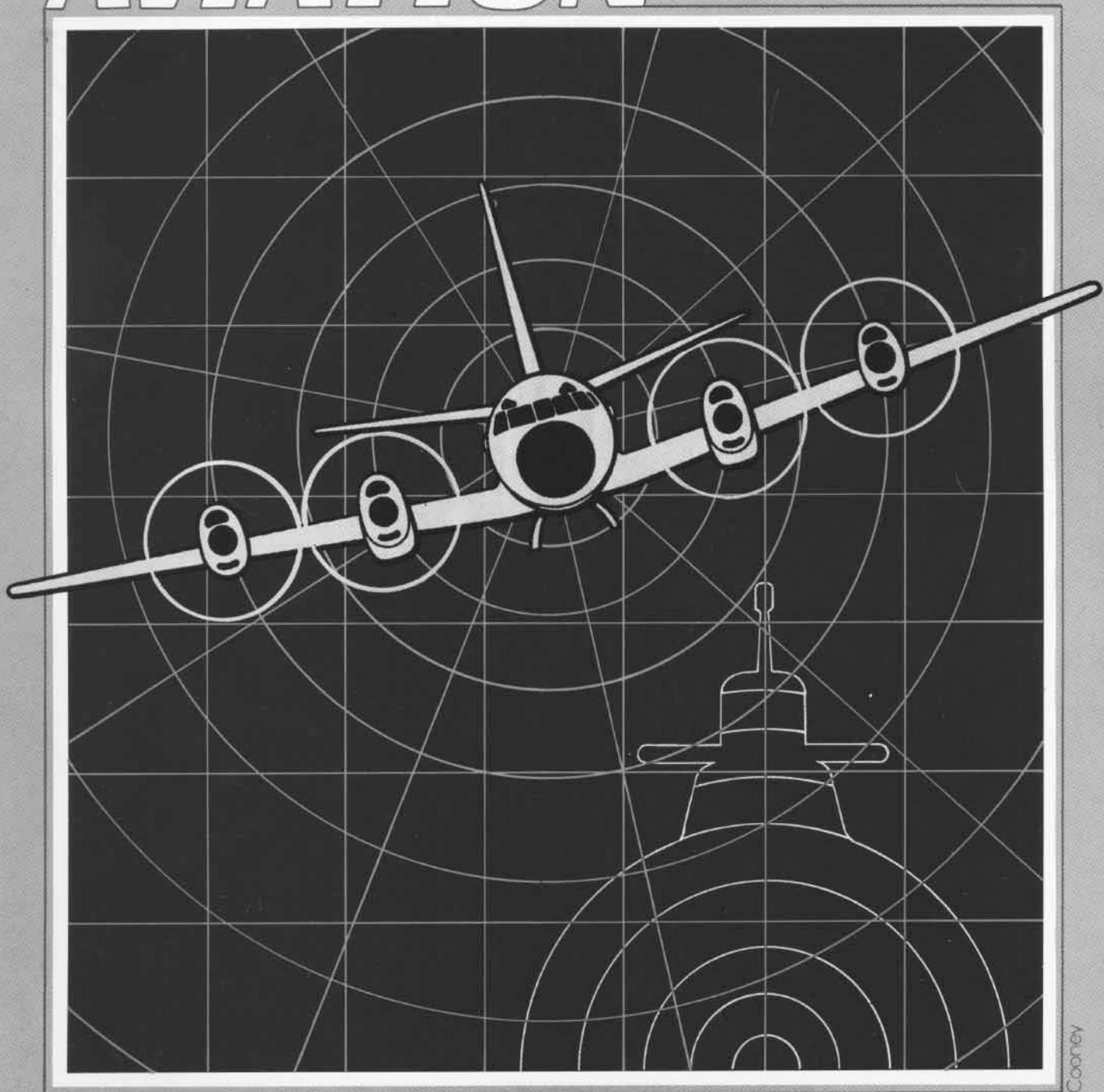


NAVAL AVIATION NEWS



NAVAL AVIATION NEWS

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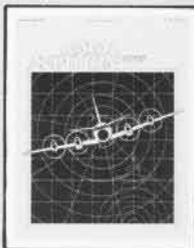
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COVERS—Front, *NA News* Art Director Charles Cooney rendered the P-3 weaving its electronic web. Back, this painting of LCdr. Barbara A. Rainey, the Navy's first female Naval Aviator, hangs in the Naval Aviation Museum. Rainey Hall at the Fleet Training Center, Mayport, Fla., was dedicated in April 1987 in honor of Rainey, who was killed in a crash during a training flight in 1982.

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Aviation maintenance is an "Endless Cycle" which tests the skills of all squadron personnel. In VP-56, the team spirit is what keeps their planes flying. **Page 4**



VXN-8 is the free world's only aviation squadron devoted solely to airborne oceanographic and geophysical surveys. That's why "The World Is Their Backyard." **Page 8**



Streamlining the acquisition process saves tax dollars and ensures rapid introduction of quality aircraft and weapon systems to the fleet. The E-6A and P-3 Update IV programs illustrate "streamlining" at its best. **Page 10**



Former *NA News* staff member Capt. Matt Portz, USN (Ret.), reflects on his days in the Naval Air Training Command. Read "Litany of Precision — WW II Style." **Page 12**



Top Gun recently added a new-generation adversary to its training syllabus that will push fleet fighters to their limits. The challenger is the F-16N which will eventually replace Top Gun's F-5 aggressor aircraft. **Page 20**



NA News welcomes "Weather Front" to its pages. Written and illustrated electronically on a personal computer by retired Capt. Neil F. O'Connor, the regular department will provide Naval Aviation personnel with interesting weather-related information. **Page 36**

It was August 1962, new flight boots cost \$10.50 a pair, NATOPS was only six months old, and the pilot landing aid television (PLAT) was just being introduced aboard carriers. You realize, but you don't want to believe, that it was a quarter of a century ago.

The same month, at NAS Patuxent River, Md., there was a grand event. In the greatest of Navy traditions, there were VIPs dressed in blues and speeches dressed in hyperbole. Even the weather was celebrating. A cold front had cleared the sultry skies and provided temperatures in the low seventies.

Naval Aviation News saw it this way:

"August 13 was a special and long-awaited day for Naval Aviation....To mark the event, naval officers, industrial executives, political leaders, American and Canadian ASW representatives, members of VP-8 and VP-44...and their families gathered on the ramp at NAS Patuxent for impressive ceremonies."

The P-3 *Orion* joined the fleet.

Vice Admiral R. B. Pirie, DCNO (Air), accepted the first operational P-3 from Courtland Gross, Chairman of the Lockheed Board. Gross said, "As father of the bride, I have the pleasant duty to deliver her to you for safekeeping, to have and to hold from this day forward....This is no tender creature to be pampered and petted, but a husky helpmate anxious to be put to work. Treat her well, love her a little and she

will work long and hard."

Twenty-five years later, the *Orion* continues to fulfill a promise made and surpass all expectations. Although the Navy is planning a replacement, called the long-range air ASW-capable aircraft (LRAACA), it is a safe bet that one of the competitive versions will be very much like the P-3 airframe.

"The P-3 is the best aircraft available today that a commander could want to fulfill the patrol mission," said Commander Scott Thompson, skipper of VP-44. "If you compare fighters to fighters and patrol planes to patrol planes, the P-3 is unbeatable. It has the legs to get us to the threat, the staying power to do our business, and the ability to carry the right mix of weapons and put them on target. The P-3 is as viable an airframe today as it was 25 years ago."

The solid design of the basic airframe, coupled with spacious interior and substantial electrical power, have allowed for steady growth in avionics with only minimal airframe modifications. Its ability to adapt, to meet the challenge of an increasingly sophisticated threat during an era of rapidly expanding technology, has kept the aircraft the world's foremost airborne ASW platform. The Navy planners and Lockheed engineers showed remarkable wisdom in developing a basic airframe that in retrospect has proven itself through mission versatility, staying power and

its amenability to update avionics.

Cdr. Thompson's predecessors in VP-44 and mine in VP-8 cut their teeth on the P-3A during the Cuban missile crisis. With only a handful of factory-trained maintenance personnel and no formal training for the aircrews, the *Golden Pelicans* and *Tigers*, respectively, flew into the fray of international headlines and politics with only rudimentary knowledge of their aircraft and operated avionics equipment which was only slightly more advanced than the P2V's which they had just transferred.

While both squadrons and VX-1 were operating around the clock, tracking Soviet shipping and conducting ASW operations, Washington planners had already developed the initial P-3A modifications and the P-3B. They had also tasked the Naval Air Development Center, Warminster, Pa., to integrate the aircraft's sensor systems with its navigation systems through a digital computer. These far-sighted decisions and the P-3's early proven performance to respond rapidly, and operate independently with significant airframe reliability, insured its longevity and international popularity.

This August there were no speeches, no hype, no ceremonies. The P-3 *Orion*, now supporting nine countries and numerous U.S. government agencies, marked a quarter century and never looked back. ■



The P3V-1 Orion was officially accepted in August 1962 as the Navy's newest, fastest and deadliest submarine hunter-killer.

Mystery in the Mountains

An A-6E *Intruder* launched on a night, low-level terrain clearance navigation flight off the coast of a foreign country. The route had been approved. The area of the course featured sharply rising mountains with dense, "three-canopied" jungle terrain. The search radar terrain clearance (SRTC) mode of the radar system was "down" prior to flight but maintenance personnel were working to get it "up." The SRTC was required by squadron standard operating procedure (SOP) for such flights.

The squadron duty officer asked the crew what its intentions were if the SRTC was not ready, and they responded that they had permission to fly the route "radar only." About 15 minutes after launch, a transmission "in the blind" on the designated frequency was heard indicating the *Intruder* was beginning its low-level run. Neither the ship nor an airborne E-2 *Hawkeye* monitored or maintained a track on the A-6. There was no further radio or radar contact with the aircraft following the transmission.

An hour and a half later, when the *Intruder* did not check in at marshal, lost plane procedures were initiated. Search and rescue efforts, which began immediately, utilizing forward-looking infrared radar-capable air wing assets, were unsuccessful.

Later, a reliable source reported hearing jet noises followed by a loud explosion about 30 minutes after the *Intruder* would have begun the route. Isolated reports of seeing an aircraft on fire were also received. The area of these sightings is extremely rugged.

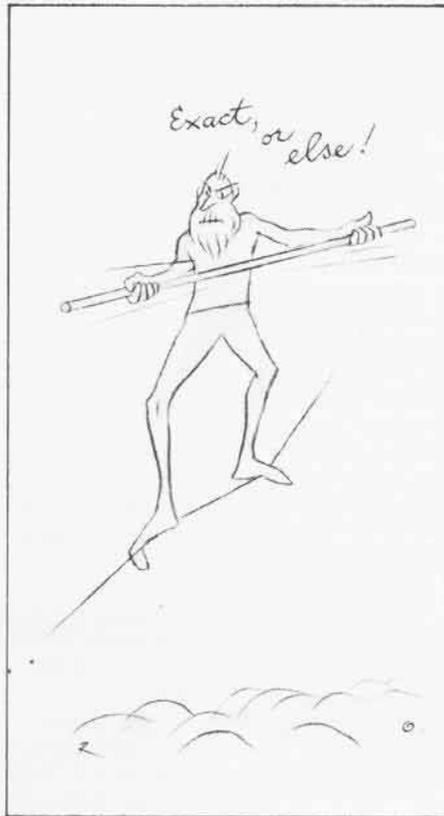
The search effort continued for 15 days, in the air and on the ground, but no signs of the aircraft or the crew were found.



Grampaw Pettibone says:

Gramps' head is hangin' mighty low over this one. The pilot and bombardier/navigator (BN) in this *Intruder* crew were considered first-rate, dedicated aviators. We'll never know what really happened to them, but investigators came up with some reasonable ideas.

The pilot, who had over 2,000 A-6 hours, had completed fleet readiness squadron training after a 15-month, nonflying period, but was new to the outfit, having flown only three hops in the squadron. The BN had been on



board for 15 months and specifically requested to fly with the pilot.

This was their first hop together, one of the toughest in the attack community — night, low-level terrain clearance, in unfamiliar terrain and locale. And neither had recent low-level or SRTC experience, not to mention exposure to terrain that was much, much more challenging than that which they practiced over at home.

Maintenance confirmed that the SRTC had been properly repaired in time for the flight. Weather wasn't a factor. Could be they hit a bird, of course. But all things considered, there's a reasonably good chance these men fell victim to loss of situational awareness and crashed in the mountains.

They had steeply rising terrain to contend with and irregular and not clearly defined valleys. Other aircrews reported the terrain being much more rugged and vertical than expected, with 2,000 to 4,000 foot-per-minute rates of climb required on the "upslope" legs along the route.

A number of charts prepared for the flight were time ticked at 360 knots except the one the BN picked. It was

figured at 420 knots at 1,000 feet above the ground. Neither crew member had recent (within 30 days) SRTC experience. So they were slated for the SRTC flight in violation of squadron SOP. And the schedulers knew this.

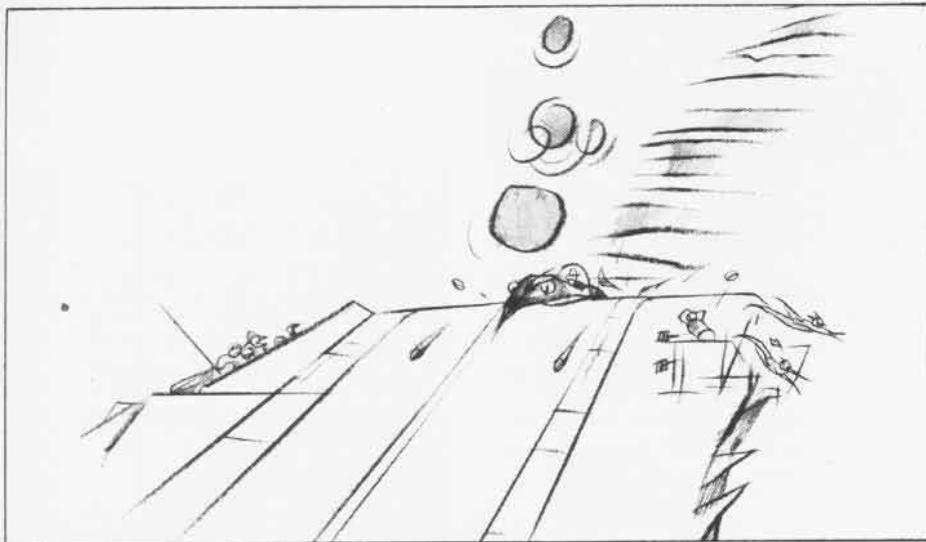
Both flyers were aggressive, talented, motivated and confident. Gramps sure can't fault 'em for those characteristics. But goin' out at night on a tough hop like this one, without recent night time, or low-level experience — and without having flown with each other before — was pushin' the odds in the wrong direction. It wasn't clear who gave the crew the OK to fly "radar only" if the SRTC went down. Point: If you're gonna have standard operating procedures in your outfit, you oughta abide by 'em. Or have a real good reason not to. In this case, Gramps can't find any real good reasons.

MOVLAS Miseries

An F/A-18 was approaching the carrier for a night arrested landing. The ship had experienced a power failure which caused a temporary loss of the Fresnel lens, pilot landing aid television (PLAT) and other systems. Power was regained for the *Hornet's* recovery but it was decided to utilize MOVLAS (manually operated visual landing aid system), due to the possibility of another power failure. Weather was VFR with seven miles visibility but it was "dark" because there was neither moon nor visible horizon.

At three-quarters of a mile, the *Hornet* driver was on course and slightly below glide path, although he stated he saw the ball in the center and that it went about one full cell high. He reduced power to work the ball down and added power slightly to catch it in the center. He added more power as the ball settled through the center and then added full military power followed by afterburner in response to the landing signal officer's (LSO) power call.

The *Hornet* struck the ramp on centerline, the main tires impacting the round-down three feet below flight deck level. The tail end of the F/A-18 erupted into flames as the plane continued down the centerline of the angle deck on its nose tires and external wing tanks. The pilot ejected just before the *Hornet* plunged off the end of the deck. He was rescued 12 minutes later.



Grampaw Pettibone says:

Holy Hornets! King Neptune got himself a nice item for the mantelpiece on this one.

Investigators couldn't determine exactly what MOVFLAS signals were being shown to the pilot in the approach. Makin' things worse, there were contradictions between statements and comments in the LSO grade book. (There is no method of recording MOVFLAS information on the PLAT or carrier air traffic control center tapes, either.)

Three LSOs on the platform agreed that the pilot started his approach low and continued low until the in-close position where he stopped his rate of descent. The controlling LSO said he used the MOVFLAS to show the pilot a slightly low ball at first, then, when the *Hornet* was "in the middle," a low ball. The backup LSO told the controlling LSO to show him "lower." The controlling LSO signalled the pilot with a red ball, at which time the pilot stopped his rate of descent. The controlling LSO then moved the ball up slowly to a low ball. He noticed the *Hornet* settling in close and immediately showed a full red ball, yelled for power and actuated the wave-off lights.

Tryin' hard wasn't good enough in this situation. Turns out the pilot had a tendency for not-enough-power-in-close and comedowns at the ramp. He had been gettin' better lately so the squadron LSO decided not to caution him 'bout these tendencies.

Also, there was pressure to increase

boarding rates and to do less talkin' to pilots on the ball and allow them to fly their own passes.

Ole Gramps is all for gettin' folks aboard in good, quick and quiet order. But this *Hornet* pilot sure could have used more timely advice than he got. And maybe the backup Paddles should have stepped in earlier, even at the expense of takin' over for a fellow experienced LSO.

Point is: We're all in this together — aviators, LSOs, seniors in the chain, everybody. Ego, pride and fast boarding rates shouldn't get in the way of safely bringin' the troops back aboard, 'specially when it's dark out.

Corsair Catastrophe

A pair of A-7Es launched on a low-level navigation training flight with the

pilot under instruction in the lead. The *Corsair* IIs proceeded at high altitude to the starting point, then descended to begin the route. They were over water about two miles offshore at 500 feet above ground level.

Prior to the mishap, lead was observed to be relatively straight and level while the instructor, in the number two jet, appeared to be maneuvering side to side from the "chase" position.

From a point slightly aft and to the right of lead, the instructor commenced a left turn, closing on the number one aircraft. Approaching from about a 45-degree angle and slightly underneath, number two impacted the lead *Corsair*. Both aircraft exploded almost simultaneously and immediately crashed into the water below. There was no ejection attempt observed from either A-7. The pilots and the aircraft were lost.

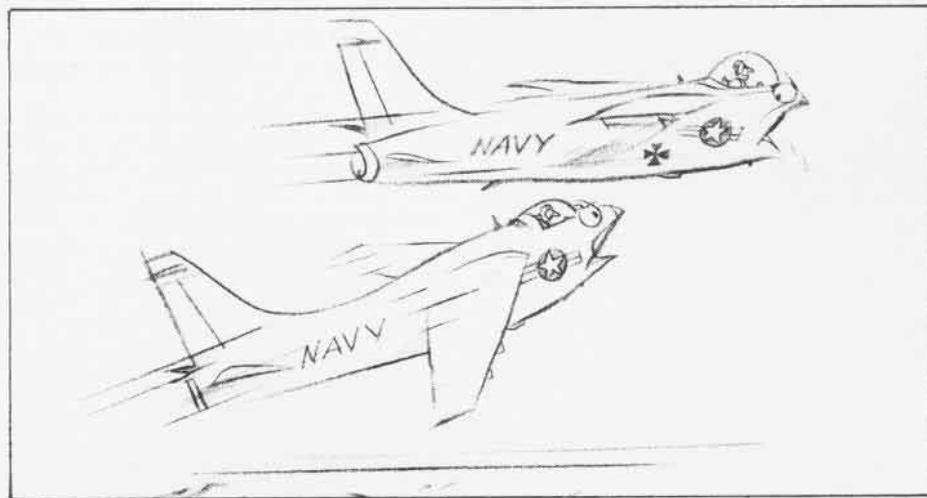


Grampaw Pettibone says:

Dad blast it! Two good men. Two good planes. Gone forever!

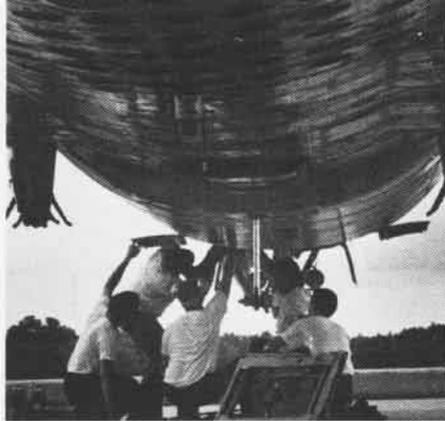
Hard to say what truly caused this midair. Number two may have lost situational awareness and failed to recognize he was closin' in too fast. Maybe they were changin' leads and communications broke down. Maybe the instructor's chase position was too close and he got distracted for a fatal second.

Anyway, this tragedy proves the hard way that in Naval Aviation there just ain't much margin, if any, for error — especially in high-performance, single-piloted airplanes.



The Endless Cycle

Story and Photos by JO1 Jim Richeson



A few hours before the sun bids hello to the sunshine state of Florida, Patrol Squadron (VP) 56's night-check maintenance crew is busy preparing to launch another P-3.

"It's a continuous cycle. As soon as this airplane takes off, it's time to recover another one of our birds," said Master Chief Aircraft Maintainer Sherman Howard, the squadron's maintenance master chief.

The cycle to which the veteran P-3 mechanic is referring is a final test. This will evaluate and challenge the squadron's ability to maintain its airplanes, fully employ every aircrew and operate as a team in a high-tempo environment.

During the next five days, VP-56 conducts round-the-clock antisubmarine warfare (ASW) operations, weapons system trainer evolutions for all the flight crews, and extensive weapons loads of all the P-3's weapons, including *Harpoon* missiles, torpedoes, depth charges, bombs and rockets.

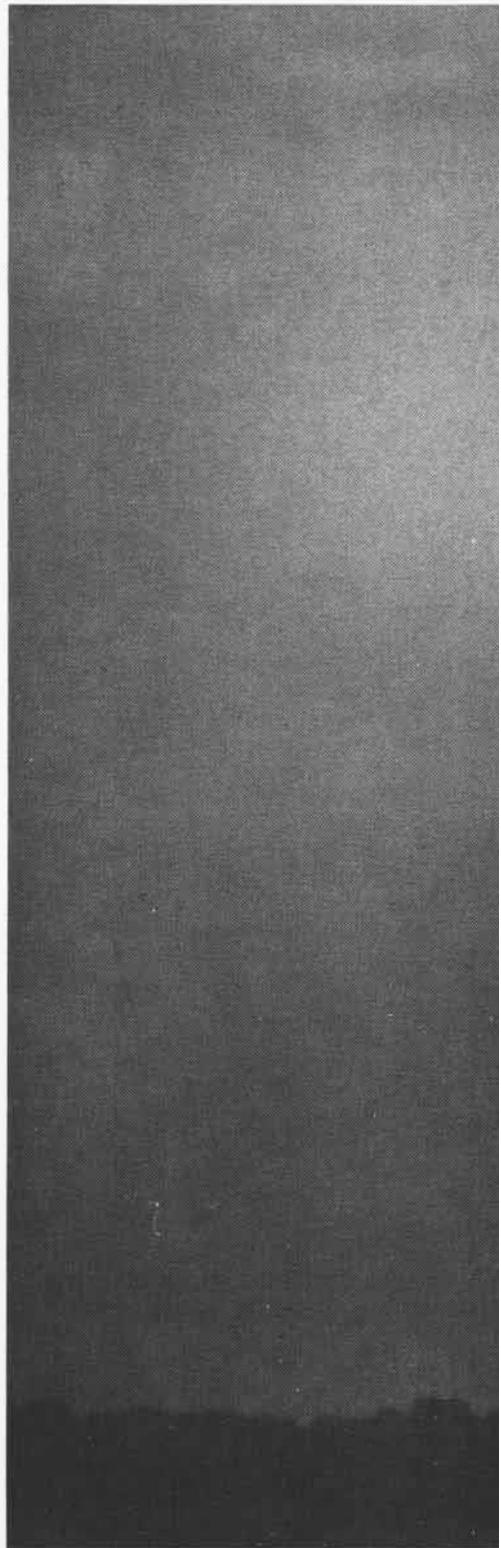
During this predeployment exercise, seven of the squadron's nine P-3Cs are moved from their hangar spaces to a secluded area northwest of NAS Jacksonville's runways. Appropriately named the Hot Spot, this is where ordnancemen perform live weapons loads in a controlled environment. It is also an area where daytime temperatures can easily soar into the hundreds. By midday, the heat and humidity can make it unbearable for the maintenance crew working on the tarmac.

The maintenance department's goal is to have all of the squadron's aircraft fully mission-capable. If an aircraft has been cited as partially mission-capable due to maintenance or supply problems, it is of little use as an ASW platform. The men and women of the maintenance department perform daily service on each airplane, adjust to changing non-scheduled requirements, and ensure the right parts are on hand and the paperwork is done correctly.

"Hunting submarines is our meat and potatoes," said Commander Bob Simpson, VP-56's commanding officer.



While at the Hot Spot, AO2 "Frog" Hart bears the heat and humidity as he loads a Harpoon missile.



Left, VP-56's mechanics struggle to meet the pressures of another scheduled launch. Below, the cycle continues as a Dragon aircrew takes off from NAS Jacksonville.



According to the veteran tactical coordinator, the purpose of this evaluation is to prepare the squadron for the real world of patrol aviation.

At 0330, while most people are still curled up in the warm comfort of their beds, the P-3's aircrew has begun its meticulous preflight check.

For nearly four hours, every member of the crew performs a seemingly never-ending ritual. The crew includes Cdr. Simpson as the tactical coordinator and patrol plane mission commander; the pilot, two copilots and a navigator; one man each at sensor stations one, two and three; two flight engineers; an ordnanceman; and an in-flight technician. They check, and double-check, the aircraft's entire ASW gear and equipment before their scheduled 0730 launch.

The mission entails an eight-hour flight over the waters off the coasts of South Carolina, Georgia and Florida. Mother nature alone stands to hamper the crew's ability to do their jobs, because it can get downright unhealthy to be in a P-3 chasing a submarine in the middle of a storm.

By 0630, the night-check crew's long 12-hour shift winds down. The rejuvenated faces of the squadron's day crew become a welcome sight. Before the night crew is relieved,



Bottom left, AMS2 Jack Keith works on a makeshift sign with the squadron's logo. Above, AD1 John Gibbs traces the cause of an oil pressure problem.



information is passed on to supervisors about problems that occurred during the night and what to watch for if the same problems persist.

Before the day is through, the squadron's day-check crew will correct any possible threat to their aircrafts' full-mission capabilities. Several mechanics have already carted off their tool boxes to confront an oil pressure drop in the number two engine of an aircraft scheduled for a full military power test.

Despite the heat and humidity, which has drenched their uniforms with sweat, the crews continue to load weapons and sonobuoys for tracking submarines. With aging aircraft, some having over 14,000 airframe hours, the need for constant maintenance cannot be neglected.

"We work daily preparing for this," said Senior Chief Dusty Rhoads, VP-56's maintenance control supervisor. "We stress that the same type of maintenance be done everyday so that we won't have any problems during the evaluation."

There are about 180 people in the squadron's maintenance department, explained Ensign Ralph Mitchell. He is

VP-56's maintenance control officer, who was a former chief aviation electrician's mate before earning his commission through the Navy's Officer Candidate School program.

They are a unique bunch of people whose names and faces may seem insignificant to many but, by any standards, the aviation machinist's mates, electrician's mates, electronics technicians, mechanics, ordnancemen, aircrew survival equipmentmen and boatswain's mates of VP-56 have proven their commitment to keep their birds ready to fly at all times.

The squadron's aviation administrationmen and storekeepers also play an equally important role in ensuring each aircraft is properly equipped and maintained.

"Anyone of those people would go in any of the airplanes anytime," Cdr. Simpson said. "They are proud of their work. They are as much involved in getting the weapons out on top of the target as the aircrews because, without them, the airplanes couldn't get out there."

The combined efforts of squadron personnel earned them an outstanding evaluation. The seven aircraft were

cited as fully mission capable, with no discrepancies.

In addition, the squadron as a whole received an overall mark of 94.7 percent. According to Cdr. Don Riffle, Patrol Wing 11's chief of staff, it was the highest evaluation given to a Jacksonville patrol squadron during this competitive cycle. "Their maintenance department did exceptionally well," he said. "They had over 60 continuous on-station hours and 13 flights during a period of five days. Everything was done letter-perfect. Nothing was missing and all the aircraft worked as advertised."

Cdr. Simpson attributed his squadron's success to teamwork, enthusiasm and getting the job done. He said, "The guy selling cokes, hot dogs and peanuts is as much involved in getting the weapons out of the bomb bay as the aircrew, because it's

everybody working together that allows that to happen."

This was the last of many inspections and evaluations that the squadron had to pass with flying colors during its 12-month, at-home training period. The *Dragons* also completed both pre and post-deployment corrosion inspections, requalified in mining, met safety survey requirements, and passed NATOPS evaluations and a naval technical proficiency inspection.

The *Dragons* of VP-56 are now deployed to NAS Bermuda. This will be the squadron's home for six months while they ply their ASW skills against the Soviet submarine presence in the Atlantic and participate in *Unitas XXVIII*, an annual joint U.S.-South American naval exercise. The *Dragons* took with them the skills which they developed over an intensive at-home training period and tested on the hot

tarmac at NAS Jacksonville.

The final test of the squadron's team spirit and skill lies ahead as individual aircrews and a handful of maintainers work their trade in isolated airports throughout South America, while the rest of the team goes one-on-one with the invisible Soviet threat in the Atlantic.

There have been some changes in patrol aviation since VP-56 became the Navy's first operational P-3C squadron in September 1969. But it is still a world of launches and recoveries, and long, lonesome hours of tracking submarines in different parts of the world. In between the missions, there will always be maintenance crewmen, doing what they do best, beneath the belly of a P-3.■

Airman Angie Blaine and other members of VP-56's line division prepare for the next launch and recovery.



VXN-8

The World Is Their Backyard

By JO2 Julius L. Evans

Forty-eight hours ago, the P-3 crew was enjoying the tranquility of domestic life and the temperate climes at their home aboard NAS Patuxent River, Md. Now, their seabags are packed and stowed, the civilian scientists are strapped in at their stations, and all is secure as the personnel aboard the Orion begin an adventure that will take them to the icy continent of Antarctica.

Oceanographic Development Squadron (VXN) Eight, commanded by Commander Gary K. Iversen and based at Patuxent River, Md., is the free world's only aviation squadron devoted solely to airborne oceanographic and geophysical surveys. Its diversified missions take the squadron's aircrewmembers to many sites not normally visited by other U.S. military aircraft.

Scientific information gathered by the squadron plays a key role in the maximum effectiveness and survivability of our naval forces, allies of the United States and civilian agencies of our government. The Naval Oceanographic Office, Bay St. Louis, Miss., provides a team of civilian scientists to VXN-8 to assist in collecting data.

Commissioned as Air Development Squadron (VX) Eight on July 1, 1967, the squadron flew C-121s and an NC-54 aircraft. The squadron conducted oceanographic and special missions, such as the early CNO projects supporting the antisubmarine warfare environmental prediction system (ASWEPS), and Project *Jenny*, which provided airborne broadcast of radio and television programs to the Vietnamese people during the Vietnam

conflict. The squadron was designated VXN-8 in January 1969 and, in 1973, replaced its C-121s and NC-54 with RP-3 aircraft.

Today, the squadron conducts airborne magnetic, geophysical, oceanographic and acoustic surveys to collect data needed to support fleet operations and Department of Defense oceanographic requirements. VXN-8 flies five aircraft, in an all-*Orion* fleet. Projects *Birdseye* and *Outpost Seascan* each use an RP-3A equipped with extensively modified navigation systems, sophisticated sensors and specialized instrumentation.

The only RP-3D in the Navy's inventory was built especially for VXN-8's Project *Magnet*. Using only nonferrous metals throughout the interior of the aircraft aft of the main cabin door, the P-3C airframe enables the sensitive vector magnetometer to perform its mission, distortion-free. Its bomb bay compartment was converted into a sixth fuel tank, increasing the operating range. Rounding out the squadron's fleet are two UP-3A training aircraft. All of VXN-8's aircraft are painted international orange and white to readily identify them as overt, nonweapon-carrying platforms, and each of the squadron's project aircraft sport an officially sanctioned cartoon character typifying its assigned mission.

The squadron is uniquely tasked with three ongoing missions from which it gets its nickname, the *World Travelers*. The Project *Magnet* aircraft hosts the cartoon character "Roadrunner," and is the only airborne source that collects worldwide geomagnetic data required for safety of navigation, antisubmarine warfare (ASW) and various scientific



The Tasmanian Devil displayed on the UP-3A is one of the sanctioned Warner Brothers cartoon characters on VXN-8 aircraft.



Pilot Ltjg. Terry A. Pickering studies charts for an upcoming mission.



Skipper Cdr. G. K. Iversen stressed the fact that VXN-8 is not just another special-missions squadron.



Project Magnet flights take place primarily at night when the earth's magnetic field is more stable.

projects.

"El Coyote" signifies Project *Outpost Seascan*, which is a worldwide project working in conjunction with ASWEPS. Seascan collects thermal and acoustic data from the oceans in order to improve environmental forecasting which is essential to the U.S. Navy's ASW program.

The Project *Birdseye* aircraft displays the "Arctic Fox." Project personnel compile accurate data concerning polar ice, and provide pinpoint mapping of the changing marginal ice zone while the aircraft surveys the Arctic Basin.

The UP-3As display the characters "Tasmanian Devil" and "Loon" and are used in logistics support missions and for training the aircrewmembers.

Since a recent reorganization of the Naval Air Force, U.S. Atlantic Fleet, VXN-8 is now recognized as the 25th active P-3 squadron instead of a special missions unit. The *World Travelers* are a fleet command under the administrative control of Commander Patrol Wings, U.S. Atlantic Fleet. The squadron is under the operational control of Commander in Chief, U.S. Atlantic Fleet and, for technical direction, tasking and resource support, it looks to Commanding Officer, Naval Oceanographic Office.

Safety is a must for the squadron, which maintains an extensive flight schedule. "The crews previously detached to conduct [operations] independently for two months. But I thought that was pushing safety of flight, considering the way we have to operate," Cdr. Iversen said.

"Since the earth's magnetic field is more stable at night, most of the flying takes place then. The preflights are

done in the early evening, the crews launch around 2000 and don't return until 0800 the next day. They continue this pattern for several cycles, with one day of rest between missions," the C.O. explained. "After three or four cycles in a row, the crew needs to get back in a regular routine; otherwise, complacency and frustration could set in.

"Now, the detachment for a crew is a maximum of six weeks. The crew on *Magnet* flights, which are always designed to be two months, swap with a fresh crew from home at the midway point of the detachment. It can become easy to cut corners if you're not careful," Cdr. Iversen added.

The *World Travelers* can't be charged with cutting corners. VXN-8 has not experienced an accident since its establishment in 1967, and the squadron celebrated its 20th birthday with more than 79,000 accident-free hours. This milestone signifies the professionalism which is characteristic of squadron personnel.

With the current authorization of 34 officers and 163 enlisted billets, the squadron forms five flight crews. They include: three pilots, two flight engineers from either the AMS, AMH, AME, AE or AD rating, two naval flight officers (one ocean project navigator and one ocean project coordinator), two enlisted utility aircrewmembers, one aviation ordnanceman, one radar operator, one radioman, and four civilian scientists. These crew members are the sole technicians of the aircraft during the mission, and every crew works like the tiny parts of an expensive wristwatch — as if they were made to work together.

"Many of the areas in which we are required to fly are so remote that there are no VP bases and, in some cases, no military bases that we can turn to if we need assistance. So the crewmembers aboard will do the full-scale maintenance on their own," Cdr. Iversen emphasized.

One of the project aircrewmembers added, "While detached on missions, if the aircraft returns in a down status, we work on it immediately," said AD1 Jamie Arazaga, VXN-8 NATOPS qualifier. "Depending upon the severity, we will work, secure to rest and return the next day to finish."

The squadron demands a lot of the people who maintain and fly the aircraft but those long hours pay off, especially for the officers. Because of the leadership roles the officers are exposed to during a tour at VXN-8, when the tour has expired, the officers leave the squadron more aware and better prepared for the responsibility that an ever-growing Navy has to offer.

"When a mission commander is a junior officer, a [lieutenant] JG or lieutenant, he is actually a mini-commanding officer for six weeks," Cdr. Iversen said. "He's responsible for the crew, aircraft and all the maintenance for the plane to be completed. That's a lot of responsibility hanging around a lieutenant's neck."

VXN-8 can be proud of its accomplishments over the past two decades. While serving the Navy in its unique missions, it turns the best pilots into the best officers, and the best enlisted aircrewmembers into natural leaders. The proof is documented. The *World Travelers* meet their challenges all over the world. ■

Streamlining the E-6A and the P-3 Update IV

By Everett Pyatt, Asst. Secy. of the Navy
(Shipbuilding and Logistics)

Streamlining, tiering, descoping, specification tailoring — more gobbledegook buzzwords from the staffers in Washington? Buzzwords, yes. Gobbledegook, no.

These buzzwords are the keys to future fleet aircraft such as the E-6A and the V-22, and have unlocked the doors to the P-3 Update IV avionics suite. They mean more rapid introduction of quality aircraft and weapons systems to the fleet, and significant dollar savings to the taxpayers.

Effective acquisition streamlining results from hard work and dedicated people. Two good examples of Naval Air Systems Command programs which put streamlining to work are those for the E-6A and the P-3. The E-6A TACAMO (take charge and move out) acquisition and the P-3 avionics upgrade teams have most recently let contracts which illustrate streamlining at its best.

Let's first look at the E-6A, which will replace the aging C-130 *Hercules* as the mission aircraft for TACAMO. The TACAMO aircraft provides an airborne communications relay between the National Command Authority and fleet ballistic missile submarines.

In December 1982, the Navy's program cost estimate was \$2.3 billion. Through the process of streamlining, the current cost estimate is \$1.9 billion.

Development efforts were streamlined by using "off the shelf" aircraft design and existing mission systems. The E-6A airframe, a variant of the commercial Boeing-707-320 (as is the Air Force E-3 AWACS), was selected because the engineering design is complete, and optimal production rates have been achieved. By descoping equipment requirements (reviewing for mission necessity versus cost) and refining support elements, the TACAMO team was able to streamline contract data requirements and reduce testing requirements.

One major cost saver was the decision to use the existing CFM-56 turbofan engine. The CFM-56 engines are commercially certified and identical to those being installed or retrofitted on many other 707 derivative aircraft, including USAF KC-135R tankers. Use of the CFM-56 eliminated the need for



Freshly washed, and with wingtip pods newly installed, the E-6A prototype is shown here on Boeing Field in Seattle, Wash.

full Navy development, tests, qualifications and documentation, resulting in savings of over \$75 million in nonrecurring engineering costs. Access to worldwide supply of existing CFM-56 and Boeing 707 spare parts also offers tremendous logistic support advantages.

Use of existing data and documentation helped cut costs further. By relying on Boeing and USAF engineering and test data, the TACAMO team was able to reduce the contract data requirement list, from 4,000 items to 900. Further reductions are expected.

Innovative testing procedures are also being implemented. Concurrent testing allows both Boeing and the Navy to analyze raw data, thus reducing the number of data-gathering flights. Close liaison with the Air Force allowed Navy engineers and technicians to participate in the prior USAF KC-135R flight test program for additional data collection. Based on the 37-million flight hours of experience with the 707, separate reliability and maintainability and structural verification flights were eliminated. This resulted in a savings of over \$5.5 million.

Descoping the flight deck avionics and using Air Force and commercially certified equipment saved \$50 million. This included deletion of an altitude alert system, a ground proximity warning system, high-altitude radar altimeter, and autothrottle system. The trailing wire drogue viewing system was streamlined by eliminating a

closed-circuit television in favor of crew viewing ports. The change resulted in no increase to personnel requirements and saved \$3.4 million. The ALR-66, an off-the-shelf system currently used in P-3C and SH-2F light airborne multi-purpose systems (LAMPS) MK I aircraft, provides electronic warfare self-protection. Crew accommodations were descoped, realizing an additional cost savings of nearly \$1.2 million. Further savings were achieved by reducing the number of high-frequency radios from seven to five per aircraft.

The development program for the P-3 Update IV avionics suite is another streamlining success story. The Update IV package will be back-fitted into existing P-3Cs and also installed in the new long-range air ASW-capable aircraft (LRAACA) production model.

The P-3 team encouraged contractor innovation and participation in streamlining the Update IV suite. In March 1986, a draft request for proposal (RFP) was issued to Boeing and Lockheed for review and comment. Both contractors submitted hundreds of comments and recommendations, including reduced testing, relaxed delivery schedules, elimination of meetings and progress reviews, reduction of requirements, relaxed specificity in non-mission-critical areas, and revised performance levels. The first step eliminated a number of design constraints. It also reduced the volume of data deliverables and identified other means of reducing acquisition time and cost. This step represented a significant change in Navy design philosophy.

Boeing Aerospace Company

Instead of imposing detailed specifications and requiring standard components, the contractors were permitted wide latitude in proposing their own designs.

Five or more tiers of MilSpec-type specifications typically exist in an acquisition program for naval aircraft. This results in an array of several thousand documents which are often confusing and always formidable. The P-3 team emphasized specification tailoring. Inappropriate specifications and standards were eliminated and selected specs and standards were written into stand-alone technical documents. Finally, the program manager required only tier one specifications and standards as

mandatory. Lower tier documents were provided for guidance only.

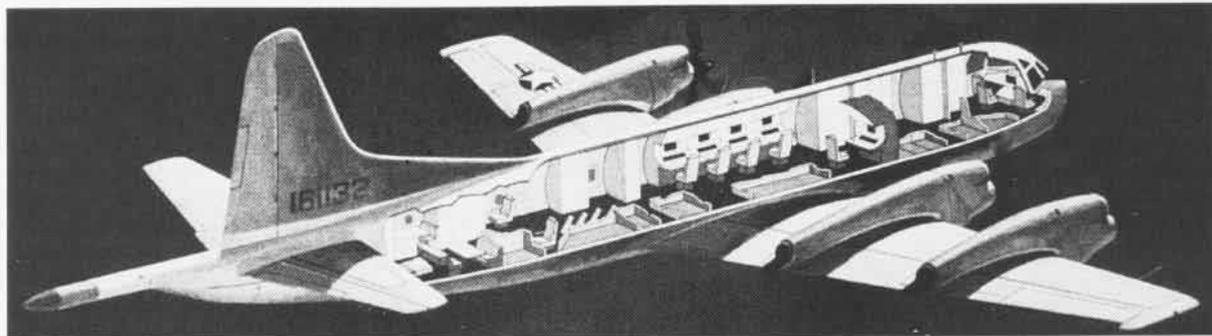
Restricting application to only a single tier of specifications is a marked simplification. Proponents of extensive specs and standards application may view these actions as an unnecessary risk. Safeguards, however, have been provided in the form of performance guarantees, product warranties, and other actions designed to protect Navy interests. The P-3 Update IV avionics suite RFP encouraged contractors to propose acquisition streamlining methods. Contractors were requested to explore and propose any idea that had potential for reducing program cost or time while still meeting Navy requirements. These ideas could

include, in addition to substitutions for government furnished equipment, new tactical employment methods, different system performance levels and alternative support concepts. If any individual portion of the streamlining proposal was not accepted, the bidder was given an opportunity to modify his proposal.

Streamlining is encouraging industry innovation. The rewards are lower costs, a more effective system for fulfilling the Navy operational requirement, and program stability through economic production rates. As streamlining comes into full swing in all naval acquisition programs in FY 88, I anticipate a savings of \$1 billion. ■

P-3 Update IV

By Lieutenant J.J. Stenzoski



A Boeing artist's conception of the crew configuration for the Update IV retrofitted into the P-3 Orion airframe.

In the early 1990s, the P-3 will be in transition to a new avionics suite. Called Update IV, the avionics program is the most comprehensive sensor and crew station upgrade in the history of the P-3. Not since the introduction of the P-3C in 1969 has so extensive a change been made. More than a modification, the system design meets the serious challenge of how to best detect and track the Soviet Union's new classes of super-quiet submarines, employs new distributed processing concepts and borrows crew station layout from the P-3A.

The Update IV package will be retrofitted into the P-3C and will be the avionics package for the follow-on long-range, air ASW-capable aircraft (LRAACA), thereby providing a common avionics configuration for the Navy's maritime patrol aircraft. The design includes a distributed-processing data bus architecture, which will support a universal crew station concept.

This multipurpose station will allow a crew to complete its mission even if one of the system's computers fails. Should one station fail, another can be easily reconfigured to take over the

mission role. Often, the tactical situation in today's P-3 can quickly overload the electronic warfare operator. The multipurpose station and the distributed bus architecture of the Update IV should alleviate this problem by sharing the workload with other crew members as required by the tactical situation.

Crew coordination and positional upgrade training will be improved by relocating the tactical crew in a centralized, grouped arrangement similar to the original P-3A's. This configuration will facilitate the mutual monitor of adjacent displays and allow crew conversation without using the inter-communication system (ICS). High-resolution color displays and touch-sensitive programmable control panels are among the crew station renovations.

The following features are anticipated for the production Update IV avionics system: UYS-2 enhanced modular signal processor (EMSP); modernized ESM suite; APS-137 inverse synthetic aperture radar (ISAR); global positioning system (GPS); UHF satellite communications (UHF SATCOM);

upgraded ICS; new controls and displays for pilot, ordnanceman and tactical crew; grouped crew station arrangement; and distributed data bus architecture.

In July 1987, after a two-year, competitive demonstration and validation phase, Boeing Aerospace Company was awarded the contract to develop the prototype for the Update IV system. Boeing began its avionics demonstrations in October 1986, which included the five tactical crew positions, plus the pilot's display and control console, doing typical operations on radar, infrared and acoustic data.

At the end of the three-year, full-scale development phase, the Update IV-equipped prototype aircraft will undergo extensive Navy test and evaluation, prior to approval for production and subsequent fleet delivery in the early 1990s. The P-3 Update IV avionics program is destined to play a major role in preserving the Navy's ASW superiority into the 21st century. ■

Litany of Precision - WW II Style



Above, on October 1, 1942, Naval Air operations in New Orleans, La., including these N3Ns, were combined at the new WW II naval air station on Lake Pontchartrain. Below, Ltjg. Matt Portz, USNR, poses with a Waco UPF-7 at Lockport, Ill., in 1943.

By Captain Matt Portz, USNR(Ret.)

This story is an excerpt from *Sagi Maru, Stearman, Too*, a memoir, not yet published, by retired Capt. Matt Portz. "Sagi Maru" was an affectionate nickname for USS *Elliot*, a WW I, four-stack, flush-deck destroyer. The words are an American adaptation of Japanese which, loosely translated, means "saggy ship" or rust bucket.

Capt. Portz was a "black shoe" officer at the outset of WW II but eventually earned his Naval Aviator wings and became a flight instructor. This account focuses on his days en route to earning his Wings of Gold at the Navy-Civil Aeronautics Administration (CAA) Flight Instructor School at the Lewis School of Aeronautics in Lockport, Ill., 40 miles south of Chicago. He was a lieutenant junior grade at the time.

One of the flight school leaders, Lieutenant Charles Judd, Jr., told me and other would-be instructors, "When you leave here, you will have had a thorough foundation both in flying and in those qualities of discipline and leadership necessary for successful completion of the war. . . . The outstanding primary flight instructor . . . multiplies his effectiveness by the number of good pilots he turns out."

Judd's listeners took him seriously. This was their route to becoming Naval Aviators and instructors.

For many of the student officers, the military routine at the school was



"Mickey Mouse" but the flying was great. The prospect of earning wings kept flight students in line and their brains wired to their mouths. Failure could mean a ticket back to another *Elliot* for me, and to a draft board for others. There were no motivation problems.

The Lewis School of Aeronautics, a depression-born child of the Catholic church, which established it to offer instruction in the aviation trades, was located in Lockport, Ill., on a bluff overlooking the Des Plaines River Valley and the Chicago sanitary canal.

It was one of our WW II Naval Aviation training sites. Only three gravel runways on the school's airport distinguished it from its neighboring hayfields. Red brick buildings housed an aircraft repair shop, flight ready room, offices, classrooms, bunk rooms, a gymnasium and a mess hall. Only a metal aircraft hangar marred the architectural harmony. There were 30 flight instructors and eight ground instructors, all civilians, and 30 aircraft in the Navy program at Lewis. Seven naval officers were in charge.

At 22, I was among the youngest of some 300 student officers trained as flight instructors at Lockport during late 1942 and early 1943. All had a private or commercial pilot's license. More than half were married, a quarter had prior Navy experience, and the remainder were probationary officers. Probationers had even stronger motivation for success than those like myself. Failures were likely to spend the rest of the war as deckhands in the Navy or riflemen in the Army. About 15 percent failed. None got another chance at Navy flying.

Veterans included a USS *Yorktown* survivor, a sailor from the amphibious landing forces, a destroyer man, a former public information officer, an armed guard officer from the Merchant Marine, an air intelligence officer, and several aeronautical engineers. A few had been athletic officers, or "muscle benders," a group for which I soon developed an intense antipathy.

Among the probationers were pre-war motorcycle cops, lawyers, radio announcers, newspapermen, advertising men and marketeers. The wealth of talent spoke well for the selection process.

Japanese or German commandos never dared to mount an attack on Lockport. But we were ready for that contingency. A 24-hour watch, directed by a student officer of the day (OD) was supported by indoctrinees, or "indocs," acting as sentries. The OD patrolled in a station wagon while sentries challenged deliverymen.

Students held ranks from ensign through lieutenant commander, but all perquisites of rank were stripped away while in student status. During the first month at Lockport, probationers were indocs who did "go-for" jobs and pushed and gassed airplanes. Those with fleet service skipped this, but all were toughened up by staff muscle benders fresh from their own Navy indoctrination. Days began at 0530 and ended at 2200.

The War Training Service (WTS), formerly Civilian Pilot Training (CPT), supervised the three phases at Lockport of some 160 flights and more than 400 ground school hours. Completion qualified one for a CAA commercial pilot license and flight instructor rating. With these credentials, one moved onto more training leading to designation as a Naval Aviator.

Our planes were Waco UPF-7s. Waco flyers wore a Switlik parachute and harness, a convenient rig which enabled one to unsnap the parachute and leave it in the seat for the next man who merely had to snap the chute onto his harness, buckle the seat belt and go.

This simple procedure was overlooked by one instructor who neither snapped on the parachute nor buckled the belt. His student performed a slow roll during which it became imperative for the instructor to grab onto the Waco's cockpit sides to prevent himself from being ejected into the slipstream. Only when he exited the cockpit back on the ground did he realize that his chute had never been attached. The guy passed out on the spot.

Physical training was an important part of our instruction. Lieutenant Elwood Pitzer was the staff muscle bender and he described his work as body building. We called it "Pitzerization." His stated creed was: "The need of a physical fitness program is very evident. Generally, our student officers, soon to become flight instructors, come from a soft, luxurious, loose-thinking, lazy peacetime life and must be prepared physically and

mentally to meet and defeat our enemies. . . ."

This was a lot of jazz. Each student was physically at his peak. Many had been college athletes. Two had been all-American. One, Jay Berwanger, was a Heisman Trophy winner at the University of Chicago and Jesse Rennick, a basketball great at Oklahoma A&M.

Pitzerization began at 0530 with 15 minutes of calisthenics and a before-breakfast run over an obstacle course. The course, built by indocs, was laid uphill and down, over a stream, and through a woods for about a quarter mile. A starting slalom had two traps: one, a ramp of unevenly-spaced logs to bark shins and, the second, a springy, 25-foot log bridge which dumped the clumsy into mud and water with the minnows. The trudge uphill included navigating over two-by-fours zigzagged on top of posts, crossing hurdles before facing a 12-foot scaffold which had to be surmounted, followed by a knee-scraping crawl under low bars, and a muscle-tearing, hand-over-hand swing along a 10-foot bar. The final test was scaling a nine-foot wall.

These obstacles had to be overcome in less than four minutes at the risk of losing Saturday liberty — another motivator. Most made it O.K. A few beat the system by starting with one group, resting in the woods, then finishing with the next group. Those guys were slow but not dummies.

One day, Lockport's senior resident Naval Aviator, Lieutenant Bob Lindner, received a letter from Rear Admiral Randall Jacobs, Chief of Naval Personnel. Jacobs said in part, "The speed

with which full production was reached at Lockport exceeded that of any similar school. Commendation is felt to be due. . . ."

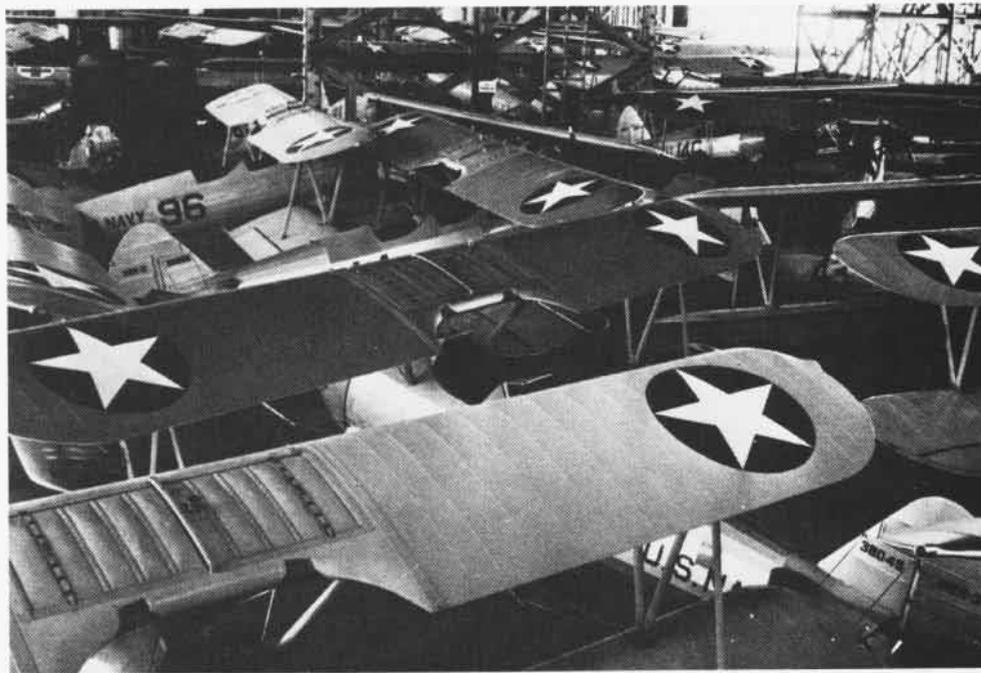
Students didn't appreciate it at the time, but the praise was deserved. Lockport and the four other Navy-CAA-WTS flight instructor schools at Bloomsburg, Pa.; Tucson, Ariz.; Fort Worth, Texas; and Athens, Ga., produced instructor pilots in a hurry. These schools were put together quickly and all faced wartime competition for instructors and aircraft, both then in short supply. Somehow they did their job during the months they existed in 1942 and 1943.

The last phase at Lockport was the instructor course, an exposure to CAA methods of instructing, and six hours of three-plane section, formation flying. With formation flights logged, I left Lockport behind for NAS Dallas, Texas, with others from Lockport and the other Navy-CAA-WTS schools.

Flying the "Navy way" at Dallas was a fast six-week trip. Each Wednesday new flight classes of officers and enlisted men from the Navy, Marine Corps, Coast Guard and the French navy checked in here. More than 2,600 officer and enlisted personnel, 300 aircraft and 12 auxiliary fields supported the more than 1,000 flight trainees at the Dallas station at any time.

The day after completing check-in at

Stearman N2Ss crowd a hangar at NAS Memphis, Tenn., in June 1943.



Dallas, my group was lectured on local flight rules and given routine physical and psychological examinations. We then moved to nearby Grand Prairie for an introduction to the Stearman N2S, built by the Stearman Division of Boeing, Wichita, Kans., which became the Wichita Division in 1941.

Most WW II Army and Navy pilots received some training in the Stearman. More than 8,000 were built. The Army designated them PT-13s and PT-17s, and painted the fuselages blue and the wings orange-yellow. The Navy's N2S, models 1 through 5 were all yellow from nose to tail and wing tip to wing tip. The "Yellow Peril", nickname was shared with the similarly painted N3N biplane built by the Navy in Philadelphia.

The Stearman's official name was *Kaydet*, but it was seldom called that in the Navy. Hardly a fighter, the Yellow Peril was a solid airplane which could take a beating. Its virtues were that it was safe and fun to fly. Seldom did the Stearman create trouble; human beings invariably caused that. Trouble, often of a terminal nature, usually came from in-flight collisions and aerobatics attempted too close to the ground.

Dallas schedules alternated weekly between morning and afternoon ground school and flight. After four-and-a-half dual hours getting to know the Stearman and local traffic rules, we were turned loose in the crowd of some 200 planes in the air at any given time. This swarm took off or landed within minutes between periods. They were all over a blacktop mat like bees at the hive. Landings on top of one another and planes getting caught in the prop-wash of others and flipping onto their

backs were common. One unfortunate student lost control on landing when his necktie blew up into his face and he reached to retrieve it.

Work at Dallas was repetitious of Lockport, but fast. We were soon on our way to NAS New Orleans, La., at the edge of Lake Pontchartrain north of the city. This activity, staffed by 1,300 officers and enlisted personnel, called itself the Naval College for Primary Flight Instructors. This fancy name was no doubt chosen to boost egos of both the staff and students who would have rather been flying in the fleet.

Instructors Under Training (IUTs), as the 400 students were labeled, bunked 60 to a barracks. IUTs hit the deck at 0545, ate a fast breakfast, and fell into ranks for muster at 0645. Groups shifted weekly between morning and afternoon flight and ground school schedules. The longest of the station's three asphalt and concrete runways was less than 3,400 feet, but more than adequate for the base's 100 Stearmans.

Ground school emphasized instructional methods with physical training and military drill not forgotten. One class explored the gosport. When fitted over the instructor's mouth and chin, this simple, funnel-like, canvas device directed his words through a plastic tube into earpieces on the student's helmet for a one-way voice communication. Since a cadet could respond only to the wind, his epithets went unheard by his teacher. Patter by instructors was considered so important at New Orleans that flight checks could be "up" or "down" depending on the IUT's ability to explain maneuvers.

The New Orleans staff drilled a

respect for teaching tasks into each IUT. "Being a good pilot isn't enough," we were told. "You have a selfish interest in being a flight instructor. During the period you are instructing primary, you will smooth out your own flying to prepare you for duty in the fleet when the time comes." These people were right. We truly learned to handle airplanes while teaching flying.

The gospel according to New Orleans was that the Naval Aviation cadet who reported for primary training was the very best pilot material. "He possesses the desirable competitive spirit, and he is adaptable to flight training because he is intelligent, well coordinated, mentally alert and mechanically inclined," said the apostles. "To waste or spoil such material would actually weaken and endanger our war effort," they preached.

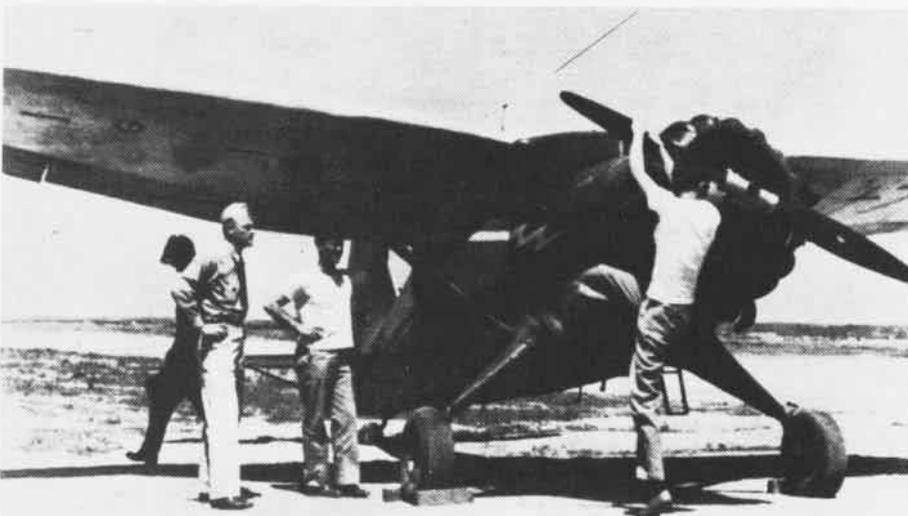
IUTs got the message, "If your cadet doesn't make it, something's wrong with you. Besides, you're learning how to fly better than the enemy who someday is going to try to shoot you down. So, hang in there, buster. Your time will come."

A Naval Aviation cadet by late 1943 had almost a year's preparation for primary instruction. His first four months were as a seaman "tarmac" doing menial chores at an air station in an apprenticeship which theoretically bound him emotionally to Naval Aviation. Practically, it concurrently made him unavailable to be drafted into the Army and therefore exclusively available to the Navy.

He moved to a flight preparatory school at one of 17 colleges for three more months of military indoctrination, physical training, mathematics, physics, basic navigation, and aircraft and ship recognition. The next eight to 12 weeks at one of the 92 colleges and flight facilities with CAA-WTS schools gave him 34 to 40 hours of getting the feel of the air in Piper *Cubs*. Most of the inept were eliminated here. Survivors were exposed to three months of physical training at the North Carolina, Iowa, Georgia or St. Mary's (California) preflight schools.

At this point, the cadet was ready for the 11 to 14 weeks of primary training. In 90 to 100 flight hours here, he *really* learned to fly, usually in a Stearman (the Navy N3N and Timm N2T were soon phased out), with precision necessary for transition to heavier and more powerful operational aircraft.

After learning to fly in primary, 14 to 18 weeks and 160 more flight hours of intermediate instruction came at Pensacola, Fla., or Corpus Christi, Texas. A cadet flew higher horsepower trainers and was exposed to instrument flying before he specialized in carrier,



Claude Settlemyer pulls a Stinson SR-7 prop as Don Armstrong and Ed Bunker watch at Navy-CAA Flight Instructor School, Lockport, Ill., in 1943.

multiengine sea or land, or observation-type aircraft — respectively designated CV, VPB or VB2, or VO/VCS. Planes flown in intermediate were the Vultee SNV *Valiant*, North American SNJ *Texan*, Consolidated PBV *Catalina*, Beech SNB *Kansan* and Vought OS2U *Kingfisher*. Prior to graduation and commissioning as an ensign or Marine Corps second lieutenant, students selected as carrier pilots flew the SNJ while specializing in tactics for fighters (VF), torpedo bombers (VTB), or scout/dive bombers (VSB).

Two more months of operational training at one of 17 naval flying installations along the Florida, Georgia and Carolina coasts gave new Naval Aviators experience in using combat-type aircraft as weapons. Another 100 hours of flight on top of the 260 or so in their logbooks took the newness from pilots' gold wings and gold bars. Those destined for carriers qualified on the decks of carriers converted from the Great Lakes' vessels *Wolverine* or *Sable* on Lake Michigan. A few did their landings on the escort carrier *Charger* in the Norfolk area. From here, it was on to the fleet.

At New Orleans, we learned how to teach the four phases of primary: A-stage, elementary dual instruction for safety in flight; B-stage, solo work for precision and smoothness; C-stage, advanced solo and aerobatics for precision and coordination; and D-stage, for precision basic formation and night flying. "Precision," the buzzword of Naval Aviation, was demanded always.

The A-stage cadet learned to climb, glide, fly straight and level and to turn, taxi, take off and land the Stearman. He was introduced to power on landings, spirals, stalls, spins and emergency procedures. Adhering to traffic rules and constantly looking out for other planes were essential survival tactics developed here.

Refinement of his flying continued in B-stage, with instructors hammering precision while the cadet flew steeply banked turns, high-altitude slips, and more spins and emergencies. He practiced landings with S-turns or slips in the approach to touchdown within a 200-foot circle or into very small fields. He flew wingovers, chandeliers and eights around pylons — always, or almost always, with precision.

Cadets and instructors, too, enjoyed the aerobatics that came in C-stage. Putting the plane through loops, Immelmann turns, slow rolls, split-Ss, falling leaves, cartwheels, and inverted stalls and spins made cadets feel like the aces only a few would become. Precision landings to circles, small field procedures, eights around pylons, and slow flight just above stall speed con-

tinued in C-stage.

D-stage was the last in primary. For this phase, formation and night flying cadets graduated from the Stearman's rear seat, from which all earlier flying was done, to the front where he would operate for the rest of his career. Three-plane-section vee takeoffs and landings, vee to echelon, and position shifts were flown. During crossovers from vee to echelon, or back again, a wheel would occasionally tangle with another plane's wing, elevator or rudder. Such accidents were a rarity, a word un-descriptive of the ultra-tight formations and friendly wing-to-wing taps performed by bored instructors.

Night flying was solo, after a safety check by an instructor. While six or eight planes made rolling landings and takeoffs on a smudge pot-marked runway at an auxiliary field, the next group to practice churned around in a loose circle above the landing traffic. Sometimes the upper circle split into forbidden dogfights — plane numbers were almost impossible to read at night. While such games were hazardous to one's health, seldom did anyone get hit in the milling mass of Yellow Perils.

I could now fly the primary stages almost automatically. Teaching was the name of the game, so we flew "sandbag" with friends for teaching practice.

Tall cyprus trees bordered New Orleans' seven auxiliary fields. Adjacent swamps were home for alligators and snakes which gave us more incentive for doing things right. Mistakes were frequently fatal, but some guys lucked out. Lockport classmate, John McAllister, rolled a Stearman into a ball at an auxiliary field. He got out with bruises and a cut over an eye but no gator bites.

A clear understanding of "who is in charge here" was a routine, but sometimes overlooked, safety rule. Two IUTs, one a sandbagger, were flying in the training area when they spotted a Yellow Peril on the ground where it obviously should not have been. Circling low over the downed plane while its erstwhile occupants waved, the IUT at the controls thought he felt a sharp jerk on the stick. Mistaking this for the signal to hand over control to the sandbagger, he let go of the controls. With no one in charge, the plane continued down. The IUT realized his error just in time to level the wings before hitting the ground. When the N2S crunched to a halt, two Stearmans and four men needed rescue.

Nine and a half months after reporting to Lockport with 387 total flight hours in my logbook, I lined up with classmates while Commander Paul



"Pitzerization" included a before-breakfast obstacle course run at Lockport.

Gillespie, the station skipper, gave us final words of wisdom before handing us our Naval Aviator's certificates. I felt great having been flattered by an invitation to return to New Orleans as a staff instructor after a few months seasoning elsewhere. It was December 1, 1943. Embroidered gold bullion wings had been sewn above the left pocket on our green uniforms the previous afternoon.

Few of the newly designated flight instructors knew where fate — or their earlier artful talking and maneuvering — would send them from New Orleans. But they could be sure that the orders would take them to one of the 13 stations of the Naval Air Primary Training Command. In addition to New Orleans and Dallas, these were at Norman, Okla.; Memphis, Tenn.; St. Louis, Mo.; Olathe and Hutchinson, Kans.; Bunker Hill, Ind.; Glenview, Ill.; Grosse Ile, Mich.; Ottumwa, Iowa; Minneapolis, Minn.; and Livermore, Calif.

Minutes after the ceremony, I picked up my orders to NAS Livermore, my first choice. My car was packed, gasoline ration coupons were in hand. I left immediately for the Golden State.

While enjoying leave before reporting to Livermore, I learned that my old ship *Elliot* was in San Diego and I drove down for a visit. When *Elliot's* motor whaleboat arrived at the fleet landing, I relieved the coxswain at the tiller, signaled the engineer, and piloted the boat alongside old "Sagi Maru." *Elliot* was little changed since I boarded her as a new ensign at Pearl Harbor more than two years earlier. She remained an aging, rusty bucket in the backwaters of the war. I had changed. Now with a full lieutenant's two stripes, and aviator wings, I had confidence in myself, my profession and my role in it. I never saw *Elliot* again. ■

Today's patrol (VP) squadron personnel look at four-engined, propeller-driven landplanes as the expected aircraft to accomplish the Navy's worldwide, long-range, maritime patrol and antisubmarine warfare (ASW) missions. Almost all those currently on board the Navy's VP squadrons got their start since the P-3 in its various versions became the Navy VP aircraft.

It hasn't always been that way. At the time of the Pearl Harbor attack, all of the Navy's patrol-bomber (VPB) aircraft were flying boats — as were all the new models being developed to meet future requirements. The amphibian version of the PB4Y did recognize the potential utility of alternate land-based operations, but the path to future capability was still exclusively with the "P-boats." However, during the first year of U.S. involvement in WW II, operational and production considerations led to the introduction of land-based aircraft for the mission, which was to prove an irreversible path to the end of the flying boat era.

Among those first Army bombers selected for Navy use was the Consolidated B-24 *Liberator*, which offered greater maximum range and operational flexibility than the Army's other heavy bomber of the time — the Boeing B-17 *Flying Fortress*, at that time, the better known of the pair. It became the first four-engined, land-based Navy "patrol plane."

The B-24 was conceived after the Army asked Consolidated to undertake production of Boeing B-17s in late 1938. Using the patented Davis wing, already designed into a new Consolidated flying boat, along with the twin tail of the boat, Consolidated's engineers counter-proposed a new design bomber in January 1939. It would have twice the bomb bay volume of the B-17 and considerably increased range, and would be powered by four 1,200-hp Pratt and Whitney P-1830 twin-row engines. A prototype XB-24 was ordered, flying for the first on December 29, 1939. With war on the horizon, French and British as well as Army Air Corps orders followed. Early production saw many design improvements, including the incorporation of turbo superchargers, with the first major production model being the B-24D starting early in 1942. By this time, widespread coproduction had been initiated, including Consolidated/Fort Worth, Ford/Willow Run, North American/Dallas and Douglas/Tulsa. In all, nearly 18,500 B-24s were produced.

While the B-24 was being developed and then put into production for the Army, the Navy was continuing flying boat programs to bring increased capabilities to its sea-based VP squadrons. At the time of Pearl Harbor, new Consolidated PB2Y *Coronados* and Martin PBM *Mariners* were in production and had entered service. New designs, the Boeing XPBB *Sea Ranger* and Martin XPB2M *Mars*, promised further increases in range and armament. At that time, the Army Air Force and Navy both conducted ASW operations, the Army using modified land-based bombers.

Early operations against the Japanese in the Pacific highlighted the need for greater speed and armament in long-range reconnaissance missions, beyond that of the current and planned flying boats. Questions of production capacity were also raised since the new designs would not be available in numbers to meet identified needs.

The result was a summer 1942 decision to furnish the Navy with land-based bombers from Army production, while planned Navy aircraft production capacity was switched to Army bombers. In addition to the B-24s as PB4Y-1s, B-34s as PV-1s and B-25s as PBJ-1s would be operated by Naval Aviation, the latter by the Marines.

The first Navy B-24s, redesignated PB4Y-1s and given Navy bureau numbers, were delivered in September 1942. While the first two were initially

PB4Y-1P

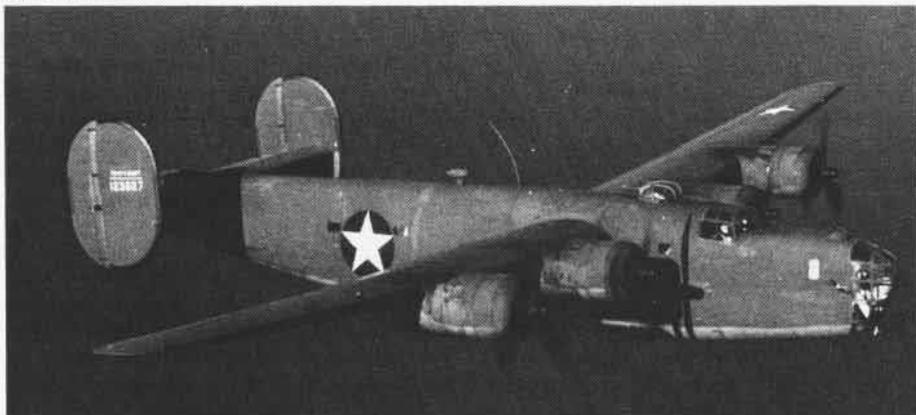


used for trials and evaluations, subsequent aircraft went directly to fleet squadrons, starting in October. In the Pacific, Marine Photographic Squadron 254 flew its first long-range photo-reconnaissance missions that month over Japanese islands and fortifications. Navy use in VP squadrons followed the same pattern of one or two-plane operations, for either reconnaissance or bombing, against far-flung Japanese targets. Lack of a nose turret hampered defense against Japanese fighters and led to modifications to incorporate an Erco ball-shaped nose tur-



Early PB4Y-1

XB-24



PB4Y-1 Liberator

By Hal Andrews

ASW PB4Y-1



ret — a clear recognition feature for subsequent Navy *Liberators*.

In the Atlantic, the PB4Y-1s were used for ASW, operating from bases on both sides of the Atlantic. In ASW, as well as other operations, a retractable radome replaced the belly turret in many of the PB4Y-1s. When the B-24D was replaced in production by the -24J and later models which had nose turrets, Navy airplanes still went to the modification center at Litchfield Park, Ariz., to have the Erco turret fitted along with other Navy and update modifications.

Navy deliveries continued from Consolidated's San Diego production line, augmented in the summer of 1943 by additional Army service aircraft when the ASW function was totally transferred to the Navy. The final PB4Y-1s were received in January 1945. By then, the revised version designed for the Navy, the longer-nose, single-tail PB4Y-2 *Privateer* was in full production and squadron service.

When the Army Air Force had transport versions of the *Liberator* built as C-87s, the Navy received a few C-87A VIP transports as RY-1s, and C-87 cargo transports as RY-2s. Total Navy *Liberator* deliveries reached almost 1,000 of the nearly 18,500 built.

As the PB4Y-2s replaced the PB4Y-1s in Navy VPB squadrons, the latter were phased out. The photographic PB4Y-1Ps were continued into the postwar years, serving with VPs 61 and 62 for their worldwide photographic missions, the last finally being retired in 1956. For a "borrowed" airplane design, the *Liberator* had served the Navy well. ■

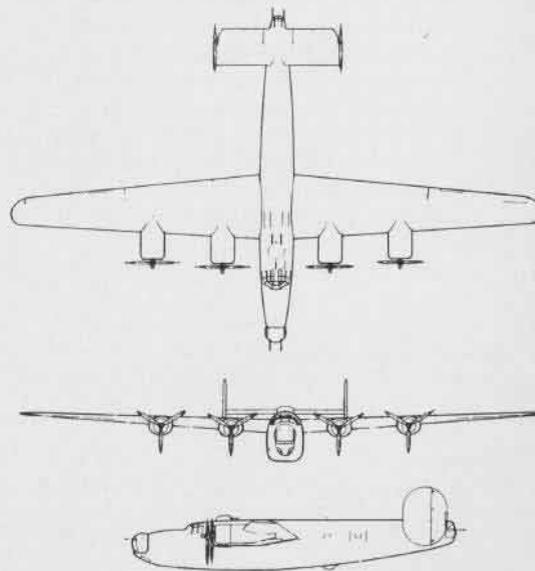


PB4Y-1

PB4Y-1



Span	110'
Length	67'3"
Height	18'9"
Engines (4)	
P&W R-1830-43 or 65	1,200 hp
Maximum speed	287 mph
Service ceiling	32,600'
Maximum range (bomb bay tanks)	4,190 mi.
Crew	10
Armament	Eight .50 machine guns; up to eight 1,600-lb. bombs



The Silver Hawk

By JO2 Julius L. Evans

Republic of Vietnam, Sept. 10, 1968 — The section of Marine fighters launched from the hot pad at Chu Lai and proceeded north at maximum speed. Arriving in the target area, almost 40 clicks north of the "Rock Pile," they immediately launched an attack on the target, using rockets and bombs. A unit of recon Marines were pinned down after having been spotted by a larger enemy force and were in serious trouble. The section of Phantoms, led by the squadron C.O. (LCol. Frank E. Petersen), began a series of runs to break the recon Marines free to disengage and return south to the relative safety of the "Rock Pile."

While pulling out on the third pass, the lead Phantom took a direct hit somewhere aft of the rear seat and the port engine immediately caught fire. The pilot banked the aircraft hard and began a run for the south, climbing for ejection altitude. Five minutes later, the starboard engine caught fire. With another 10 miles remaining before reaching the DMZ, the crew elected to remain with the burning aircraft. As the stricken Phantom crossed the DMZ, the fire burned through the aircraft control system. The pilot gave the order to eject.

Today, Lieutenant General Frank E. Petersen is the commanding general, Marine Corps Development and Education Command, Quantico, Va.

Memories of descending 10,000 feet at 450 miles per hour come flooding back to LGen. Petersen whenever he twists his body in an unusual manner. "I was looking back at my rear seater to make sure his seat worked and, when I ejected, I went out in an awkward position," he explained. For his attentiveness to his radar intercept officer, Petersen received a herniated disk in his back and a hairline fracture of his hip socket. The wounds have healed over the 20 years that have passed.

Born on March 2, 1932, in Topeka, Kansas, Petersen wanted to join the Navy after graduation from high school in 1949. "Growing up in the center of the U.S., I wanted to see more of the world before I settled down," he said.

But his father had different plans for him. "He wouldn't sign the papers for me to enlist," Petersen said. So, at age 17, he entered Washburn University. After completing one year of college, he enlisted in the Navy in 1950.

While in boot camp, Petersen learned of the first black Navy pilot, Ensign Jesse L. Brown, who had been killed in action that year in Korea. "I didn't know the flight program was open to blacks," he said.

After researching the possibility of entering flight training, he applied to the Naval Aviation Cadet (NavCad) program. He finished boot camp and for the next year attended the electronics technician school at Treasure Island, Calif. Upon completion, he was sent to NavCad training at Pensacola, Fla.

During the initial phase of flight



LGen. Frank E. Petersen

qualification, the only other black student in the program at that time was washed out on final carrier quals.

"Coming up for solo, I was given an unsat and was told by my instructor I would never be a pilot," Petersen remembered. "The next day, I was assigned a new instructor who took me out, supposedly to restart that particular phase of training. But he climbed out of the airplane and said, 'Go fly it.'" In October 1952, Petersen was designated a Naval Aviator and accepted a commission as a second lieutenant in the Marine Corps.

"The significance of becoming the first black aviator in the Marine Corps was fully understood then," Petersen said. "It was prior to the civil rights movement and we were still operating in a segregated environment. It could have been confusing if you evaluated your social position by color," he added.

Petersen has become accustomed to holding unique positions. He is the current Silver Hawk, the Marine Corps' senior aviator by date of aviation designation.

In 1968, while under Petersen's command, Marine Fighter Attack Squadron (VMFA) 314 became the first squadron to receive the Marine Corps Aviation Association's Robert M. Hanson Award as the outstanding fighter-attack squadron of the year. The occasion also marked the first time a black had commanded a tactical aviation squadron.

Petersen compared flying machines and tactics of the early fighter pilots to those of today. "I have flown some birds that young aviators today wouldn't recognize — the F8F *Bearcat* as a cadet, the F6F *Hellcat*, F9F *Panther* and T-33 *Shooting Star* and many current ones, such as the AV-8 *Harrier*, F-4 *Phantom*, and the F/A-18 *Hornet*," he said.

Petersen explained that the aerial war of today is light years away from when he first began flying. "During Korea, you had to see who you were fighting. You were literally face to face. Today, the air fight takes place over the horizon. You can achieve a kill miles away."

Petersen recalled a favorite tactic used in years past. "Once in Korea we were on a deep interdiction mission when we were jumped by MiGs. The one tactic we used was called the 'Luffberry Circle,' a carryover from WW I. It worked well back then but wouldn't work today. The airplanes formed a circle and the airplane behind the one being fired upon had a good shot at the opponent. Of course, those tactics can now be found in a museum," he added.

Those times bring great memories for Petersen who, today, flies a lot less than in previous commands. "My last flight was on June 5 in an F/A-18. Prior to that, it had been 10 months since I piloted an aircraft. In the future, I plan to get back into my old standby, the F-4," he declared.

The 55-year old Marine leader still aches for the thrill that younger aviators enjoy. "I would rather spend my career in a cockpit than behind a

desk," he said. "The thrill of flying an airplane is something that drives one to fight to stay in the cockpit.

"As I sit here now with three stars, I would give up a month's pay to be able to rove around with the young aviators and fly their stuff and live in their world," Petersen continued. "Today's pilots — of the computer and electronics age — seem to do better in the cockpit than those seasoned with thousands of hours in a 'bird,' primarily because eye-hand ability is more adaptable to the modern cockpit."

Changes in Naval Aviation are as persistent as LGen. Petersen. "I wouldn't be at all surprised if, 10 years from now, we see a cockpit with the pilot's seat in a virtually horizontal position to accommodate more 'G' load, audio-activated sensor systems capable of scanning hundreds of miles, and missile systems that can be launched from any aspect," he said.

"I read the Buck Rogers comic books in the 1950s, and I now see some of those gadgets. Even some of the things

I thought were absolutely impossible — like the Dick Tracy wrist radio of the 1940s — are here!"

Many changes have taken place since the forties and fifties, but Petersen said that some things must stay the same for a successful career in the military. "You must remain well aware of the contents of your oath of office. Those words are very meaningful in realizing and accepting the awesome responsibility of an officer." The general added, "The military is a profession and, as an officer, you have a responsibility to exercise the powers invested in you in a way that is fair, impartial, and good for the nation."

Petersen preaches this message nationwide to young Marine Corps officers. He is frequently invited to speak at universities, colleges and commencement ceremonies. At a recent ceremony at Virginia Union University, he was honored with a Doctor of Laws degree. As the commanding general at the

"Crossroads of the Corps," where all Marine Corps officers begin their careers, the general's time is also much in demand. He is frequently called on to speak at the various schools aboard Quantico and actively participates in the numerous graduation ceremonies held by the schools.

His time has been well spent throughout 37 years of continuous Marine Corps service. He stated, "I'm one of the few men who have fought in two wars and am close to the last pilot on active duty who participated in Korean War combat."

Those facts are in the record book, and Petersen is satisfied with his life's accomplishments. "I have two years left at Quantico and, at that time, I will be 57 years old. You have to know when to stop," he said. ■

On August 21, 1987, with the retirement of Vice Admiral James E. Service, LGen. Petersen assumed the title of Gray Eagle, the Naval Aviator on active duty with the earliest date of designation.

The Gray Eagle

Vice Admiral James E. Service, an aviation cadet, earned his wings in April 1952. He is a veteran of combat in Korea and Vietnam. He has been a test pilot, has operated attack, fighter and reconnaissance aircraft, and commanded two squadrons and USS *Independence*. After Washington, D.C., duty, he commanded Carrier Group Eight and Battle Force, Sixth Fleet. He was president of the Naval War College before assuming command of Naval Air Force, U.S. Pacific Fleet. His log book attests to 4,500 flight hours and 500 traps.

On June 6, VAdm. Service relieved retiring Vice Admiral C. E. Kempf as the Gray Eagle. When he retired on August 21, he relinquished the title to Marine Corps Lieutenant General Frank E. Petersen.

VAdm. Service talked to *Naval Aviation News* on the day he became the Navy's "senior" aviator.

NANews: Do you have any special feelings about becoming the Gray Eagle?

Service: I'm elated. Many others aspire to this special recognition. Five or 10 years ago, if someone had told me I'd be the Gray Eagle one day, I would have said, 'Impossible. It could never be me.' There is a tremendous amount of prestige that goes with the designation.

There is an effort underway to ensure that we are inculcating a strong spirit of tradition and pride of heritage in Naval Aviation. How do you feel about this?

I am a vigorous supporter of promoting the rich heritage of Naval Aviation. At ComNavAirPac headquarters, in fact, we are dressing up our spaces with old photographs, insignia and other memorabilia to better reflect our proud past. Our people are putting 100 hours a week in the operating environment so they don't always have time to focus on this heritage. However, my experience has been that commands are doing a good job in this regard. New ideas are welcome and needed. Promoting our legacies not only fosters good morale, it enhances readiness.

In June, there was an event commemorating the 45th anniversary of the Battle of Midway. Some veterans of that battle, which is considered the turning point in the Pacific war, were on hand. They pointed out that many of their members in the fight were not only young, but they had only 300-400 flight hours. Could today's generation of Naval Aviators do as well?

Absolutely. The training is incomparable. And, by the way, in Korea as well as Vietnam some of us had as few hours as our Battle of Midway



VAdm. James E. Service

counterparts. Navy flyers today have proven time and again that they have the training to do the job. We had the shoot-down of two Libyan *Fitters* in the Gulf of Sidra in 1981. There was the successful Libyan raid in April 1986. The quality of the men and women in the cockpits has never been better.

What advice would you give a youngster who wants to pursue the gold wings of a Naval Aviator?

Self-confidence and a competitive spirit are musts. A solid college education is vital. There has to be an intense desire to make the grade because the competition is tough. Perhaps most important, the young people must realize they would be joining a team. Therefore, having the mindset and disposition of a team player is essential. The challenge is great and is well worth going after. ■

A New-Generation Adversary Challenges Fleet Fighters

By Lieutenant Commander Bob Frantz, USNR-R

Since the release of the movie *Top Gun*, the Navy Fighter Weapons School's (NFWS) nickname is an everyday catchword. The film depicts the exciting mission performed by the school's pilots and aircraft. In late June, Top Gun received another dynamic addition to its repertoire — the F-16N *Falcon*.

The F-16Ns, built by General Dynamics, will be used as adversary aircraft and will replace Top Gun's F-5s. The first two received recently are part of a scheduled eight to be delivered by April 1988. With the new supersonic adversaries, training at NFWS gets a real boost.

"It's going to be tough for the fighters. We already do very well with the A-4 and F-5, and those airplanes are certainly inferior to the F-16 in thrust-to-weight and turning performance. The F-16 is at least a generation ahead of what we have here now," Lieutenant Mike Jones, a Top Gun instructor and not long ago himself a Top Gun student, was not trying to be boastful.

Jones, who has 2,000 hours, 1,250 in the F-14, explained, "We fly ACM air combat maneuvering everyday, which alone gives us a tremendous advantage over the fleet guys who must spend a great deal of their time and energy preparing for carrier ops. That combined with a superior performing jet means if we are going to truly replicate the threat, we may have to throttle back. We fly about two to three times as much as the typical Soviet pilot. When you combine the tremendous performance of a clean F-16 with our experience levels, we may need to temper our aggressiveness, depending on the threat we're trying to simulate.

"Jones feels a properly flown F/A-18 will be a better match for the F-16 than the F-14 with its present engine. "When the *Tomcat* gets the GE F110, it will be on a par with or better than anything currently on the street, dogfighter or interceptor," he said. "The F-14 has always turned well, but just never had the thrust for sustained

performance."

The F-16 definitely has the thrust and then some," commented Top Gun's assistant training officer, Lieutenant Tom Hendricks. "You have to throttle back at 800 [knots indicated airspeed] to keep from exceeding the limits. The airplane will go supersonic in military [without afterburner (AB)] with no problem. Tactically, there is far less need to use burner which gives you a tremendous fuel benefit. If max AB is applied on takeoff, the jet will be airborne in 850 feet.

"The Navy version, F-16N, accelerates better than an earlier USAF version because it is being equipped with the General Electric F110-GE-100 engine. This is essentially the same engine that will go into the F-14A+ and F-14D."

Commander Rick Ludwig, the Navy Fighter Weapons School's commanding officer, recalls that early consideration was given to equipping the F-16 with a J79 engine. "We looked at that possibility, along with buying the F-20. Someone even came along and tried to sell us MiG-21s. My information is secondhand, but I've heard the F-16/F-20 performance was comparable, but the price tag made the difference."

The veteran fighter pilot with 5,600 tactical hours and more than 1,000 traps is excited about the F-16 and is looking forward to reaching full implementation of eight airplanes. The skipper said, "This will be the first time the adversary community can replicate the aerodynamic performance of the current threat, as well as its weapon system capability. We are taking a quantum leap in readiness with this jet."

In addition to having the benefit of high thrust-to-weight ratio, better than one-to-one at combat weights, and a nine-G capability, the F-16's APG-66 radar will allow the bogey to do its own detecting, sorting and targeting — full weapon systems capability. The aircraft will provide a good high-performance threat that can employ tactics for a beyond visual range, forward-quarter radar missile.

Initial training in the F-16 for Top Gun instructors has been conducted primarily with the assistance of the 312th Tactical Fighter Training Squadron at Luke AFB, Ariz. The Naval Aviators receive about 45 hours of academics, eight to 10 simulator hops, and fly the F-16 eight times.

The flight syllabus includes familiarization, acrobatics, formation, night work, intercepts and offensive/defensive basic flight maneuvering (BFM). Cdr. Ludwig said that BFM is more structured than ACM and defined it by comparing the two.

"ACM is knock down, go for the throat, no holds barred. It is unstructured and you start from a neutral position," he explained. "BFM is canned and you begin from an offensive perch or defensive position. The first two F-16 hops are done in a two-seat version with a qualified F-16 instructor pilot. In the second hop, you get to earn your nine-G pin."

Lieutenant Commander Mark Pfundstein, Top Gun's assistant ops officer, explained that the first two hops are in a two-holer. "Without question, the most challenging aspect of flying the *Falcon* is landing the airplane.

"Just about every other airplane lands near the stall speed. When you get the airplane on the runway, it's done flying," he said. "The F-16 lands at an airspeed much higher than the stall speed and, therefore, you must continue flying the airplane during the first two to three thousand feet of landing rollout with wheels on the deck.

"The approach is at about 145 knots, touchdown at 135-140 knots and the stall is at about 90 knots," he added. "The airplane generates so much lift that there is a tendency to make two or three landings on the first try. It's called the 'dance of the *Falcon*' — the plane bobbles back and forth on its wheels because it's just not finished providing lift."

Lt. Hendricks agreed, "Knowing what I know now, there is no way I'd want to be in a single-seater for the first ride.

Landing the F-16 is totally different. Use too much attitude and you'll scrape the tail and speed brakes, too little and you bounce down the runway."

Although the staff is excited about flying the F-16, in many ways the F-5 will be missed. Pfundstein explained, "The F-5 is very simple, very honest, very forgiving. It has a stick, throttles, engine and tires. You can do almost anything and still recover. You can be very aggressive, flying it right to the

edge of the envelope. The F-5 pilot is in control at all times.

"In the F-16, because of its sophisticated fly-by-wire flight control system, the pilot is a voting member," he continued. "As you push it closer to the edge, computers run more of the

In addition to Top Gun, adversary squadrons VF-45, NAS Key West, Fla., and VF-126, NAS Miramar, Calif., are also receiving F-16Ns.

show and the pilot gets less of a vote. Since it's such a complicated jet, there's obviously more to go wrong.

"The F-16 is fast and new and will be fun to fly. You have to sit in the cockpit to believe it, Pfundstein said. "The visibility is so good, it's like flying without a canopy. The radar, tremendous turning ability and dogfighting aspects are what are really going to make the difference."

Pfundstein, who flies the *Kfir* with VF-43 two weeks per quarter, as part of the NFWs adversary standardization mission, said the *Falcon* is similar in end speed to the *Kfir*, but the F-16 accelerates better. "We never had the capability here to chase down the F/A-18 and F-14 at low altitude. If we were two miles behind, dead six in the F-5, forget catching them.

"The instantaneous and sustained turn performance in the F-16 is significantly better than the F-14 and slightly better than the F/A-18," he said. "A degree or two per second differential in pitch rate is noticeable. Five degrees, the difference between the instantaneous turn rate of the *Falcon* and *Tomcat*, is tremendous."

The *Falcon's* performance will make training more realistic, but the primary justification for having the F-16 is to be able to train against radar weapon control-equipped fighters capable of employing radar-guided missiles. "Since we've taken the artificiality out of the radar game by requiring the F-16 to get its own radar lock on the fighters, we now have the opportunity to gain more realistic feedback on who got the first radar contact and the effectiveness of current F-14/F/A-18 tactics against radar-equipped bogies," Pfundstein added. "Fighter readiness should improve because we are training against the worst-case threat."

The veteran F-14 pilot cautioned, "Learning to employ the weapons system effectively will be an evolutionary process. Very few of us have flown aircraft where that was required of the pilot. The guys with F/A-18 backgrounds will have an edge."

Commander Steve Gaylor, Top Gun's executive officer, feels that getting used to running the entire weapons system will prove to be the most challenging aspect during the F-16 transition. Gaylor, a former F-14 squadron landing signal officer, training command carrier qualification standardization officer, and RA-5C *Vigilante* pilot, said, "It is fairly difficult to land the F-16 well, but discipline will make the difference in landing effectively as opposed to just dumping it on the cement. However, adjusting to the increased pilot workload — working



General Dynamics Corporation

the radar and flying the airplane at the same time — will take time and training.

Cdr. Gaylor called the *Falcon* a "hands-on airplane with frequently needed controls on the throttle and stick."

He explained, "UHF, VHF, gunsight and radar antenna scans are on the throttle. You're never looking over or away for radio frequency or tactical air navigation controls and, of course, vital performance and weapons system information is displayed on the heads-up display (HUD) in front of you. Input to the inertial navigation system, communications, and the tactical air navigation and identification friend or foe systems are also conveniently made through the keyboard in front of you."

Lieutenant Jon Hulst, Top Gun's NATOPS officer and an F-14 pilot with 1,200 hours in the *Tomcat*, commented that "a good deal to flying the *Falcon* is interfacing with its computer." Comparing its flight display to the F-14's, he said, "There's more information, more logically displayed and a lot easier to use. For example, I never used the flight path marker in the F-14. It was difficult to use, not as accurate and the display jumped around too much. In the F-16, the information is extremely accurate and the display has been stabilized, making it easier to read.

"The F-16 is much more responsive, as well as quicker and lighter on the controls, than the F-14," Hulst added. "In the *Falcon*, there is far less stick movement and it takes far less pressure to achieve full stick deflection — about 25 pounds — as opposed to probably 50 to 75 at high G in the F-14.

"The stick is side-mounted instead of on the floor between your legs. It takes about one hop to get used to and is a very natural feeling. It also makes the console easier to see and more accessible," he concluded.

Lt. Hendricks, who flew F-4s on USS *Midway* prior to his Top Gun tour, advised that during the early stages of training, pilots have to be careful not to let the F-16 HUD lead to information saturation or overload. You also have to guard against the tendency to focus too much on one piece of information.

"Coming from a background in *Phantoms*, the scan pattern and habit patterns are radically different. A hard habit to break for me is the tendency to want to use rudder during high angle-of-attack/low-air-speed maneuvering," he said. "In the F-16, the rudder input is done by the flight control system. With regard to avionics, the guys with F/A-18 backgrounds will have it easier

during the transition because both aircraft exhibit state-of-the-art technology."

According to Skipper Ludwig, the introduction of the F-16 at Top Gun marks the first time that the physical limits on the airplane will exceed those of the aircrew. In this nine-G aircraft, it is very important to implement a high-G awareness and tolerance training program.

A section of NFWS's written training syllabus is devoted to G-induced loss of consciousness (GLOC) instruction. Aviators will experience G awareness and GLOC training by flying centrifuges — with and without a G-suit — at Holloman AFB, N.M., and Brooks Army Hospital, San Antonio, Texas. They will practice gut-tightening anti-G exercises designed to facilitate blood flow to the head while under high Gs. Top Gun is developing a physical training program which combines aerobics and weight training to help increase aircrew G tolerance. (Read "Fit to Fly," *NANews*, March-April 1987, and see page 26 of this issue for suggested fitness workouts.)

The seat in the *Falcon* is inclined 30 degrees to help minimize the effect of high G, which lead the skipper to say, "Although it's the most comfortable airplane I've ever flown, with the inclined seat, armrests, great visibility and easy access to displays and controls, it is also the most difficult to get in and out of — there is nowhere to plant your legs. You can't stand on the seat, and the cockpit is designed for your legs to be extended in front of you, so there is no level floor on which to stand flat. There is no graceful way to do it."

Initial implementation of the F-16 at Top Gun will be with the single-seat version. The F-5s will be turned over to adversary squadrons as the single-seaters arrive. It will be about a year before the school receives the first two-seat F-16s.

Cdr. Ludwig looks forward to the two-seaters so that Top Gun can become self-sufficient in its F-16 transition training and instructor-under-training syllabus. The unique landing characteristics of the *Falcon* make it mandatory that the initial two hops be with a fully qualified pilot. The first deep-stall hop also requires that someone who has already experienced it be on board.

It is inevitable that the new F-16 will be compared to the current Navy inventory. Staff instructors with F-14 backgrounds concede that, with its present engines, the *Tomcat* is no match for the *Falcon* as a dogfighter. But the two have different missions.

The F-14 is a large airplane, with

long legs, very powerful radar and a long-range, forward-quarter-capable missile system. It was designed for fleet air defense, and happens to be a good dogfighter. The F-16 was designed primarily as an air-to-air combat fighter. While air-to-ground capability was subsequently added, it remains an outstanding dogfighter.

Top Gun's F/A-18 drivers see similarity in the two airplanes and are more reluctant to concede advantage to the *Falcon*. Marine Captain Bob Walsh, NFWS safety officer, said, "The F-16 has more available Gs, and may try to make it a high-G fight, but the F/A-18 doesn't have the F-16 angle-of-attack limitations and can maneuver better at slow speed. If the *Hornet* pilot can exploit this limitation, or if the fight degrades to a low-energy, slow-speed battle, the F/A-18 will prevail."

Staff instructor Lieutenant Commander Dave Martin added, "One unique characteristic about the F-16 is that it's a good flying glider, that is, for a tactical jet. As a rule, the Navy doesn't permit engine-out landings. The Air Force has already done it in the F-16, and the F-16N will be the first current Navy jet to incorporate no-engine landings as a sanctioned emergency procedure."

Commenting on why the Navy could not use its own aircraft in an adversary role, LCdr. Pfundstein explained, "You need dissimilar airplanes for identification so that you know who is on what side. It is very important to fight aircraft with different flight characteristics from your own, so you can learn to capitalize on your inherent advantages and exploit the adversary's limitations. Otherwise, it is strictly a test of aircrew proficiency."

Although acquisition of the F-16 is a major step in enhancing fighter readiness, Cdr. Ludwig is not about to become complacent. The Top Gun skipper feels that "a cadre of fleet fighters is needed (at NFWS) — four F-14s and four F/A-18s." He said "It would give us the ability to instruct from the fighters as well as the threat. Supplementing the fighter mission and instructing from its perspective is an option that is not available to us now. The class members bring their own aircraft, which are fully tasked, and there are no extra sorties available."

The addition of the F-16N to the NFWS training syllabus gives Navy pilots one more advantage against the adversary threat, and provides impetus to Top Gun's continued commitment to fighter excellence. ■

Marine Pilot - Top Flight Instructor

PHAN Young

By JO1 Jim Richeson

Sometimes it's hard to be humble, especially for a Marine Aviator who has been selected as the Navy's top flight instructor for 1986. But Captain Marc R. Musgrove, with NAS Corpus Christi's Training Squadron (VT) 27, is doing the best that he can.

The 32-year-old native of Fort Worth, Texas, outshined 1,010 Marine and Navy instructors in the Naval Air Training Command to receive the David S. Ingalls Award.

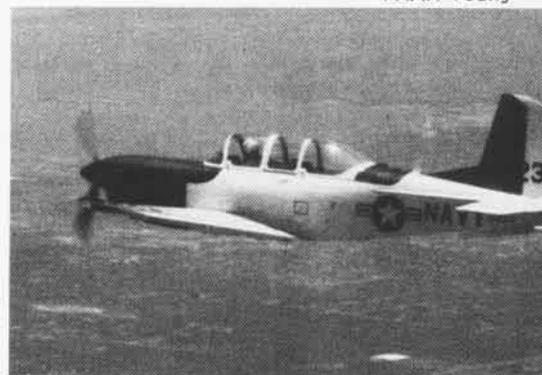
Sponsored by the Navy League, the award is named for Rear Admiral David S. Ingalls, the Navy's first ace. He was also a member of the famed First Yale Unit during WW I. The unit comprised a group of students who organized a flying unit in 1916 that later became the basis for the Naval Air Reserve.

Each year, the Chief of Naval Air Training picks one candidate from the Navy's 21 aviation training squadrons for outstanding performance and effectiveness as an instructor. The award also recognizes Musgrove's contributions to safety, his character, personality, leadership and civic involvement.

Being nominated by his peers is an honor in itself, but according to Musgrove, a Texas Tech University graduate, receiving the award came as a complete surprise. "I was surprised that I got picked for the squadron, let alone being nominated by the wing," Musgrove said. "I guess they narrowed it down to three instructor pilots. The



SSgt. Lee J. Tibbetts



Above left, Capt. Marc R. Musgrove, 1986 Instructor of the Year. Above right, a T-34C Turbo-Mentor of VT-27. The Boomers won the 1986 Vice Admiral Robert Goldthwaite Award. Sponsored by Rockwell International, the award recognizes training excellence.

skipper flipped a coin and they needed a red-headed Marine," he joked.

Commander David D. Faraldo, VT-27's commanding officer, said that all of the flight instructors nominated were worthy of the award but no one was more deserving of the recognition than Capt. Musgrove.

As the squadron's former NATOPS officer, Musgrove wrote a set of course rules for the squadron's detachment to use when they are deployed to NAF El Centro, Calif. VT-27 sent 27 aircraft there from January to April for students to acquire additional visual flight rule flying time because of unstable weather at their home base.

"Basically all the rules were just traffic rules," Musgrove said. "I was trying to eliminate the possibility of midair collisions for aircraft entering and leaving the airfield."

Musgrove flew the Navy's CH-46 *Sea Knight* combat transport helicopter with Marine Medium Helicopter Squadron 164 from MCAS (H) Tustin, Calif., before being assigned as an instructor with VT-27. "Although I have as much flight time now in fixed-wing aircraft, all of my fleet experience was with helos," he said. He has amassed over 3,700 accident-free flight hours. Since becoming a flight instructor in January 1985, Musgrove has accumulated over 1,000 hours while training aviation students on the T-34C, the Navy's primary training aircraft. Although Musgrove has distinguished himself by being chosen as the Navy's best flight instructor, he still likes to be treated as just another instructor pilot doing his job, and doing it very well. ■

SSgt. Lee J. Tibbetts, PAO, MCRD Parris Island, S.C., contributed to this article.

1987 Sailors of the Year



CPOs Hills, McCormack, DeVaughn and Visosky

By JO2 Julius L. Evans

It's like the popular \$10-million-dollar sweepstakes. A lot of people enter and many are selected to go to the next round. They get their hopes boosted and the process continues until the winners are chosen.

Being selected Sailor of the Year

gave four Navymen the opportunity to go through a similar process and acquire the prestige of being number one.

"You always read about Sailors of the Year (SOY), but you never think you will become one," said CNO Shore Sailor of the Year Chief Aviation Antisubmarine Warfare Technician (Aviation Warfare) John S. Visosky. The Dunkirk, N.Y., native is presently the ASW center supervisor in the Aircraft Intermediate Maintenance Department, Antisubmarine Warfare Wing, NAS North Island, Calif.

The three other winners include Chief Signalman (Surface Warfare) Gregory DeVaughn of Milwaukee, Wisc., for the Pacific Fleet; Chief Operations Specialist (Surface Warfare) Timothy J. McCormack of Robbinsdale,

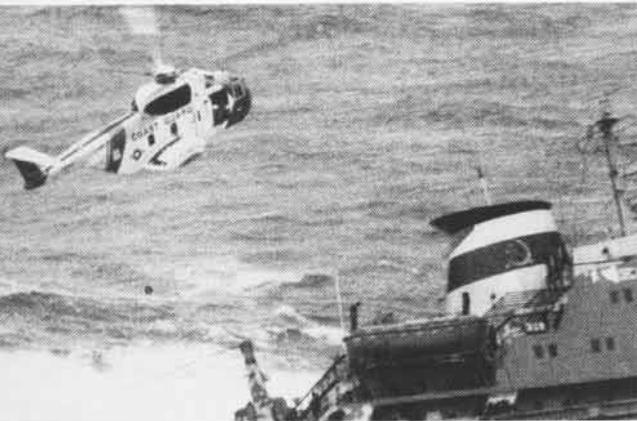
Minn., Atlantic Fleet; and Chief Hull Technician (Surface Warfare) Paul D. Hills of Pleasant Hill, Calif., Naval Reserve.

All 1987 Sailors of the Year were honored at a banquet in Washington, D.C., sponsored by the Northern Virginia Council, Navy League of the United States. Chief of Naval Operations Admiral C. A. H. Trost frocked the four winners to chief petty officer and presented them with Navy Commendation Medals.

The winners also received a week's paid vacation to anywhere of their choice in the continental United States, along with their families, compliments of the Fleet Reserve Association.

The Sailor of the Year program enables Navy units to reward individuals for a job well done. This year's recipients earned the honor by exhibiting the typical Navy "can do" spirit. ■

Superpower Rescue



Above left, a helo from CGAS Cape Cod maneuvers to rescue Soviet sailors from their sinking freighter. (Ltjg. Matthew Thomas) Above right, Lt. Keith Comer presents a model of the H-3 to the skipper of the Komsomolets Kirgizii. (PA3 John Guzman)

By PA3 Kenn Arbogast, USCG

Three H-3 helicopters from Coast Guard Air Station (CGAS), Cape Cod, Mass., battled sleet and gale force winds to pluck 37 Soviet sailors from the deck of a sinking freighter 220 miles off the New Jersey coast last March 14.

During a ceremony honoring the Coast Guard's rescuers in the White House Rose Garden, President Reagan called it "one of the most dramatic rescue missions in the history of the Coast Guard."

USCG Group Cape May, N.J., received a distress call from the 482-foot *Komsomolets Kirgizii* about 8:30 that morning. The ship's skipper reported that his vessel had a 26-degree port list in heavy seas and requested immediate evacuation of his crew. The ship's list prevented the crew from lowering the lifeboats.

The 3rd District operations center on Governors Island, N.Y., dispatched a C-130 from CGAS Elizabeth City, N.C., to assess the situation. Coast Guard cutter *Tamaroa*, sailing up the New Jersey coast en route to New Hampshire, was directed to the scene as well.

The C-130 was the first aircraft on scene, locating the Soviet freighter at 10:25 a.m. Communications Station, Portsmouth, Va., acted as a link between the C-130 and the 3rd District operations center.

"It took us about 20 minutes to establish communications with the vessel's master because of the language barrier," said Lieutenant Commander Mike Flood, pilot of the

C-130. He finally found some English words that the master recognized. The C-130 stood by with rescue gear and ready to drop it if the vessel sank. The plane also located and diverted to the scene two nearby American merchant vessels. Flood maintained constant communications with the Soviet master, reassuring him that helos were on the way and explaining what to expect when they arrived.

The first Cape Cod H-3 arrived on scene about 11 a.m. to assist the distressed freighter. "We made it just in the nick of time," said Lieutenant Keith Comer, the helo's pilot. "The entire port side was awash."

The helo hovered 50 feet over the fantail of the sinking ship. Twenty-foot swells washed over the pilot house. Gusts of 55 knots howled through the ship's superstructure and pounded the H-3. "It took 15 minutes to find a place to drop the basket where it wouldn't snag because it was blowing around so in the wind," Comer said.

Because of the helo's limited fuel and the ship's dangerous position, people usually rode in the basket two at a time. The first helo hoisted 15 people aboard in 20 minutes, then departed for Atlantic City International Airport.

The second H-3 hauled up 16 more crewmen. The aircraft's pilot, Captain Rick Hardy, was an exchange pilot from the Canadian Forces. "It looked to me like the vessel was going down at any moment," said Hardy. "The deck was almost totally awash."

After the second helo finished its hoists and left for Atlantic City, a third H-3 moved into position over the ship's stern to rescue the remaining six crew

members, including the skipper.

"By the time we got there, the ship had a 40-degree list," said AD3 Mark Noonan, hoist operator aboard the third H-3. "It was a pretty tough hoist job because of all the obstructions on deck and the wind knocking the basket around."

A second C-130 arrived a few minutes before the hoists were complete. Once all the Soviets were picked up, one of the C-130s escorted the first helo to Atlantic City. The other transport stayed with the remaining H-3s as an escort.

The last helo arrived in Atlantic City at 2:35 p.m. Each helicopter was in the air about four hours and travelled more than 400 miles on the mission.

Lieutenant Junior Grade Matthew Thomas, copilot of the first H-3, talked with the rescued Soviet captain. The skipper told Thomas that his ship's engines stopped and the vessel turned broadside in 30-foot waves. A load of flour sacks shifted to one side and caused the ship to list.

"He was distressed," Thomas said, describing the Soviet skipper who had watched his ship sink. "It's like watching something die and he felt that way, too. Part of himself died as it sank."

Komsomolets Kirgizii was barely afloat when *Tamaroa* arrived late that night. The freighter was listing about 90 degrees and going down in 18-foot swells when the Coast Guard cutter arrived. *Tamaroa* moved away to wait for daylight. At dawn, no part of the freighter was afloat, only debris.

Tamaroa's executive officer, Lieutenant Commander Kenneth Dykstra, said, "All that was left were thousands of bags of flour. Except for an oil slick, the water in the area was white."

The rescued Soviets stayed in New Jersey the night of the disaster and flew to a Soviet embassy compound the next day. The rescued and the rescuers were reunited three days later in Washington at the awards ceremony at the White House. The pilots, copilots and flight mechanics on each crew received Air Medals and other crew members were awarded Coast Guard Commendation Medals.

In praising the crews for their daring efforts, President Reagan said, "In your courage, your tenacity, your know-how, you summed up all that is best in the American spirit — in a word, all that is heroic." ■

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National Champions En Route to the Navy

By JO2 Julius L. Evans

Two brothers' love for Naval Aviation has earned them national recognition and a head start for careers as future Naval Aviators.

What began as a hobby for Mike and Marc Schachter, identical twins from Ramona, Calif., turned into a trophy-winning avocation.

The twins almost always win first, second or third-place honors in each competition they enter. The 19-year-old brothers are masters at converting hundreds of tiny pieces of plastic into beautiful and accurate replicas of modern and WW I and II aircraft.

The Schachters' work is so renowned that each has built models which appeared on hobby aircraft kit box covers produced by the Testor Company, one of the biggest model kit manufacturers. At age 13, nine years after receiving their first model kits, the Schachters began what became a dynasty in the competitive aircraft modeling community. "Because of the smog in Los Angeles where we lived, it wasn't healthy to go outside," Marc said, the younger by six minutes. "Our mother came home one day with a couple of models and we have been building them ever since."

At the time, neither twin had plans of becoming expert model builders but, as time went on, they became absorbed by attention to detail which manifested itself in building model airplanes. The models that Mike and Marc build for competition are usually in a 1/72 or 1/48 scale. Nine times out of 10, their models are winners. In 1981, they won awards for every model they entered in the San Diego Aerospace Museum's inaugural contest. In fact, between 1981 and 1982, they won so many awards at these annual competitions that they were asked to stop competing and were invited to judge. They did so for the next four years until they began undergraduate school at the University of Washington in Seattle last fall.

The year 1981 also marked the beginning of their domination of aircraft categories in the Junior Division (17 and under) at the local and regional

levels of the International Plastic Modelers Society (IPMS) competitions. In 1983, at their first IPMS Nationals contest in Phoenix, Ariz., they brought home six out of a possible seven awards in Junior Division aircraft categories. The Schachters swept the Out-of-the-Box category, in which modelers are restricted to using only the parts available in the kit and are not permitted to add any extra-kit details. In addition, three of their four remaining entries won honorable mentions.

At the 1984 Nationals in Atlanta, Ga., the duo brought back seven out of a possible nine awards. In 1985, their individual entries won 15 out of a possible 20 awards in the Junior Division competition at the IPMS Nationals in Indianapolis, Ind., including the Judges Award/Best of Show prize for that division.

After turning 18 last year, the twins graduated to the Adult Division competition at the 1986 Nationals held in Sacramento, Calif. In their first "major league" contest, the Schachters batted 1,000 by winning first-place awards in the three aircraft categories in which their combined total of three models were entered.

Living close to California naval air stations during their childhood inspired the twins' interest in Naval Aviation. "Beginning with their seventh birthday celebration, they were given a choice of doing whatever they wanted for the occasion," said their father, Harold Schachter. "It would always be the same thing year after year. They wanted tours of NAS Miramar."

Their interest and enthusiasm in aviation also landed them a political position. In September 1983, Congressman Duncan Hunter (R-Calif.) appointed them to his Citizens Advisory Council on Defense — Strategic and Planning Policy, making them the youngest members.

"The twins happen to share a common hobby interest and it led them to similar career goals," said their father. But then individuality took over and separated them.



L to R: Capt. Edwin D. McKellar, USN(Ret.), executive director of the San Diego Aerospace Museum, and Marc and Michael Schachter pose in front of the museum's 75th Anniversary of Naval Aviation exhibit.

"While working at a *Blue Angels*' air show magazine stand, something in an article I read caught my eye," Mike said. "The things it said about the A-6 [*Intruder*] blew me away. I've been hooked ever since."

Marc is interested in the F/A-18 *Hornet's* mission. "I have always been fascinated with what I saw at Miramar," he said. The Navy has been an influence on the twins since childhood and is very much a part of their lives today. Both are enrolled in the Navy Reserve Officer Training Corps (NROTC) at the University of Washington.

After researching all possibilities, the brothers decided the Navy offers the best choices for them. "There are many ways to become a pilot," said Mike, "but the Navy has the best deal." Upon completion of NROTC, both expect to receive their regular commissions in the Navy and continue on to flight training.

The twins share the same opinion about Navy pilots. "They're the best. The cream of the crop," Marc stated. "There's no comparison," Mike added. "When you have to land on a rolling deck at night compared to a land-based runway, the difference speaks for itself. Being able to say you can do that, allows you to say you are the best!"

Making dreams a reality sums up the Schachter twins' motivation. Turning tiny pieces of plastic into perfect airplane models is the prelude to eventually flying the real thing. They look forward to the challenge of pursuing their Wings of Gold. Those wings represent the end of the rainbow for them. "Their desire to excel and be the best they can be is not just a catch phrase you hear in recruiting. It's why they aspire to Naval Aviation as a career," their father said.

The twins plan to continue their hobby as time allows but they admit they won't be as prolific as in the past, which is good news for their fellow competing modelers. At future IPMS competitions, the field is open to new modeling wizards. The Schachters are en route to the Navy. ■



This 1/72 scale model of the F-8J Crusader by Michael Schachter won "Best of Show" honors at the 1985 IPMS Nationals in Indianapolis.

Photos by Cory Crowell



Pumping for Power

The following is a muscular strength and endurance conditioning program designed by the Naval Aerospace Medical Research Laboratory, NAS Pensacola, Fla., to improve aircrew G tolerance. (For details, see "Fit to Fly," NANews, March-April 1987.) The suggested workouts are part of an interim program which will be modified pending the results of ongoing research.

A Muscular Strength and Endurance Training Program for the Enhancement of G Tolerance

Training Program Goals:

1. Increased strength of those muscle groups associated with the anti-G straining maneuver (AGSM).
2. Improved capacity in the same muscle groups for maintaining submaximal work repeatedly during air combat maneuvers.

This program should be performed four days per week, ideally M, T, Th and F. It consists of two different workout styles, an A workout (strength) and B workout (muscle endurance), which are directed to address and achieve the above goals. From our work in the area of acute responses to different resistance workout styles, we are now able to suggest some variations in program prescription which enable us to specify the training effect. This program is designed to be performed over a 10 to 14-week period, after which a maintenance program should be followed. Workout logs should be maintained and safety precautions observed. Participants should be thoroughly briefed and trained on proper lifting techniques and safety precautions before starting this program.

Schedule

Both the A and B workouts should be performed two days per week for a total of four resistance training days weekly. The ideal schedule follows:

Mon	Tue	Wed	Thu	Fri	Sat	Sun
A	B	Rest	A	B	Rest	Rest

It is important that (1) rest periods are strictly adhered to (1-1/2 to 2 minutes on the A and 30-60 seconds on the B workout); (2) order within exercise segments is followed; and (3) RM or repetition maximum loads are used (weight is adjusted to allow only that number of repetitions listed to be performed to reach momentary muscular failure). The workouts are designed to be used with several types of multistation exercise equipment.

The program is designed to give acute responses which are similar to the physiological demands of G forces; thus, specificity of training is apparent and strength changes should also be concurrent over the training period. Recent findings seem to indicate that moderate aerobic training (20-30 miles per week) done in conjunction with a weight training program is not a detriment to G tolerance.

A Workout (Strength)

Warm-up General individual stretching — several stretches will be suggested.

Exercise	Sets/Reps	
Segment 1 Leg press	6 4 2 4 6 R* R R R R	(Pyramid, 5 sets, 6 reps, 4 reps, 2 reps, 4 reps, 6 reps)
Segment 2 Bench press	5 5 5 5 R R R R	(4 sets of 5 repetitions at 5 RM)
Segment 3 Lat pull down	5 5 5	(3 sets, 5 reps @ 5 RM)
Segment 4 Military press	8 8 8	(3 sets, 8 reps @ 8 RM)
Segment 5 Shoulder shrugs	6 6 6	(3 sets, 6 reps @ 6 RM)
Segment 6 Sit-ups (bent leg)	10 10 10 10 R ↓ R ↓	(1 set, 10 reps sit-ups followed immediately by 1 set, 10 leg raises repeat)
Segment 7 Neck series	10 10 R R	(Rotation with resistance, flexion/extension front and back, and laterally)

B Workout (Anaerobic Tolerance)

Warm-up Individual stretching

Exercise	Sets/Reps	
Segment 1 Leg extension Leg curls	10 10 10 R* ↓ R ↓ R ↓	(1 set, 10 reps extension @ 10 RM followed immediately by 1 set, 10 reps curls, repeat 2 x)
Segment 2 Bench press Shoulder shrugs	10 10 10 R* ↓ R ↓ R ↓	(Same format as segment 1)
Segment 3 Lat pull Seated row	10 10 10 R* ↓ R ↓ R ↓	(Same format)
Segment 4 Military press Upright rows	10 10 10 R* ↓ R ↓ R ↓	(Same format)
Segment 5 Arm curls Tricep extensions	10 10 10 R* ↓ R ↓ R ↓	(Same format)
Segment 6 Sit-ups Leg raises	20 20 10 10 R ↓ R ↓	(Same format)

*R = 2 to 3-minute rest periods between exercises and sets.

*R = 30 to 60-second rest periods between super sets; no rest between exercises.

Out of My Class

By Mark Evans

The following article is reprinted with permission from Air & Space/Smithsonian magazine. It appeared in the "Flights & Fancy" department of the June/July 1987 issue.

In the 32 years I've been teaching elementary school, my students' essays and examinations have taught me some fascinating facts about air and space. For instance, did you know that the first female aviator was Kitty Hawk? Or that Roger Wilco invented "the language of communications"?

One nine-year-old lamented that "the history of aviation is getting longer and harder all the time." Perhaps to compensate, some of my students have taken the fabric of that history and tailored it to their own measure. One boy cut matters down to basics. "In aviation history," he wrote, "there was first the Wright brothers, then Lindbergh, then on to now."

My students always manage to remember something about the Wrights. "Orville Wright was born in 1871, supposedly on his birthday," wrote one skeptic. "The Wright brothers are two of the four fathers in aviation," wrote another student, raising further questions. A third student admired the brothers' physical skills: "When it came to mechanical things, the Wright brothers showed they had smart heads up their sleeves."

Putting it all in perspective, one youngster observed, "They both lived in the pre-me times."

Charles Lindbergh's accomplishments become equally memorable. "Charles Lindbergh was the first to fly to Paris," I once read. "He did it by the airplane method." He also had some strange powers over geometry. "A straight line is the shortest distance between two points unless you are going with Lindbergh to Paris. Things are different there."

And finally, Lindbergh seemed to have physical abilities on a par with the Wrights: "When they asked him if he would like to navigate to Paris, he rolled his eyes and flashed his teeth and said sure."

Test takers have been equally imaginative with definitions. "Spinning

jennies were flying jennies that did not work," one decided. Another noted that "lift in an airplane is the same as thrust, only just the opposite." Commenting on the duties of a navigator, a lass claiming to be one of aviation's "starchest supporters" explained, "The navigator figures out the latitude and longitude. Latitude tells him where he is and longitude tells him how long he can stay there." Her best friend wrote, "Three main crewmen on a plane are the pilot, navigator, and percolator." Concluded another, "Navigators look something like people."

Some writers avoid controversial issues. "Until it is decided whether ramjets are rockets or jets, we must continue to call them ramjets," advised one. "I know what a sextant is," a student admitted, "but I would rather not say."

Other students are more courageous. One bravely tackled the controversial subject of air traffic control. "There is a group of people called the CAA. They make safety rules about airplanes. Some of their rules have advanced to the point where they are no longer understandable."

Jets are a popular topic, once you figure out what one is. "Look at a jet plane," I read once. "Does it have a propeller? Then it is not a jet plane." Moving to another paper, I discovered how a jet works: "In order to learn how jets work, I only need to blow up a balloon and let it fly into the air. Somehow this explains it to me."

"Jet planes fly faster but helicopters fly straight up and down," wrote one youngster, "so it is about six of one and one for all."

"Some facts about jets are just to listen to, not to understand," according to another, who was all ears.

Rockets are another favorite subject. Much of the youthful wisdom I've collected has been devoted to an explanation of the action-reaction principle, which means that when force is exerted in one direction, the rocket

travels in the other. Or as a boy named Todd put it, "Anytime there is a force pushing one way, there is another pulling the other way. Only rockets can understand this well enough to make it work for them."

"A rocket has no moving parts," another wrote. "Except itself. Straight up."

The rocket's propulsion system holds its own peculiar fascination. "Liquid fuel rockets will not go unless they have both a fuel tank and an oxidizer tank," explained one student. "And don't forget the match."

"Oxygen is for burning or breathing, depending on whether you are rockets or people," another added.

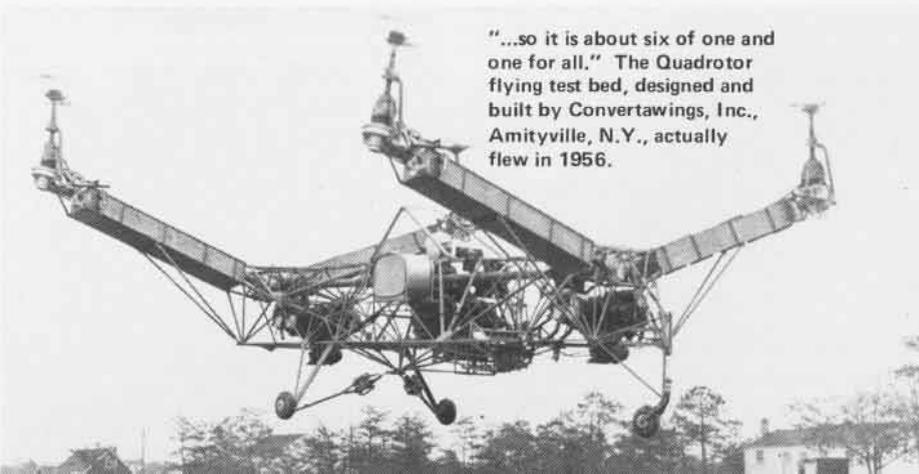
"When the fuel gets burning, the gases rush out at the nozzle. So would anybody," a third noted sympathetically.

One lad had this encouraging report: "Only two great problems yet remain in our conquest of Mars. They are getting there and getting back." Another student looked at the project differently — "The most important thing about going to any planet or doing anything is knowing when you are there and through and stopping there and ending."

And let's not forget the unknown horrors in space — like gravity. "An orbit is the path of a body in space that is under the pull of another body," wrote one young scientist. "It's all pretty spooky."

What do children see for the future? A host of technological breakthroughs, if my students are any indication. "Even better aircraft are to be found," one wrote three years ago. "Where they are to be found is in the future tense."

"So far, planes have only been able to fly in circles of no more than 360 degrees," observed another. "This could be the next big breakthrough in air travel." On the other hand, that may be something Charles Lindbergh pioneered on his way to Paris. ■



"...so it is about six of one and one for all." The Quadrotor flying test bed, designed and built by Convertawings, Inc., Amityville, N.Y., actually flew in 1956.



CARD STUNTS

By Arthur L. Schoeni

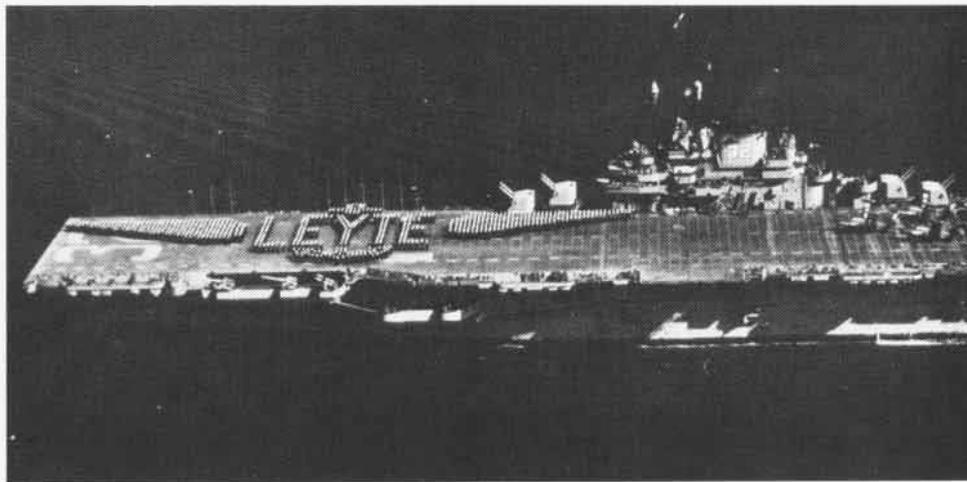
Opening the mail can be an adventure. Like flying airplanes, it is mostly routine, but one day something unusual may appear that brings some excitement into an otherwise dull day.

Recently, the mailman gave the entire *NANews* staff that special feeling. As we opened a package from former editor Arthur L. Schoeni, we were greeted with the musty aroma of Art's basement. He had been sorting through his memorabilia and came across a story he wrote in 1951, along with some pictures he collected throughout his career. Complete with rusty paper clip and brittle yellow paper, Art sent them to us for safekeeping. We are turning them over to the archives but first wanted to share some of the excitement and memories they brought to us.

Navy aircraft carriers, borrowing a trick from college cheering sections, use a novel way to herald their arrival into a home or visiting port by spelling out the name of the city or carrier on their huge decks.

Each carrier as it steams into harbor may line up hundreds of its bluejackets on its 600 to 800-foot deck. Working from carefully worked out plans, they spell out the name or message. The idea is going strong now but it is not new. Some displaced college cheerleader back in August 1933 had seamen on the carrier *Saratoga* spell out the letters "NRA" for a newsreel cameraman to publicize the National Recovery Administration of those depression-ridden days.

Three years later, USS *Lexington* spelled out "Navy." The practice lapsed during the war years but, as the victory seemed to be won and spirits rose, it was revived. The battle-scarred *Bunker Hill* came to port and spelled out its name in two tries, spelling "Bunker" one time, then reassembling the



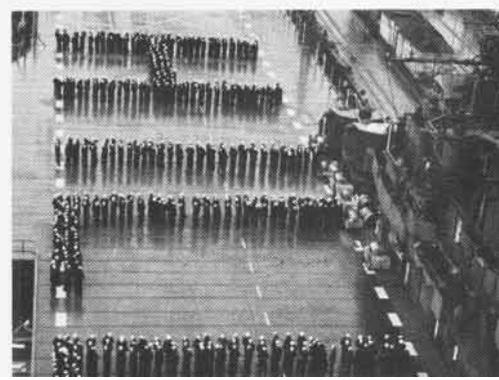
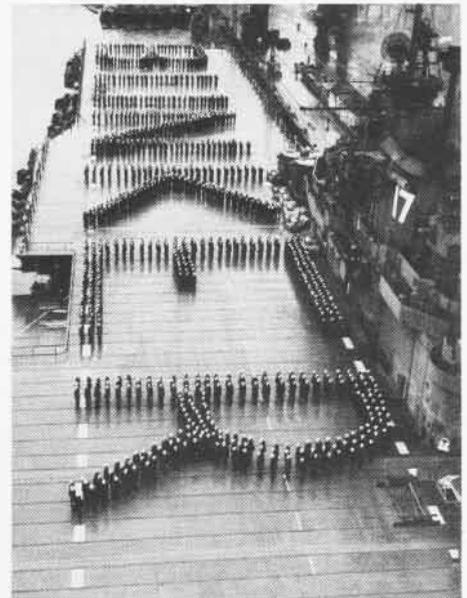
hundreds of men to spell "Hill."

Since then, however, a rash of card stunts has hit the fleet and many hours of midnight oil have been burned to arrange these spectacular displays which, incidentally, are far more visible to passing aviators than to the cities they are supposed to honor.

As an example of how the stunts are planned, take the time the carrier *Monterrey* steamed into New Orleans, La. (which sometimes calls itself NOLA as a contraction.)

The *Monterrey* stunt required 697 men. With the use of a miniature scale drawing of the flight deck, it was estimated that the letters would have to be 36 feet by 24 feet, with eight feet between letters and 24 feet between words.

It then was determined that the average man would take up a space of two feet by one foot at about a 70-degree angle from the overhead position. Taller men were placed in the background and shorter ones in front. Three men with a 50-foot tape

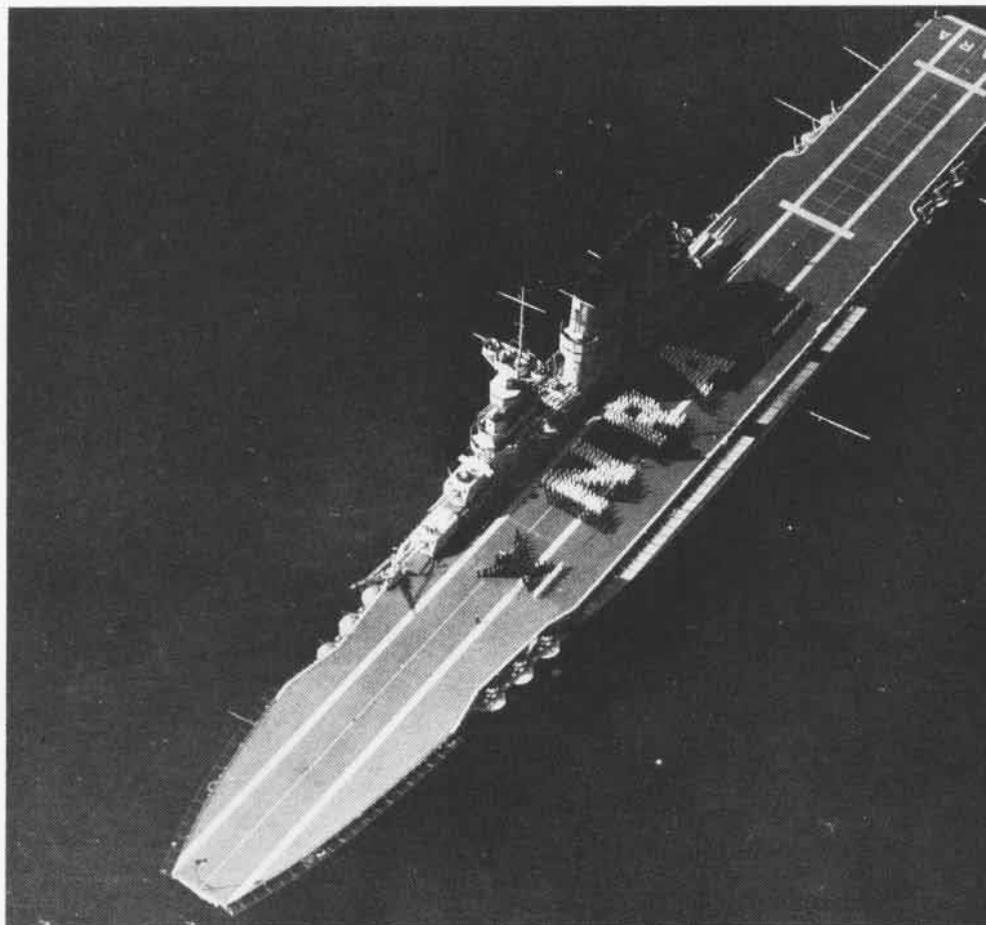


Top, USS *Leyte* displayed her name with Navy wings upon return to San Diego after Korea. Center and right, it took two tries to form "Bunker Hill" in 1945.

In 1933, USS *Saratoga* created what is believed to be the first "card stunt." NRA stood for the National Recovery Administration during the great depression.

measure, hammer and carpet tacks laid out the checkpoints for the letters the night before the picture was taken.

This operation took 50 minutes. Using the checkpoints and a tape measure, a small chalk circle was drawn at the precise point where each man was to stand. This took little time. Chalk marks were not drawn too far in advance for fear rain would obliterate them. The men just stood on the marks the next day and a photographer in a



Far left, the crews of *Saratoga* and *Essex* said "Hello America" en route to Mayport, Fla. Left, back from Korea, *Valley Forge* came home to Puget Sound. Below, *Tarawa* greeted Jacksonville in 1952.



helicopter recorded the greeting, prints of which were presented to New Orleans newspapers and dignitaries.

Probably the fanciest job of name-spelling was done by the carrier *Leyte* at San Diego. The ship not only spelled its own name when it returned from a tour in the Korean war zone but it put Naval Aviator wings and anchor on it — a job that took some precise figuring and a few blueprints. When the *Saratoga* spelled out NRA, it also put two blue eagles at both ends of the initials.

In figuring out how to make the *Leyte's* aviator wings, one of the carrier's junior officers spent many hours measuring various locations on the broad flight deck to work out details, exact measurements and the number of men required. After the blueprint was drawn, the design was chalk-lined on the wooden deck, using a 100-foot tape, and a dot of black



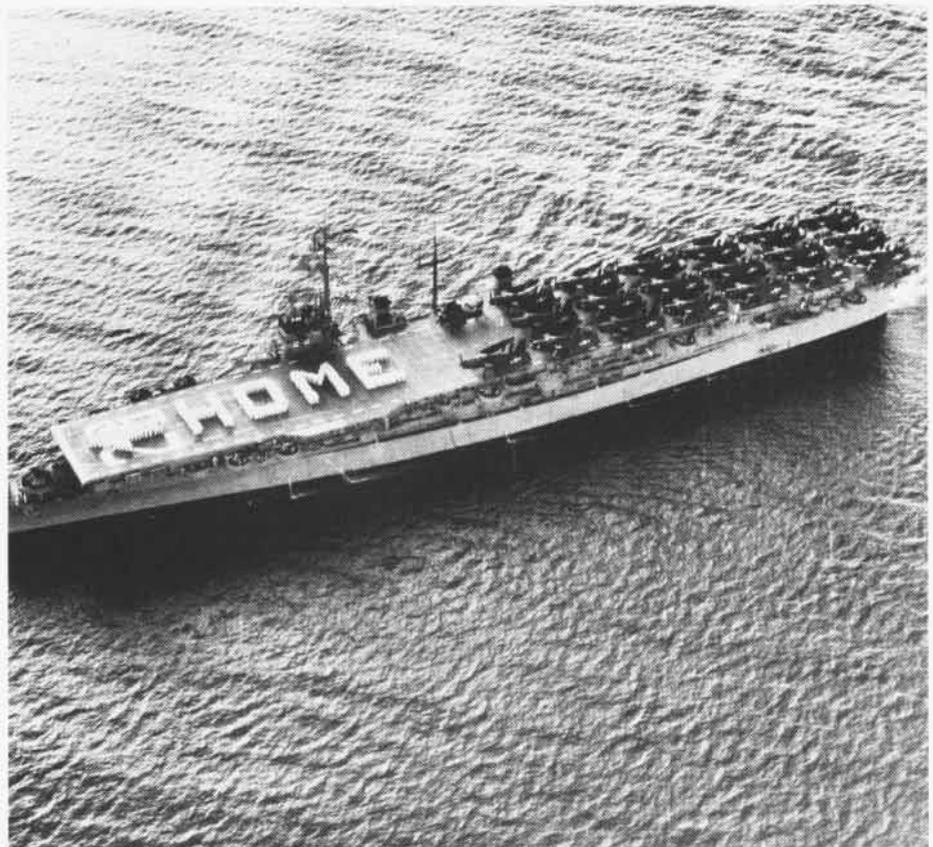
Left, crewmen of Intrepid, Saratoga and Independence commemorated the 50th Anniversary of Naval Aviation in 1961. Below, glad to be "home" after battling enemy forces in Korea, USS Bataan personnel spelled out their favorite word.

paint marked every 30 feet. This dot represented where each man was to stand and could be made permanent by use of brass tabs.

In this particular card stunt, more than 1,000 men were used. Specific divisions of the ship were told to furnish men for certain portions of the design. The men were mustered and marched to their positions. One trial run was held and the picture was then shot from a helicopter. Since they were on their way home from an extended tour in the war zone, the men had fewer ship duties and could take a little time to help in working out the stunt.

One enterprising carrier, the *Bairoko*, from whose deck Marine *Corsairs* flew during the Korean conflict, spelled out its ship's name in Japanese as it returned from the war. In another stunt, proud of its record of donating 2,377 pints of blood, the carrier *Boxer* formed a blood flask with the numerals inside.

Card stunts give crewmen a chance to break the monotony of long cruises without air operations, and the resultant photographs often find their way into newspapers, magazines and ships' cruise books, thereby preserving many fond memories. ■



Navy Satellite Marks 20 Years

A Navy satellite, designated *Oscar 13*, celebrated its 20th year of service recently. The solar-powered satellite was launched on May 18, 1967, and still functions as part of the Navy's Transit Satellite Navigation System, which is used by ships and submarines to chart their courses around the globe. According to officials at the U.S. Space Command's Space Surveillance Center, *Oscar 13* is the oldest active U.S. satellite on record. It has travelled over 2.8-billion statute miles, logged over 175,000 hours of service (for a 99.965-percent reliability rate), and broadcast 5,259,600 navigation messages to Transit users.

F-14D Super Tomcat

Grumman Corporation



A second aircraft has been added to the F-14D development flight test program at Grumman Corporation. Although its current use is for engine testing, Aircraft 503 will be the only development aircraft to be fully configured as an F-14D with new engines, avionics and radar.

Airship Contract

The Navy awarded Westinghouse-Airship Industries, Inc., a \$168.9-million contract to build a prototype airship for testing and use in fleet operations. The last Navy airship squadron was disestablished in 1961, and the last flight of a Navy airship took place at Lakehurst, N.J., on August 31, 1962.

Advances in technology and the endurance and cost-effectiveness of airships have renewed Navy interest in lighter than air. The new contract calls for a 60-month, start-to-delivery schedule, with the first flight within 41 months.

Westinghouse-Airship Industries is a joint venture headquartered near Baltimore, Md., with production facilities at Weeksville, N.C. Westinghouse Electric Corporation joined forces with Airship Industries, Ltd., of the United Kingdom in July 1986. The new company was formed to design and produce airships for U.S. military and government use.

New ASW Carrier Helo

VAdm. Robert F. Dunn, DCNO (Air Warfare), officially accepted delivery of the Navy's newest antisubmarine helicopter on June 30 at the Sikorsky Aircraft plant in



Stratford, Conn.

Designated the SH-60F, the CV-helo will replace the SH-3H *Sea King* which is slated for retirement in the 1990s. The SH-60F will operate from aircraft carriers and is designed to track down and attack submarines near the carrier battle group. The new helicopter will provide a close-in defense which is superior to that provided by the *Sea King*. The Navy plans to buy 175 SH-60Fs during the next decade.

Coast Guard E-2C Drug Busters

Two E-2C *Hawkeyes* became full-time drug busters for the Coast Guard at its newly formed air interdiction squadron in Norfolk, Va. Eventually, the unit will comprise 20 pilots and flight officers and 80 enlisted personnel.

After a two-year training program, the squadron will move to Clearwater, Fla., where the E-2Cs will be used mainly to help patrol the Caribbean and stop marijuana and cocaine shipments from reaching the U.S. The *Hawkeyes* can detect airborne and surface targets 200 miles away, and will direct pursuit aircraft to chase detected smugglers.

In addition to combating drug traffickers, the E-2Cs will help the Coast Guard in its maritime defense role — providing early warning radar in coastal areas.



Unity

The Navy is the front line of defense and Naval Aviation is the advance guard of this first line." So wrote Rear Admiral William A. Moffett in 1925. He was the first chief of the Navy's Bureau of Aeronautics and a principal founder of the Naval Aviation establishment as we know it today. He possessed the wisdom and foresight to recognize the long-term value of seaborne aviation at a time when airplanes were rudimentary and quite often "risky" flying machines with limited capabilities. Moffett observed that "Any innovation must fight its way. It becomes stronger and finds its proper place in the scheme of things more readily because it *has* to fight." In the 1920s, Moffett was a key figure in the well-documented and stormy controversy over air power and who should have it. He fought hard for Naval Aviation.

The Army's General Billy Mitchell believed in an independent air force, separate from the Army and Navy.

While there was merit to his proposal (and that proposal reached fruition in 1947 with the creation of the U.S. Air Force), others at the time, particularly in the Navy, correctly believed that the sea service should have its own, full-bodied air arm. Working within the system, in a low-key but determined fashion, Moffett helped convince Congress and others of the merits and need for aviation within the Navy.

A generation later, Naval Aviation was again in jeopardy. There seems always to be a group of people who criticize the value of aircraft carriers. They existed then. They exist now. They will probably always be with us. But in the late 1940s, carriers and carrier-based aircraft came under unprecedented fire, because some people believed that they could not adapt to nuclear war scenarios. Fortunately, there were supporters like James V. Forrestal (Secretary of the Navy, Secretary of Defense and, incidentally, Naval Aviator No. 154)

who advocated and successfully argued for nuclear-armed bombers that could operate from existing carriers.

We can be proud of those from the past who went to the wall to preserve Naval Aviation which now, more than ever, is an integral part of our naval forces. We like to think of Naval Aviation as the point of the Navy spear. At the same time, it is important to recognize that we are but one of a number of parts that interplay not only with different elements of the Navy but with the Marine Corps, the Air Force, the Army and the Coast Guard. Coordination, teamwork and unity are all buzzwords that apply. We must sustain these three commodities and strive to improve them.

Admiral Moffett once quoted President Calvin Coolidge, who said, "We need a balanced fleet." Explained Moffett, "By this, [the president] meant a balanced fleet on the surface, under the surface and over the surface."

True then. True now. ■

USS Dwight D. Eisenhower (CVN-69)



Awards

Two California air stations received the Allen G. Ogden Award for outstanding fire-fighting accomplishments. MCAS Tustin's crash crew captured the medium division award for the seventh consecutive year and its fire department held onto the small category for the fourth year. MCAS El Toro was the large division winner.

Sponsored by the U.S. Navy Fire Protection Association, the award recognizes the best Navy and Marine Corps fire department and crash, fire and rescue squads.

Marine Sgt. Purvis Lockett, MCAS Yuma, Ariz., was named the Navy Department's 1986 crash/fire/rescue fire fighter of the year. The William Troutner Award, sponsored by the U.S. Navy Fire Protection Association, was presented to Lockett at a banquet held in Cincinnati, Ohio. The award recognizes the military crash crew member who exemplifies leadership, initiative, professionalism and dedication to duty.

HMH-466, commanded by LCol. William C. E. Wolfe, received the Department of Defense Maintenance Award for outstanding achievements in maintenance management and production. Based at MCAS Tustin, Calif., the *Wolfpack* was one of six units in the armed forces to be chosen for the 1987 award. The squadron flies the CH-53E *Super Stallion*.

VP-19's total preparation and flawless execution of duty earned the squadron the first ComSeventhFleet ASW Excellence Award. The *Big Reds*, from NAS Moffett Field, Calif., were cited by VAdm. P. D. Miller, Commander Seventh Fleet, as having "superior submarine-tracking abilities and for the development and execution of innovative tactics while conducting an arduous split-site deployment [while attached to ComSeventhFleet at NAF Kadena, Okinawa, and NAF Misawa, Japan]."

Some aviation personnel found ways to help the Navy save money and improve operations by cutting time and materials, improving procedures and increasing safety:

Applying their technical skills in the IM-2 shop aboard USS *Coral Sea* (CV-43), five sailors designed and built a welding booth and ventilation system for the ship's airframes shop that may save the Navy more than \$1 million. The beneficial suggestion submitted by AMCS Ray Armstrong, AMS2s Rory Stanwood, Mark Little and Jay Singer, and AMS3 Troy Seifert has already saved *Coral Sea* \$142,000, according to the commanding officer, Capt. Bruce Bremner. Each man received a \$500 cash award for the idea.

The Navy realized a first-year \$151,734 savings when AFCM Ralph R. Allen, USS *Saratoga* (CV-60), suggested that contractors test altimeters on T-34C Beechcraft trainers during local squadron maintenance instead of removing and sending them to a repair facility for testing. AFCM Allen received \$3,956 for his suggestion, and the procedure has been adopted on all T-34s and T-44s operating in the Naval Air Training Command.

Underway replenishment is often a dangerous job for those involved. Concerned with the safety of the personnel, LCdr. James H. Fletcher, assigned to CinCUSNavEur, devised a break-away tool that increases safety by allowing a sailor to stand at a safe distance to pull the cotter pin from the pelican hook holding the span wire. Previously, pliers and a hammer were used to complete the task, often resulting in injury. For his efforts, LCdr. Fletcher received \$2,500 and the satisfaction of knowing his idea will be implemented Navy-wide.

What seemed like common sense to Cpl. Daniel T. Oesterman, H&MS-36, MCAS Futenma, Japan, earned him a check for \$250. The jet engine mechanic suggested replacing unserviceable packings in fuel connector links instead of discarding the entire unit. The packing is a synthetic rubber O-ring that costs 7 cents. The link costs \$708. Thus, Oesterman saves the Marine Corps \$707.93 every time his beneficial suggestion is implemented.

Anniversaries

VAW-116 recently celebrated its 20th anniversary aboard USS *Ranger* (CV-61) after participating in the large-scale, multi-services exercise *Team Spirit 87* in the Sea of Japan. The *Sun Kings*, flying the E-2C *Hawkeye*, achieved a 100-percent sortie completion rate during the extensive flight operations.

On April 1, 1987, NAS Patuxent River turned 44 years old. Home of the Naval Air Test Center and U.S. Naval Test Pilot School, the air station was established to centralize widespread air testing facilities developed during the pre-WW II years.

HMM-268, MCAS Tustin, Calif., marked eight years as a CH-46 squadron. First commissioned in 1972 as a light helicopter squadron and designated the 3d MAW's night assault squadron in 1982, the *Red Dragons* recently participated in the multi-services exercise *Kernel Blitz*, and supported HMX-1 in its mission of transporting President Ronald Reagan and his press entourage.

The crew of USS *Lexington* (AVT-16) celebrated the carrier's 44th birthday with a cake cutting ceremony and birthday party. *Lady Lex* was commissioned in 1943 as CV-16. She was designated the Navy's training carrier in the early 1960s.

The Marine Corps' largest air group celebrated its 35th anniversary at MCAS El Toro, Calif. MAG-16, consisting of 10 tactical squadrons, one training and one maintenance squadron and supported by nearly 3,200 Marines, flies CH-46 and CH-53 helicopters.

Established

HC-2, NAS Norfolk, Va., was established on April 1, under the control of ComHelTacWing-1. The *Circuit Riders* fly the CH-53E *Super Stallion* and SH-3G and VH-3A *Sea King*. Under the direction of C.O. Cdr. David A. DuVal, squadron missions include search and rescue, at-sea recovery of torpedoes and drones, medical evacuation, plane guard, vertical on board delivery and executive transport.

The Strike-Fighter Weapons School was established in May at NAS Cecil Field, Fla. Cdr. Michael Anderson assumed command of the unit, formerly called the Light Attack Weapons School.

A new unit, designated Naval Reserve, NAS Barbers Point (NR NAS BP) 0187 was established on June 13 to reinforce the air station's regular Navy personnel in the event of mobilization. It joins Naval Air Reserve Fleet Maritime Mobile Maintenance Facility, Misawa, Det Alpha, which provides repair and maintenance on P-3 *Orions*.

The Fleet Surveillance Support Command was established on July 1 as a component of the Naval Space Command, Dahlgren, Va. The new organization will operate and maintain the Navy's relocatable over-the-horizon radar (ROTHR) system now being developed to provide wide-area oceanic surface and air surveillance data to support fleet commanders.

Records

The following units marked safe flying time: VP-66, 60,000 hours and 16 years; VMAT-102, 53,000 and 8; VAW-110, 47,300 and 12; VS-32, 17,818 and 4; HMH-363, 15,000 and 3; and VAQ-139, 6,000 hours.

Several VS-24 aviators recorded flight-hour milestones in the S-3A *Viking*: Cdr. Rocco Tomanelli, 3,000; LCdr. Stuart Ashton, Jr., 2,000; and LCdr. Glenn Murashighe and Lts. Randy Cohn and Tim Conkling, 1,000.

Cdr. Jay Yakeley, C.O., VF-124, achieved 3,000 F-14A hours. He was the test pilot for the first fleet production *Tomcat* when it was accepted in 1973.

The 98,000th carrier arrested landing aboard USS *Dwight D. Eisenhower* (CVN-69) was made by Cdr. Gordie Stewart, skipper of VA-72. He recorded the milestone in an A-7E *Corsair II* while the carrier was operating off Guantanamo Bay, Cuba.

Honing the Edge

Two CVW-1 fighter squadrons successfully completed a detachment to NAS Pensacola, Fla., in support of *Solid Shield 87*. F-14 *Tomcats* from VFs 33 and 102 achieved a 100-percent sortie completion rate during the joint services exercise in support of Blue Forces in multiple strikes against

Eglin AFB, Fla. The *Starfighters* and *Diamondbacks*, respectively, choreographed a precise interdiction MiG sweep prior to engaging Orange Force F-15 defenders.

Exercise *Solid Shield 87* is the largest recurring exercise of the U.S. Atlantic Command, involving more than 40,000 military personnel.

HSL-94, NAS Willow Grove, Pa., completed its first deployment at sea. Deployed aboard USS *Clark* (FFG-11) off Newport, R.I., the *Titans* took part in an ASW operation with ships from ComNavSurfGru-4 and recorded six simulated attacks on USS *Pittsburgh* (SSN-720). The detachment comprised four officers and 16 enlisted personnel flying and supporting the SH-2F LAMPS MK I helicopter.

Et cetera

Near tragedy aboard USS *Kitty Hawk* (CV-63), deployed in the North Arabian Sea, was averted and conditions returned to normal when A03 Michael S. Thompson of VF-211 risked his life while disposing of two ordnance lockers.

While working on the flight deck, Thompson noticed smoke rising from the bomb handling area. He manned an aqueous film-forming foam (AFFF) hose to cool the ordnance, then noticed flames around the jettison lockers filled with thermite grenades. Thompson instructed an AFFF nozzleman to hose him down as he made his way toward the lockers, which exploded moments

after he jettisoned them.

Well done, Petty Officer Thompson!

USS *Nimitz* (CVN-68) arrived at her new home port on July 2 at Bremerton, Wash., after an around-the-world cruise. The carrier left Norfolk, Va., last December and conducted a turnover in the Med with the former West Coast-based USS *Kitty Hawk* (CV-63). *Nimitz*, commanded by Capt. Eugene D. Conner, will remain at the shipyard until facilities are completed at her permanent home port of Everett, Wash.

Change of Command

FAirWestPac: RAdm. Bobby C. Lee relieved RAdm. Hoagy Carmichael. HelTacWing-1: Capt. Paul F. Erny relieved Capt. Lawrence D. Presnell. HelWingRes: Cdr. Harvey G. Fielding relieved Cdr. Michael S. O'Hearn. H&HS MCAS El Toro: Maj. Gary L. Galiger relieved LCol. John S. Kinsman. H&HS MCAS Tustin: Maj. Frank X. Braun relieved Maj. Patrick F. Gallagher.

H&HS MCAS Yuma: Maj. Bruce E. Poley relieved LCol. John P. Hertel.

HS-11: Cdr. Charles P. Finney relieved Cdr. Allen A. Ferber.

HSL-35: Cdr. Richard A. Dryden relieved Cdr. George A. Powell.

MAG-31: Col. Gary R. VanGysel relieved Col. Robert L. Pappas.

MCAS Tustin: Col. Robert F. Wemheuer relieved Col. David L. McEvoy.

MWSS-373: LCol. Russell J. Enke relieved LCol. Vincent D. Diloreto.

NAF Detroit: Capt. John T. Williams



Three generations of admiral's aides met for lunch last June to renew old acquaintances. Left to right: Lt. L. Ann Quick was aide/admin. asst. to RAdm. J. Sam Yow (now ComPatWingsLant), OP-15, 1986-87; RAdm. Yow was aide to RAdm. H. Spence Matthews, CNABaTra, 1969-70; and RAdm. Matthews (Ret.) was aide to RAdm. Frank Akers (Ret.), ComCarDiv-2, 1954-55.

relieved Capt. Guy D. Nickerson.
NAS Memphis: Capt. Richard Grant
relieved Capt. Peter M. Reber.
NAS North Island: Capt. Joseph S.
Walker relieved Capt. Buddie J. Penn.
NavResFor: RAdm. F. Neale Smith
relieved RAdm. Cecil J. Kempf.
PatWingsLant: RAdm. J. Samuel
Yow relieved RAdm. S. Frank Gallo.
TraWing-6: Capt. Marty P. Morgen
relieved Capt. James C. Roy.
VA-34: Cdr. Bernis H. Bailey relieved
Cdr. R. G. Coleman.
VA-95: Cdr. William H. Miller re-
lieved Cdr. Jeremy C. Rosenberg.
VA-176: Cdr. Ross A. Word relieved
Cdr. Gary W. Stubbs.

VAQ-131: Cdr. William K. Young re-
lieved Cdr. William F. Headridge.
VAQ-136: Cdr. Justin N. Greene re-
lieved Cdr. Dana B. McKinney.
VAW-113: Cdr. David A. Ersek re-
lieved Cdr. Frank J. Bush, Jr.
VC-5: Cdr. George M. Moore relieved
Cdr. John F. Ohlinger.
VC-12: Cdr. Patrick D. Gravitt re-
lieved Cdr. Jack M. Lewis II.
VF-211: Cdr. James Flaherty, Jr., re-
lieved Cdr. Gerald W. Hull.
VFA-87: Cdr. Timothy Keating re-
lieved Cdr. Raymond Dudderar.
VFA-131: Cdr. Dean Steele relieved
Cdr. Charles Moore, Jr.
VMA-142: LCol. Michael P. Holland

relieved LCol. Kenneth R. Olson.
VMGR-352: LCol. Edmund Bauern-
feind relieved LCol. Edward J. Ritchie.
VP-5: Cdr. Paul S. Semko relieved
Cdr. Edwin W. Dews.
VP-9: Cdr. David W. Stromquist re-
lieved Cdr. Phil M. Lenfant.
VP-31: Cdr. Raymond J. Morris, Jr.,
relieved Cdr. John R. Ryan.
VP-46: Cdr. William B. Zell relieved
Cdr. Philip F. Swain.
VP-90: Cdr. Mark T. Gilsdorf relieved
Cdr. James P. Kelly, Jr.
VT-28: Cdr. Bill Wittmann relieved
Cdr. George McInchok.
VTC-21: Cdr. Roger R. Burbrink re-
lieved Cdr. James L. Bowen.

AWARDS

SecNav FY 86 Achievement in Safety Ashore Awards

The Naval Air Systems Command, Washington, D.C., was the major command winner of the SecNav FY 86 Achievement in Safety Ashore Award. Cited for its continued excellence in maintaining an effective command mishap frequency program, NavAir is a four-time recipient of the award.

NAS Jacksonville, Fla., took the honors in the nonindustrial category for an outstanding safety and occupational program. Winning criteria included strong command support, innovative use of Navy Occupational Safety and Health (NAVOSH) inspection notebooks, and development of many computer software programs for use in the NAVOSH program.

SecNav 1986 Environmental Protection Awards

USS *Constellation* (CV-64) won in the large naval ship category for the greatest initiative toward operating in an environmentally acceptable manner. The aircraft carrier also received the award in 1985.

The Marine Corps winner was MCAS Cherry Point, N.C.

Grampaw Pettibone Trophy

USS *Midway* (CV-41) is the winner of the 1986 Grampaw Pettibone Trophy for aviation safety awareness through communications. The carrier's publication, "Flight Deck Awareness — A Basic Guide," was chosen for its originality, diversity and the overall impact that it had on aviation safety. More than 10,000 copies have been distributed to aircraft carriers throughout the fleet.

The annual award recognizes the individual or organization that contributes the most toward aviation safety awareness through published articles, posters, pamphlets, television and radio broadcasts, etc.

USCG Crew Presented Two Awards

U.S. Coast Guard Helicopter Crew #1467 of CGAS Kodiak, Alaska, was named the 1987 recipient of the William J. Kossler Award. Presented annually by the American Helicopter Society, the award recognizes achievement in practical application or operation of rotary-wing aircraft during the preceding calendar year. The crew also received the 1987 Avco-Aviation/Space Writers Association Helicopter Heroism Award, which annually honors acts of heroism involving the use of a helicopter.

Crew #1467 was cited for the heroic rescue of two fishermen off the Alaskan coast in December 1986. Upon arrival at the stranded vessel, the crew was confronted with severe weather conditions — visibility of less than one-half mile, 50-knot winds (gusting to 80 knots), 30 to 40-foot seas and a driving rain. While the pilots battled Mother Nature, the crew struggled for hours before they were able to successfully lift the fishermen from the deck of their craft to the safety of the helicopter.

The Coast Guard crew consisted of pilot LCdr. Thomas Walters, copilot Lt. John Filipowicz, avionics technician AT2 Donald Nolan, aviation mechanic AM3 Antonio Juan, Jr., and health services technician HS3 John Holcomb.

National Aviation Hall of Fame

Two former Naval Aviators were enshrined in the National Aviation Hall of Fame in July, along with entertainer and aviation promoter Arthur Godfrey and Daniel J. Haughton, former chairman of the board of the Lockheed Corporation.

Marine LCol. Virgil Grissom was one of the original seven *Mercury* astronauts and, with fellow astronaut John Young, he commanded the first manned orbital flight of the *Gemini* series in 1965. He died on January 27, 1967, in the *Apollo 204* fire at Cape Kennedy, Fla.

Admiral Thomas H. Moorer, a former Chief of Naval Operations and two-term Chairman of the Joint Chiefs of Staff, was the first naval officer to serve as commander in chief of both the Atlantic and Pacific fleets. During his military career, he was awarded 42 medals and unit citations, including the Distinguished Flying Cross.

By Commander Peter Mersky, USNR-R

The United States Navy and the Vietnam Conflict: The Setting of the Stage to 1959. 1976. 419 pp. \$12.

The United States Navy and the Vietnam Conflict: From Military Assistance to Combat, 1959-1965. 1986. 591 pp. \$22.

Both are published by the Naval Historical Center, Department of the Navy, Washington, DC. They are available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

These two detailed, well-written volumes provide coverage of the Navy's contribution, as well as (in the first volume) a historical perspective before the American involvement in Vietnam escalated. The first volume was out of print but is again offered, along with the larger second volume, in an open-ended series.

From Military Assistance to Combat gives new insight into the Gulf of Tonkin incident of August 1964 which quickly thrust the U.S. into center stage in Vietnam, where before it had functioned only as a major supplier of arms and training to the beleaguered South Vietnamese. The cloak-and-dagger war in Laos and the early air campaigns against the North are also covered in refreshing new light.

These are perhaps two of the best books on the Vietnam war and will quickly established the series as definitive references.

Polmar, Norman, ed. *Guide to the Soviet Navy*, Fourth Edition. U.S. Naval Institute, Annapolis, MD 21402. 1986. 560 pp. Illustrated. \$38.95.

A companion to *Ships and Aircraft of the U.S. Fleet*, also

edited by Mr. Polmar, this large, well-illustrated book contains a great deal of information on the Soviet navy, its ships, history, organization and personnel. The editor is well-known as a naval analyst and author and is extremely well-qualified to oversee a book such as this.

This fourth edition of the guide is dedicated to the premise that the Russians are catching up to and, in several areas, may have surpassed the U.S. and western navies, especially in submarine acoustics and design and nuclear ship construction.

Included are informative and handy tables detailing ship classes, construction dates and fleet assignments. Many of the fine photos, some published for the first time outside classified sources, exhibit close-up details of shipboard armament systems and operational environments. Chapters on naval aircraft and Naval Aviation organization, naval weapons, bases and ports finish off this edition.

There is no doubt that this book, as well as the previously mentioned *Ships and Aircraft*, definitely belong in most squadrons' libraries and in the collections of well-informed intelligence officers, both surface and air.

Franks, Norman. *Aircraft vs Aircraft: The Illustrated Story of Fighter Pilot Combat Since 1914.* MacMillan Publishing Co., New York, NY 10022. 1986. 192 pp. Illustrated. \$19.95.

This book is a well-written overview of aerial combat, but it also focuses on personalities and developments, and can serve as a reference. Part of the book's appeal is the collection of illustrations by British artist Peter Endsleigh Castle who did most of the initial trend-setting airbrush profiles for the *Profile* series of the 1960s.

The author considers the entire 70-year period of aerial warfare and shows the development of theory and actual events in well-researched vignettes and essay form. There are various tables of aces' scores, as well as discussions on the impact of the Mitsubishi *Zero* and Messerschmitt Me 262.

Korea and the new jet-versus-jet arena receive adequate coverage, as well as Falklands and Mideast combat, but Vietnam is given little treatment.

Overall, this book, though not without a few sins of omission, is a valiant effort, interesting to examine and perhaps could set a new style for aviation historical writing.

Murray, Williamson. *Luftwaffe.* Nautical & Aviation Publishing Co., Baltimore, MD 21201. 1985. 337 pp. Illustrated. \$21.95.

This publication is not the regular litany of aircraft and hardware development, but a detailed discussion of how the mighty German *Luftwaffe* of WW II developed from the ashes of WW I.

Luftwaffe is a scholarly treatment of familiar material. So refreshing is the author's writing that it appears he has discovered new facts with his in-depth research. The development of the *Luftwaffe* and its role in German foreign policy prior to WW II, including its early campaigns in 1939-41, are worthwhile reading. There are over 50 numbered tables, as well as bar charts and graphs, all showing various areas of interest, aircraft production, losses, training output, etc.

This book is sure to become a major reference on the subject.

WEATHER FRONT

By Captain Neil F. O'Connor, USN(Ret.)

OPARS



"OPARS" is the the Naval Oceanography Command's Optimum Path Aircraft Routing System, a computerized flight service managed by the Fleet Numerical Oceanography Center, Monterey, CA. Started in 1980, today OPARS is available for nearly every aircraft used by the Navy Marine Corps and Coast Guard.

When an OPARS request is received at Monterey, it is first checked manually, then fed to "HAL," a CDC 6500 main frame, named after the computer that starred in the Hollywood film "2001-A Space Odyssey." HAL compares the proposed track with forecast conditions, then determines the best route for fuel conservation and safety. HAL even computes the amount of fuel expected to be on board when the aircraft lands.



How good is OPARS? In 1986 there were 127,185 requests...which means a lot of squadrons took advantage of the service, which averages a 1.3 minute turnaround time. The bottom line according to HAL is that he figures the troops at Fleet Numbers saved the taxpayers \$6.7 million in fuel in 1986.

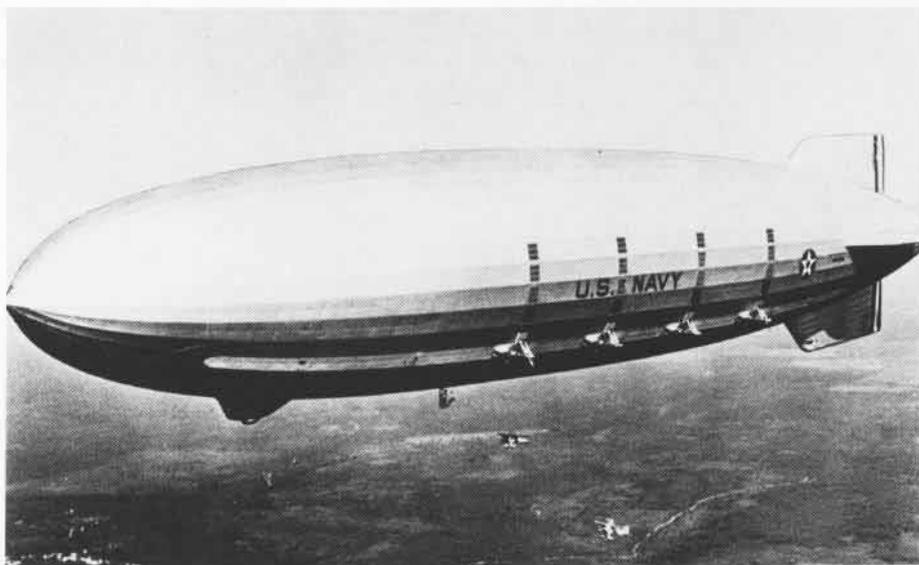


Lighter Than Air

The Naval Historical Foundation received an interesting inquiry from William Rhodes/Miyakhota. An edited version follows:

"I am American Indian. I am 60 years old. When I was a child, friends and I would lie in the grass and watch the dirigibles fly. They would drop airplanes out of the belly and the planes would fly around, then go back up inside. When I tell someone of this, they think I speak with forked tongue. I would appreciate it if you could help me with this, and send me photos if you can."

Ed's note: Mr. Miyakhota's memory is, of course, correct. The phenomenon of which he speaks was a common sight during the days of active rigid airship operations in the Navy. In the photo, mid-1930s vintage, USS *Macon* is shown with her Sparrowhawks preparing to hook on.



Missing Person

Anyone knowing the whereabouts of Charles Hill, WW II Navy pilot, born 9-5-23 in Pawtucket, RI, please contact Carolyn Hill, 1534 E. Caroline St., Ontario, CA 91764.

Balloon Reconnaissance

I am writing a book on balloon reconnaissance. I would like to hear from any Navy personnel who were involved with the WS-461 L program, which was Air Force-sponsored and used an aircraft carrier in the Bering Sea as a launch platform. The only operational missions were flown in July 1958. In particular, I would like to know the name of the carrier.

Curtis Peebles
1164 E. Madison Ave.
El Cajon, CA 92021

Wanted: Patches, etc.

I would like to obtain patches from the F-14 squadrons at NAS Miramar, Calif., and any carrier-based *Tomcat* squadrons.

Gary Damm
102 Wimbledon Run
Sicklerville, NJ 08081

I have a young brother who is aspiring to become a Naval Aviator. To encourage him to study hard and pursue this goal, I'd like to present him with a flight jacket laden with patches from as many Navy air units as possible, including the reserves. Please let me know how I can acquire these patches.

J. L. Charlton
11630 Quail Ridge Ct.
Reston, VA 22094

I work for the Naval Aviation Depot in San Diego and collect aircraft photos, patches and decals from squadrons and installations. My young son is also a buff. If anyone has information on how to obtain these items, please call me at autovon 951-6606 or write:

Cindy Bucaro
9544 E. Heaney Cir.
Santee, CA 92071

Confederate Air Force

One of the biggest problems of the Confederate Air Force is finding parts for the 40-plus-year-old aircraft that our organization maintains and operates. We would like to hear from anyone regarding possible locations of airplane parts or pieces. Any information, such as names, dates, etc., would be greatly appreciated.

Col. John E. Yoder, CAF
P.O. Box 5174 (N)
Norman, OK 73070

Reunions, Conferences, etc.

VF-1 survivors reunion planned. To assist in compiling a mailing list, all 1944-45 members or their spouses are requested to contact: Simpson Evans, 7131 Riviera Dr., Ft. Smith, AR 72903, or Ralph G. Kelly, 7026 Macapa Dr., Hollywood, CA 90068.

VX-4 reunion, October 16-18, NAS Point Mugu, CA. Contact Ensigns R. J. Belling or Dave Orans, AV 351-8931/7518 or (805) 989-8931/7518.

VPB-208/VPMS-8/VP-48/FASRON 105/NAS Trinidad reunion, October 16-18, Pensacola, FL. Contact E. O. Bright, 6859 Lake Joanne Dr., Pensacola, FL 32506, (904) 453-6137.

Lighter-Than-Air/Naval Airship Assn. reunion, September 3-5, New Orleans, LA. Contact NAA reunion, c/o John S. Sciambra, 3822 Elysian Fields Ave., New Orleans, LA 70122.

Radar Air Traffic Control Facility reunion, October 9, NAS Patuxent River, MD. Contact AC2 William McClain, Air Ops/ATC, NAS Patuxent River, MD 20670-5409, AV 356-3339 or (301) 863-3339.



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