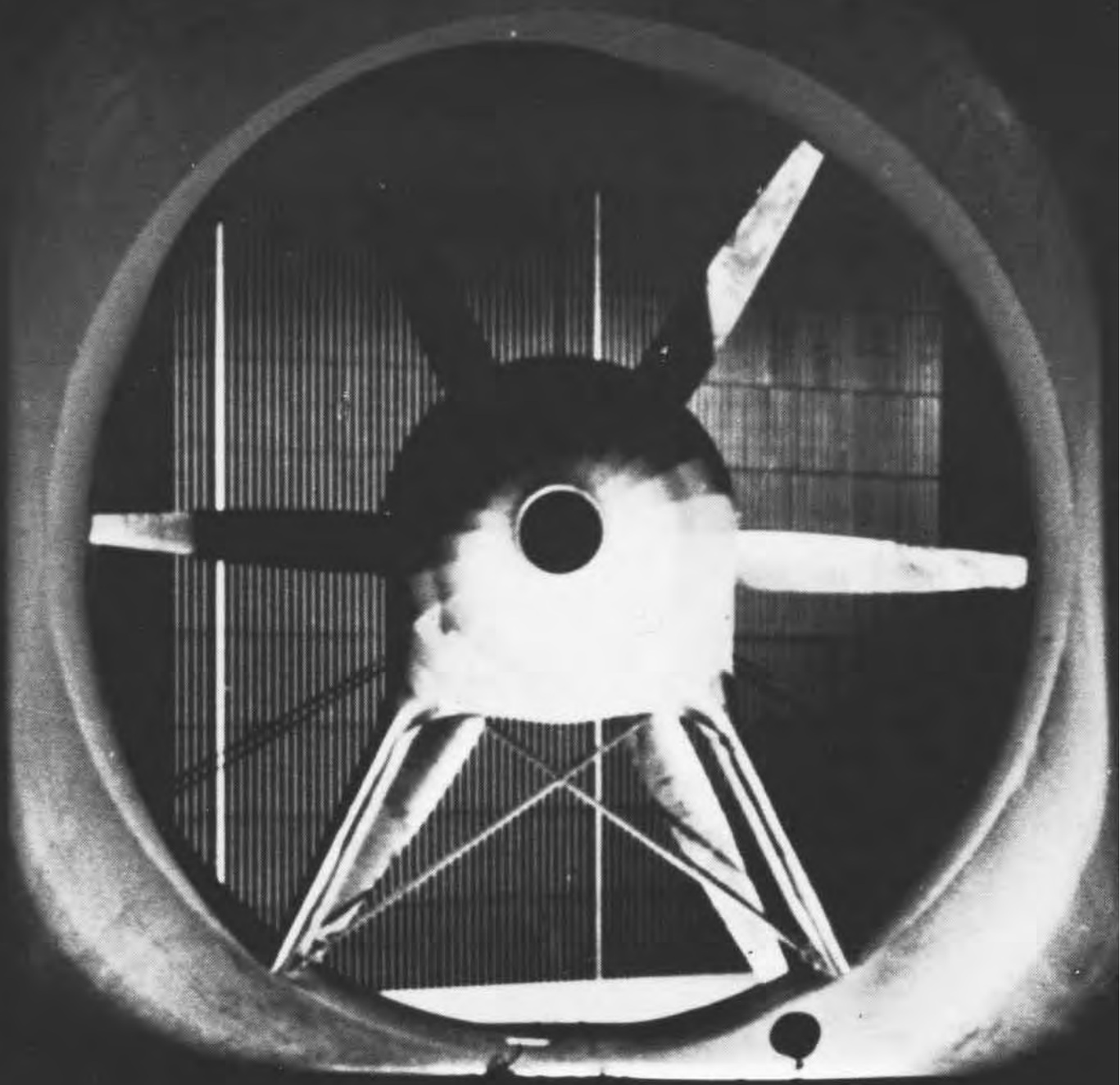
NAVAL AVIATION NEWS



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NAVAL AVIATION NEWS

SIXTY-FIRST YEAR OF PUBLICATION

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COVERS — Front, this NASA photograph depicts one of six mammoth wind-tunnel motors in the Ames Research Center's Forty-by-Eighty wind tunnel. (See feature beginning on page 8.) Back cover view, courtesy of Grumman, shows Whidbey Island based VA-196 Intruders en route from North Island to Hawaii with a USAF KC-135 tanker during the first Navy/Air Force A-6 transPac last year. Here, the talented eye and camera of McDonnell Douglas' Harry Gann froze a volley of rockets by A-4Ms from VMA-223 during training exercises at Fallon last October.

editor's corner

The Other End of the Spectrum. This poem, entitled *Low Flight*, was extracted from our files on HC-2.

Oh, I have slipped the surly bonds of earth
And hovered out of ground effect on semi-rigid blades;
Earthward I've auto'ed and met the rising brush
of non-paved terrain – and done a thousand things
you would never care to –
skidded and drooped and flared
low in the heat soaked roar.
Confined there, I've chased the earthbound traffic
and lost the race to insignificant headwinds.
Forward, and a little up, in ground effect
I've topped the admiral's hedge with dropping turns
where never Skyhawk, or even Phantom flew.
And, shaking and pulling collective, I've lumbered
the low trespassed halls of Victor Airways,
put out my hand,and touched a tree.

Tales from the Carrier Pattern. We thank Max Schwartz for this anecdote excerpted from a 1933 BuAer *Newsletter*. The story teller is an officer from the California National Guard's 115th Observation Squadron who flew out to USS *Saratoga* with others from his unit for a visit.

"Our formation consisted of 18 planes, preceded by two squadrons of fighters and a squadron of scouts. It was a long, cold ride, but it was worth it, as the experience of being landed on the deck, which from altitude looks about the size of a postage stamp, is something to write home about. You are coming in right on the tail of the preceding ship and if he doesn't get out of the gear and taxi forward, you are flagged off and have to go around again. The other boys are as anxious to land as you are and will move up so as to prevent your getting in. It's the old mess-line psychology. We saw one poor fellow flagged off four times, through no fault of his own, and he was getting madder each time. If ever an airplane reflected the mental attitude of its pilot, that one did. He finally got in on the fifth approach and lost no time in draining his radiator, which was the reason for his haste."

Life Begins at 42. NARU Norfolk's *SAR-TAR News* reports that AD1 Charles "West" Westmoreland of VR-56 joined the selected air reserves about a year ago – which isn't exactly earthshaking news. But West became a military man for the first time in his life at the age of 42, just under the age limit. "I felt like I'd always missed something by not having served in the military," he says. His children are grown and he's settled comfortably in a civilian career, so the timing seemed right for him. He's been flying since he was 19, has a commercial pilot's rating, a multi-engine flight instructor's license, and one in airframes and power plants as well.

"I just wanted to serve. . .to gain the experience the military offers," says West. "When someone misses that, it's like being on the outside looking in."

The advance pay grade program permitted West to attain AD1. He's had 11 years' experience with RAM Aviation and also worked in engine repair at NARF Norfolk. VR-56 has C-9B transports.

Dry Tank. Retired Commander E. T. Garvey, who flew H-16 patrols off the southern coast of Ireland years ago, remembers a note which was passed to a pilot from a concerned mechanic near the end of a long mission: "Fly low," read the message, "almost out of gas!"

One Man's Family. Captain Thomas E. Davis retired last summer after 30 years of duty, but the family name has far from run its course in the sea service. Lt. Teresa Davis and Ens. T. J. Davis flank their father at an NAS Memphis ceremony. The senior Davis was C.O. of the Naval Air Maintenance Training Group.

NAVAL AVIATION NEWS did you know?

Elder Statesman of Aviation

Aircraft designer, Edward H. Heinemann, otherwise known as Mr. Attack Aviation, was honored with a special award at the 16th annual Wright Brothers banquet held in Beverly Hills, Calif., in December, commemorating the 75th anniversary of powered flight.

On January 23, he was also one of three who received the Elder Statesmen of Aviation Award given by the National Aeronautic Association. The awards were presented at a luncheon of the Aero Club of Washington held in the Senate caucus room in Washington, D.C. The awards honor Americans over 60 years of age who, over many years, have made contributions of significant value to aeronautics.

Dedicated to the production of simpler designs of lighter aircraft for the American defense establishment, Mr. Heinemann attained the respected position he holds in the aviation industry during the period of its greatest development, from 1926 on. He was for many years a member of the Navy's only scientific advisory group, the Naval Research Advisory Committee, and held its vice chairmanship for a time. In 1953, Mr. Heinemann was co-winner of the Collier Trophy – for development of the *Skyray* fighter. He and his Douglas Aircraft engineering team also designed the SBD *Dauntless*, the A-26 *Invader, Skystreak* and *Skyrocket* research aircraft, A-3 *Skywarrior*, A-4 *Skyhawk* and many others.

Reserve Awards

The *Green Falcons* of Atlanta-based VA-205 are the recipients of the 1978 F. Trubee Davison Award as the best reserve Tailhook squadron. The award, sponsored by McDonnell Douglas Aircraft Corporation, was presented at the last annual Tailhook Convention in Las Vegas, Nev. Competition was based on performance as a Naval Air Reserve Force unit during the previous year.

The award is given in memory of Lt. Davison who, while a student at Yale in 1917, anticipated U.S. entry into WW I and organized a group of fellow students to take flying lessons. The group formed the First Yale Unit, which became the first component of what later was the Naval Air Reserve. Many members of that unit distinguished themselves in combat during WW I.

Commissioned in 1970 as an integral part of CVWR-20, VA-205 maintains combat readiness for rapid mobilization in a national emergency. The squadron counts aviation safety as a paramount goal in all of its operations. Its pilots have had at least one tour of duty with the fleet and most are combat veterans.

NAS Willow Grove has been awarded the Edwin Francis Conway Memorial Trophy which goes to the most efficient air station in the naval air reserve training command. The trophy was presented to the Navy in the 1930s by personal friends of Lt. Conway, who was commanding officer of NAS Floyd Bennett Field at the time of his death in a plane crash aboard the station in 1933. The inscription on the memorial stone at the former air station reads, "He loved progress more than he feared death." A miniature replica of the trophy becomes the permanent possession of each winner.

The Sheldon Clark Naval Air Reserve Trophy goes to Commander Carrier Air Wing Reserve 30. The trophy is given by the Navy League to the reserve unit achieving the highest combat readiness status during each award period. It is constructed from flight deck planking from the carriers *Enterprise* (CV-6) and *Franklin* (CV-13) and has a ship's bell clock mounted on the base.

The naval air reserve winners of the Noel Davis Trophy, rated as the best of their type, are VP-60, VR-53, VA-305, VF-302, HC-9 and VAQ-208. The trophy was donated in 1927 by Harry F. Guggenheim, a naval reserve aviator, in

memory of LCdr. Noel Davis. Davis was active in advancing naval and naval reserve aviation. He was killed in a crash near Langley Field, Va., while testing a plane in preparation for a New York to Paris non-stop flight. Miniature replicas are presented to the winners, while the permanent trophy is retained by the Chief of Naval Reserve.

Energy Conservation

As a result of its vigorous fuel-saving program, VX-1, NATC Patuxent River, Md., is the 1978 winner in the aviation squadrons category of the first annual Secretary of the Navy Energy Conservation Awards, one of seven winners in the overall Navy competition.

In July 1976, VX-1 began a study to determine whether significant amounts of fuel might be conserved through careful planning and conduct of mission operations. The command goal was to reduce hourly fuel costs by 10 percent and to save $83,550 annually. A memorandum regarding economy procedures went out in August 1976 from the commanding officer to all VX-1 pilots, Taccos and flight engineers comprising the crews of 15 mixed-type aircraft (seven P-3s, three S-3As, three SH-3D/Hs and two SH-2Fs). The premise was that conservation is necessary because squadron flight operations are more rigidly limited by dollars than flight hours; and that fuel saved during flight operations directly results in more flight hours and thus greater proficiency of flight crews and increased scheduling flexibility. The program called for flight crews to carry out their missions with fuel economy subordinate only to safety.

By the fall of 1976, the reduction in squadron fuel costs was visible in P-3 operations since the *Orions* used 85 percent of the squadron's fuel. According to C.O. Captain M. R. Byington, Jr., the squadron decided to publish its findings and recommendations for the rest of the P-3 community. By August 1977 a 40-page P-3 Fuel Management Guide had been written and distributed to all P-3 operators. An analysis in May 1978 of LantFlt operational P-3 squadrons' costs per hour revealed a continuing steady decline as lessons in conservation were applied more universally. It revealed an even more significant benefit of fuel economy in promoting a keener sense of mission readiness through better understanding and use of the aircraft's inherent capability.

Proven economies in VX-1's *Orion* operations suggested a similar program for the S-3 community. The squadron developed an S-3A Fuel Management Guide, based on its *Viking* operations, which was distributed in July 1978 to all S-3A operators. The guide highlights procedures for fuel management to enhance S-3A mission capabilities and reduce the cost of flight operations, in a climate of monetary constraints and flight-hour ceilings which has caused fuel economy to become a focal point for command attention within the Naval Aviation community.

The current feeling is that while efforts to minimize cost per hour have met with some success, a more suitable measure of effectiveness for fuel economy is cost per mission, and that present fuel reserves and military budget limitations provide ample justification for efforts to minimize this cost. From an operational standpoint, proper fuel management can significantly improve mission capabilities by increasing radius of action or time available on-station. Since improper fuel-economy practices could degrade mission performance, mission commanders must analyze the requirements of each mission phase and select the altitude and airspeed most suitable for that phase.

To implement the above, a command-supported program of lectures and information interchange was begun to increase awareness of operating economy.

Use of maximum range airspeeds for transit, loitering engines when practicable and proper altitude and airspeed selection in all phases of flight were emphasized. Although a cross-section of fleet squadron mission profiles differs from those flown in VX-1 with regard to icing, overhead fuel requirements, etc., the appropriate techniques will result in substantial savings in varying degrees, depending on the fixed mission requirements.

Two years of VX-1 experience and observation demonstrate that substantial aircraft fuel economies are readily available through simple, viable planning and operational procedures.

In announcing the Energy Conservation Awards for 1978, Secretary of the Navy William Graham Claytor, Jr., extended his personal thanks. "The winners are to be congratulated for demonstrating supremacy in all categories of energy conservation: awareness, planning, innovation, training and efficiency in use of equipment. Their hard work and dedication have helped the nation conserve critical energy resources and their efforts serve as particularly outstanding examples for the entire Department of the Navy."

grampaw pettibone

Some Birds Don't Fly

Two lieutenants (junior grade) and two crewmen were assigned a COD (Carrier Onboard Delivery) mission in a US-2C to deliver nearly 1,300 pounds of cargo. An installed Mk 8 tow reel in the aircraft weighed 790 pounds.

At an intermediate fuel stop, a small oil leak was discovered in the starboard engine nacelle, but the lines were found to be secure and the oil tanks were topped off. The amount of oil added indicated normal consumption on both engines.

The one and a half hour flight and landing on board the CVS went smoothly. Cargo was offloaded and the aircraft was reloaded with 1,114 pounds of freight and mail for delivery ashore. The crewmen carefully post/preflighted the starboard engine compartment oil lines. Everything was secure. The oil dip sticks were also checked; topping off was not required.

Passing 6,000 feet during climbout after catapult from the carrier, the copilot reported that a considerable amount of oil was leaking from the starboard engine around the propeller dome assembly; oil pressure was still normal, however. The pilot immediately headed back for the CVS, a distance of 26 miles.

Upon receiving the call from the returning COD, the ship immediately started a turn back into the wind. The deck was respotted forward and made ready for recovery by the time the aircraft was eight miles away. Clearance was given for a modified straight-in approach. The wind was down the angle at 28 knots.

When power was reduced aboard the US-2C for descent, the oil leak seemed to subside. Between 10 and 6 miles out, the aircraft was prepared for landing. Full flaps were lowered, the landing gear was dropped and power added. The increased rpm and manifold pressure intensified the oil leak, and the oil pressure started to drop rapidly.

The pilot intercepted the glide path slightly high and commenced his approach. At approximately one mile, the oil pressure fluctuated violently, dropped to 10 psi, and the propeller began to overspeed.

The starboard prop was immediately feathered and transition made to a single-engine approach. Flaps and gear remained fully down. As the approach continued, the plane started to settle. Power was added on the port engine several times in response to the LSO's calls. The S-2 arrived at the ramp with full throttle.

At the cut, although the pilot reduced power, the nose of the aircraft came up, and the S-2 floated up the deck. The LSO called, "Land it! Land it!" The nose dropped and the plane touched down beyond the crossdeck pendants.

As the LSO called, "Bolter, Bolter," the pilot added full power on the port engine. The aircraft left the deck under full control, wings level, and climbed a little. The landing gear was retracted and the flaps left fully down.

The then doomed S-2 started gradually losing altitude until it struck the water 23.5 seconds after leaving the deck, about one-half mile ahead of the ship.

As soon as the aircraft came to a stop, all the crew exited through the overhead hatches. Rescue was accomplished on the double by one of the carrier's helos.

Grampaw Pettibone says:

Oh, my achin' blood pressure! These guys just plain doped off. With a combined total of over 1,000 hours in S-2 aircraft, you'da thought they'd know a little more about single-engine flight characteristics than they demonstrated.

I can't find fault with the decision to return to the ship. Considerin' the distance to the beach and uncertainty of future behavior of that starboard engine/propeller, it was a wise decision.

What happened after the engine quit, however, is just too durned much – or should I say just not enough? Where were these guys when the emergency procedures briefings were given? Hadn't they ever been in an OFT? The pilot stated that he "thought it would fly" on one engine with the gear down and full flaps. The copilot said he didn't know if it would or not. And he a designated plane commander, too!

ILLUSTRATED BY Osborn

Simple ignorance is not knowing; compound ignorance is not knowing that you don't know.

Natops plainly recommends two-thirds flaps for single-engine approach and one-third flaps for a bolter. It's a cryin' shame that two "fully qualified" pilots would show such disregard for a few simple procedures so critical to the continued flight of their aircraft.

This isn't the first time this sorta thing has happened. There are several pilots and crews who aren't around any more, because they didn't know what to do when an engine quit. (October 1968)

AHAA

The mission was dissimilar DCM involving two sections of A-7s and F-14s. A thorough face-to-face brief outlined three head-on engagements. Individual briefs addressed aircraft emergency procedures, departure/spin characteristics and recovery techniques. The A-7 wingman launched and proceeded to the prebriefed rendezvous. There he conducted an inflight automatic flight control system (AFCS) check during which he had some initial difficulty engaging heading hold. The malfunction appeared to correct itself after several cycles of the control augmentation switch between cont aug and attitude hold.

After the rendezvous, radio comm was established with the controlling E-2B. One fly-through and two engagements followed. During the third engagement, the A-7 wingman maneuvered from the right side of his combat spread position to close on the F-14 that had slipped into his leader's six o'clock position. While maneuvering for a look-up missile shot with 30 degrees nose-up, 20 degrees left bank, 300 kias, 13,000 feet altitude, in a 3.5 G turn, his aircraft suddenly departed from controlled flight.

The departure was characterized by a 10 to 15-degree initial yaw divergence to the left, followed by a rapid yaw right. The pilot released all flight controls, activated the AFCS disconnect, and transmitted AHAA – the A-7 community procedural acronym used in departures to mean: A (AFCS disconnect), H (hands and feet off the controls), A (AOA check) and A (airspeed and altitude check).

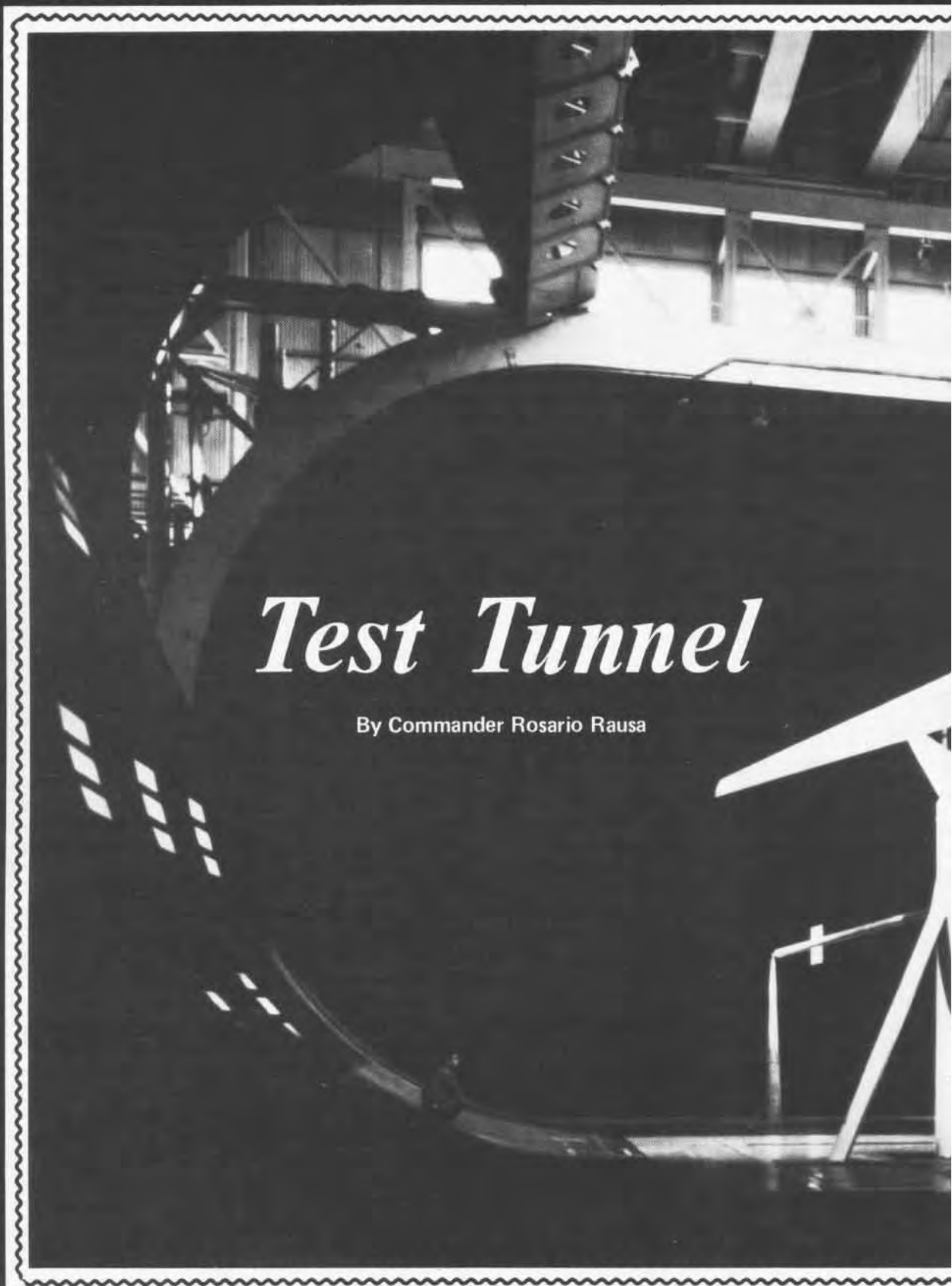
The A-7 immediately entered a rapid right spin. No post-departure pitch or roll oscillations were noted. After two turns, the pilot applied full right aileron, full left rudder and stick slightly forward of neutral. AOA remained pegged at 30 units, airspeed remained at zero.

The flight leader confirmed a right spin. Controls were left in, through five turns, with no effect. The wingman ejected, passing 6,500 feet. The aircraft was observed to continue the flat spin until water impact. The pilot, suffering from extreme cold, was rescued approximately 25 minutes later.

Grampaw Pettibone says:

AHAA is right! Going into a spin is like stepping out on your wife. You might get away with it, but if you don't, bub, you're in a lot of hot water! (Cold water in this lad's case.) This pilot was highly experienced in departure/spin techniques, having logged well over 400 maneuvers while in various units flying several different aircraft. Did too much experience sucker this gent into takin' an ailing machine into the DCM pattern?

The aircraft mishap board concluded the most probable cause of the aircraft entering the spin following departure was failure of the AFCS roll augmentation cut-out to function properly. No maintenance-related factors were assigned. But this aircraft had had nine AFCS gripes in the past 26 days with nine additional AOA gripes. Three other squadron pilots had previously experienced sudden or unexpected departures in this machine. What I want to know is where was all this hot info being kept before the mishap. Sounds like someone took "hands and feet off the controls" in the maintenance department, and QA spun in, too. DCM training is a vital part of aircrew readiness, gang, and it's an all hands effort, as always! And that's the truth! Nuff said.



Test Tunnel

By Commander Rosario Rausa

It may not be one of the seven wonders of the world, but the Forty-by-Eighty [foot] wind tunnel at the Ames Research Center is certainly an awesome structure. It is the most imposing of more than 30 tunnels, laboratories and technical facilities situated on nearly 400 acres of land at Ames, adjacent to Naval Air Station, Moffett Field, Calif. Importantly, what goes on in this curving, cavernous space, as well as at the many other activities, has far-reaching effects which benefit the entire aviation community, including the military services.

The Ames Research Center, like Moffett Field, is located in Mountain View, Calif., at the southern end of San Francisco Bay. It is a field laboratory of the National Aeronautics and Space Administration and has a vast network of human and material resources devoted to research which, by definition, is "the careful, systematic, patient study and investigation in some field of knowledge, undertaken to discover or establish facts or principles." In the case of Ames, that research focuses on flying machines.

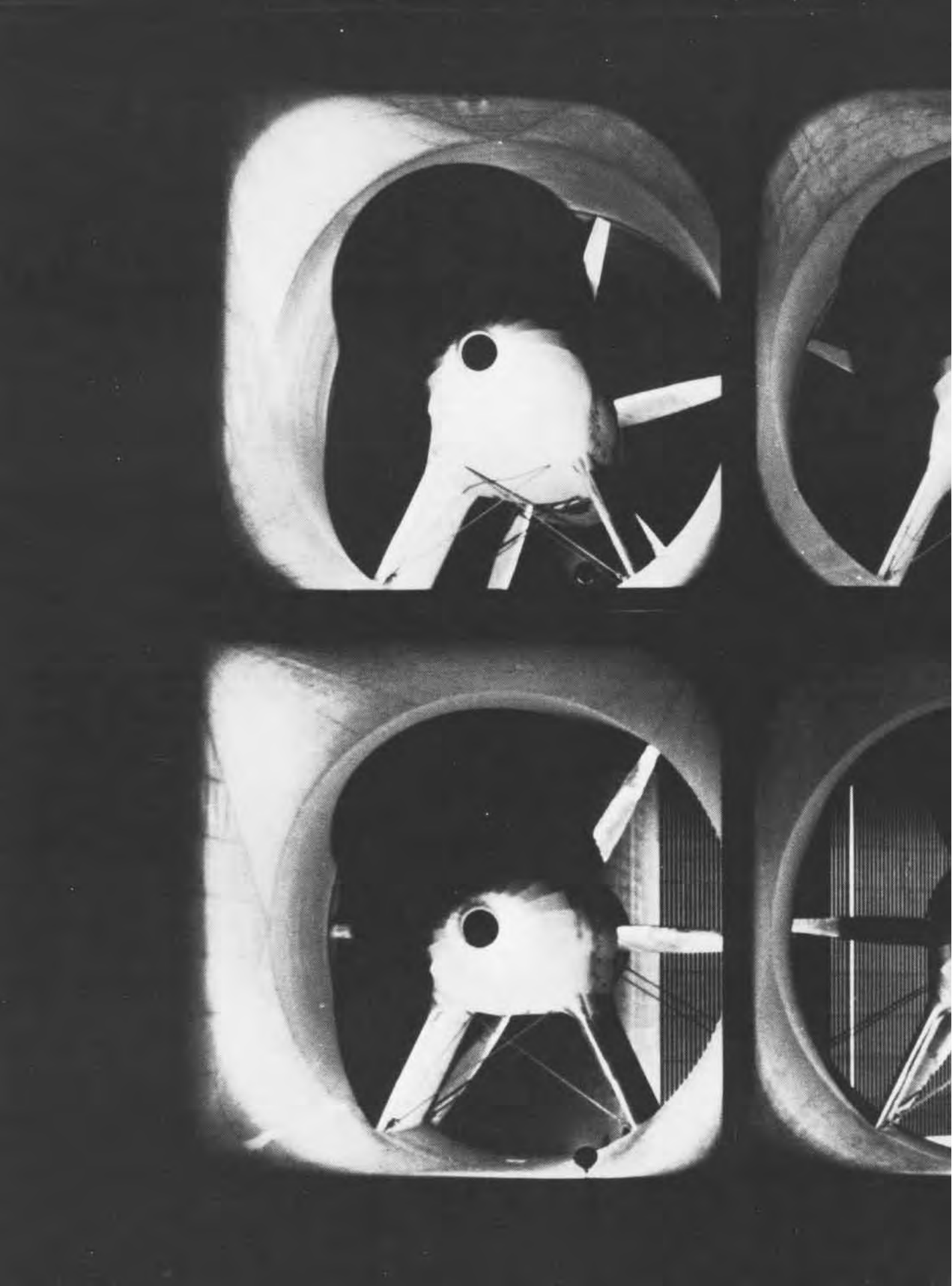
A brochure at the center proclaims that "Since life first appeared on Earth over three billion years ago, it has had to grapple with fluid mechanics. [Fluid mechanics is the study of the mechanical properties of fluid. Fluid is any substance that can flow, liquid or gas. Air is a mixture of gases, chiefly nitrogen and oxygen.] But it was a long, hard road from simple creatures learning to move through water in search of food to man learning to design a spacecraft able to plunge at 25,000 miles per hour into Earth's atmosphere on a return voyage from the Moon."

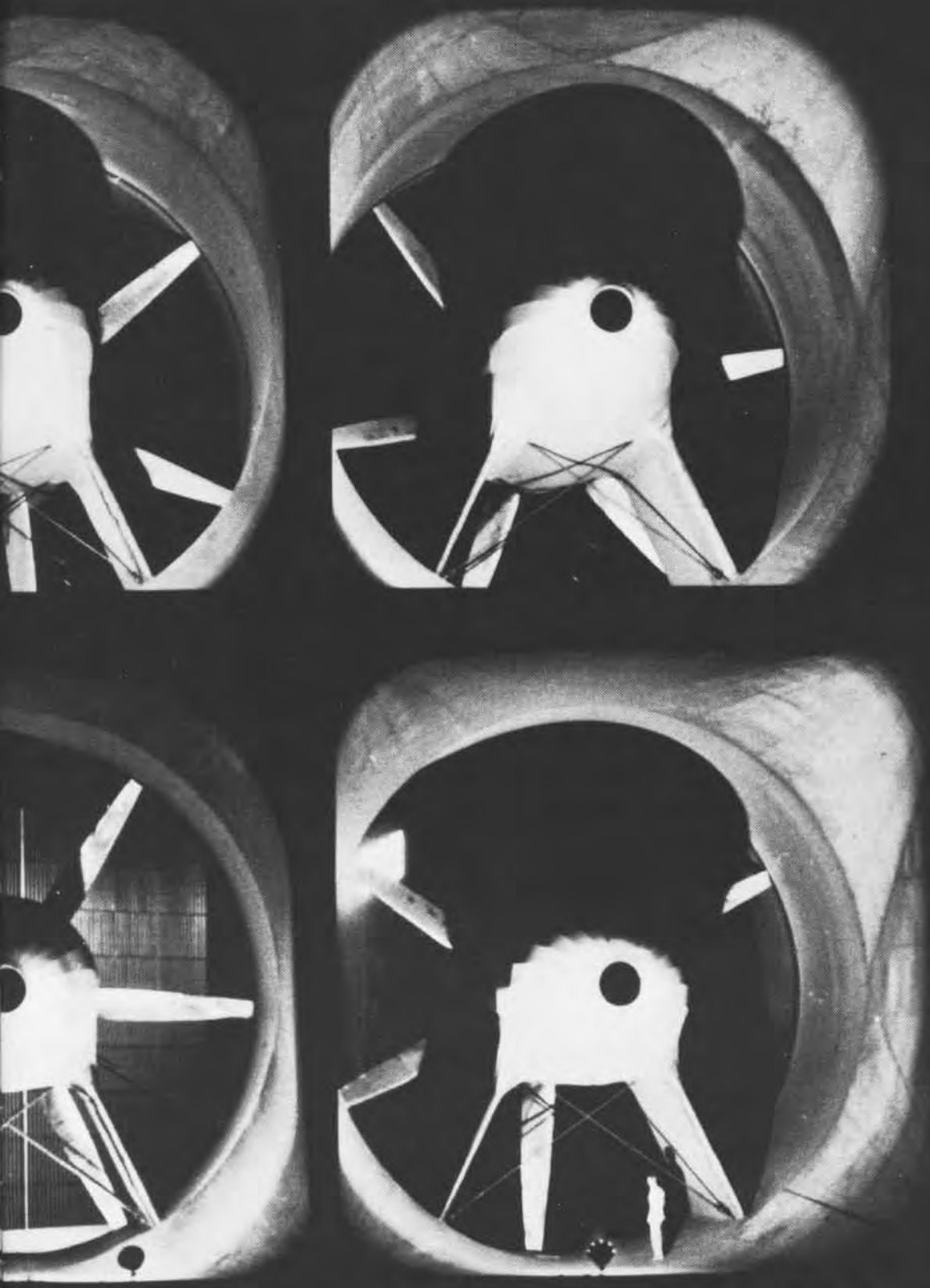
The huge wind tunnel which, when viewed from the air, resembles a cornucopia with boxed ends, is a dynamic stage for the exhibition of fluid mechanics in action. It yields an abundant flow of aeronautical

data and is especially valuable because it can handle life-size aircraft, or life-size components of aircraft, as well as scaled-down models.

Basically, a wind tunnel is a scientific instrument used to obtain the information necessary to predict the manner in which an airplane will fly. It is shaped to maximize results from the power available to create wind and simulate the airstream which flyers encounter when airborne. The Forty-by-Eighty tunnel's air is generated by six variable-speed, 40-feet-in-diameter fans, each driven by a 6,000-hp electric motor. This mighty

The Ames complex, located at the northern end of San Francisco Bay, has more than 30 tunnels, labs and technical facilities on about 400 acres adjacent to NAS Moffett Field. At center of photo is the Forty-by-Eighty-foot tunnel which was completed in 1944, four years after Ames was founded. An addition to the tunnel is planned. On opposite page, the AV-8B, successor to the Marine Corps' A version of the Harrier tactical aircraft, was tested at Ames in 1976.





Each of the tunnel's electrically-driven motors has 40-feet-in-diameter, six-bladed fans and generates 6,000 horsepower. Combined, they produce an airflow which reaches a peak velocity of 250 miles per hour through the test section.

In this 1971 picture, a technician prepares a one-fiftieth-scale model of an Advanced Technology Transport in one of three test sections in another impressive facility at Ames – the Unitary Wind Tunnel. Completed in 1955, it is considered a landmark in the development of supersonic wind tunnels. Its four motors generate 180,000 horsepower for the various test sections which can achieve airstream speeds ranging from Mach 0.40 to 3.45. Model here underwent tests at 745 miles per hour.

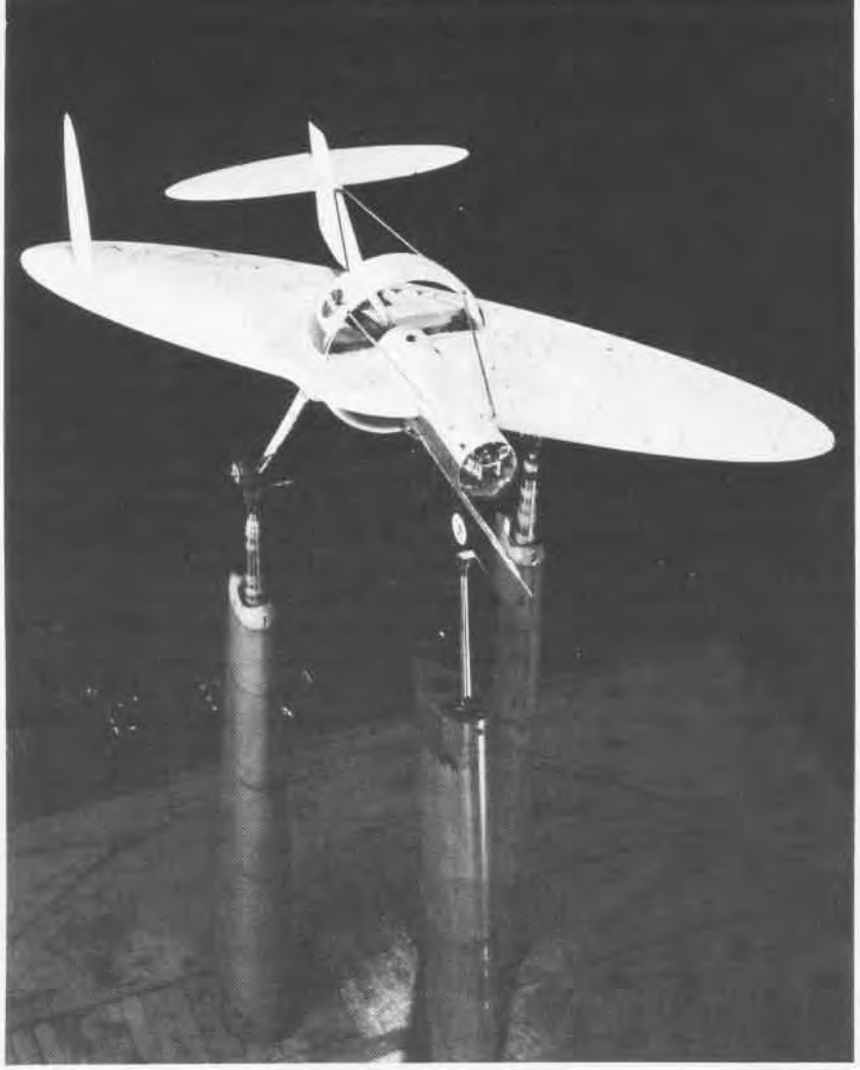
source of wind – 36,000-hp worth – is affected by the tunnel's changing dimensions and the venturi principle. (Venturi is a converging-diverging passage for fluid, which increases the fluid velocity and lowers its pressure.) In the test section, where aircraft are monitored and studied in detail, the air reaches a maximum of 250 miles per hour.

The tunnel forms a closed circuit and air is continuously recirculated during a run. The route of travel carries it from what is called the return passage area through the entrance cone, the test section, an expanded portion of the tunnel, the motor section, and once again to the return passage. It makes four 90-degree turns in the process. The motor-generator system which supplies power may be operated continuously at any output up to a maximum of 30 megawatts. Once in motion, all of the power required to drive the air is expended in overcoming friction between the airstream and the tunnel walls plus the drag created by the model being tested.

Cross-sectional areas in the tunnel vary. In the return passage, dimensions are 132 feet high and 173 feet wide. Air travels at 30 to 35 miles per hour through it. This portion serves as a settling chamber and allows any turbulence to subside so that air is smooth-flowing when it is accelerated and reaches the test section.

From the return passage, air passes through the entrance cone which reduces the tunnel cross-section area and causes an eight-fold increase in velocity producing the 250-mph test section speed.

The test section itself is 80 feet long, 40 feet high and 80 feet wide with a constant area throughout its length to ensure that airstream velocities remain constant for the crucial measurements on the test subject. Once the air leaves the test section and enters the expanded portion it decelerates rapidly, minimizing wall-friction losses. These losses in the test section account for about 90 percent of the power required to drive the tunnel at top speed. For this reason the skin in the high-speed sections is



Some aircraft which have spent time in the Forty-by-Eighty's test section are the F-111, undergoing tests, gear-down, below; the YOV-10 STOL research aircraft, right; and, above, a remotely piloted research aircraft with a swivel wing. Aircraft are prepped on the test chamber floor, then raised and positioned on the variable-height support struts. The tunnel's test section is 80 feet long, 40 high and 80 wide. Scales can measure 90,000 pounds of lift and 16,000 pounds of thrust or drag. Engines, prop or jet, can be running during the tests, as with the OV-10A, right.

made of smooth sheet steel while more economical corrugated construction is used in the lower velocity sections.

Each of the four 90-degree turn areas contains vanes which extend across the tunnel and bring the air smoothly and efficiently around the corner with minimum disturbance.

The tunnel's six-motor arrangement is a marvel in itself. It was chosen because designing and building a single, colossal fan which could absorb 36,000 horsepower would be as difficult as it would be expensive. Each of the half dozen fans turns inside its own tube at exactly the same speed as the others and has a maximum of 290 revolutions per minute.

The Forty-by-Eighty, believed to be the largest wind tunnel in the world, encloses 900 tons of air, 41 of which pass any given section every second (at top tunnel speed). That's quite a roar. Overall, the tunnel is 870 feet long, 400 wide and 160 high. It covers eight acres.

In the test section, airplanes or models undergoing investigation are supported by three struts which are attached below the test section floor to a frame. This frame is supported by force-recording scales which can measure up to 90,000 pounds of lift and 16,000 pounds of thrust or drag. A test aircraft's own engine(s), jet or prop, can be operated during the tests, which enhances realistic data yields.

As one expert at Ames explained, "The value of an airplane increases directly with its top speed. High-speed design requirements are dictating more and more the final form of airplanes and, as the speeds increase, these forms tend to become more unconventional."

It follows that unconventional airplanes show fewer tendencies to act like conventional airplanes during slow-speed flight. Landing and takeoff periods, therefore, can be the most hazardous part of the flight of high-speed airplanes. The demands of high-speed flight preclude the use of ordi-

Construction of the tunnel, considered the largest of its type in the Free World, was completed in 1944. Right, combination photo-artist's concept depicts the proposed extension to the tunnel. Modifications will provide controlled airflow at slower speeds — down to five knots — than are presently possible, and an enlarged test section. This capability will enhance testing of V/STOL aircraft.

nary means of easing takeoff and landing requirements. It becomes the task of the low-speed tunnel to help designers devise means which will not conflict with the high-speed requirements. This is where the Forty-by-Eighty pays big dividends.

Essentially, the huge tunnel permits accurate study of the low-speed characteristics on full-scale airplanes. It can be determined, with reasonable certainty, that a particular aircraft can take off and land safely on a real-life runway or landing field.

Highly trained Ames personnel man the control house, located beneath the test section, during all tunnel operations. Operators control the airflow and adjust not only the airplane or model being tested but the control surfaces and engines on those aircraft as well. All the while, an extensive bank of very sophisticated computers and measuring devices records the data which is analyzed prior to the issuing of reports.

Engineer Jerry Kirk, assistant branch chief of the big tunnel, is a Navy reserve captain, aviator and former C.O. of Alameda-based VA-304. When *NANews* visited Ames, Kirk pointed out a test subject which illustrated the broad range of interests and capabilities at the center. On the test center floor, what looked like a bright yellow sail emerging from the deck was really a one-third scale section of a Boeing 707 aircraft wing.

"We're conducting airframe noise tests," explained Kirk. "Air actually scrubs along the surface creating noise and we're using transducers in the wing section to measure that noise." Obviously, engines aren't the only components of an aircraft which cause noise pollution.

"We're also installing a 3,000-psi air line," said Kirk, "one which can be plugged into tip turbine fans of V/STOL-type aircraft to test their aerodymamic characteristics. This high-pressure line will also help start the jet engines on aircraft in the test section."

About 3,000 people, both government and contractor employees, work at the Ames Research Center. The Forty-by-Eighty wind tunnel is but one of the multitude of units engaged in the business of research there. Space precludes listing them here but they range from more than a dozen wind tunnels, including one of hypersonic speeds, to a variety of shock tubes, thermal labs, and a broad spectrum of flight simulators. Ames also flies aircraft in ongoing aerial research projects.

In summary, aeronautical and related information collected at Ames is generously disseminated for the benefit of all who are interested in making the aviation world better and better.

FF/S

The first Grumman fighter, like the current F-14A, was a two-place fighter incorporating many advances in aircraft technology. The XFF-1 prototype was also the first Grumman airplane, and the production FF-1s which followed were the first in the long parade of Grumman aircraft to serve with fleet squadrons.

When the Loening Aeronautical Engineering Corporation, famous for its widely used amphibians, was moved out of New York by its new owners in 1929, its top managers decided to stay behind and start their own company. LeRoy Grumman, who had been general manager and chief engineer for Loening, became president of the new company, which took his name.

Incorporated in December 1929, Grumman started out with repair work on Loening amphibians and building amphibious floats for Navy observation planes. During 1930, they proposed a new fighter design to the Navy's Bureau of Aeronautics. Taking advantage of the availability of the Wright Cyclone engine which had higher power than any engines in use in Navy fighters, their own retractable landing gear design and metal construction experience developed on the amphibious floats, and other current advancements in aeronautics, Grumman proposed a two-seat fighter with performance exceeding that of the single-place fighters in use or being built for the Navy. The main function of the second crewman was to be a defensive rear gunner. This fighter concept enjoyed favor in many military services at the time. The contract for the XFF-1 was awarded in March 1931 with initial flight of the new company's first airplane taking place on December 29 of the same year.

Performance was as expected, and Navy trials found the prototype sufficiently attractive, so that an order followed for 27 FF-1s with a higher powered Cyclone engine and other improvements, including increased wing area. These would equip one squadron with the usual spares for replacements or other special uses.

Meanwhile a second prototype, similar but with reduced armament, increased fuel capacity, revised equipment and increased-area wings which were later fitted to the production FFs, was ordered and delivered as the XSF-1. The performance improvements of the advanced design would be advantageous for the scouting role as well as for the fighter mission. While the FF-1s were being built, 33 SF-1s were ordered.

The FF-1s went into service in mid-1933 with VF-5B, assigned to the *Lexington* air group. The deep-bellied look that was to characterize generations of Grumman fighters attracted attention wherever FF-1s operated, and the rugged design and construction of the new company's products were soon recognized. SF-1s followed the FFs into the fleet, assigned to VS-3B of the same air group. The FF-1s, or *Fi-Fi's* as they came to be known, served with VF-5B through 1935, until replaced by Grumman's next fighter, the single-place F2F-1. The two-place fighter concept faded from the picture until the advent of specially designed, radar-equipped night fighters in the mid-Forties. New scout bombers also replaced the SF-1s in VS-3B. Both FFs and SFs saw extensive use in various utility roles and several years' duty with the reserves. The FF-1s became FF-2s when they were reconfigured with dual controls.

A prototype XSF-2 was built, having a number of improvements, including a twin-row P&W Twin Wasp, Jr., in place of the Cyclone, which gave it a more streamlined appearance. Competing in the new scout-bomber class, it failed to receive a production order.

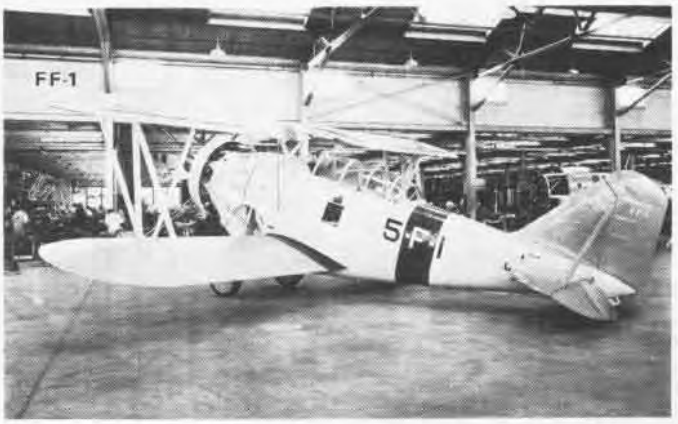
The last production of this first Grumman airplane was done under the Canadian Car and Foundry label in Canada, though much of the airframe for these G-23s was built under subcontract by Grumman and its airframe subcontractors. Serving with the Royal Canadian Air Force, and exported to Spain and Latin America, one of the G-23s has been retrieved from a jungle "bone yard." After extensive rework by Grumman, to restore it as closely as possible to the FF-1 configuration, it can be seen at the Naval Aviation Museum in Pensacola — an outstanding example of innovative fighter design in the between-the-wars period.

SF-1

XSF-2

XFF-1

FF-2

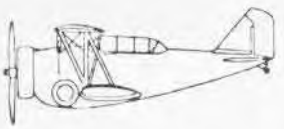


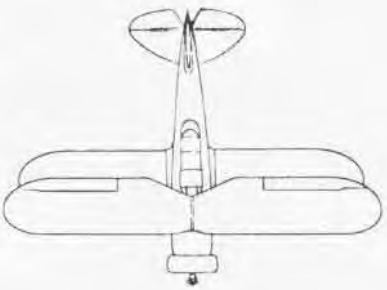
FF-1

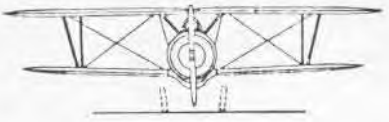
XSF-1

FF/SF

Span		
XFF-1		33'
FF-1, SF-1 and XSF-2		34'6"
Length		
XFF-1		24'10"
FF-1		24'6"
SF-1		24'4"
XSF-2		24'9"
Height		
XFF-1, FF-1, SF-1 and XSF-2		11'1"
Engine		
XFF-1	Wright R-1820E	575 hp
FF-1	Wright SR-1820F	600 hp
SF-1	Wright R-1820-84	700 hp
XSF-2	P&W R-1535-72	650 hp
Maximum speed		
XFF-1		195 mph
FF-1		201 mph
SF-1		207 mph
XSF-2		215 mph
Service ceiling		
XFF-1		20,500'
FF-1		22,400'
SF-1		22,500'
XSF-2		24,100'
Range		
FF-1		732 miles
SF-1		900 miles
XSF-2		934 miles
Crew		
All configurations		2
Armament		
one .30		all
one .50		XFF-1, FF-1
rear gunner one .30		all
two 100-lb bombs		all







PEOPLE · PLANES · PLACES

Honing the Edge

A $400,000 West Coast P-3 learning center was officially dedicated recently at Moffett Field. RAdm. Charles O. Prindle, ComPatWingsPac, cut the ribbon opening the 10,000-square-foot facility. Also on hand were Cdr. Harold L. Midtvedt, C.O. of VP-31, and Cdr. Larry Croix, OinC, FASO-TraGruPac, Det Moffett. All ground training for Navy's *Orion* aircrews stationed on the West Coast and in Hawaii will be conducted in the center. A similar facility is planned for VP-30 at Jacksonville.

Midway-based VF-161, commanded by Cdr. John M. Nash, conducted its first semi-annual ACM deployment to NAF Misawa. The *Chargers* flew their F-4J *Phantoms*

against A-4s piloted by Top Gun instructors and VC-5 adversary pilots. The squadron conducted ACM training in support of its air-to-air warfare mission while evaluating its ACM capabilities in competitive exercises. During the week-long training, VF-161 completed 152 sorties and 168 flight hours.

VMA-311 and VMFA-122 participated in Exercise *Cope Thunder* at Clark AFB, R.P., conducting mock air-to-air and air-to-ground warfare training. The readiness exercise stressed realistic training to increase combat efficiency of air and ground crews. Both Iwakuni-based squadrons, along with units of the 13th Air Force, formed opposing Red and Blue Forces. VMA-311 was the aggressor on the Blue Force, while VMFA-122 provided fighter protection. The A-4s of VMA-311 "shot down" 17 F-4s from the 13th AF. The Marines lost only three aircraft.

Personnel from HC-6 Det 3, Norfolk, compiled an enviable record while supporting the Sixth Fleet during a seven-month Med deployment. Deployed aboard *Detroit* (AOE-4), the squadron flew over 600 hours in its two CH-46D *Sea Knights*. Det 3 vert-repped over 6.5 million pounds of stores and ammunition to task force members, carried over 21,000 passengers and 650,000 pounds of cargo, and delivered 70,000 pounds of mail to fleet units. OinC LCdr. Doug Livingston and his crew participated in Exercises *National Week XXIV* and *Display Determination 78*. *Detroit* is commanded by Capt. Herb Hope, former CAG-1 and skipper of VA-85.

Cecil Field's VA-46 participated with Spanish forces in Exercise *Poopdeck 78*, designed to train Spanish air defense forces in countering airborne attacks. Between raising the anchor in Palma de Majorca and dropping it 150 hours later in Naples the *Clansmen* spent 340 hours in flight and landed aboard *Kennedy* 170 times. During this at-sea period, the squadron's A-7Es were scrutinized by corrosion inspectors, receiving the highest grade, outstanding.

The *Jolly Rogers* of VF-84 completed a successful weapons deployment to Roosevelt Roads during which they flew 161 sorties and 260.8 hours. Of particular note was the fact that out of a single division (four aircraft), all four pilots received Es for their shooting and brought home a century banner (100 hits). The century banner division included Cdr. Tom Treanor, LCdr. Jon Eastman and Lts. Chuck Scott and Gerry Mountcastle. Other pilots who received Es for shooting ability were Cdr. Em Brown, LCdrs. Mitt Mittendorff and Mike Williams and Ltjg. Al Mullen.

VF-154 achieved a significant milestone with the airborne firing of an AIM-7F *Sparrow* from a fleet F-4J *Phantom*. The operation, flown by Lts. "Lowrider" Dussman and "Blue" Funk, launched from *Ranger* and was conducted at PMTC against a land-launched AQM-34 target drone. The AIM-7F is the latest generation *Sparrow* and represents an advance in reliability, guidance and performance capabilities.

The Gulf of Mexico-Northern Caribbean area was the scene of operations for *GulfEx 79*, a joint service exercise involving Navy, Air Force and Coast Guard units, and British ships. The exercise was conducted to improve overall task force readiness through extensive training in several major mission areas while providing experience in joint Navy/Air Force and Navy/Royal Navy operations. Over 20,000 personnel, 36 surface ships, two nuclear-powered submarines and more than 300 Navy and Air Force aircraft of at least 15 types participated.

Awards

In a ceremony held at Oceana, VAdm. G.E.R. Kinnear II, ComNavAirLant, presented the FY 78 Battle E Award to VA-65. During the competitive cycle, the *Tigers*, led by Cdr. "Buzz" Needham, accumulated more than 4,800 accident-free flight hours and 878 arrested landings. The squadron was instrumental in planning and executing *Operation Shamrock*, a weapons training exercise conducted on board *Eisenhower* for President Carter. VA-65 also won the MAtWing-1 annual bombing derby and the FY 78 Bombs-on-Target award.

SecNav W. Graham Claytor, Jr., awarded the Navy Unit Commendation to the Navy Astronautics Group, Point Mugu. Commanded by Capt. James H. Simpson, the group was cited for meritorious service in the operation of the Navy Navigation Satellite System from October 17, 1968, to October 17, 1978. "This system provided continuous, accurate, worldwide and all-weather navigation information to the fleet ballistic missile submarine force and other military and civilian users throughout the world," said Claytor in a letter announcing the award.

Some drilling reservists were responsible for adding the coveted Liberty Bell Trophy to VP-62's trophy case at NARU Jacksonville. Presented by the Naval Reserve Association, the annual award goes to the reserve ASW squadron scoring the highest grade on a special advanced exercise. Originated to commemorate the Bicentennial, the trophy is named for the Liberty Bell Chapter of NRA, Philadelphia. VP-62's Crew 7 competed with 13 other reserve VP squadrons during the four-hour exercise held in Brunswick. The crew consisted of LCdrs. Robert J. Williams, Claude S. McGehee and James R. Piche; Lt. Paul A. Harvey; AWCs Paul M. White and Edward R. Walker; AT2 Gerald L. Wade; AD1 R. M. Dye and AW1 George E. Leath.

PEOPLE · PLANES · PLACES

Et cetera

CVWR-20 deployed recently for a week aboard *Independence*. When the carrier left Norfolk, on board were over 700 officers and men of the wing. Although squadrons

from the air wing frequently participate in refresher carqual training, this was the first time since 1971 that the entire air wing actually conducted air ops while embarked.

The Marine Corps took a step into the 1980-2000 time era when HMA-269, New River, received the newest attack helicopter, the AH-1T TOW-mounted *Sea Cobra*. LGen. T. H. Miller, Jr., Deputy Chief of Staff for Aviation, Headquarters, Marine Corps, and LCol. K. H. Johnson, HMA-269 C.O., completed the helo's maiden flight.

VR-58 trail blazed the assignment of women pilots to reserve squadrons when Lt. Chris Giza arrived for active duty. (Another female aviator has since been assigned to a reserve squadron on the West Coast.) Giza was in the second group of women accepted for flight training,receiving her wings in April 1976. She has qualified in the T-24, T-28, S-2, T-39 and the C-9, in which she is presently a second pilot. "I am also qualified to fly from the left seat," she says. "That's the decision seat. You are in command." Giza went on to explain that the second pilot does just as much flying as the plane commander.

When Capt. W. H. Davison, USN(Ret.), visited his son, LCdr. John Davison, in San Diego recently, he recounted tales of his days at Miramar in the late 40s and 50s. Capt. Davison was C.O. of VC-61, flying reconnaissance versions of the PB4Y *Liberator* and F8F *Bearcat*. LCdr. Davison recently checked into VFP-63 and a quick scan of the squadron history revealed that, sure enough, he is a second generation pilot flying second generation F-8s in his father's old squadron. VFP-63 was originally commissioned VC-61 in 1949.

Wiley "Jim" Earnhardt, Jr., the city attorney for Edenton, N.C., holds up his end of a law partnership during the day, and moonlights at a job whose success could ultimately spell survival for the U.S. As a captain in the naval reserve, he heads NARU Norfolk's Seapower Presentation Team whose members travel around several states

alerting citizens to what the Navy perceives as a serious threat to America's survival as a maritime power. All members are volunteers who are not paid for their time and efforts, but who have made almost 3,000 presentation to groups in the mid-Atlantic region in the past six years. "I don't think most Americans know how really serious the threat is," says Capt. Earnhardt, "but we rely on imports for 72 of the 79 vital materials it takes to keep this country running. More than 97 percent of our imports and exports travel by ship. This includes oil, grain and industrial goods. Loss of control of sea lanes over which these materials are carried means a drastic loss of control over our national destiny."

October 5, 1978, was proclaimed "Pappy Nansteel Day" by Jacksonville's VP-24, honoring Senior Chief Robert L. Nansteel for 30 years of naval service. During that time, Pappy logged over 12,000 flight hours and served as a crew member on 10 different

aircraft, from the F3D to the P-3C *Orion*. During his eight-year tour with the *Batmen*, Nansteel earned the reputation of being "one of the Navy's best P-3 flight engineers." A fellow engineer paid him the ultimate compliment when he said, "Pappy knows more about that aircraft than the people who built it!"

Records

VC-3 detachments operating at PMTC, NAS Point Mugu and San Clemente Island are claiming a new world's record for aerial missile target operations. During the last quarter of FY 78, the two detachments conducted 117 launches of the MQM-74C *Chukar*. "The world's leading *Chukar* activity is VC-6 at Norfolk," says Cdr. Bill Stepp, C.O. of VC-3. "VC-6 is responsible for conducting *Chukar* operations throughout the Atlantic, Med and Pacific coast of South America. Their operations have historically averaged 260-275 missions per year. VC-3 is the second leading worldwide operator with a normal average of 185-215."

Change of Command

CVW-1: Cdr. Daniel P. March relieved Cdr. Gary F. Wheatley.

HT-8: Cdr. John P. Gander, Jr., relieved Cdr. Richard W. Youmans.

VA-97: Cdr. John M. "Mike" McGrath relieved Cdr. Rex Arnett.

VAW-112: Cdr. William T. T. Hood, Jr., relieved Cdr. Andrew J. Rochells.

VAW-116: Cdr. Kenneth D. Denbow relieved Cdr. Matt Matheson.

VAW-124: Cdr. J. R. Slaughter relieved Cdr. J. R. Condon.

VF-302: Cdr. Milburn J. Holmes relieved Cdr. R. C. Hulse.

VP-46: Cdr. Joe A. McElmurry relieved Cdr. William E. Frederick.

VR-53: Cdr. Malcolm K. Hunter relieved Capt. George W. Holyfield.

VS-22: Cdr. George Love relieved Cdr. Luther Schriefer.

VS-24: Cdr. Russell Gill relieved Cdr. Louis Wardlow.

VS-37: Cdr. Paul A. Ruth relieved Cdr. James P. Cartwright.

VS-38: Cdr. Don W. Baird relieved Cdr. James L. Durbin, Jr.

VS-41: Cdr. William P. Behning relieved Capt. George M. Zaludek.

VT-2: Cdr. Ronald L. Folse relieved Cdr. Roger K. Runkle.

DOWNED

Story and Photos by
SSgt. Cal Openshaw

The stillness at Holly Ridge swamp, 20 miles south of MCAS(H) New River, N.C., was shattered by the sound of an axe chipping away at its target, bit by bit, the chuck of a muscle-driven spade being thrust into a sponge-like earthen floor and the throaty roar of chain saws as the Marines attempted to recover an Army O-47A observation plane, one of only a couple of hundred built before WW II. Its right wing was enmeshed in the swamp's roots and vines, like a wild animal in a hunter's tooth-laden trap. Its other wing lifted to the sky as if in a silent plea or, perhaps, a vain effort to lift and soar as it remembered.

The aircraft's story will possibly never be told since its records were lost in a fire in 1951. But what is known is that it and other O-47As were intended for service with the National Guard until war drums echoed from coast to coast and they were pressed into service with the Army Air Corps.

Housed and cared for at many bases, including nearby Camp Davis, they never felt the sting of battle. This particular plane responded obediently to the sure touch of instructors and maybe a little more skittishly to the nervous hands of observer students.

Efforts to recover it had been futile but, though almost forgotten through the years, interest in it never completely waned. For example, since the mid-Sixties the Naval Aerial Observation School at New River has used it as a reference point for identification and for learning precise grid square coordinates. The Army finally decided it was time for the aircraft to be returned, maybe to a place of honor.

The Marines of aircraft maintenance, not normally rescue men, took on the task. With some experience in handling old aircraft, men like MGySgt. Mike Wilkes and SSgt. Ed Knoff were considered best suited to fight the swamp and retrieve the plane.

At first they thought they could

BIRD

cut a landing zone next to the downed craft, but soon realized there was only one way in and one way out. With the help of Marine Light Helicopter Squadron 167, Wilkes, Knoff and others, like John Brick, William Kamen and Steve Staps, were harnessed to a pencil-thin steel cable and lowered from a *Huey* onto the downed bird's wing.

After a full day of clearing out the area, the swamp reluctantly yielded only enough room for the Marines to stand. The brush and trees formed a solid wall, almost impervious to the cut and bite of steel blades, while the ground retained the consistency of a wet sponge, barely holding a man's weight.

The solid walls of vegetation kept out everything but the blazing heat. Sweat ran from arms making it difficult to grip an axe. Any breeze was as welcome as a drink of cool water.

The ground covering the wing was so laced with hidden roots that spades and axes were useless. Chain saws were used to cut triangular chunks of sod which were then pulled clear with block and tackle, uncovering a pool of water, full of more of the clinging roots and a layer of thick mud.

Axes and spades rose and fell with regularity while vines and roots caught and clung to feet. The swamp's floor was littered with a stub-like growth of brush and trees. Hordes of bugs and nests of snakes were forced to give ground.

But gradually the Marines loosened the swamp's grip on the still solid aircraft. Finally, Wilkes, Knoff and a pilot and crew chief from Marine Heavy Helicopter Squadron 461 brought in a cradle for the bird. With practiced eyesight and skilled hands, they fastened the cradle for its final flight. A CH-53 *Sea Stallion* hovered as slings, bars and hooks were put in place.

Then the aircraft was lifted free and taken home.

Although the *Flying Tigers* existed as a fighting unit only from December 1941 to July 1942, they amassed a remarkable number of victories over the Japanese. Flying durable but obsolescent Curtiss P-40s which displayed chilling eyes and the jagged teeth of a shark, they flew in daily combat against superior forces.

They had few replacement planes or spare parts. The resourceful ground crews plugged bullet holes in gas tanks with chewing gum and patched riddled fuselages with adhesive tape. They foraged in the rice paddies and jungle for usable parts from planes that had crashed. They waxed fuselages to increase speed. Since the P-40s had neither bombs nor bomb racks, the *Tigers* made incendiaries out of whisky bottles filled with gasoline, and dropped homemade pipe bombs down chutes meant for flares.

The AVG had to brave overwhelming numbers of Japanese planes. Each kill meant another miniature Japanese flag painted beneath the canopy of a P-40. They were successful primarily because of the tactics Chennault taught them. "Use your speed and diving power to make a pass, shoot and break away." To emphasize his point, he diagrammed tactics on a chalkboard like a football coach.

The men had to be ready to take their fighters up whenever enemy planes approached. Once airborne, they were often outnumbered six to one. Sometimes the battle-scarred P-40s went into action eight times in a day. The American pilots would alter their voices over the radio and give orders to imaginary squadrons, trying to trick Japanese listening on their frequency into believing they had superior forces.

Using the tactics they had learned from their leader, the *Tigers* took their planes high above the enemy formations, then zoomed down at speeds reaching more than 400 miles an hour, and attacked in singles, pairs or groups, depending on the circumstances.

Foreseeing the long months ahead when the U.S. would be able to establish only a small air force in China, Chennault had drummed into the men rules that would help to keep them alive. "If you take the best characteristic of your plane and fight with it, never letting the enemy fight with the best characteristic of his, you can lick him."

A

When John E. Petach graduated from high school in Perth Amboy, N.J., in 1934, he could not have known that within a few years he would be a member of one of the most colorful and deadly fighting units of WW II.

From high school, Petach went on to New York University and got his degree as a chemical engineer in 1938. That same year, he joined the Naval Aviation training program, and was

Photos from Petach's scrapbook, left to right: SNJs, mixed bag of Vought, North American, and Lockheed aircraft, Petach in front of N3N-1s, Grumman F2F-1, Petach in China by his P-40E and Boeing F4B-4s.

Flying Tiger

designated Naval Aviator #6409 on May 16, 1940.

Petach was one of the military pilots recruited by Colonel Claire Lee Chennault, in 1941, to serve in the Chinese Air Force. The men were permitted to resign from their branches of service with the understanding that they could return when they had completed their tours with the Chinese. They were known as the American Volunteer Group, later the *Flying Tigers*.

In late summer of 1941, the group left for China where Chennault put them through intensive training on the Burma border. Thus, they were already on the scene when Pearl Harbor plunged America into the war. They were ready to fill a military vacuum.

During the following months, when Allied military forces in Burma consisted only of ground units, the *Flying Tigers* were racking up impressive victories over the Japanese in the air. They fought as the American Volunteer Group for just over six months until July 1942 when they were disbanded. They became the nucleus of the USAAF 23rd Fighter Group, which was later made part of the 14th Air Force.

While on a mission with the 23rd Fighter Group on July 10, 1942, Petach was shot down and killed by Japanese antiaircraft fire.

During the time Petach was flying bombing and strafing missions as a *Flying Tiger*, he married one of the nurses attached to the AVG. After his death, his wife returned to the States, where their daughter was born.

Petach was not forgotten. In 1975, the New Jersey Aeronautical Historical Society sponsored a memorial dinner in his memory. Among other family members, his wife and mother were present, as well as several veterans of the *Flying Tigers*.

Petach's story was contained in a letter from one of our readers, Gregory A. Moreira, a member of the New Jersey Aeronautical Historical Society.

Naval Aviation Physiology

By LCdr. Terrence J. O'Leary, MSC

Reprinted from "U.S. Navy Medicine," September 1978

During World War I, because the primary role of Naval Aviation was antisubmarine warfare, most Navy flying was done at low speed and low altitude. As a result, there was little or no appreciation of the stresses of high-altitude flight.

By the end of the war, however, aircraft were available that could attain an altitude of 25,000 feet. As higher flights became more routine, the need for a supplemental oxygen supply for pilots became apparent.

In 1927, a letter from the Chief of the Bureau of Aeronautics (BuAer) indicated that 2,000 oxygen tanks that had been purchased by the Navy in 1922 (probably for welding purposes) could be used for aviation. (At that time, oxygen was supplied to the aviator through a pipestem hooked over his lip.)

In 1929, a memorandum endorsement from the Director of Fleet Training to the Chief of Naval Operations emphasized the importance of supplemental oxygen for high-flying pilots.

"It is apparent that the use of oxygen at altitudes of 15,000 to 16,000 feet is not necessary for safety but is extremely desirable in that the physical and mental capability of the pilot is increased. Above these altitudes, the necessity for oxygen increases and the factor of safety to personnel enters."

In February 1940, with prewar naval activities on the increase, the Medical Research Section of BuAer recommended that facilities be procured to provide oxygen indoctrination for all flying personnel. Through lectures and training films, instruction was to be given on the effects of anoxia (lack of oxygen) at altitude and on the use of oxygen equipment. Practical demonstrations were to be provided in low pressure chambers, where flight personnel could experience firsthand the consequences of anoxia and the benefits of supplemental oxygen.

In July of the same year, BuAer approved installation of low pressure chambers at the basic flight training schools at Pensacola, Corpus Christi, Miami and Jacksonville.

Aviation cadets work in Pensacola's low pressure chamber which was installed in 1942. Also at Pensacola, opposite page, WAVES teach aviation cadets the proper use of oxygen equipment in 1943.

In May 1941, Lt. H. J. Rickard (MC, USNR), Lt. T. D. Boaz (MC), Pharmacist's Mate First Class H. G. Leak and Water Tender First Class J. Krohn were ordered by the Bureau of Navigation to proceed to the Navy Department in Washington for two weeks' training as members of the Navy's first Altitude Training Unit.

This group spent the first week with the Experimental Diving Unit at the Washington Navy Yard, where there was a low pressure chamber used primarily for research and development and staffed by qualified divers. The second week was spent in Boston at the Harvard School of Public Health, which also had a low pressure chamber and was already training two Army flight surgeons in high altitude problems.

By June the four were in Pensacola, where they gave a two-week course of instruction to prospective training-unit personnel from the other basic flight schools and began training cadets.

Of the early altitude instructors, N. E. Williams and N. L. Barr, in *The History of the Medical Department of the United States Navy in World War II*, wrote: "One of the major accomplishments of the . . . program during 1941 and 1942 was to dispel misconceptions concerning the use of oxygen. It was commonly believed that breathing 100-percent oxygen was harmful, that strong men did not need supplemental oxygen until they reached comparatively high altitudes, and that only the physically weak needed to use oxygen at low altitudes. To many, use of oxygen at low altitudes was an admission of weakness and lack of stamina. These misconceptions were so prevalent and firmly ingrained that altitude training personnel soon found themselves selling the use of oxygen to aviation personnel."

Demonstrations were given in low pressure chambers like the one at Pensacola, described by T.D. Boaz in a U.S. Navy Medical Bulletin. "The chamber, which is cylindrical in shape, is 20 feet long, 8 feet in diameter, and is divided into 2 compartments; the larger is 16 feet long, containing 14 seats (7 along each side), and the smaller or lock compartment being merely 4 feet long and containing 2 seats on each side. The 2 compartments may be operated separately when the door between them is secured. This is of importance for individuals who become distressed during a simulated high altitude run. They may be transferred to the lock compartment and brought quickly to atmospheric pressure while the others remain at the simulated high altitude and complete the 'flight'."

By late 1941, the four low pressure chambers originally ordered had become so overworked that six more were procured for other air stations. (For oxygen training in fleet units, six mobile chambers were procured in 1943.)

In November 1941, according to Williams and Barr ". . .plans were developed for a program of pilot declassification based on each aviator's tolerance to anoxia, chilling, and air embolism. . . . During 1942 the Altitude Training Unit at Pensacola conducted investigations aimed at the establishment of measures of altitude tolerance. Reactions to hypoxia at altitudes of 18,000 and 18,500 feet were studied. . . . Installation of the first refrigerated low pressure chamber was completed at Pensacola in December 1942."

Cadets had to demonstrate a tolerance for temperatures as low as -30 degrees F while at a simulated altitude of 30,000 feet. Those showing lesser tolerances were limited to flying low-altitude aircraft.

A course of instruction in low pressure chamber technology, leading to the designation "low pressure chamber technician," was established in 1941 for hospital corpsmen (pharmacist's mates), and Altitude Training Units began giving the course in 1942. In December 1943, the first classes of WAVE corpsmen began this training, so they could replace male corpsmen needed for fleet assignments.

Ten medical officers were trained at Pensacola in 1942 "as instructors to inaugurate low pressure chamber training at their respective duty stations. Also, H-V(S) officers were trained as instructors."

H-V(S), for Hospital Corps-Volunteer (Specialist), was a designation given to certain officer specialists brought into the Navy in WW II. These H-V(S) officers were the predecessors of Medical Service Corps aviation physiologists. At the time, however, they were designated environmental physiologists.

Ensigns Wilson C. Grant, Arthur H. Smith, and Daniel T. Watts formed the first class of physiologists to receive altitude training.

Ens. Smith arrived at Pensacola in April 1942, a month early, and was temporarily assigned to work with Lt. Peckham, an aviation psychologist who was developing a night vision training program.

Of his subsequent altitude indoctrination, Smith says, "Nobody talked to us—we just learned by OJT." Not until two or three classes later was a formal curriculum established.

In December of that year, Smith was transferred to MCAS Cherry Point, N.C., to establish an Altitude Training Unit. Subsequently he was assigned to NAS Jacksonville, then to MCAS Santa Barbara where he served as the night vision training officer until February 1946.

For Grant there are some vivid

memories of Pensacola in 1942.

One is of the visit of First Lady Eleanor Roosevelt, who arrived during an inspection tour to learn where women might fit into the Navy training program. While at Pensacola she went through a low pressure chamber flight on which Ens. Grant was an observer. The original intention was to take Mrs. Roosevelt on a "flight" to only a few thousand feet; however, despite lengthy explanations of potential discomforts, she insisted on sharing the experience of the student pilots.

Another memory is an unhappy one, for Grant was a witness to the plane crash in which Commander Eric Liljencrantz (the Navy's first flight surgeon to die in an aircraft accident) was killed. Grant had been flying in the same aircraft on the flight just before the fatal accident.

After leaving Pensacola in December 1942, Ens. Grant served in the Altitude Training Unit at NAS Norfolk for three or four months before becoming a line officer. Eventually, he switched to PT boats, arriving in the Philippines just as the war ended.

The third classmate, Ens. Watts, had joined the Navy as a line officer, in his rush to enter the war effort. After three months' active duty at Key West, he became an H-V(S) officer and was ordered to Pensacola in May 1942 for altitude training.

After a tour at NAS Alameda, he served from early 1944 until 1947 at the Naval Air Experimental Station, Philadelphia, carrying out some of the early human-factors research leading to development of the first Navy ejection seat. Two special visitors to the station during that time were Charles Lindbergh and James Doolittle, whom Watts laconically describes as "characters — especially Doolittle."

Early in 1943, the Altitude Training Unit at Jacksonville established a course of instruction leading to the designation oxygen officer. A few of the students were physiologists, but most were pilots who had been disqualified from flying, cadets who had not completed flight training and others.

Since at the time there was no such thing as a test stand to check oxygen equipment, these people were tasked with checking each pilot's equipment prior to flight – and occasionally at altitude in an aircraft. They were often assigned to an Altitude Training Unit; however, they spent most of their time with the squadrons.

Later, air-sea rescue and survival training was added to the oxygen officer course, and the designation for graduates was changed to aviation equipment and survival officer. A school similar to Jacksonville's was established at Pensacola in 1944 and, by the end of 1945, the two schools had trained more than 400 officers.

By 1943, rapid expansion of the aviation training and pilot declassification program had begun making it difficult for Altitude Training Units to comply with the numerous directives they were receiving. Shortages of trained medical personnel were occurring. Moreover, ground and flight training syllabuses for cadets were too crowded to allow enough time for the oxygen indoctrination courses and altitude classifications requested by BuAer. In short, the program was becoming a major administrative problem.

In April 1943, BuAer asked BuMed to assume responsibility for the program and, within a few months, altitude training had become the program's primary mission.

Describing developments during this period, Pollard wrote: "The Bureau of Medicine and Surgery established a Low Pressure Chamber and Oxygen Section under its Division of Aviation Medicine in June 1943 and subsequently administered the development of training techniques, the conduct of high altitude training for the training commands and the fleet, and provided trained instructors and supervisory personnel. The conduct of the training at the local level was placed under the direct supervision of the local senior medical officer. Assistance was obtained from locally assigned junior flight surgeons."

It should be noted that early in the program not all Altitude Training Units had physiologists assigned. In those that did, a flight surgeon was still directly in charge, and the physiologist served as his assistant.

With the war at an end, the training of corpsmen as low pressure chamber technicians was discontinued in late 1945.

Summer 1946 saw a massive exodus of personnel and, wrote Pollard, "aviation physiology training collapsed due to the release of trained instructors from active duty."

But progress in the science of aeronautics, and the advent of more sophisticated aircraft, assured that the setback would be only temporary.

By this time the Navy was developing ejection seats for its high-performance aircraft, and on October 30, 1946, Watts, a lieutenant commander, was witness to the first live Navy ejection from an airborne platform.

The aircraft was a JD-1 and the volunteer was Ltjg. A. J. Furtek, who had been a qualified parachutist as an enlisted man and had later become a Naval Aviator.

The ejection process was supposed to work like this: After ejection had been initiated, a static line attached to the aircraft was to open the main parachute, which was attached to the ejection seat. When descent of the seat had been slowed down, the occupant was to disconnect himself, fall away from the seat and open his personal parachute.

After five perfect dummy trials, it was decided to try a live firing. With the aircraft at about 10,000 feet, flying at about 205 miles per hour, Furtek began his ejection; however, the main parachute failed to open completely. To observers, Furtek seemed slow in getting out of the seat, but he finally pushed himself out at about 1,500 feet above ground. He fell some 200 feet more before getting his parachute open and landing safely. (*NANews*, October 1976)

"Until the establishment of the Allied Science Branch of the Medical Service Corps in 1948, there was no established career pattern in the Navy to attract aviation physiologists," Pollard wrote. He noted that although flight surgeons tried to conduct aviation physiology training, there were too few of them to do so adequately. Thus, "the unavailability of instructors was an important factor in the slow revitalization of training."

At the 1948 Naval Air Training Command Conference, according to Pollard, a "general strengthening of the training was recommended, including the addition of regularly scheduled refresher training for fleet pilots." Still, the end of 1950 saw just four aviation physiologists on active duty.

Lt. Elizabeth Reeves, stationed at North Island, was the only physiologist who had come on board during WW II and had remained on continuous active duty. Lieutenants Glenna Cahill, stationed at Jacksonville, and Mary F. Keener at Norfolk, had been asked to return to active duty to help revitalize the program. Commander Roland A. Bosee, at El Centro, had been a Naval Aviator during WW II and had converted to aviation physiology in 1947.

In early 1951, a 10-week course was conducted for the first class of student applied aviation physiologists in six years. The five graduates were Ltjg. Bill Archer, assigned to Philadelphia, Ltjg. Kenneth Coburn to Pensacola, Ltjg. Tom Ferris to Atlantic City, Ens. Harold Bower to North Island and Ens. Morris Damato to Corpus Christi.

In March of that same year, BuMed accepted the Navy's first portable ejection seat tower designed exclusively for training purposes. The prototype was installed at NAS North Island for evaluation by the Altitude Training Unit, with LCdr. Marvin Courtney (MC), a flight surgeon, as project officer. Shortly thereafter, ejection seat trainers were installed at all training unit locations.

The first female aviation physiologist to enter the program after WW II was Ens. Nancy Murtagh. She completed her training in the fall 1951 and was assigned to NAS Alameda. She says she initiated the push for hazardous duty incentive pay for officers and enlisted personnel routinely making low pressure flights, having begun her work on the proposal around 1953.

In June 1954, a bill introduced in the Senate included the statement that "duty as low pressure chamber inside instructor" entitled individuals assigned by competent authority to HDIP. The resulting Career Incentive Act of 1955 set the monthly HDIP for officers at $110; for enlisted personnel at $55.

In early 1959, the Hospital Corps NEC of 8409 was established for low pressure chamber technicians. These individuals had to be qualified aviation medicine technicians who had received on-the-job training with Altitude Training Units. (Around 1962, a formal low pressure chamber technician course was established for selected volunteers and, in 1963, the designation for these individuals was changed to aviation physiology technician.)

In 1961 an additional duty billet (Head, Aviation Physiology Branch) was established at BuMed, and Captain Mary F. Keener was appointed to fill it. (The billet became full-time in 1965 but was lost in 1976 because of personnel cuts following the Vietnam conflict.)

Later in 1962, LCdr. Harold Bower presented a proposal to Captain Clifford Phoebus, Commanding Officer, Naval Aerospace Medical Institute, Pensacola, concerning the training of naval aviation physiologists. Under the proposal, preflight and flight training would be added to the curriculum – a measure that would lengthen the course from ten weeks to nearly six months. Also, naval aviation physiologists would become designated aircrew members, rating flight pay and the right to wear wings. The purpose was to ensure that the training physiologists provided would be oriented, not just to the low pressure chamber, but to the real world of aviation.

In January 1963, LCdr. Bower and Captain Phoebus presented the proposal at BuMed to Captain Keener; Captain Merrill H. Goodwin, Assistant Chief for Aviation Medicine; and Captain Robert S. Herrman, Chief of the Medical Service Corps, all of whom liked the idea.

In December 1965, Lt. Durward Rhoades, Ens. Tom Bird, and Ens. Robert L. Smith became the first aviation physiologists to complete the new flight-training syllabus. On January 10, 1966, the Secretary of the Navy approved the designation of naval aviation physiologists as aircrew members. And on April 12, 1967, a change in the U.S. Navy Uniform Regulations permitted wearing of wings by designated naval aviation physiologists.

Early in 1970, Commander Paul W. Scrimshaw, who had relieved Capt. Keener at BuMed, called a meeting of some of the senior aviation physiologists to standardize Navy physiology training procedures and syllabuses. The resulting changes went into effect in fall 1970 and included expansion of the night vision lecture to cover various aspects of visual problems, vertigo and disorientation. Added to the oxygen equipment lecture was a briefing on all pertinent items of aircrew protective and survival equipment.

In January 1975, LCdr. David G. Smith (MSC) entered the Aviation Safety Officers School at Monterey, becoming the first of a growing number of naval aviation physiologists in the Aeromedical Safety Operations (AMSO) program. Awareness of the need for more emphasis on the medical aspects of aviation safety and recognition of the additional services the naval aviation physiologist can provide have made the physiologist an integral part of the AMSO team.

Recent developments in aviation physiology have included interservice programs with the Air Force.

In 1976, LCdr. Terrence J. O'Leary (MSC), HM1 Billy J. Cox and HM1 Claude Carroll became the first naval aviation physiologist and aviation physiology technicians to work in an Air Force training unit (at Andrews AFB, Md.).

Simultaneously, Capt. John Graham (BSC, USAF) became the first Air Force physiological training officer to work in a Navy training unit (at Barbers Point, Hawaii).

In February 1977, HM2 John Lawlor, HM2 Jeffrey L. Munson, HM2 James Neeley and HM3 Marlon Evans became the first aviation physiology technicians to be trained by the Air Force (at Brooks AFB, Texas).

The history of any program is a history of people. The people in this program have always been willing to take on the job at hand – with a can-do spirit and with devotion to the U.S. Navy. Their spirit and enthusiasm have brought growth to this program while, in these times of austerity, others have not fared as well.

PCS for a P-3

November 13, 1978, looked like a typical autumn New England day – the last colors of fall were gone. But the naval air station at Brunswick, Maine, was quietly preparing to make an entry in antisubmarine warfare history. The *Golden Pelicans* of VP-44 closed another chapter in airborne ASW logs with the last active duty operational flight of the P-3A *Orion*, and became the first squadron to be fully equipped with the P-3C Update II.

Leading up to this climactic flight were months of transition for the flight crews, maintenance and other departments; long hours of preparation with the assistance of VP-30; and "hands on" experience under the direction of Commander William L. Vincent.

Each arrival of an Update II signaled the departure of another A model. The last P-3A to leave the squadron, BuNo 152173, was built in August 1965. First delivered to VP-10, this aircraft was transferred to VP-44 a year later. With the exception of several short excursions to VP-30, the aircraft has remained in VP-44's custody for the last 12 years.

Preparation for the final flight was a smooth, all hands effort. The combat air crew which flew the ceremonial surveillance mission boasted over 42,500 hours of flying experience and 172 years of naval service. It was headed by patrol plane commander, LCdr. Bob Noce, who has almost 7,000 hours of flight time.

Third pilot for the crew was Lt. John Price, the last patrol plane commander to be so designated in the A model. LCdr. Larry Curtis, with over 3,300 flight hours, assumed the role of tactical coordinator. Senior members of the enlisted crew included AWCS Larry Sherwood with 6,000 flight hours and AOC Marcus Reed with 5,200.

As an appropriate link between the old and new, AWC Ron Ellis took the opportunity to become the last person ever to reenlist on board an active duty P-3A.

Although the P-3As are retired from the active duty ranks, they will continue to be used by reserve squadrons. It is hoped that the reserves will enjoy the same success and reliability with the aircraft as VP-44.

Crew for the Last Flight

Name	Position
LCdr. Bob Noce	PPC
LCdr. Bob Bozich	Second pilot
LCdr. Larry Curtis	Tacco
Lt. John Price	Third pilot
Ltjg. Bob Smith	Navigator
AWCS Larry Sherwood	Acoustic operator
AXC Jim Prop	Radioman
AOC Marcus Reed	Ordnanceman
AWC Ron Ellis	Acoustic operator
AE1 Deke Buchanan	Flight engineer
AX1 Tom Dolan	Inflight tech
AW1 Glenn Strickland	Radar, MAD, ECM
AE3 Tom Gregory	Second mech

Lima Mike 11, VP-44's and the Navy's last active duty operational P-3A, top. Above, LCdr. Curtis gives an affectionate farewell to the aircraft. Far left, crewman mans tactical station on the final VP-44 mission. At left, the crew for the last flight, top to bottom, left to right: Reed, Buchanan, Ellis, Sherwood, Strickland, Prop, Gregory, Dolan, Price, Smith, Bozich, Noce and Curtis.

COMING THROUGH

Naval Aviation News is required to conduct a readership survey every two years. The questionnaire was published in July 1978 and the returns have now been tabulated.

While most commercial magazines can gauge content popularity by response from advertisers, paid subscriptions and newsstand sales, military publications cannot. Ergo, the readership survey. Editors use it to determine how well their efforts are received each month.

Occasionally, *NANews* gets suggestions, slaps on the wrist, and atta boys, but usually these are letters from only a handful of readers. The survey allows you, the reader, a chance to speak out on issues you want to see and read about.

In July there were 31,750 copies of *NANews* printed. Only 381 readers, (one-fourth of these were civilians) submitted the survey form and voiced an opinion, good or bad. Statistically, that's one point two percent.

Those responding were from all walks of life. There were civilians, students, sea cadets, all Navy paygrades from seaman recruit to rear admiral, several retirees and a midshipman. They ranged in age from 11 to over 75.

Almost everyone found the magazine educational and readily available. A staff sergeant says readily available for him means stealing it from the officers' head. Others say readily available means a subscription rate of $18. They were quick to let us know the price is a bit much, especially since we don't even feature a full-color, foldout centerspread of a bare fuselage as do some other pubs.

Others gave us budget-breaking requests for more color covers and centerspreads. Many want to see more photographic features and the use of larger photographs. We would like all of these, too, and more, but the purse strings are, not surprisingly, tight these days. We will continue publishing color whenever we can, though.

A reader wants us to tell sea stories and true confessions (shudder, an aviation soap opera in magazine form). Another directs us to stir up the pot with controversial R&D items, and simple things like holdups on essential parts due to lack of congressional budgeting, etc.

One first class petty officer on CNO staff declares, "Any further improvement would come close to putting you in competition with the 'Good Book' itself." Now, to borrow a phrase: Let us make it perfectly clear, *NANews* has not in the past, nor will it be in the future, in competition with Natops Manuals or the Bible, for that matter.

While on the subject of books, a 14-year-old writes, "It's the best book I ever read. Could you please send me info on USS *Missouri*." This kid is really hooked on aviation.

An 11-year-old wants more published on wars – Korea and Vietnam. Another youngster complains about not being notified his subscription is running out (he has every right to) because he doesn't want to miss a single issue. One teenager says thank you for the chance to make suggestions. "I would like to see information on carriers and their escort ships; ships' defenses against enemy surface and sub-surface ships and air attacks; an update on V/STOL and the F/A-18; more info on fighter squadrons, etc." He ran out of space on his form so we'll have to wait until the next survey for the et cetera. And a young student exclaims, "I enjoyed the articles on the United States Navy Sea Cadets but they could have been longer. After all, *we are the future Navy.*"

A lieutenant commander who enjoys the magazine ponders: "My kids still aren't sure who won World War II. They listen to a Panasonic transistor radio, watch a Sony TV, and drive to school in a Datsun."

Most everyone wants to see articles on their unit, job specialty and particular type aircraft. We agree. Get with it, PAOs. You're there and familiar with what's happening. If you have questions, drop us a line or give us a call.

By JOCS Bill Bearden

TO YOU

One young VP type wants to see stories on units "near or around New Zealand and Australia." We mentioned his name and desires to his detailer who mumbled something about duty on the Ice for the duration. Good luck, dress warm.

We got a mixed bag of requests for past and current events as well as those planned for Naval Aviation in the future. Gears have been set in motion on the latter. An article is programmed on the Naval Aviation Plan. Bear in mind that it takes a lot of cooperation and support from higher-ups to put in writing today what is planned for tomorrow. So many things can change drastically, while on the drawing board. Where have all the clairvoyants gone?

Grampaw Pettibone continues to be one of the most popular features of *NANews*. The responses were mixed, however, when it came to his advice concerning past incidents and those present. For some, past experiences are just as appropriate in theory today as when they occurred. Others, expressed one lieutenant commander, feel that Grampaw ". . .can relate safety to 20 or 30 years ago; however, the more modern the incident the more I can relate to it."

Some black shoes on recruiting duty were very complimentary. We were doing OK "for a bunch of aviators." May the almighty albatross, guardian of piers and wharfs, bless you by singling out your white hat for target practice.

We heard from a Marine infantry officer who says *NANews* "helps narrow the gap between air and ground." Another Marine would like us to publish a "list of every billet connected with Naval Aviation, and a feature article concerning each billet." Wow!

A quality assurance officer with a light attack squadron suggests we ". . .highlight different types of squadrons and the aircraft they fly. The troops who work for me are always asking exactly what I do in between the cat shot and the trap. Stories from the view of the pilot, written in such a way as to be thoroughly understood by the average 19-year-old AT, AE, AO, etc., would go far toward instilling a feeling of purpose about the outstanding work these kids are doing for us everyday. They need to know what the pilots are doing up there so they can fully appreciate their role in Naval Aviation." We couldn't agree more. Hopefully, a pilot somewhere will kick off the program with the first submission and encourage his fellow pilots to do likewise.

The same applies to the following suggestion: "Articles on specific missions would be of interest to student Naval Aviators. For instance, a pilot's view of a typical ASW mission or an intercept run by an NFO. Give us a look at our future!"

An airline pilot suggests we do an aerodynamics article based on Professor Neilson's aviation safety class at Monterey, Calif. "The max turning rate for least loss of altitude in an aircraft is taught as 45-degree angle of bank. His explanation of 'why' would make very interesting reading."

An editor of a Washington-based aviation periodical says, "I do steal material from you (sob!) when I see something on Navy or Marine helicopters I've not seen before. I would assume this is called disseminating the news." You take an awfully big chance when you assume. Seriously, we don't mind, if the folks we stole it from don't.

An aerospace engineer, GS-13 type, in NavAir headquarters wants us to ". . .eliminate the shop talk jargon. Besides plane drivers, there are other people who read the magazine. Half the time I can't understand what is written." We thought it was the jargon of your profession, too. Nevertheless, we'll endeavor to simplify.

And finally, a young photographer wants us to double the magazine's size. "Naval Aviation is one of the finer things of life and this magazine really brings it out."

Thank you for that.

The Golden Eagles, formed in 1956, comprise the Early and Pioneer Naval Aviators Association. Their numbers, originally the surviving members of the first 1,900 Navy pilots, have been expanded in recent years by certain other flyers (Naval Aviation News, November 1978).

Naval Aviation News wishes to thank Vice Admiral B.M. Strean, USN(Ret.), one of the association's leaders, for helping us acquire for publication the personal remembrances of the Golden Eagles which will be featured periodically in the future.

Second Yale Unit

F. Trubee Davison, Class of 1917, Yale University, drove a Red Cross ambulance in France in 1915 during his summer vacation. When he returned he prophesied that we would shortly be in World War I and that the Navy was going to have to provide aerial antisubmarine coastal patrol. He wanted to participate by "jumping the gun" and having a group of flyers ready.

His mother and father financed the purchase of a Curtiss F Boat and hired an instructor, Dave McCulloch, to teach him and 11 classmates how to fly – in the summer of 1916 at Port Washington, Long Island. During the fall, the group learned to fly and Trubee enlisted 17 additional classmates into his Unit.

In 1917 Trubee bedeviled Secretary of the Navy Josephus Daniels to enlist his group and provide it with a commanding officer and some mechanics while he enlisted sufficient sponsors (largely among the parents of the group) to underwrite the cost of leasing land, constructing ramps, obtaining six additional Curtiss F Boats, leasing a hotel and providing quarters and subsistence for the group and the naval personnel – all at West Palm Beach, Fla. – at no expense to the Navy. Secretary Daniels finally acceded and, in March prior to the declaration of war, our group was enlisted at New London as 3rd Class Seamen. We reported to West Palm Beach, with Ltjg. E. O. McDonnell, Naval Aviator #18, in command, and immediately started flying. Six of the original members, who learned to fly in 1916, were our instructors.

On June 1 we moved by special train, airplanes and all, to Huntington, Long Island, where we were provided ramps and living quarters. By June 8 we were again in the air completing flight training. While at Huntington we were issued a Burgess *Dunn* (a plane with swept wings and no tail), and a Curtiss N-9 (a Navy version of the landplane known as the famous Curtiss *Jenny* with a single pontoon) and a Curtiss twin pontoon R-6 with a 200-hp Curtiss engine.

Because we had soloed in Curtiss F Boats, we had no difficulty in qualifying in the N-9s which, though underpowered, had remarkable stability – for that era.

One of our members resigned to join the Marines because he just couldn't get the knack of flying by the "seat of his pants." Another cracked up the N-9 without hurting himself. (The accident was attributed to a tailspin which was caused by a lack of speed in a sharp left-hand turn). In August 1917, we all took our qualifying tests for our Navy wings. This consisted of climbing to 6,000 feet, spiraling down with a dead engine and landing within a relatively short distance from the stake boat. Unfortunately, our great leader, Trubee Davison, who took the first test, overstretched his glide, cracked up and sustained a back injury. The rest of us made it and Eddy McDonnell certified all of us for our wings.

Summary: One injured, one dropout and two planes damaged.

Although all our certifications were mailed to Washington at the same time, someone shuffled the cards and five of us received aviator designations in the 60s (65, 65½, 66, 67, 68); seven of us in the 80s, and five in the 90s.

Bob Lovett was the first to receive orders which took him to France, followed shortly by Di Gates. Dave Ingalls, who was to become our only World War I Navy Ace, received orders to report to the Royal Flying Corps for training in land fighter planes. Some of us were transferred to cruisers as gunnery spotters, some were sent to Naval Air Station, Hampton Roads as instructors, some went to the air station at Key West, some went to England, Italy and France to learn to fly their respective coast patrol planes, and some were given assignments in Washington, D.C.

Later Eddy McDonnell was assigned the job of starting the Navy land Northern Bombing Group and quite a few of us qualified in Italian *Capronies* (a rather poor excuse for an airplane) in order to fly them to France for service in the bombing group.

By the end of the war all but three of us had returned safe and sound, some of us with medals of one kind or another. Of the three, one was killed in training, one was shot down flying a land fighter with the Royal Flying Corps, and one was shot down by German fighter planes while patrolling for submarines in a twin-engine flying

boat over the North Sea.

My own personal experience in the Navy was as follows:

My orders got lost or mislaid, but six weeks after qualifying I finally was assigned to Hampton Roads, then under the command of my old boss, Eddy McDonnell. I immediately started instructing. By this time, the MIT Naval Aviation Boot Camp was in operation and regularly a group of cadets would arrive on Saturday noon. Kind mothers of attractive girls put on a dance at the Country Club for the newcomers. Much as I loved to dance, I spent most of my time watching the cadets and selecting the 10 best dancers as the students I would ask for. (In those days, we believed a good dancer with good rhythm made the best pilot.)

As a result of my record as an instructor, I was elevated to Chief of the Flying School. About this time we received one of the old flying boats, *The Mary Ann*, which I flew in training. On an average, it took 10 hours to qualify students in N-9s for solo. Then, after 10 hours of solo, I would take them out in my Curtiss F Boat, give them five more hours of instruction before I let them solo in it.

Even then, the students wouldn't remember the admonition, "Don't make a left-hand turn until your plane reaches maximum speed." As a result we had many tailspins which damaged the planes but didn't hurt the occupants – except for one. On one formation flight, the left-hand outside plane would be the slowest, with my plane, as the leader, at a medium speed, and the outside aircraft, the fastest. While jockeying to get into position, the outside-right man spun into the water and was drowned. We were able to extricate his copilot before he went under. Later, the OXX-6 100-hp Curtis engines were replaced with Hispano-Suizas, 150-hp, which improved the N-9s' performance.

As a result of this accident, I went to my C.O., then Pat Bellinger, and asked permission to include instruction on how to get in and out of tailspins as one of the qualifying requirements. (He had previously turned down my suggestion that anyone who cracked up a plane stand courtmartial, if for no other reason than to impress upon the pilot the dangers of going into a tailspin in an N-9.) "What do you know about tail spinning?" Pat Bellinger asked. "Why do you suppose every Sunday some of my buddies and I have driven 25 miles to Newport News to learn the art from Eddy Stinson in his *Jenny*?"

I got the okay and, as long as I was at Hampton Roads, nobody received wings until I had qualified them in spinning.

In September 1918, I was transferred to Morehead City, N.C., to establish a patrol station and maintain a submarine alert. Two planes would fly from Norfolk to Morehead City each day, spend the night and return the next day.

In July 1919, when the air station was completed, I terminated my Navy career by signing my own orders for discharge on July 19, 1919.

By R.L.(Liv) Ireland,USNR(Ret.)
Naval Aviator #84

First Yale Unit

Thirteen young men, most of them sophomores, Yale Class of 1919, reported to Lt. Wadleigh Capehart, Naval Aviator #19, in Buffalo, N.Y., for training (at private expense). They learned to fly, passed exams from Pensacola and were commissioned in November 1917. Here is a glance at where they were when the war ended November 11, 1918.

Granson Goodyear Depew, NA#121: "Gans," organizer and head of the unit, was X.O. at NAS Hampton Roads. His organization plan had been approved and ordered into effect at all patrol stations, stateside and abroad.

Edward de Cernea, NA#132: After injury in a crash off Dunkirk, France, Eddie was sent back to the U.S. to recuperate. The French had awarded him a *Croix de Guerre*, with palm, and made him a *Chevalier de la Legion d'Honneur* for actions against enemy submarines.

Percival Strong Fuller, NA#131: squadron commander at Coco Solo, Panama.

Frank Henry Goodyear, NA#122: at NAS San Diego instructing.

Ashton William Hawkins, NA#128: "Tex" was squadron commander at NAS Killingholme, England. He was credited by Adm. Sims for having flown more North Sea patrols than any other U.S. Naval Aviator.

Seymour Horace Knox: "Shorty" was in the hospital in U.S. recuperating from a skull fracture suffered in the crash of the unit's first F boat, May 30, 1917.

Chauncey Forbush Lufkin, NA#129: chief flight officer at NAS Brest.

Alexander Agnew McCormick, NA#123: killed in the crash of a British night bomber in France, following raid over enemy lines, September 4, 1917.

James Sanford Otis, NA#127: with Northern Bombing Group in France.

Stephen Potter, NA#130: shot down in flames by German monoplanes in the North Sea, April 25, 1918.

Thomas Clifford Rodman, NA#125: in charge of flight training at Pensacola.

John Jay Schieffelin, NA#124: in Dundee, Scotland, in command of three H-16 flying boats, standing by to scout for the British Grand Fleet.

Edward Traver Smith, NA#126: in France with the Northern Bombing Group.

Four were awarded Navy Crosses (two posthumously) and two WW II DDs were named *Stephen Potter* and *McCormick*.

By J. J. Schieffelin, Naval Aviator #124

letters

Seaplane

This seaplane, 2-T-2, was the first Navy plane to conduct surveillance activities in Sitka, Alaska, in August 1923. I was a teenager when I witnessed the flight. The photo was taken by my father.

John P. Buchanan
250 Scenic Drive
Vallejo, Calif. 94590

Attack!

In reference to your December 1978 issue and in response to VMA(AW)-533's claim to being the "first Marine *attack* squadron in two years to participate in carquals," it must be pointed out that while Marine Tactical Electronic Warfare Squadron Two does not contain the word attack in its official title, it does fly the A-6. We fly it continuously, day and night, aboard USS *Midway* and have safely done so for three years. Our carquals, however, are anticlimactic to the mission at hand. We get *ours* at night.

R. J. Joslyn, 1st Lt., USMC
ASO, VMAQ-2
MCAS Cherry Point, N.C. 28533

S-3 Drivers

We in the attack community here in USS *Midway* have heard a great deal about the S-3 *Viking* but have little personal experience since none are aboard our ship. Many questions were thus aroused by the pictures preceding the interview with RAdm. Carius in your October 1978 issue. For example, aren't S-3s tactical jet aircraft and, therefore, aren't oxygen masks required by OpNavInst 3710.6J? We would sure like to find the version of the instruction that allows boom mikes! We'll not comment on the lack of G suits. But our most important question is "When is the US-3 going to bring the mail?

R. A. Ven
VA-93
FPO San Francisco 96601

Ed's Note: Don't know about the mail but S-3 drivers need to wear the masks for takeoff and landing only, when operating from carriers, which accounts for the boom mikes in flight. OpNavInst 3710.6J applies.

Prairie Navy

I am looking for material on the naval air stations which were formerly located at Hutchinson and Olathe, Kans., especially information on the last five years of NAS Olathe. Credit will be given for any materials used in my planned monograph on the Prairie Navy. I would like to get aircraft pictures and unit histories.

Second, I was stationed in USS *Enterprise* (CVN-65) during 1970-71 and would like to buy a cruise book from anyone who might have one to sell.

Keep up the good work on this fine magazine. I really enjoy looking through each issue at the library of the university where I work in the Veteran Services Office.

Patrick Murphy
1559 North Emporia
Wichita, Kans. 67214

Thanks

A quick note of appreciation for sending me the copies of *Naval Aviation News* with the Earhart article. I am delighted you were able to use it and hope that it will lay to rest some of the fiction and speculation concerning her disappearance. I was also delighted to see that the article shares the issue with the story about Dutch Schildhauer. I have known Dutch for some time as a truly fascinating personality of Naval Aviation, but not until your article did I understand the extent of his contributions and activities. Let me know if I can assist your excellent magazine in any way in the future.

J. Gordon Vaeth
NOAA
Washington, D.C. 20233

Ed's Note: Mr. Vaeth authored the article on Amelia Earhart which appeared in the January 1979 issue of *NANews*.

Reunions

The second reunion of the ships crew of USS *Hancock* (CV-19) and Air Groups 6, 7 and 80 will be held in Boston, Mass., in July 1980. For additional information write to Bill Colleran, 7623 North Rogers Ave., Chicago, Ill. 60626.

USS *Mission Bay* (CVE-59) personnel will hold a reunion July 12-15 at the Regency, 3900 Elati Street, Denver, Colo. 80216. Anyone desiring more information contact Herbert H. Freise, P.O. Box 946, Walla Walla, Wash. 99362.

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SQUADRON INSIGNIA

TACAMO – take charge and move out – is the byword for Fleet Air Reconnaissance Squadron 3 and the airborne fleet broadcast system, which provide the Navy with a mobile communications system that can be quickly deployed anywhere in the world. VQ-3 was commissioned July 1, 1968, at NAS Agana, Guam. Originally the TACAMO component of VW-1, the squadron flies four Lockheed EC-130Qs as the Pacific link in the broadcast system. Since commissioning, VQ-3 has operated out of almost every base in the Pacific. Cdr. Hugh K. Barnhill is squadron commanding officer.

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