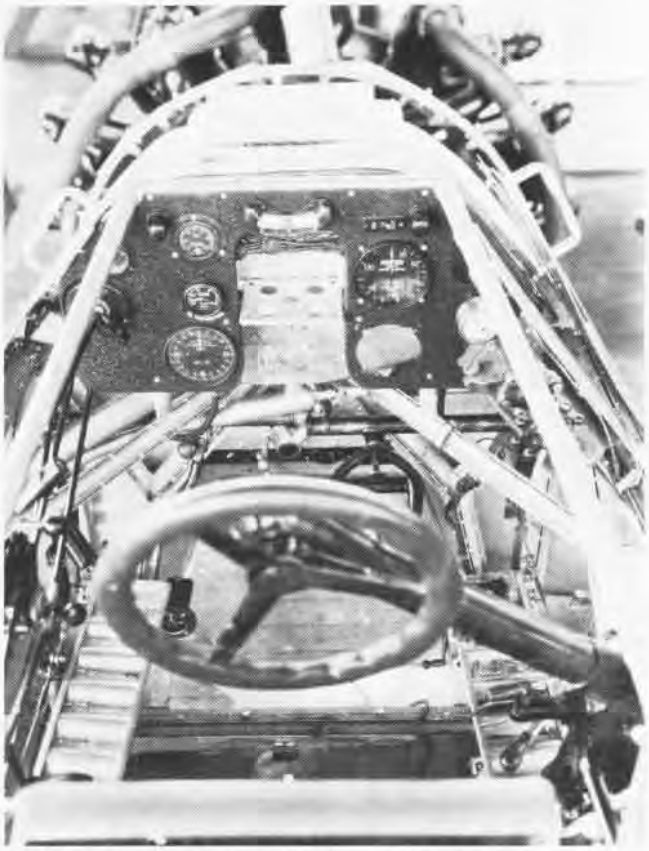
An AE's specific tasks are determined by his duty station. He can be based at a naval air station, aboard an aircraft carrier, in an aircraft squadron or as an instructor.

It was not until 1921 that enlisted aviation specialists received recognition and the first strictly aviation ratings were established. The Aviation Electrician's Mate, AEM, was established on September 4, 1942. The abbreviation was shortened to AE in 1948. Today, the AE rating is a general rating at pay grades E-4 through E-8. At E-9, the rating changes and becomes Master Chief Avionics Technician, AVCM. This also occurs for the AXCS, AQCS and ATCS pay grades.

The skills are demanding. In addition to electrical school, the Navy trains its AEs in avionics fundamentals school. Classroom and on-the-job instruction equips students to work on all parts of aircraft and furnishes them with a broad knowledge in many related areas.

Currently, there are over 7,700 AE billets — ashore and afloat — with only 89.7 percent of these filled.

When an aircraft breaks down, chances are it's a nervous breakdown. Every component must be checked: every switch, every circuit, every connection. It's all part of the teamwork that keeps Navy aircraft flying successfully. The AE is an important part of that team.



A 1932 photograph of a T4M-1 cockpit reflects the simple instrumentation of an earlier flying era. AE2 Jeff Anderson trims the automatic flight control system of an A-6 Intruder. Much of an AE's time is spent troubleshooting.

AE3 Robert Barrett inspects the fire protection wiring of a C-1A Trader. An AE must know the entire electrical system.

touch and go

Langley Plank Owner

The early days of carrier aviation were recalled recently by *Langley* plank owner, George Campbell. The father of Cdr. Michael Campbell, executive officer of NATTC Lakehurst, reminisced about his fledgling days in 1921 when he joined *Langley* (CV-1) before she was commissioned as an aircraft carrier. "She had been a fleet collier named *Jupiter* before they converted her.

"My rate was aviation instrument mechanic. Not a hard job in those days," he recalled. "Mainly, I repaired and calibrated the tachometer, altimeter, oil and water temperature gauges, oil pressure gauge, compass, air speed indicator and bank turn indicator (which was just a gyroscope). There were supposed to be clocks — nice clocks — mounted in the dash, too, but they usually disappeared in short order.

"If you think about it, we really didn't know anything at all in those days," he observed. "For the first year we never landed our airplanes when the ship was moving. All landings were made with *Langley* at anchor. And we didn't use the catapult very much. Most of the planes we carried could take off in about half the length of the flight deck. We did use the catapult for the seaplanes. The seaplanes were kept in a cradle device and we attached the cradle to the catapult. The cradle would remain onboard when the seaplane was launched.

"Landings were different too. For one thing, the arresting cables weren't hydraulically operated. Where the cables ran down the side of the ship, there were weights made of slotted boiler plate. When the arresting cable was engaged by the plane's tailhook, the cable's bitter end engaged the first weight, and as more cable payed out, the second, then the third, etc. Each piece was heavier than the next, so that the planes were brought to a stop pretty quickly. In the early days, the tails sometimes broke off. The planes weren't designed for that sort of stress.

"Of course, those weights had to be greased so that they'd slide across each other easily. The seamen had that job — not the most popular one aboard, as you can imagine."

Of great concern to aviation planners then were planes sliding sideways across the deck. "To prevent this," Mr. Campbell recalled, "fore and aft wires were installed about 10 inches apart down the flight deck. The wheels on the planes were attached to a common axle which ran between the landing struts. There were no wheel brakes but there were hooks attached to the axle. When the plane landed, the fore and aft wires would engage those hooks."

One big difference between *Langley* and later-day carriers was the barricade. "It wasn't at all like the nylon webbing barricade used today. Ours was made of channel irons which rose out of the deck about a foot apart. It was used mainly as a windbreak, but I guess it could have been used as a plane stopper."

After leaving *Langley*, "I visited friends on her several times afterwards, and it was evident she was becoming obsolete. *Saratoga* and *Lexington* had been built — *Langley* just couldn't take those heavier and faster planes."

Cobras and Broncos

Several flocks of rare birds are becoming a common sight in the skies over central Georgia.

Although their unusual sound and odd appearance attract attention, the birds have made themselves right at home at the Marine Air Reserve Training Detachment, NAS Atlanta, Ga. The birds are *Broncos* and *Cobras*.

The *Bronco* is the OV-10A, a twin-prop, high-powered observation aircraft. The *Cobra* is the AH-1G, a versatile, highly maneuverable attack helicopter.

A squadron of each type aircraft was relocated to Atlanta as part of a consolidation program designed to increase readiness of the 4th MAW using existing support facilities.

Several officers and enlisted Marines accompanied the aircraft to Atlanta from southern California and spent two weeks active duty instructing local Marines in operation and maintenance.

Until earlier this year, Atlanta was the home of VMF(AW)-351, equipped with F-8s, and HML-765 and its UH-1Es. The F-8s were phased out of the inventory while the UH-1Es were transferred to MARTD Glenview.

For the former VMO-8 California-based OV-10s, their new squadron designation will be VMO-4.

The *Cobras* will retain their squadron identity — HMA-773, the first and only *Cobra* squadron in the Marine Corps reserve.

HMA-773 will eventually be equipped with 12 *Cobras* while VMO-4 will have 15 *Broncos*.

Magnet Project

The Navy Oceanographic Office's Project *Magnet* this year celebrates its 25th anniversary. Project *Magnet* is an airborne survey program that provides current, worldwide geomagnetic data for navigation safety.

The present survey aircraft is the RP-3D *Orion*. Surveyors located both the north and south magnetic poles within a six-week time span in 1960; accomplished the first trans-Antarctic flight in 1962; monitored magnetically the birth and growth of Surtsey, a sub-surface volcano near Iceland that erupted into a volcanic island.

In 1974, personnel pinpointed the location of the lost Civil War ironclad *Monitor* off Cape Hatteras.

The results of Project *Magnet* are reflected in world geomagnetic charts published by the Naval Oceanographic Office every five years. The next series will be printed in 1980.

Cutlass Model

Almost two years ago, young Al Casby started on what was to become the biggest model building undertaking of his life: constructing from scratch an F7U-3 *Cutlass*. It took months of letter writing, phone calls, and a trip to Ft. Lauderdale, Fla., to study one of the few remaining aircraft.

Close to his home in Grosse Point, Mich., the Naval Reserve Center at Southfield was advertising a Bicentennial Navy scale model contest. The judges were impressed by the detail and authenticity of Al's model and awarded him first place in the scratch-built category and overall best of show.

50-30-20 Percent

The May issue of *NANews* has arrived and I find one James F. Jensita, Jr., taking you to task for identifying a plane on page 13 of the November 1975 issue as an SNJ-5. He claims the aircraft is an SNV or BT-13. Well, he's right — from the edge of the rear cockpit aft! Forward of that is about seven feet of tubing structure incorporating the gunner's seat and attaching to an SNJ's center section, cockpit structure and wings. Forward of that is about four feet of extended motor mount, a geared 1340 P&W (stock for neither aircraft) and a modified SNJ/AT-6 cowling. Round wingtips are fiberglass. Thus the final score must be shown as *Naval Aviation News* 50 percent correct, J. F. Jensita 30 percent correct and 20 percent undecided. These hybrids were shipped by Steward-Davis Aircraft of Long Beach, Calif., (and others) for the film *(Tora, Tora, Tora)*.

As my job requires me to answer letters for all sorts of accuracy, glitches big and small, real and imagined, you can imagine what a refreshing change it is to catch someone else's goof.

Seriously, though, I really like the mag.

H. D. Galvin
Revell, Inc.
4223 Glencoe Avenue
Venice, Calif. 90291

Anyone for Bridge?

On a recent very successful family day cruise aboard USS *Midway* (CV-41) an "all VP" bridge team took the ship out as OOD, JOOD, JOOW — LCdr. Curt Borchardt (ex-VP-17), Lt. Jack Airlie (ex-VP-6) and myself (ex-VP-40). This is definitely not unique to carrier aviation, but it did set me thinking that I've never heard of an "all VF" or "all VA" bridge team being on duty when the ship pulled in or out (and only very rarely at sea). I would be interested in hearing of any "all carrier pilot" bridge teams that have operated on carriers recently. I'm really thinking of the non-squadron tour types and I can think of several reasons why they aren't on the bridge. Nevertheless, the implications are very interesting and got me wondering if carriers really do "leave the driving to us."

Lt. Tom Perkins
Asst. Navigator
USS Midway (CV-41)
FPO San Francisco 96601

Alumni Association

During this past spring an alumni association was formed for the NROTC/NESEP graduates and instructors of the University of Texas. The association concerns itself with the qualities of leadership which members have displayed in the naval service and civilian life. This is covered through articles in the unit newspaper and through lectures for students by active duty personnel on their careers and experiences. NROTC/NESEP graduates and former instructors of the University of Texas who are interested in the association should write to NROTC/NESEP Alumni Association, University of Texas, RAS 302, Austin, Texas 78712. Your careers are of keen interest to the midshipmen and officer candidates of the unit and are a positive motivating factor for their choosing Naval Aviation.

David M. Hardy, Ltjg.
Faculty-Alumni Coordinator

Last Fly-In

Have just finished reading the July issue of *NANews* and noted the article regarding the return of VFs 191 and 194 to Miramar with the comment that it was the "last fly-in" for F-8 squadrons. The occasion has even more significance in that the fly-in consisted of all aircraft from CVW-19 and, perforce, was the last fly-in from a 27C-class carrier. (*Oriskany* began decommissioning.)

Mobile Logistic Support Force ships in the Navy have a tradition of providing service to the fleet. We in Killer Whale upheld that tradition on March 2 in that *Kilauea* (AE-26) and HC-3 Det 108, embarked in *Kilauea* during our recent deployment, provided the plane guard for the fly-in of CVW-19. It was our pleasure to have been in a position to provide the service.

T. W. Glickman, Cdr.
C.O., USS Kilauea
FPO San Francisco 96601

Ed's Note: Technically, *Oriskany* is a 125A type rather than a 27C; however, the carrier is commonly called a 27C.

Memorabilia

Enclosed are flight suit and jacket, vintage 1942. I hope some of this is useful but, whatever, it's for a good cause!

The winter jacket was refurbished at my expense but then never used—too hot!

If squadron identification is used, I prefer VF-42, *Green Pawns*, where I served as a civilian advisor during 1949 Blue Nose Ops aboard CVB-41, USS *Midway*. Interestingly, my good friend Alan Shepard (astronaut No. 1), then a lieutenant junior grade, was flight officer at the time. The C.O. was Commander J. R. Sweeney.

You guys at *NANews* do a great job!

Art Droge, Lt. USNR (Ret.)
108 S. Franklin Ave.
Valley Stream, L.I., N.Y. 11580

Ed's Note: Mr. Droge donated the flight gear for display at the Sea-Air Hall in Washington, D.C. (*NANews* December 1975, page 2).

So, the Brown Shoes are gone forever. But wait! A press release from Naval Air Station, Lakehurst hints of hope: "NavAirWep 704, in conjunction with other reserve units drilling at NARDet Lakehurst, N.J., conducted formal retirement ceremonies on 18 July, retiring the Brown Shoes to the *Standby Reserve!*"

Who knows? Someday we may have to call them up.

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VF-143 Oceana F-14As

VAQ-131 Whidbey Island EA-6Bs

VS-33 Pensacola S-3As

VP-56 Keflavik P-3Cs

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