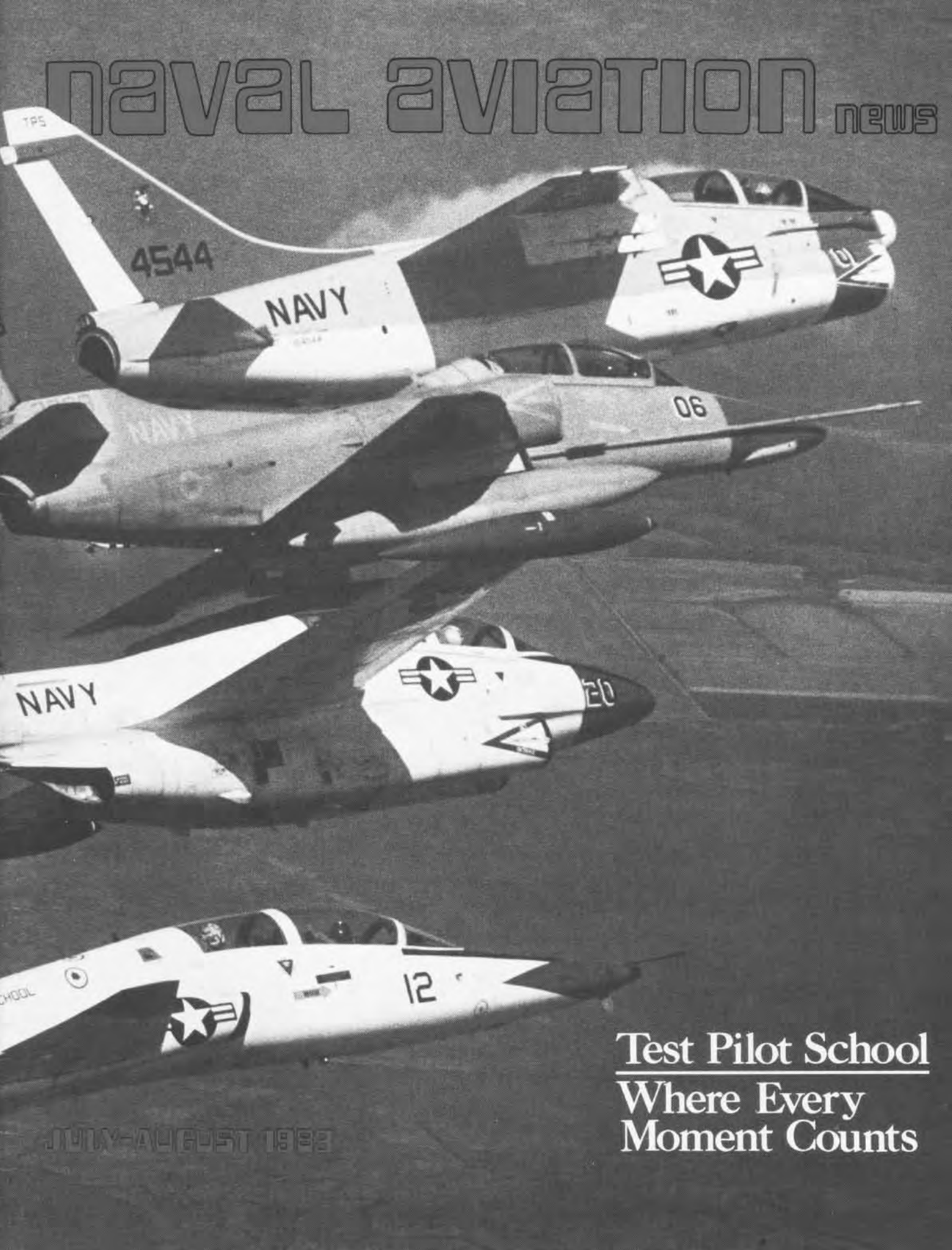
naval aviation news



Test Pilot School
Where Every Moment Counts

JULY-AUGUST 1982

naval aviation news

Sixty-Fifth Year of Publication

(ISSN 0028-1417)

Vice Admiral Robert F. Schoultz Deputy Chief of Naval Operations (Air Warfare)
Vice Admiral E. R. Seymour Commander, Naval Air Systems Command
Captain R. C. Knott Head, Aviation Periodicals and History

Staff

Cdr. Howard Wheeler Editor
Helen F. Collins Managing Editor
Charles C. Cooney Art Director
Sandy Russell Associate Editor
JOC Kirby Harrison Associate Editor
Jeanne Gray Hamlin Assistant Editor
JO2 Timothy J. Christmann Assistant Editor

Associates

Harold Andrews Technical Advisor
Lt. Cdr. Peter Mersky Book Review Editor
Cdr. Chuck Sammons Contributing Editor
Terry C. Treadwell European Correspondent
Capt. Rosario Rausa Contributing Editor

COVER—A flight of Naval Air Test Center aircraft in an echelon formation include (from bottom to top) a T-38 *Talon*, T-2 *Buckeye*, TA-4 *Skyhawk*, and TA-7 *Corsair II*.

Photo by JOC Kirby Harrison

Features

Departments

Naval Aviation News is published bimonthly by the Chief of Naval Operations and Naval Air Systems Command in accordance with Navy Publication and Printing Regulations P-35 (revised May 1979). Opinions expressed are not necessarily those of the Department of the Navy. Reference to regulations, orders and directives is for information only and does not by publication herein constitute authority for action. All material not copyrighted may be reprinted. Naval Aviation News offices are located in Building 159E, Room 590, Washington Navy Yard Annex, Washington, D.C. 20374. Phone (202)433-4407/8/9, autovon 288-4407/8/9. Annual subscription is available through Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Phone (202) 783-3238. Second-class postage paid at Washington, D.C., and additional mailing offices. POSTMASTER: Send address changes to GPO Order Desk, Superintendent of Documents, Washington, D.C. 20402.

Long-term career planning for Naval Aviators is discussed candidly by the Navy's Air Boss, VAdm. Robert "Dutch" Schoultz. He addresses the value of Washington-area experience, PG education, service college and subspecialty development, p. 4.

Navy test pilots know all too well that "Every Moment Counts" (p. 6) when millions of dollars are at stake. This story zeroes in on how they learn their trade and what they do after Test Pilot School.

A key figure in the Test Pilot School vanguard and former DCNO(Air), VAdm. T. F. Connolly, USN(Ret.), discusses the origin of the program and the positive impact TPS training had on his career, p. 14.

When the Navy takes delivery of a new Grumman F-14, EA-6B, A-6, E-2C or C-2A, its NavPRO pilots at the Bethpage, L.I. facility do much more than just "kick the tires." See page 18.

VX-1 did ASW OT&E with P-2Vs and ADs in the '50s and continues today with P-3s, S-3s, SH-3s and SH-2s. It makes sure ASW equipment works as it should in the fleet. Story on page 22.

The Empire Test Pilot School in England is every bit as tough as TPS, p. 24. The school presently has a U.S. Navy test pilot instructor on its staff.

Supersonic V/STOL Jet

With NASA/Navy sponsorship, McDonnell Douglas Corporation is designing a single-engine vertical and short takeoff and landing (V/STOL) aircraft that would fly at supersonic speeds. This design work is part of NASA/Navy research that has been ongoing since 1981 into potential future V/STOL tactical aircraft.

The aircraft would carry two long-range and two medium-range air-to-air missiles, plus air-to-ground ordnance totaling 18,000 pounds. In addition to making vertical takeoffs and landings, it would be capable of making short takeoffs in less than 400 feet of runway at a takeoff gross weight of 46,000 pounds.

Designated Model 279-3, the advanced supersonic V/STOL aircraft would have 41 percent of its structural weight, or 3,866 pounds, made of carbon-epoxy composite material, which will lower the plane's weight without decreasing its structural strength or aerodynamic performance. Like the Rolls-Royce Pegasus now flying in the AV-8B *Harrier II*, the new engine would have four nozzles, two on each side, that can be rotated from the full-aft position for forward flight to a full-down position for vertical takeoffs, landings or in-flight maneuvering, but would incorporate augmentation of the forward nozzle exhaust through plenum chamber burning. McDonnell Douglas Corporation

Model 279-3 would be powered by a plenum chamber burning engine capable of lifting it vertically for takeoffs and propelling it at twice the speed of sound during conventional forward flight. Small, stubby wings, called canards, would be placed forward of the aircraft's main wing and away from the exhaust.

Phoenix Reliability Test

Navy tests, which put the AIM-54C *Phoenix* air-to-air missile through severe environmental conditions, have shown that the weapon will operate reliably throughout its intended service life. The testing was the first in a series of Navy technical and operational evaluations of the new-generation *Phoenix* missile, developed and built for the Navy by Hughes Aircraft Company's Missile Systems Group, Canoga Park, Calif.

No failures were recorded during the 600 cumulative hours of a mission profile qualification test conducted over an 11-week period at the Pacific Missile Test Center, Point Mugu, Calif. After every 120 hours of operation, the improved *Phoenix* was removed from the acoustic and temperature chamber and put through a series of tests to verify that its systems were working properly. The weapon's built-in, self-test feature, an innovation in missile design and with which the AIM-54C electronically takes its own pulse, was triggered once each hour to keep a running tab on the missile's operation. A total of 417 different missions were simulated in the test, including combat patrols, escort and strike missions, and air intercept maneuvers.

The improved *Phoenix*, like its predecessor AIM-54A, is designed as the principal long-range, radar-guided, air-to-air armament for the F-14 *Tomcat*.

Grampaw Pettibone

Sand Trapped

An S-3A *Viking* crew was taxiing its bird to the approach end of the runway for a session of night FCLPs. Weather was fine enough: 3,000 scattered with seven miles visibility. All nearby taxiway lights were working. The pilot became disoriented, however, and turned off one taxiway onto what he thought was the next proper one. Traveling at a moderate speed of five to seven knots, the S-3A departed the taxiway, entered an area of soft sand and became bogged down 50 feet from the point where it left the taxiway. The pilot contacted the tower for assistance and shut down the turbofans. With the help of the ground crew and *Tilley*, the *Viking* was returned to the taxiway.

Grampaw Pettibone says:

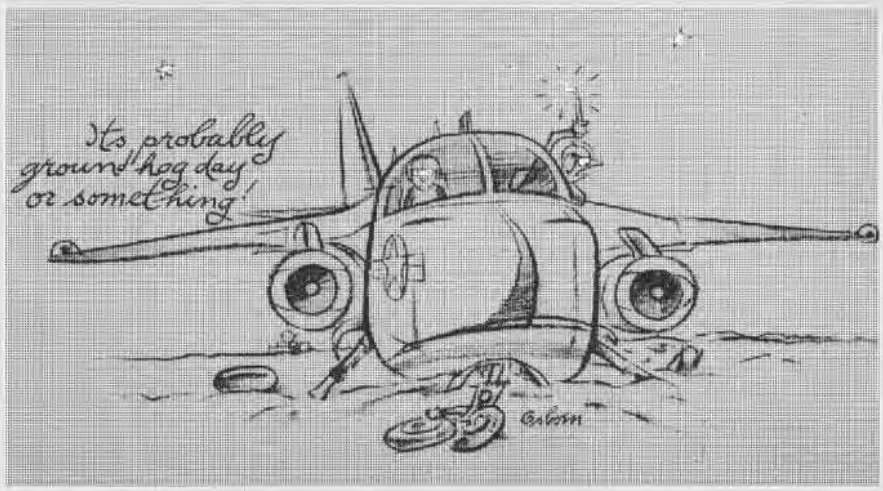
Pass me the Pepto. My stomach's turnin' again. There may not have been any damage to this sub-hunter, but I hope somebody's brain got massaged a bit. The Viking has a perfectly good taxi light which was not used, because the pilots believed the light wasn't needed. A mishap report noted that there is a feeling among some pilots that real aviators don't need the taxi light. What worries me is that this macho syndrome may have its roots in the training command and the FRSs.

If you want to walk a rocky ledge in the dark without a lamp to bolster your ego, that's one thing. Driving a Viking is another. The taxi light was designed for a reason. Let it put light in your night when you need it.

Sugar Cane Blues

The UH-1N helicopter crew briefed for a late night mission to shuttle five range control personnel from an outlying island target zone back to their overseas air station home plate.

The crew conducted a normal brief, noting a 2-hour plus 15-minute fuel load. A review of the aircraft yellow sheets showed an outstanding repeat



ILLUSTRATED BY Osborn

discrepancy of low-fuel warning light illumination at an abnormally high fuel state, and repeat gripes of number 2 (right) fuel boost pump light illumination.

Upon arrival at the range control site, nine passengers and 500 pounds of bulky cargo were awaiting the helicopter shuttle. Expecting only five passengers, the pilot determined that two trips would be required and requested fuel truck servicing for the second sortie. Once in the aircraft, the passengers advised the pilot of an alternate destination, which was closer than that originally briefed. As a result, the pilot cancelled his request for fuel truck servicing.

After delivering the passengers and cargo, the UH-1N departed the lighted helo landing zone, heading for home base, with 400-450 pounds indicated on the fuel gauge. Two minutes after takeoff, the fuel low-level light illuminated. Six minutes later, the right fuel boost pump light came on. The pilot directed the copilot in the performance of emergency NATOPS procedures for fuel boost failure. The light did not extinguish and the right boost pump circuit breaker was pulled.

The pilot contacted home plate tower for clearance through the airport traffic area. About 45 seconds later, the number 1 (left) fuel boost light came on and the pilot immediately started a turn to the closest field. Within 15 seconds, the aircraft experienced a dual engine flameout. At 500 feet altitude and 110 kias, the pilot began autorotation, radioed the tower and reported that he was making an emergency landing.

The pilot commenced a flare at an undetermined altitude. The aircraft contacted the ground tail first, bounced hard and came to rest some 50 feet away in a hilly field of 10-foot-high sugar cane. The crew exited the aircraft with only minor injuries to the passenger. The aircraft suffered significant damage.

Grampaw Pettibone says:

Holy cane-cuttin' catastrophies! What a way to end a flight that should never have launched in the first place. Where was maintenance control and Q.A. supervision in this case, and how much warning did these guys need?

After the cane squeezings were cleared away, it was discovered that only 2.5 gallons of usable fuel remained in the aircraft. Seven gallons of fuel, which could have been used, were trapped due to a partially clogged fuel strainer serving the number 2 boost pump.

The UH-1N NATOPS manual states that 150 plus 20 pounds of fuel (about 13 to 17 minutes of flight) remain when the low-fuel warning light illuminates. The UH-1E/L NATOPS manual addresses a 20-minute fuel, low-level light. But don't be misled by this, gents, 'cause that's with everything else working 4.0. It's less with a boost pump malfunction. They squeezed out 9 to 10 minutes of flight after the low-level light came on.

Keep in mind that these intrepid lads briefed for a 2-hour plus 15-minute fuel load, and had flown 2 hours and 2 minutes when they flamed out with 225 pounds shown on the gauge.

You have to wonder about the previous crews who griped about the low-fuel warning and boost pump lights. How close to flameout did they get?

Listen, gang, it's too late to remind these hapless chaps of one of Gramp's top 10 axioms but let me tell you one more time, "If it ain't right don't take it!"

The Air Boss on Career Planning

Vice Admiral Robert "Dutch" Schoultz

JOC Kirby Harrison

In a recent interview published in *Wings of Gold,* I addressed a long-term goal for Naval Aviation of upgrading the training and assignment practices for our best junior officers to better prepare them for positions of senior leadership. We have all heard the words before, but recent selection and promotion board results are giving new meaning to career terms such as *Washington area experience, postgraduate education, service college attendance* and *subspecialty development.*

Since the mid-1960s we have been heavily tasked operationally in combat and later with a number of *rapid-response* scenarios. Reduced training command production during the 1970s, together with a post-Vietnam civilian/airline booming economy, rapidly eroded our large wartime aviation inventory. We became *lean and mean,* and the majority of our young officers continued to be employed in strictly aviation-oriented squadron, ship or training assignments.

Meanwhile, our Vietnam-era, mid-grade officers moved on to sequential command and flag selection on the basis of superb but strictly operational records. This led to the unfortunate perception which many well-meaning, but definitely misinformed, mid-grade officers continue to strongly support today — that the key to success for Naval Aviators is to remain on a straight and *narrow,* operational-only career path. The bottom line is quite simply that nothing could be further from the truth.

We need good operators, of course, but today our Navy is growing both in numbers and sophistication. Our selection boards are seeking and selecting leaders who are versed in procurement, budget, legislative affairs, personnel management, system acquisition, or any of a myriad of other subspecialties which can be obtained primarily through Washington area experience, service college attendance and/or postgraduate education.

This policy is not new. It has, in fact, been in existence for a number of years and has been promulgated in professional publications and vehicles such as the "Officer Personnel Newsletter" and the *Unrestricted Line Officer Career Guidebook.* It has also been the topic of numerous speeches and presentations. Whether we felt we were unique, having subscribed to the *stay-in-the-cockpit* theory of success, or simply believed that the requirement for career broadening was meant for the other guy, not enough of our young Naval Aviators and Flight Officers have taken this policy to heart.

I believe that we must do better in this area if we are to maintain our position of leadership in the Navy. We must encourage aviators to actively seek Washington area exposure and higher levels of education. Subspecialty development should be emphasized and considered important for every career-oriented aviation officer.

The Naval Aviation career path is unique. Up to 24 months are spent in initial training command and fleet readiness squadrons (TRACOM/FRS). Aviators then have available three tours at sea and two ashore prior to command screen at the 13 to 14-year point. Command screen is and should continue to be a highly sought goal for every aviation officer and we must develop *warriors,* highly competent in their warfare specialties. However, it is important to note that a substantial portion of the aviation career lies past that initial command point and not every aviator will have command. Of the many vital, challenging billets found at the senior career level, only a limited number allow one to remain in the cockpit. To be effective in these and the other non-flying jobs, we must prepare, and this preparation must begin prior to the commander level.

Sea duty tours for junior aviators will continue to be mostly aviation oriented — ship, staff or squadron. We must then look to our other early shore tours. There are aviation requirements here also — TRACOM/FRS instructor manning is the big one — and our *lean* inventory of the seventies was hard pressed to man just these requirements. Over the last few years, however, higher TRACOM production, coupled with more favorable retention, has increased our available junior officer inventory. At the same time, the Naval Military Personnel Command has been moving to upgrade our subspecialty exposure. Education quotas are increasing, and more *wings* are visible on uniforms here in Washington. We need to continue to build on this base.

Perhaps, as our inventory is improving, one of the greatest stumbling blocks is the simple fact that many of us may want only to fly. My aim here is not to thwart or in any way discourage the desire to *bag flight time* and sharpen operational skills. It is rather to get us thinking beyond flying. Presently, the majority of our aviators being ordered to Postgraduate School at Monterey or to initial tours in Washington must be coaxed or, in a few cases, forced into accepting orders. The perception is that they are going to lose career potential in comparison with their peers in FRS and TRACOM instructor assignments. Once established at "headquarters" or in a course of study, the individual usually realizes and appreciates the importance of the education and the new broadened perspective it brings. Our hard chargers should be expected to actively seek these assignments during one of their two available shore tours.

Is completion of a tour in Washington a guarantee for promotion or sequential command selection? Are our current lieutenant commanders and commanders without subspecialties going to be penalized by promotion boards? "No" to both questions. Each officer has been and will continue to be judged on the merits of his record and performance in each assignment. But, today, our boards are looking more toward subspecialty qualification, service college attendance, Washington tours, and advanced education as indicators of officers with greater potential than their peers with similar performance but who have strictly "warfare limited" backgrounds. I can state with certainty that, for our current lieutenant and below inventory, subspecialty qualifications will substantially increase command selection and promotion potential.

Let's get these issues out in the open. Make them topics at AOMs. Discuss them with your detailer. He has the latest information and can recommend the best subspecialty plan, taking into consideration your desires, your background and the billets available. Look up through your chain of command; seek advice and perceptions from those commanders, captains and flag officers who have served in Washington and/or attended service colleges.

Get involved! It's your career and one that should include more, much more, than just flight time. ■

NAVY TEST

EVERY MOMENT COUNTS

By JO2 Timothy J. Christmann

Test pilots have often been portrayed as daredevils who fly the wings off airplanes, drive fast cars and party till dawn.

But, test pilots at the Naval Air Test Center (NATC), Patuxent River, Md., belie that stereotype. They are solid professionals, highly skilled aviators, and serious about what they do. Most of them drive economy family cars, with kiddie seats, rather than turbocharged sports cars, and they are often too busy to drink and howl with the boys at night. They do, however, fly their planes and helicopters to their whining limits – not for thrill, but to gather data

Pilots

necessary to complete their mission. To them, every moment in the air has purpose.

Testing aircraft is a dissection process that continues until every component has proven its value and every system has demonstrated its capability. It is grueling, time-consuming work requiring attention to detail carried to the nth degree.

At the Test Center, the latest in aerodynamics, propulsion, rotary-wing flight, antisubmarine warfare and weapons systems are put through the most realistic tests conceivable. It is all done in the name of readiness.

JOC Kirby Harrison

Cdr. Asbury Coward, Director of TPS since September 10, 1982, is scheduled to report to Carrier Group Four in Norfolk, Va., this summer. Below, clockwise from top, a TA-4J Skyhawk, TA-7C Corsair II, T-2C Buckeye and T-38A Talon fly in diamond formation over the Test Center.

A properly tested aircraft that performs to specifications gets the job done, and is efficient, reliable and endowed with a long life expectancy. And it saves lives as well. Test pilots, test flight officers and test project engineers are responsible for ensuring that Navy requirements are met. The bottom line is that taxpayers' money be well spent to give the best to the fleet.

TPS — It's no rose garden

Because of this immense task, and the multimillion-dollar price tags on naval aircraft and their complex subsystems, test pilots have to be among the Navy's most skilled and knowledgeable aviators. In order to be a part of this elite fraternity, they have to first go to school.

Since aviation began, there have always been test pilots. Even the Wright brothers were early members of this select group, but it wasn't until the mid-1940s that a semi-structured approach to teaching aircraft testing and evaluation was devised by the Navy.

In early 1945, a group of Naval Aviators, recognizing a need to change aircraft testing methods, created an informal three-month test pilot training program (see "TPS Vanguard," page 14). This program evolved into a formal six-month course in 1948 and, ten years later, was lengthened to eight months when it was officially designated the U.S. Naval Test Pilot School (TPS). Its mission was, and remains, simple and to the point: train and qualify experienced pilots, naval flight officers, and engineers to test and evaluate aircraft. Today, there are only three other such schools in the free world: the Empire Test Pilot School in Boscombe Down, England; the U.S. Air Force Test Pilot School, Edwards AFB, Lancaster, Calif.; and the French Ecole du Personnel Navigant D'Essais et de Reception, Istres, France.

In 1961, TPS added a helicopter flight curriculum in response to the increased importance of rotary-wing aircraft. As a result of the growing sophistication of and need for airborne sensors, a Naval Flight Officer curriculum was instituted in 1966. Since 1973, the school has conducted an 11-month course of study.

TPS has three curricula: fixed-wing flight mechanics, rotary-wing flight mechanics, and airborne systems.

For its average student population of 58, the course involves classroom academic studies and test flights in up to 15 different aircraft. The students, who are split into a senior and junior class, devote half of each day to classroom instruction, and the rest of the day to flight activities, data preparation, report writing and study — lots of study.

"The first thing that happens when you come to this school is that you're in shock for six weeks," said weary-eyed A-7 *Corsair* pilot Lieutenant Carl C. Engelbert, a student in the senior class. "It's like drinking out of a fire hose. In the beginning, you can't believe the school expects you to do this much," he added. "Although most students get used to the work, TPS pushes you to your personal limit — to the point where you can't work any harder or produce any more. It feels good knowing you can hack it, though," Engelbert said. "It's exhilarating."

The majority of TPS students are Navy and Marine Corps officers. But pilots and engineers from foreign military services attend, as do civilians from both U.S. and foreign government agencies and private industry. Because of the school's unique rotary-wing curriculum, all U.S. Army and U.S. Air Force rotary-wing test pilots are trained at Patuxent River.

Rear Admiral Edward J. Hogan, Commander, Naval Air Test Center, said TPS training does for aviation what nuclear power school does for subsurface. "It is the ultimate level of participation in aviation," he said. "It offers an unlimited potential for individual development and gives you a higher order of engineering education."

Commander Asbury Coward IV, Director of TPS since September 10, 1982, added, "If you really want to know what airplanes are all about, what they do and don't do, then this is the place to come and find out. It's a $400,000 education and has one of the longest obligated service extensions in the Navy — a total of four years. This includes 11 months at TPS, one year as a test pilot, and one year as a TPS instructor. There isn't a place in the world where a Naval Aviator can learn as much about aircraft as he can right here. It's a once-in-a-lifetime opportunity."

According to Cdr. Coward, TPS builds an aviator's confidence and competence to the point where he can fly virtually any type of aircraft. "It gives aviators a kit bag to use to effectively evaluate both fixed-wing aircraft and helicopters," he said. "It's my responsibility to make sure that kit bag has enough tools in it so he can go to work."

Marine Corps Major David Jacobs, the school's senior fixed-wing instructor, said TPS gets aviators out of their one-plane syndrome and teaches them not to shy away

"It is the ultimate level of participation in aviation."

from a new aircraft just because it isn't the one they're used to flying.

"It also teaches aviators to take a Sherlock Holmes-type of approach to flying," he added.

According to Jacobs, most fleet aviators don't think of their aircraft as having possible design or manufacturing faults. Rather, they fly their aircraft with the mission in mind. TPS graduates make it their business to look beyond the mission to what is under the skin of the aircraft. "To go out and fly an aircraft is one thing, but to fly it with a critical eye and come back and write about it in a detailed report is tough," he said.

At TPS there are three areas a student must master before graduating: academics, flying and report writing. And, generally, report writing is the toughest. Jacobs, an F-4 *Phantom* pilot, said one to two people in each of the past 20 classes failed because of poor reports. Added Coward, "It's the blood and guts of the curriculum."

Each student, whether a pilot, NFO or engineer, completes flight projects that include test planning, project flying and reporting the test results. Although students attending TPS have solid academic backgrounds, virtually none of them have technical writing experience. Writing clearly and accurately is essential because without proper input a project is valueless.

"To go up, intelligently plan and brilliantly fly a project, but then return unable to articulate what you have discovered is nothing but a waste of time," said Cdr. Coward. So, to remedy this flaw, students learn very early in the course how to put it on paper.

Lieutenant Jim Loeffler, a student in the junior class, said one of the first assignments he received was evaluating

©HANK HARRIS 1983

JOC Kirby Harrison

A TPS student and instructor land an AH-1S Cobra helicopter after a familiarization hop. The Cobra is one of more than 15 different aircraft types flown by students at the Test Center.

an unfamiliar cockpit. Later came the more advanced tasks of reporting how fast the aircraft flew, how much power it needed to cover various speed ranges, how high it could go, etc. "So we don't just go up in an airplane and fiddle around — we fly the flight, get all the things we wanted to look for, and then take what we found and included it in our report."

During the 11-month course, each pilot under instruction completes 35 flights. All must submit 22 reports before graduation, at which point they are tasked with writing their first Navy Preliminary Evaluation — or what Maj. Jacobs likes to refer to as the TPS master's thesis.

"What we do is take a student, put him into an airplane he's never seen before and give him four flights or six hours, and from that he must tell us everything he knows about the airplane. In the end," Jacobs said, "the evaluation comes out to be a 100-page single-spaced typed report. Each student has two weeks to plan the project, fly it and finish the document."

But all the time is not spent developing writer's cramp. TPS has a flight program supported by a stable of 33 aircraft including the T-2C *Buckeye*, TA-4J *Skyhawk*, T-38A *Talon*, TA-7C *Corsair*, AH-1G *Cobra*, OH-58 *Kiowa*, OV-1B *Mohawk*, X-26A *Frigate*, U-6A *Beaver* and NU-1B *Otter*. In addition, variable stability aircraft like the Learjet 24 and T-33 are employed to demonstrate to each student the wide variety of parameters that affect handling qualities.

According to Jacobs, most students fly every aircraft at the school, at least for a familiarization hop, and any other aircraft the school can obtain. "Over the years, we've brought some strange machines in here," Jacobs recalled. "Like an old SNJ *Texan*, a Navy WW II prop plane, and a Stearman biplane."

In addition to flying, two to four hours a day are devoted to formal academic instruction for a total of 460 classroom hours. The courses, taught by civilian instructors, are graduate-level and tailored to provide the students with the technical background in support of, and parallel to, the flight program.

"We're always tinkering and upgrading the curriculum," said Cdr. Coward, "mainly because the systems business is becoming more and more important."

Coward explained that years ago it was clear where the airplane stopped and the systems began. "Today, with aircraft like the F/A-18 *Hornet*, there is no line of demarcation. The two are one and the same."

Over the years, only NFOs and a select group of pilots were taught systems academics and systems flight, according to Maj. Jacobs. But with the growing importance of systems, soon the whole school will receive this training.

"Right now, TPS can't support all the students with systems training and flight because of the lack of assets," he said. "We've programmed for it, however, and in the future the school will have an entire systems approach. Students will still have to conduct flying qualities and performance tests on basic airplanes, but aviators coming through will also have to learn about radars, FLIR, lasers, weapons delivery equipment and all the acronyms of the modern airplane."

Despite these projected additions to the curriculum, Cdr. Coward doesn't foresee the 11-month program getting any longer.

"The rule that my predecessors and I have had is that anytime we add something to the curriculum, something

M.S. in Aeronautical Engineering

An added incentive for Naval Aviators to apply to Test Pilot School is the chance to acquire a Master of Science degree in aeronautical engineering through a combined Naval Postgraduate School curriculum.

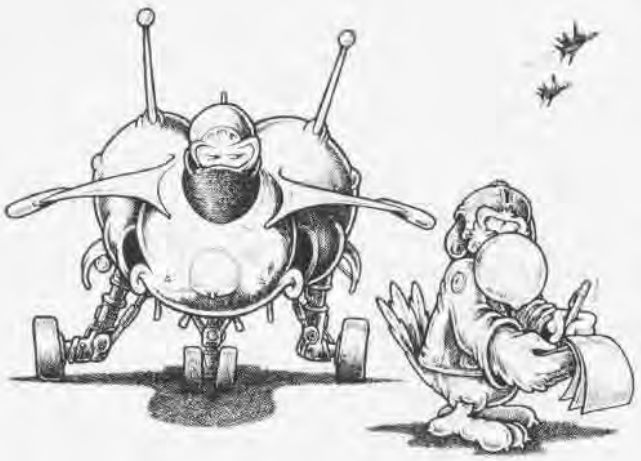
For two years now, TPS has been selecting aviators far in advance to spend 10 months in residence at Naval Postgraduate School in Monterey, Calif., prior to coming to NAS Patuxent River for TPS. Both schools have similar academic curricula, but TPS is more applied and Postgraduate School more theoretical, according to Mr. Robert B. Richards, head of Academics at TPS.

Upon graduation from TPS, the Postgraduate School student is given a master's degree in aeronautical engineering and assignment of the subspecialty codes XX71P and XX73P.

"This program is a four-year tour," said Richards. "Ten months at Postgraduate School, two months flying (jet refresher training) and three years at the Test Center.'" For the young lieutenant interested in the test aeronautical engineering field it is unbeatable, according to Richards.

Presently, four TPS-bound aviators are attending Postgraduate School and three have recently arrived at Patuxent River. The first TPS aviator to go through Postgraduate School, Lieutenant Bud Jewitt, graduated last June.

Mr. Richards said TPS would like to send all its students through Postgraduate School, but logistically it is impossible at present. Until further changes are made he said TPS plans to receive four aviators annually from Monterey, or average about two graduates per class.



has to come out. Pressures and time constraints on the students are about as heavy as you can get right now, and you can't stuff any more than five pounds into a five-pound bag," said Coward.

One of the most valuable learning experiences at TPS in addition to the curriculum is the exposure students have to other aviators from many different aviation communities. "When you take aviators and divide them into groups, they are going to discuss the ways they do things in their particular communities," said Lieutenant Commander George Hill, a fixed-wing instructor.

Lieutenant Commander Dennis Roderick, the Test Center's VP branch head, who went through TPS in 1976, said the school gave him contact with some of the finest Navy pilots, NFOs and engineers anywhere. "I learned as much from them as I did taking the course," he said. Roderick added that this mixing bowl concept gave him a good view of the whole Naval Air mission – not just his particular community.

Quipped Lt. Engelbert: "I'm in a class with Army and Air Force helicopter pilots, an Italian fighter pilot, a Navy fighter pilot. . .and part of going to school for me is just having a cup of coffee with them every morning."

All Naval Aviators and Naval Flight Officers (in grades of 02 to 04) are eligible to apply to TPS. The school receives 120-140 applications for each class (which convenes every six months). Thirty applicants are accepted. Primary selection criteria for U.S. Navy applicants are based on the needs of the service and recent fleet operational experience. The applicants' academic and flight backgrounds, availability for shore duty, and recommendations from endorsing seniors concerning flying ability, motivation and professional competence are equally important. The selection board considers a minimum of 1,000 flight hours and a Bachelor of Science degree in engineering, mathematics or physical science to be important prerequisites. But these prerequisites are occasionally waived with good justification. Many aviators have been accepted with degrees in physical education, political science, business and English.

"It is harder for people who don't have engineering degrees to get through the academics, but if they apply themselves they'll make it," said Jacobs. "Determination is the key ingredient for any aviator hoping to graduate from this school. You have to apply yourself and learn."

The Test Center has no one named "Mad Dog" Morley who drinks all night, wakes up, and flies the rivets out of an airplane with a scarf flapping in the wind and a cigar clenched tightly in his teeth. "There isn't any tolerance for the hard-drinking, two-fisted, wild and crazy guy," said Cdr. Coward, "because this business is more professional and the airplanes more expensive."

You don't have to be the best stick in the world to attend TPS, but it does require a special kind of aviator, "one who is hard-working, serious and dedicated," said Lt. Engelbert.

"He has to be a very high achiever," said RAdm. Hogan. "He has to want to excel and have a lot of perserverance. Simply, he has to be one of the best guys this nation can produce."

Hogan, a graduate of the Empire Test Pilot School, added that although being a test pilot is a prestigious position, it is not necessarily a flamboyant one. "That's the objection a lot of the hard workers would make. . .that we oversell the flamboyant at the expense of the guy who is in there in a more day-to-day, doing-it-over-and-over kind of position," added Hogan. "It may not be as glamorous, but it's more important."

Life after TPS

Cdr. Coward described today's test pilot as being a special breed of aviator, someone with a competitive instinct and an inexhaustible willpower to be the best aviator he can be.

"You're dealing with confident, aggressive people here," said Coward. "The average guy comes here thinking he's the best there is or close to it. He probably was the best in his squadron and he knows he'll be competing with the best here."

Added Jacobs, "Aviators by nature are aggressive, and TPS has the ultra-competitive mix of them."

"Historically, the graduates from this place have done disproportionately well relative to the average," Coward said. The alumni include many past and present astronauts, flag officers, squadron C.O.s and aircraft carrier skippers.

He cited as an example his own class: Captain R.E. Tucker, Sr., C.O. of *Sylvania;* Captain Fred Lewis, ComFitWing-1; Captain Bruce Bremner, ComMAtWing-1; and Commander M.M. Kemple, Jr., ComCVW-20.

"TPS training is a significant plateau that the aviator reaches," said RAdm. Hogan. "It's not a step-up in an aviator's career, it is a ramp-up." He added this experience gives aviators a unique quality that isn't attainable any other way.

Current aircraft carrier skippers Captain Edward W. Clexton, Jr., and Captain J. C. Breast both agree TPS training is a boost in an aviator's career.

"I think it is the best billet for a junior officer coming off sea duty," said Capt. Clexton, skipper of *Eisenhower.*

"Besides being an important education, it gives aviators a chance to perform, almost independently, some very important work."

Capt. Breast, C.O. of *Independence,* added that TPS training gives an aviator a completely different perspective toward aircraft and the aviation community in general. "It's a big chunk of education that teaches aviators a whole new approach to aviation. It also opens the door to continued research and development types of job assignments," he said.

While assigned to the Test Center in the 1960s and 1970s, Capt. Clexton and Capt. Breast were both separately involved in several projects that included test evaluation of the British F-4M *Phantom.*

"TPS made me better equipped to get back to the fleet and go into a department head role in a squadron," said Capt. Clexton, a TPS honor graduate.

Capt. Breast added that TPS training gave him the ability to thoroughly plan an evaluation flight, conduct a test, reduce the data and finally write the report. "It disciplined me to write technically as opposed to philosophically," he said.

The students also feel TPS training will be a definite help in their careers. "It's teaching me the nuts and bolts of my business," said Lt. Engelbert. "I'm learning about writing and communicating as well as flying."

"It offers an unlimited potential for individual development . . . ."

After graduation from TPS, the majority of aviators remain at the Test Center. The larger percentage of Navy and Marine Corps officers are assigned to one of the four test directorates: Rotary-Wing, Strike, ASW or Systems. It is here that they begin a tour of duty as project test pilots, project flight officers, or project flight engineers.

The projects vary in scope. "There are a lot of projects going on simultaneously in each of the directorates, but most aren't the big multimillion dollar F/A-18 *Hornet,* or AV-8B *Harrier* projects that seem to get so much visibility in Washington," said Maj. Jacobs.

Some of the literally hundreds of projects currently being handled by the directorates are the LAMPS MK III helicopter in Rotary; installation of inverse synthetic aperture radar in the P-3 *Orion* in ASW; modifying the F-14 *Tomcat* M-61 Gatling gun in Strike; and testing the elec-

JOC Kirby Harrison

Civilian instructors at Naval Test Pilot School teach students 460 hours worth of graduate-level academics from calculus to project management.

"(A project officer) has people working for him and manages more money than the average squadron skipper may see in a lifetime."

tromagnetic compatibility of all Navy aircraft in Systems.

"Some projects aren't as glamorous as others, and some guys get discouraged because they are not in something a little more exciting, but it's all good work," said Commander Richard "Dusty" Rhoades, an A-6 pilot and project manager for the F/A-18 *Hornet* program. Cdr. Rhoades is in charge of all the developmental and follow-on test efforts made on the *Hornet* at Pax River. Before that, he spent a year and one-half as directorate branch head in charge of weapons testing, which included jobs involving weapons separation and weapons carriage.

"The F/A-18 assignment is technically demanding and takes a lot of effort, but it's a lot of fun," he said.

Rhoades, a Naval Academy graduate, was assigned to A-6 squadrons for 10 years before coming to TPS. "It's been exciting getting involved in jobs that are totally unlike what you do in fleet squadrons," said Rhoades. He added that test flying is no more difficult than fleet flying, it just requires a different discipline.

"Certainly night carrier landings can be as risky as anything we do here," he said. "And yet when you're in a squadron, that's your business and you prepare for it, brief for it and train for it. You compensate and reduce the danger with a lot of careful preparation. We do the same thing here.

"It's not like the old Clark Gable white-scarf movies. Generally, what we do now is improve systems or try to make the airplane we use fly better."

Despite the Hollywood test pilot portrayal, Maj. Jacobs is amazed at and proud of how far the aircraft test evaluation business has come since its inception.

"Two years ago, while on a visit to the Air Force's test pilot school at Edwards AFB, I met Bill Dana, one of the original X-15 pilots, and asked him how the aviation business had changed over the years," Jacobs recalled. "Dana looked me straight in the eye and said that in those days, test pilots just didn't know about their aircraft. When they climbed into their cockpits, they didn't know if the wings were going to fall off or not. They didn't know about structures, flutter, stability and control. . .airplanes were just plain dangerous. The attitude toward first tests was usually 'Well, let's take her up and see what happens this time.' "

JOC Kirby Harrison

Lt. Colleen Nevius became the first woman to graduate from TPS on June 10.

Today when an aircraft makes its first flight, it isn't as fraught with danger as it used to be. The flight is approached carefully and usually monitored with computers (like the real-time telemetry processor) by a team of engineers capable of stopping the test if they see something they don't like.

Cdr. Richard W. Sidney said that today many test pilots are involved in some very demanding assignments, like expanding weapons envelopes or flying aircraft in degraded

"It's not a step-up in an aviator's career, it is a ramp-up."

mode at night. You have to have the moxie, the coolness and the reflexes to handle the job. "But more importantly," said Sidney, "it takes training, self-confidence and planning." That is the difference between the fleet aviator and the TPS-trained aviator.

"I could take an average fleet aviator, give him a couple of months' training, and he could probably do most of the flying we do," added Sidney. "But we want someone who can do it all. You can't take the average guy and make him a test pilot who can do it all."

That's why TPS is so critically important. It teaches aviators how to do it all.

As a project manager, an aviator is more than just a test pilot. He runs his own projects and is often on his own, according to Maj. Jacobs.

"A project officer has a big responsibility. He has people working for him and manages more money than the average squadron skipper may see in a lifetime," he added. "I mean he is dealing with millions of dollars! He has to manage that money, manage his flights and manage his materials. He might be in charge of one project or several."

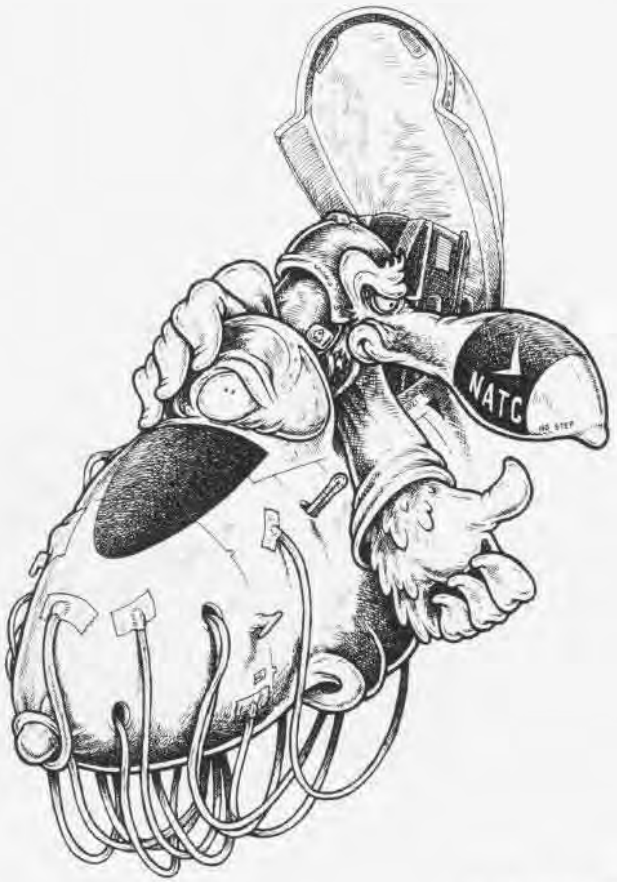
Cdr. Sidney said the only time a commander or below would ever have the level of responsibility comparable to that of a project officer would be as C.O. of a squadron. He added that the job is similar to having your own aircraft squadron.

"The project officer not only has to be a pilot par excellence with specialized training, but he has to be a manager of people," Sidney said.

During projects, the test pilot is normally linked up with a civilian test engineer and together they work as a team. "That is why it's so important that engineers and pilots go through TPS together," said Jacobs. "This way they both understand the other guy's problems. They're able to talk to each other better and it takes away the 'us and them' attitude."

The pilot and engineer are the nucleus of test and evaluation at the Center. "It is the way we train and the way we work," Cdr. Sidney said.

In the final analysis, the overriding objective of their efforts is to give the aviator in the fleet a superior product. Something safe, efficient, reliable and ready. "All of us came from the fleet," said Cdr. Coward, "and all of us are going back." ■



© HANK CARUSO 1983

The following is a listing of Navy and Marine Corps Aviators who graduated from the U.S. Naval Test Pilot School and later became astronauts.

Alan L. Bean, Captain, USN(Ret.)
Charles F. Bolden, Jr., Major, USMC
Vance D. Brand, former USMC
Daniel C. Brandenstein, Commander, USN
James F. Buchli, Major, USMC
John S. Bull, Lieutenant Commander, USN(Ret.)
M. Scott Carpenter, Commander, USN(Ret.)
Michael L. Coats, Commander, USN
Charles Conrad, Jr., Captain, USN(Ret.)
John O. Creighton, Commander, USN
Robert L. Gibson, Lieutenant Commander, USN
John H. Glenn, Jr., Colonel, USMC(Ret.)
Richard F. Gordon, Jr., Captain, USN(Ret.)
S. David Griggs, former USN
Frederick H. Hauck, Captain, USN
James A. Lovell, Captain, USN(Ret.)
Bryan D. O'Connor, Major, USMC
Richard N. Richards, Lieutenant Commander, USN
Walter M. Schirra, Captain, USN(Ret.)
Alan B. Shepard, Jr., Rear Admiral, USN(Ret.)
Michael J. Smith, Commander, USN
Robert C. Springer, Lieutenant Colonel, USMC
Clifton C. Williams, Major, USMC (deceased)
Donald E. Williams, Commander, USN
John W. Young, Captain, USN(Ret.)

TPS

VAdm. Connolly says his three years at Flight Test were "some of the happiest, most fulfilling" times of his life. He credits TPS with building a high caliber of naval officer who is destined for great accomplishments, noting that many astronauts were graduates of the school (see listing on page 13).

JO2 T. J. Christmann

Vice Admiral Thomas F. Connolly, USN(Ret.), exudes a youthful energy and aggressiveness much like that he must have possessed as a young naval officer when he helped to lay the groundwork for the U.S. Naval Test Pilot School (TPS). Even now, 12 years after retirement from a 38-year career, he exemplifies the hard-charging spirit of the school's training program. During a recent interview, the admiral talked about the early days at TPS and the impact his training had on his naval career.

VAdm. Connolly graduated from the Naval Academy in 1933 and received his Naval Aviator wings in 1936, at a time when the Navy was completing testing of its new primary trainer biplane, the XN3N-1. He flew with VO-1 and VP-12 before being ordered to Naval Postgraduate School in 1939. There, he majored in aeronautical engineering for two years and continued his studies at M.I.T., where he earned his M.S. in 1942. A tour as skipper of VP-13 was followed by a brief assignment to Fleet Air, West Coast. In 1944, he was ordered to NAS Patuxent River, Md., as Assistant Director of Flight Test.

The admiral says his interest in flight testing evolved from his aeronautical engineering background and his early flying experiences in squadrons where they "did a good analytical study of every operational mission." As deputy to the Director of Flight Test, he saw a need to develop a training program which later became the Test Pilot Training Division in 1948. Ten years later, it was officially designated the U.S. Naval Test Pilot School.

Working mostly with test pilots and engineers from many different fields, Connolly found that "nobody spoke the same language." A test report on a particular aircraft would be written in the technical language indicative of the engineer's expertise who wrote it, i.e., mechanical, electrical, chemical, etc. If they were to understand each other, Connolly decided, "they needed to speak a common aeronautical engineering test language." It was this fundamental communication problem that prompted him to suggest starting an in-house school, three days a week, to train test pilots and engineers to employ the same verbal and written perspective on aircraft performance, engineering, stability and control. The in-house school, which began in 1945, became very popular and soon the other test divisions at Patuxent River wanted their personnel to attend the course. Word spread quickly to the fleet and eventually many young pilots requested orders to the informal school.

VAdm. Connolly credits several people in those early days as being the guiding hands in the establishment of TPS. Among them, Commander S. S. Sherby was known as a "gifted teacher." Connolly says he was "a master at explaining" aerodynamic eccentricities to the engineers and test pilots. When Captain F. M. Trapnell came to Patuxent River as Director of Flight Test (later part of the Naval Air Test Center), the school got even better, Connolly says. From Trapnell, he learned the importance of two disciplines in a naval career: English and physics. "You can't go very far in physics without math, chemistry, etc.," he states, and "You can't go very far in English without reading broadly, writing and knowing what to say." The admiral believes that education, whether formal or self-taught, is the key to success. It is important to be continuously thinking, learning and growing in order to succeed in any field.

While Connolly went to sea for a brief period, Cdr. Sherby took over as the first Director of the Test Pilot Training Division which replaced the informal school on March 4, 1948. Commander Connolly returned from sea to duty as the school's second director from December 1948 to March 1951. When asked why the Navy established a program to train test pilots, VAdm. Connolly says, "The Army Air Corps was about to become the U.S. Air Force

Vanguard

By Sandy Russell

[in 1948]. The Navy decided that we had better train and educate the best, because we were going to need them if we were to have Naval Aviation."

The original training program at TPS lasted for six months, with classroom study in the morning and flying in the afternoon. VAdm. Connolly admits this was a rather ambitious plan, but there were so many applicants that the school tried to conduct two classes a year. Graduates usually went on to a tour in a test division at Patuxent River. They were considered to be great assets to the Navy and were in high demand for staff assignments at major commands.

Commenting on an immediate benefit reaped from the fledgling TPS program, the admiral says it was "a widespread level of understanding developed in an area where one didn't exist – how and why airplanes fly and how to get more from them. The more understanding pilots have of the aircraft's capabilities and limitations, the less apt they are to get themselves into trouble. While I was director of the school, we lost only one pilot."

VAdm. Connolly says his TPS training greatly enhanced his career in the Navy because the key word is "confidence." He feels that the long hours of studying and flying produce a naval officer and pilot with a "real belief in himself." There are many theories on how to advance in the Navy, he says, but "if you do it by slickery, it doesn't really give you any self-confidence." This trait plays a crucial role in anyone's career.

The command positions held by Connolly after TPS are testimony to his effectiveness as a naval officer. Between tours in Washington, he commanded the aircraft carriers *Corregidor* and *Hornet* and went on to become Commander, Carrier Division Seven and Commander Naval Air Force, Pacific Fleet.

While Deputy Chief of Naval Operations (Air) from 1966 until his retirement in 1971, he was one of the Navy's most dynamic and resourceful Naval Aviators. As chairman of the Ad Hoc Committee on Astronautics, he prepared the definitive study "The Navy in the Space Age," a pertinent evaluation of man's latest step toward his destiny. He was successful in presenting the Navy's viewpoint on the importance of space exploration to those in positions to influence programs. VAdm. Connolly was also well prepared, academically and professionally, to present a realistic evaluation of the TFX, the program designed to develop a "fighter of the 1970s." He sought alternatives to the F-111B aircraft and was instrumental in obtaining for the Navy the F-14 *Tomcat*, a fighter capable of close-in combat as well as stand-off missile interception.

Known as a doer and a man of action, VAdm. Connolly repeatedly put his career on the line and took great pride in pursuing what he believed to be best for the Navy and the country. Much of his drive and determination was developed during those formative years of his career spent at TPS.

What rewards can a young naval pilot today expect from all that hard work going through TPS? "The improvement of his mind and his comprehension," says the admiral. "There's a certain staleness that a naval officer can fall victim to if he isn't careful. He can get to the point where he is not increasing his knowledge as he goes along. If he's not a reader, studier, thinker, it's easy to become mentally lazy. TPS makes him work hard, and it comes along at a time when a young mind needs the education and experience. One of the best things about TPS is that it is school combined with flying, which is not true of many other graduate courses."

Today, VAdm. Connolly is still *involved*. From an office in Arlington, Va., his work as a defense business consultant manifests his continuing loyalty to and support of the military. An inherent vitality characterizes this pioneer test pilot who *lives* his lifelong philosophy that "nothing succeeds like persistence." ■

Of the 75 aircraft at TPS in the early days, VAdm. Connolly flight-tested "everything," like the F6F Hellcat shown here, the F4U Corsair, SB2C Helldiver and SBD Dauntless. Among the 50 some aircraft that he flew during his career, he says the carrier-based AJ Savage was his all-time favorite.

X-26

The military "X" airplanes and test pilots have always been tied together. From the days of the Bell X-1, the first aircraft to achieve supersonic flight (1947), the piloted aircraft in the X series have generally been research aircraft of one sort or another flown by highly experienced test pilots. No less tied to test pilots, though not as research aircraft, have been the X-26s. Their special niche has been in the training of test pilots at the Naval Test Pilot School, Patuxent River, Md.

While they have common roots (as Schweizer sailplanes), the two models in the X-26 series are otherwise quite diverse. The X-26As are standard two-place Schweizer 2-32s, while the X-26Bs are much modified, powered versions of the 2-32, originally developed by Lockheed Missiles and Space Company as quiet reconnaissance airplanes for Army use in Vietnam.

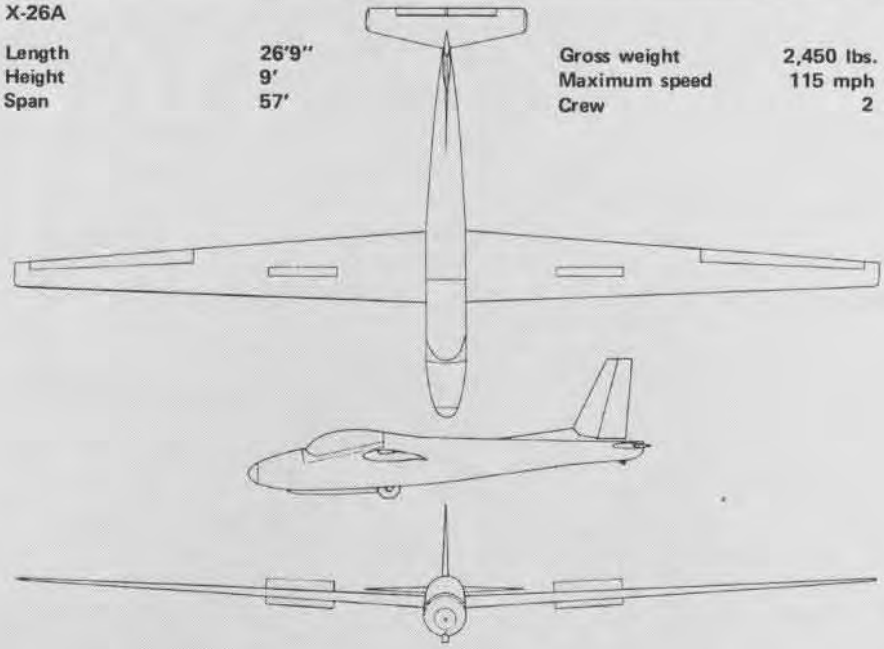
Recognizing that the then current spectrum of military aircraft were all highly dependent on powered operations, the Test Pilot School initiated glider training in 1968 and the first two X-26As were added to the TPS inventory in 1969. These were used to make student test pilots more aware of aerodynamic flight characteristics. A third X-26A was subsequently purchased but only one remains in service at TPS today, and is included as part of the syllabus.

While the X-26As did provide the desired training, the need for tow launches made operations cumbersome. When the Army made available two of its QT-2PC sailplanes (designated X-26Bs in the Navy), the Test Pilot School acquired them in hopes of making sailplane operations more practical, since they could be flown to altitude under their own power before initiating gliding flight. These much modified sailplanes had a Continental 0-200 installed behind the two-man crew, driving a large, slow-turning propeller via a shaft running forward over the cockpit canopy. Along with the special propellers, silencers were fitted to the engine exhaust system,

By Harold Andrews

X-26A

Length	26'9"	Gross weight	2,450 lbs.
Height	9'	Maximum speed	115 mph
Span	57'	Crew	2



resulting in a minimum of noise being generated in flight.

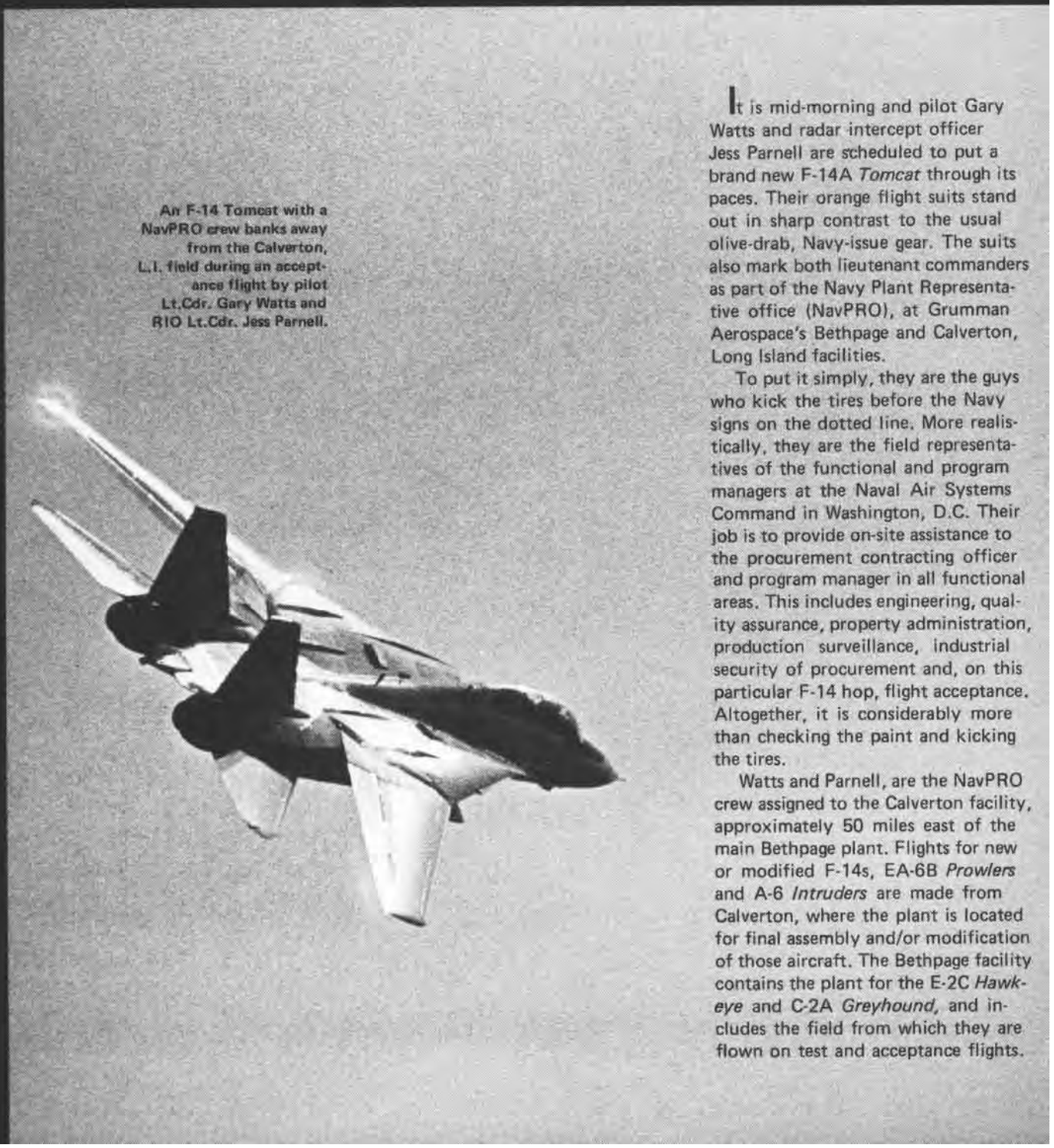
When the two X-26Bs were obtained by TPS in 1970, only one was placed in service, while the other was retained for spare parts. The muffler system was removed from the active aircraft but, even so, it was found to be underpowered. It also had some difficult handling characteristics, particularly in taxiing and taking off with any crosswind component. Thus, the X-26B saw only limited use in TPS training. In 1974, it was withdrawn from flight status and is currently part of the Army Aviation Museum at Fort Rucker, Ala. The "spares" X-26B was declared surplus and disposed of in a nonflight status.

Appreciation is extended to Mr. Robert B. Richards, head of Academics at TPS, for providing much of the information in this article. ■

JOC Kirby Harrison

More than just kicking the tires

Story and Photos by JOC Kirby Harrison



An F-14 Tomcat with a NavPRO crew banks away from the Calverton, L.I. field during an acceptance flight by pilot Lt.Cdr. Gary Watts and RIO Lt.Cdr. Jess Parnell.

It is mid-morning and pilot Gary Watts and radar intercept officer Jess Parnell are scheduled to put a brand new F-14A *Tomcat* through its paces. Their orange flight suits stand out in sharp contrast to the usual olive-drab, Navy-issue gear. The suits also mark both lieutenant commanders as part of the Navy Plant Representative office (NavPRO), at Grumman Aerospace's Bethpage and Calverton, Long Island facilities.

To put it simply, they are the guys who kick the tires before the Navy signs on the dotted line. More realistically, they are the field representatives of the functional and program managers at the Naval Air Systems Command in Washington, D.C. Their job is to provide on-site assistance to the procurement contracting officer and program manager in all functional areas. This includes engineering, quality assurance, property administration, production surveillance, industrial security of procurement and, on this particular F-14 hop, flight acceptance. Altogether, it is considerably more than checking the paint and kicking the tires.

Watts and Parnell, are the NavPRO crew assigned to the Calverton facility, approximately 50 miles east of the main Bethpage plant. Flights for new or modified F-14s, EA-6B *Prowlers* and A-6 *Intruders* are made from Calverton, where the plant is located for final assembly and/or modification of those aircraft. The Bethpage facility contains the plant for the E-2C *Hawkeye* and C-2A *Greyhound,* and includes the field from which they are flown on test and acceptance flights.

Left, life at the NavPRO isn't all flying. C.O. Capt. Roy Buehler spends a good part of his time in meetings with the staff.

Captain Roy Buehler, commanding officer of the NavPRO, has offices at the Bethpage facility, along with seven additional Naval Aviators, two Supply Corps officers and an electronics technician first class. All profess to enjoy the job. As AT1 Charles Barnes put it, "New airplanes smell just like new cars. I love it. After a lot of sea duty aboard a carrier, it's nice to be aboard a command that doesn't have to turn into the wind to launch aircraft."

The NavPRO includes 211 civilian employees, most of them at Bethpage. "We have a very competent group of civilians," says Capt. Buehler. "Some of the younger people are especially impressive. They accept responsibility and do an exceptional job."

Buehler feels part of the reputation of the NavPRO Bethpage/Calverton is based on the continuity provided by the civilian work force. It is a continuity that springs in part from a relatively isolated location where most of the upward mobility is necessarily within the NavPRO organization itself. "We have a lot of people who have been here awhile, and it lends stability," explains Buehler, adding that "Last year I awarded a half-dozen 30 and 40-year pins."

The reputation of the NavPRO for quality work is felt in both the military and civilian sides of the house, and is reflected in the safety record. Despite flying in a situation that appears on the surface to carry some risk, it has been almost 20 years since the last aircraft accident involving a NavPRO Bethpage/Calverton airplane and crew. *(Continued on page 20)*

Lt.Cdrs. Gary Watts (foreground) and Jess Parnell are intent on results during debrief following the acceptance flight of an F-14.

This NavPRO is unique among the Navy's eight plant representative offices, with the assignment of two Air Force officers to coordinate that service's $25 million program to modify the F-111 to an electronic warfare (EF-111) version. Under the Navy/Air Force agreement, Lieutenant Colonels Tom Milligan (pilot) and Pepper Thomas (electronic warfare officer) work out of the NavPRO, and certain civilian personnel are involved in the main functional areas of the modification program. The original F-111B had a short-lived Navy career, with six actually delivered. Carrier trials were completed aboard *Coral Sea* in 1968, and shortly after that a decision was made to go with a new program resulting in the F-14 *Tomcat*.

Duty for the Naval Aviation personnel at the NavPRO is not all flying.

NavPRO personnel discuss acceptance of an E-2C Hawkeye at Grumman's main Bethpage, L.I. plant.

Below, NavPRO X.O. Cdr. Fred Blakely preflights an EA-6B prior to a test flight.

Right, miles of wiring go into an A-6 Intruder being reworked at Calverton.

The average is a little less than 20 hours of flight time a month, although Lt.Cdr. Parnell points out that it is generally quality flying, and a good opportunity to get time in a variety of aircraft. Many of the pilots and flight officers are qualified in more than one aircraft. Grumman's present contract calls for delivery of two or three *Tomcats* a month.

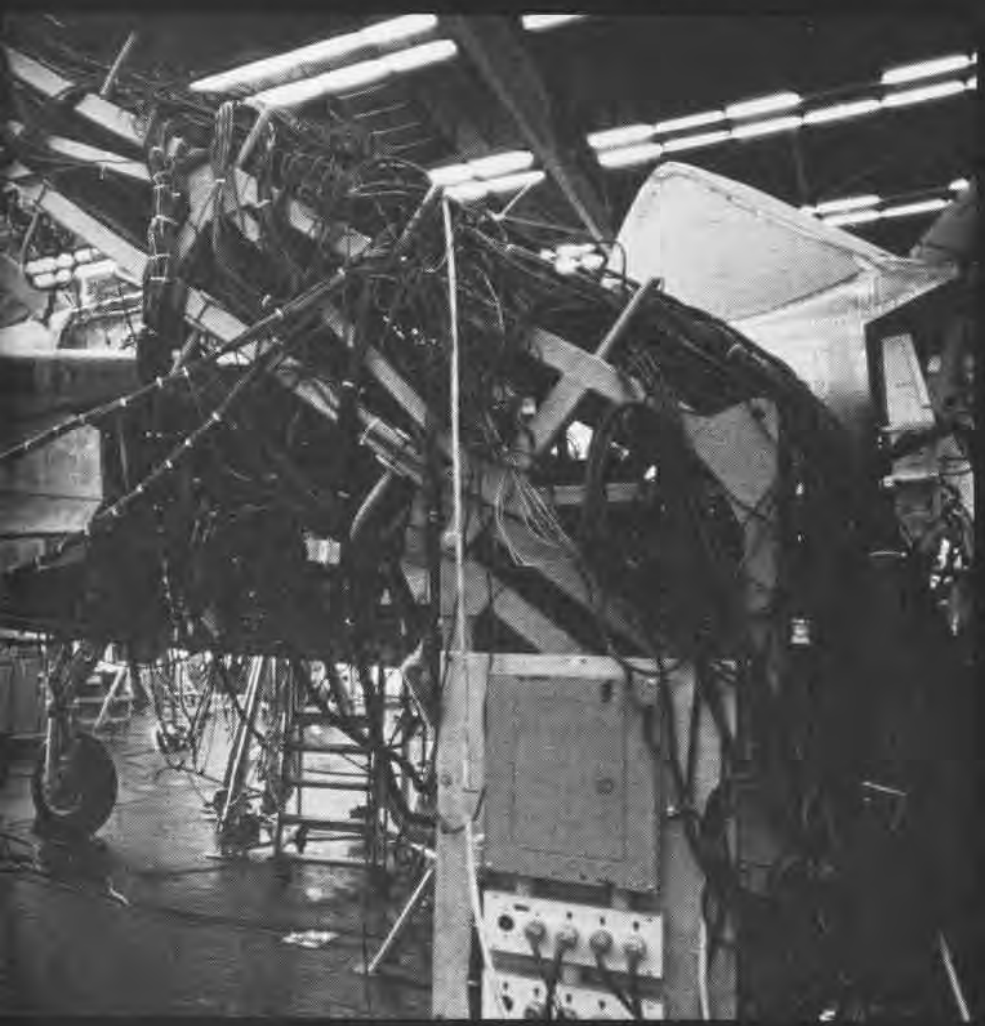
Capt. Buehler emphasizes the career aspect of assignment to the NavPRO. "A number of our aviators are driven to stay in the operational chain by a short-range view of what is required for command screening," he says. He feels the real pivotal point in a Naval Aviator's career comes after the squadron command level, when the job requires more than just flying.

"Once past the squadron command, he may well be assigned to a job that requires frequent high-level decisions. He will be in a position where he has the seniority to make a decision stick, but may not have the diverse experience outside operational flying to consistently make the correct decisions." The captain includes in that experience such areas as funding, engineering and administration. He maintains that duty with a NavPRO is the kind of job that can give the Naval Aviator, in one tour, the experience that might otherwise be gained in two separate tours in other field activities or in NavAirSysCom.

Watts and Parnell say the air crew assigned to the NavPRO appreciate the opportunity to broaden their experience but, as it is for most Naval Aviators, flying is still the thrill that gives it all meaning. And on this day, they're looking forward to taking up the *Tomcat*, despite the attention required in an acceptance flight, and the debrief with Grumman and NavPRO personnel that follows the hop. That attention to detail will include everything from flight characteristics to the avionics and weapons systems performance. Even the cockpit canopy is checked for visual distortion. Problem areas will be noted and corrected and, when the NavPRO okays the plane for acceptance by the Navy, it will be ready to fly.

The two men are amused as they head out to the flight line. "We're usually not this popular," says Watts, referring to a list of special requests that includes a pass by the tower for a photographer and visiting legislator.

"All part of a day's work," says Lt.Cdr. Parnell, with a grin. "At NavPRO, we aim to please." ■



Above, an F-14 passes the tower at Calverton during a Navy acceptance flight.

VX-1

By Lts. W. H. Mueller and L. Bradshaw

The Soviet Union has the largest nuclear and conventional submarine force in the world, and its submariners are highly trained and motivated professionals. One of the most mobile and effective counters to this threat is air antisubmarine warfare and, for the last 40 years, Air Test and Evaluation Squadron One (VX-1) has been in the vanguard of airborne ASW.

During the early days of WW II, German U-boat wolf packs stepped up their attacks on Allied convoys, with unprecedented losses in lives and shipping. The need to thin out the wolf packs became increasingly urgent and in April 1943 a new chapter in Naval Aviation began when the Air Antisubmarine Development Detachment was established at Quonset Point, R.I., to help win the battle against the enemy. It was a one-of-a-kind unit and today VX-1 remains unique in that it is the Navy's only operational test and evaluation squadron for air antisubmarine warfare.

At Quonset Point, the new Detachment brought together for the first time Navy pilots, crewmen and technicians, and scientists, with a common mission — to improve antisubmarine weapons and tactics aimed at defeating the U-boats.

The Detachment underwent several reorganizations until the establishment in 1946 of Antisubmarine Development Squadron One, which was based at Boca Chica Field, NAS Key West, Fla. Its mission was to test and evaluate ASW and related equipment for use in combat, and develop operational doctrine and tactics for the fleet.

The first evaluations were of scanning sonar, surface radar and helicopter dipping sonar. The 1950s brought new ASW aircraft to the squadron, and P2Vs and ADs were evaluated along with sonobuoys, towed MAD (magnetic anomaly detection), improved radar and sonar equipment, and ASW mining techniques.

After several name changes, the squadron was redesignated Air Test and Evaluation Squadron One in January 1969, and in 1973 moved from NAS Key West to its present location at Patuxent River, Md. Today, more than 40 years after its establishment, VX-1's mission remains essentially the same. The squadron functions as an interfacing unit between the development of new weapons systems and their introduction into fleet units.

VX-1 and its two sister squadrons are under the operational control of Commander Operational Test and Evaluation Force (ComOpTEvFor), NAS Norfolk, Va. VX-4 at Point Mugu, Calif., tests and evaluates fighter weapons systems, including air-launched guided missiles, and VX-5 at China Lake, Calif., tests airborne attack weapons systems.

VX-1 conducts operational test and evaluation (OT&E) on the premise that the equipment has already met its *technical* specifications. The evaluation has three basic elements:

First, testing is done in the operational environment aboard aircraft carriers, destroyers and in remote places with climatic extremes, where it is subjected to all the physical stresses and rigors of the real world environment since that is where the equipment will operate after its introduction into the fleet.

Secondly, fleet-experienced aircrews and maintenance personnel — not test pilots, engineers or specially trained technicians, but Navy personnel — are used to operate and main-

tain the equipment being tested. They possess the skills and talents found in operational squadrons and receive special training only insofar as the equipment requires.

Finally, OT&E is conducted against a simulated enemy who operates with little or no restrictions in his use of evasive tactics and countermeasures.

In this respect, OT&E tests the total weapons system, not simply the components. If a missile is being developed, OT&E does not test the missile itself, but rather the entire missile system, which includes the firing platform, the platform's acquisition system and interfacing equipment, etc. Thus, the missile under development may fail OpEval through no fault of its own but because its interfacing systems are not well enough adapted to it.

Because of the diverse nature of air antisubmarine warfare, VX-1 has in its inventory at least one of each type of ASW aircraft, including the P-3C and EP-3A *Orion,* S-3A *Viking,* SH-3H *Sea King* and the SH-2F *Seasprite,* and is conducting operational testing on each.

VX-1 has several P-3C *Orions.* The P-3, which recently completed its twentieth year of fleet service, is the Navy's long-range aircraft. Its many sensors include radar, MAD, FLIR (forward-looking infrared), sonobuoys and electronic surveillance equipment capable of tracking submarines while remaining covert. Therefore, the P-3C is an ideal platform for countering the open ocean submarine-launched ballistic missile threat. Carrying a crew of 12, the *Orion* can fly missions in excess of 12 hours. VX-1 is currently using the P-3C to test and evaluate new types of sonobuoys, the global positioning system (the satellite-directed navigation system) and other improvements to P-3 hardware and software.

The carrier-based S-3A *Viking* provides medium-range ASW protection for the carrier battle group. Using electronic surveillance equipment, radar, FLIR, MAD and sonobuoys, the S-3A can search, detect, classify, localize and, if necessary, destroy any submerged threats. The S-3A underwent its initial operational evaluation at VX-1, which is currently testing its weapons system, avionics and software.

The carrier-based SH-3H *Sea King* provides close-in ASW protection for the carrier task force. In addition to MAD and sonobuoys, the SH-3H has an active dipping sonar transducer. After the helo has entered a hover, the transducer is lowered into the water and the crew can obtain range and bearing information on the submerged target. The *Sea King,* with its dipping sonar, provides one of the most rapid and effective means of localizing a submerged submarine which may be dangerously close to the carrier. Besides providing ASW protection for the task force, it performs utility and search and rescue functions. VX-1 is currently conducting follow-on test and evaluation of the sonar data computer, which will increase the aircrew's ability to process data from passive sonobuoys on board the helicopter.

The SH-2F *Seasprite* is the Navy's small ship ASW aircraft. It is the first generation of the Navy's light airborne multipurpose system known as LAMPS MK I. Deploying from destroyers and fast frigates, the *Seasprite* extends the sensor range and weapons delivery capabilities of its parent ship. VX-1 is conducting test and evaluation of the SH-2F avionics improvement program, which will better its navigation, data link and radar systems.

LAMPS MK III uses the Navy's brand new SH-60B *Seahawk* helicopter, which had its operational evaluation by VX-1 in 1981-82. The SH-60B will deploy on *Spruance*-class destroyers, *Perry*-class frigates and *Ticonderoga*-class cruisers. LAMPS MK III is a sophisticated weapons system which integrates ship and air sensors to enhance the system's performance.

Still another VX-1 mission is its role as model manager for all ASW tactical publications. The squadron is responsible for developing, updating and keeping the fleet informed of new ASW tactics and procedures.

VX-1 is a globe-trotting squadron. The *Pioneers* routinely deploy to Bermuda; Keflavik, Iceland; the Mediterranean; Barbers Point, Hawaii; and Cubi Point, Philippines. Their helicopters fly in the Bahamas and Nova Scotia, Canada. Four thousand hours worth of flying annually go into carrying out their mission.

In its inventory, VX-1 counts significant assets of buildings and aircraft, not to mention personnel. The squadron has approximately 80 U.S. Navy officers, one Canadian and two British liaison/exchange officers, over 300 enlisted personnel and several civilian employees. Officer personnel is a mix of those with recent fleet experience and those with postgraduate education in such areas as computers, underwater acoustics and aeronautical engineering. Maintenance personnel have the talents and skills typical of those in operational fleet squadrons.

Air Test and Evaluation Squadron One travels the world over to carry out its mission of establishing and maintaining an advantage over any potential adversary. It is the final guarantor of quality airborne ASW systems designed for the fleet. ■

Above, a P-3 Orion, in the midst of the other VX-1 aircraft, awaits maintenance. Opposite page, two S-3 Vikings bearing the distinctive VX-1 tail markings fly by NAS Patuxent River.

Learn to Test

By Terry C. Treadwell
United Kingdom Crown Photos

Whether you are a U.S. Naval Aviator or a British Royal Air Force pilot, you fly your aircraft to the limits. But it is the test pilot who takes the controls first and determines how far you can go with your flying machine. Being personally responsible for checking out and establishing the operating limitations of the newest front-line aircraft surely is one of the most rewarding ways to spend time in the cockpit, next to operational flying. It requires special skills, knowledge and courage no matter which side of the Atlantic you happen to be on.

England's Empire Test Pilot School (ETPS) has been turning out test pilots for 40 years and, although the aircraft and instructors have changed, the standard of excellence, as the mission demands, has remained constant.

The school got an early start in the business of creating formal training for test pilots. Established in 1943 at Boscombe Down, Wiltshire, England, it was first known as the Test Pilot Training Flight and was then redesignated the Empire Test Pilot School one year later. A move to R.A.F. Cranfield in 1945 was followed by another to the Royal Aircraft Establishment in Farnborough in 1947, where the school remained for over 20 years. However, in 1968 it returned to Boscombe Down because of restrictions imposed on test flying.

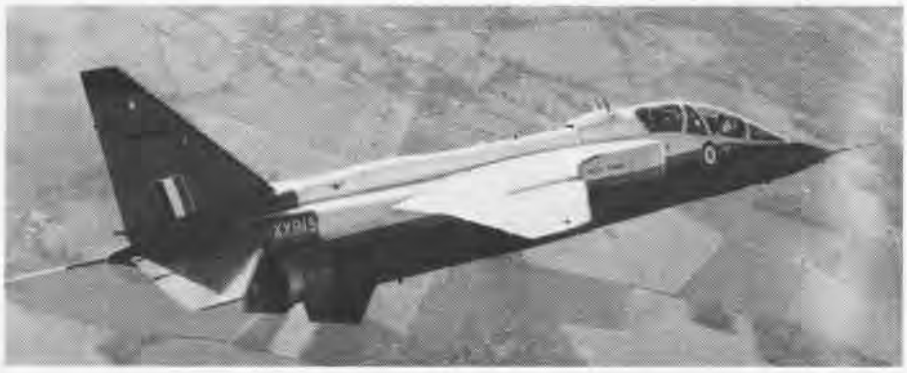
Currently under the command of Wing Commander Robin Hargreaves, RAF, the school not only trains British test pilots but also students from Commonwealth countries and other friendly nations. Students come from the United States on an exchange student and instructor basis. At present, Lieutenant Commander Keith Crawford, USN, is in his final year of a three-year tour as an instructor.

The school's motto *Learn to Test, Test to Learn* epitomizes the school's goals – training test pilots to evaluate aircraft and equipment. The learning and the testing never stop.

But what about the caliber of the pilot who belongs to this special breed? Each applicant undergoes a rigorous selection process culminating in an interview with a board made up of Ministry of Defence officials from test establishments and representatives from ETPS. To be eligible, the pilot must have an outstanding flying record; a recent operational tour; not less than 750 first pilot hours and current flying experience; and a strong knowledge of mathematics and mechanics and principles of flight. The applicant must also be not more than 32 years old, with not less than four years to serve from the start of the course, and, of course, be physically and medically qualified. For the flight test engineers (flight officers) section, the requirements include high grades in an appropriate academic discipline and a minimum of one year's experience in full-scale flight test work.

Other countries are invited by the Ministry of Defence to send pilots to ETPS for training. Each country selects its candidates and every care is taken to ensure that only the best are enrolled.

The ten-and-one-half-month course is divided into ground and flying training. During the flying phase, the student accrues 120 hours of flight time, four of which are at night, encompassing the school's entire fleet of aircraft, fixed and rotary-wing. The student in the fixed-wing course is introduced to the basic flying characteristics of rotary-wing aircraft and, conversely, each rotary-wing student is given



Jaguar

Hawk

Test to Learn

demonstrations in fixed-wing testing.

The school's fixed-wing aircraft include a *Basset, Hawk,* two-seat *Lightning,* two-seat *Hunter,* two-seat *Jaguar,* jet *Provost, Andover* and an *Argosy.* In the rotary-wing fleet are a *Scout, Lynx, Wessex 3, Gazelle* and a *Sea King.*

The *Basset* is probably the most valuable teaching tool at the school. It is equipped with an analogue computer and autopilot actuators that can simulate a wide variety of stability and control characteristics. Therefore, the theory discussed in ground school can be demonstrated in the cockpit of the *Basset.*

Students at ETPS are divided into small groups, while at other test pilot schools there are 20 to 25 students in a class. The course consists of three terms, and each term's syllabus is further divided into smaller segments. The first three weeks are spent in ground school, reviewing basic theory and preparation for flying. The students are then divided into "syndicates" — or groups — which include a flight test engineer who acts as an observer for the test flying exercises. Syndicates are changed each term so that students will have the opportunity to learn from different instructors.

Test flying exercises fall into three categories: system evaluation, handling assessments and performance testing. The instructors conduct a collective briefing for each exercise, while syndicate instructors advise during preflight planning and supervise their students during the exercises.

The student submits a report to either his instructor or specialist instructor within 10 days of completing his test flying exercise. The student flight test engineer submits his report, based partly on his own observations and partly on discussions with the student test pilots in his syndicate. The reports can be either written or verbal. After they have been assessed and corrected, the reports are discussed by both students and instructors, which gives the students practice in expression and committee work.

The student is appraised continuously throughout the course for his flying ability, academic progress, aptitude for test flying, report writing and personal qualities. The flight test engineer is appraised in much the same way, except for flying ability.

During one recent no-punches-pulled debriefing after the completion of an exercise, it was obvious the pilots had enjoyed the challenge. Although the discussion was informal, the students never failed to show the respect they had for the instructors and never lost sight of their objectives — to fly accurately, observe critically and report objectively. Using slides and models whenever necessary, they gave their reports which the instructors then critiqued. The manner in which the discussion was conducted pointed up the necessity for a test pilot to be able to communicate well. Very often some of the test team will consist of nonflying engineers who must understand the problems that need correcting.

Thirteen days of the course are set aside for visits to the aircraft industry and major experimental establishments. The visits have three objectives: to broaden the students' knowledge of the aircraft industry; to meet designers, development engineers and production personnel; and to allow the various firms to demonstrate their current operations.

At the end of the course, each student has to test fly an aircraft that is not one of the school's fleet and which the student has not flown before. The aircraft is borrowed from a Ministry of Defence unit and checked out by the instructor before the student makes his report on the test flight.

Many of the American astronauts were test pilots before they joined NASA'S space program and two of them, Bill Pogue (*Skylab 3*) and Alfred M. Worden (*Apollo 15*), were graduates of ETPS.

With its emphasis on modern technology and standards of excellence, the Empire Test Pilot School is a front-runner in advanced aviation training. Its expanded curriculum recognizes that teamwork is fundamental to any successful test and evaluation program. ■

UP, UP, but not necessarily away!

By G. Duane Powers and Mickey Strang

The United States Navy has intermittently used lighter-than-air ships – from balloons for reconnaissance flights off *Fanny*, the Civil War floating platform "aircraft carrier," to WW II blimps for submarine patrol. However, at the Naval Weapons Center (NWC), China Lake, Calif., the tethered balloon has become a regular test bed for weapons research and development projects.

The clear Mojave Desert sky above this giant base, about 155 miles north of Los Angeles, is ideal for flying all types of aircraft, both powered flight and sailplanes which ride the Sierra Wave (certain wind conditions in the mountains that produce strong updrafts and downdrafts).

The clear air is important for missile and component testing over the Center's instrumented test ranges. Both tethered hot air and helium balloons provide a stable test platform far superior to that of an aircraft since balloons can be emplaced where they are needed and kept at that location and altitude for as long as needed. Equally important, they do not create air turbulence which might affect test results. There are no metal parts, which allows them to be used for radio frequency testing with no reflectance or interference.

Ed Yost, who explored hot air balloon systems under a contract with the Office of Naval Research, introduced the balloon at the China Lake base (then the Naval Ordnance Test Station) in the early 1960s, demonstrating its capabilities to engineers and managers of weapons programs.

Yost, an engineer and ex-Army pilot, had been working with high-altitude research balloons since the early 1950s under contract with the Office of Naval Research. His interest in balloons led him to look for better ways to provide hot air for the balloons than burning straw or other materials in fire pits in the gondola under the fabric envelope.

He eventually solved the problem by assembling a propane-burning system that generated enough BTUs to produce the massive amounts of hot air required. Along with the air-heating system, he also used modern materials like rip-stop nylon and nomex for a sturdy yet lightweight envelope.

This first practical, modern hot air balloon was brought to China Lake on the invitation of a friend of Yost, Jim Craig, who was an engineer. Craig's off-duty hobby of hot air ballooning earned him the national hot air balloon championship in 1964 and 1965. He was also the Navy's premier hot air balloon pilot.

Craig thought that a hot air balloon in either free flight or tethered flight would be ideal as an NWC test platform. After Yost's demonstration, Navy managers agreed and the first of China Lake's balloons was ordered.

In free flight, the hot air balloon would move slowly with a minimum of disruption of air. It could also be held in one spot at the end of its 5,000-foot tether and be raised or lowered by the pilot adjusting the heat. It could be quickly inflated whenever weather conditions were appropriate (low winds of not more than seven miles per hour). At that time, the cost of the propane needed was a mere $1.75 for each hour of flight.

When the balloon was acquired and put to use by early 1964, other benefits also became obvious. A hot air balloon is simple to repair and maintain. It is easy to store because

the envelope folds flat and can be stuffed into its gondola, which can then be put into the back of a pickup truck.

Pilot training, too, was simple and inexpensive — and fun. Several of China Lake's senior scientists and engineers became licensed balloon pilots in order to fly their own project flights. They found that they enjoyed ballooning enough to later fly on their own time as a hobby.

The Navy's first hot air balloon measured 50 feet in diameter and 80 feet in length when fully inflated with 62,000 cubic feet of hot air. Craig piloted the balloon more than 50 miles nonstop and took it to an altitude of over 20,000 feet. But the majority of the test work was done with the balloon at 3,500 feet or less, tethered over one spot.

The balloon had a climb rate of about 500 feet per minute and, even if all the hot air were suddenly to be spilled (a virtual impossibility), it would still descend at about the same rate that a parachute drops.

This first balloon was made of rip-stop, acrylic-coated nylon, a considerably heavier fabric than that now used with China Lake's red and white striped or bright green balloons.

With advances in fabric technology, despite the increased size of the Center's sixth and latest balloon system (67 feet in diameter and 110 feet long when inflated with 155,000 cubic feet of hot air), it can still be readily folded up into the gondola measuring 46 inches by 66 inches, and both can be carried in a pickup truck bed. Currently, the Center's hot air balloon inventory contains two balloons with several gondolas for different purposes "so that we can put together exactly what we need for any particular test," according to Powers, the Center's chief balloon pilot.

Although the hot air balloon is highly visible after dark, it has been used only in daylight for test work and flights have been limited to about three hours. The operating cost has risen but still is only about $10 an hour for propane fuel.

Practical as the hot air balloons have proved to be, they do have limitations in life, flight duration and maximum allowable winds that restrict missions despite urgent project schedules. The solution to these problems was a helium kite balloon purchased by NWC in the mid-1970s.

This fat, yellow-and white, sausage-shaped object is a newer version of the barrage balloon that appeared over England during WW II. Designed primarily for tethered flight, it can also be flown as a free balloon. A balloonist who holds a commercial license is in the gondola at all times when the balloon is used for test work, in the event it breaks loose.

The tethered helium balloon has a number of advantages over its hot air counterpart. First, it provides a much more stable platform for airborne instrumentation since it remains within 20 to 40 feet of the desired location and the tight tether line keeps the helium balloon under control. Its aerodynamic shape causes it to weather-vane into the wind and provides additional lift.

Second, helium has a greater lifting capability than hot air. Without the gondola, the helium balloon can lift more than a ton, an increase in capacity over the hot air balloon, especially when desert temperatures soar in spring and summer. The balloon itself is 106 feet long and 40 feet in diameter.

Third, the duration of flights is markedly longer. Hot air balloon flight is fuel-limited while the helium balloon is not.

And, fourth, the helium balloon can fly and work in winds up to 40 knots and survive in winds up to 50 knots in the field, while any wind over 7 to 8 knots grounds the hot air balloon. Tethered at its home on NWC's Charley Range, the helium balloon has withstood winds of up to 90 knots without sustaining major damage.

The increased capability of the helium kite balloon quickly paid for its initial cost of $76,000. Since NWC was already a user of industrial helium, filling its 70,000-cubic-foot-envelope was no problem.

The tether for the helium balloon consists of a neoprene-coated cable of kevlar, a man-made fiber of exceptional lightness and strength. The 3/8-inch-thick kevlar cable is rated at 10,000 pounds working load; a steel cable of the same diameter would be considerably heavier. There is more than a mile of tether on the truck even though the balloon usually stays within 2,500 feet of the ground. The tether for the hot air balloon is 1/4-inch nylon with a breaking point of about 900 pounds.

The winches that hold the two balloons in place are surplus equipment. The hot air balloon uses a B-29 target-tow winch, and the helium balloon moves sedately over a British-made barrage balloon WW II-vintage winch.

The helium balloon is slower to unroll and inflate than the hot air balloon. The envelope takes about an hour to unroll with another two hours needed to install hardware such as the nose and valves before it is inflated with helium.

The helium balloon, with its zero g-force, zero vibration and nonradar reflectivity, has been ideal for countermeasure and seeker tests. Among the weapons and components tested have been the *Shrike* and Standard ARM missiles, the *Zuni* rocket, *Hawk* components, and Air Force as well as Army radar systems.

Other federally-funded projects involving either or both types of balloons have ranged from Foggy Cloud (a method of clearing fog from airport runways) to free flights in the hot air balloon which permit archaeologists to find sites of early Indian artifacts in the rugged and less accessible parts of the Navy's extensive desert land holdings.

As more people have become interested in ballooning with the advent of new and better materials, standards for balloon licenses have tightened. Even though nearly all of the Center's balloon work is done with tethered balloons, each of the pilots must be qualified for free flight in case a balloon escapes.

Licensing requires passing a written FAA test as well as spending at least 35 hours in hot air and helium balloons, with a minimum of six hours of instruction and a minimum of two solo flights. Powers, who has served as the Center's only balloon pilot for the past several years and is also a qualified instructor, has been teaching additional civilian personnel how to fly.

Since the first balloon was sent aloft by the Montgolfier brothers in France 200 years ago, balloons have proven that even in today's 20th century world of complex technology, there is an important need they can fill. And so, this latter-day helium balloon descendant of that 18th century hot air balloon will continue to demonstrate its unique suitability for many of the Navy's research and development projects. ■

Left, six portraits of newest Hall of Honor enshrinees line podium before guest speaker VAdm. R. F. Schoultz. Above, Mrs. P. B. Folsom, daughter of first Coast Guard Aviator, cuts ribbon at Coast Guard exhibit, assisted by Coast Guard Commandant Adm. James S. Gracey.

Hall of Honor Gets Six More

Six names of past aviation leaders were added to the Naval Aviation Hall of Honor on May 12 at the Naval Aviation Museum, NAS Pensacola, Fla. The festivities began the day before with the opening of two new exhibits at the museum devoted to U.S. Coast Guard Aviation and Navy lighter-than-air (LTA) operations.

Those enshrined include one who was the first Coast Guard Aviator, a Marine Corps pilot who became one of the leaders of amphibious warfare in WW II, a civilian pilot who built aircraft for military use, and three admirals who were leaders in combat or in LTA development.

Highlighted by a speech by Vice Admiral Robert F. "Dutch" Schoultz, Deputy Chief of Naval Operations (Air Warfare), the ceremony honored:

General Roy S. Geiger, the fifth Marine Corps officer designated as a Naval Aviator, Guadalcanal aircraft wing commander, and an amphibious warfare leader during WW II island campaigns.

Glenn L. Martin, a pioneer civilian aviator, inventor and industrialist, and founder of the Glenn L. Martin Company, producer of many naval aircraft.

Admiral Marc A. Mitscher, the first commanding officer of the carrier USS *Hornet,* and an outstanding combat leader in carriers during WW II.

Admiral Arthur W. Radford, the first naval officer to serve as Chairman, Joint Chiefs of Staff, director of naval air training at the start of WW II, and a combat carrier division commander.

Vice Admiral Charles E. Rosendahl, leader and proponent of LTA development and operations in the Navy.

Commander Elmer F. Stone, the first Coast Guard Aviator, and one of the pilots of the NC-4 flying boat on the first Atlantic crossing by air in 1919.

These six brought the total to 18 men enshrined in the Naval Aviation Hall of Honor.

VAdm. Schoultz paid tribute, individually and collectively, to the six men who were enshrined. "One of the most impressive qualities about those in the Hall of Honor is that they were not afraid of change," he said. "I would go so far as to say they thrived on it. They realized the great potential of technology and the innovative capacity of our great nation. Like the family of man itself, Naval Aviation has survived and prospered because our predecessors learned to adapt to change. They had great confidence in their chosen profession, in themselves and in the future, and they readily accepted every challenge."

At the grand opening of the Coast Guard and LTA exhibits on the day before the enshrinement ceremony, a gathering of 1,300 viewed a new film, "Wings of Gold," which was produced by the Naval Aviation Museum Foundation, Inc. Shown simultaneously on a dozen large television screens spread around the main floor of the museum, the 30-minute film, first of a planned 13-segment series, portrays the development of flying machines through the space shuttles of today. Interspersed throughout the film are interviews with Navy WW I ace David Ingalls, WW II ace Joe Foss, Admiral A. M. Pride, Admiral Schoultz, and Astronaut Bob Crippen, a former Naval Aviator.

Former naval officer and Commander in Chief Gerald Ford made the introduction in the film, while narration was provided by Ed McMahon, *Tonight Show* announcer and former Marine Corps pilot.

The Naval Aviation Museum Foundation, Inc., was represented at the exhibit openings and at the enshrinement ceremony by Admiral M. F. Weisner, USN(Ret.), and by Vice Admiral M. W. Cagle, USN(Ret.), Foundation President and Vice President, respectively. They told of plans to expand the museum in the future, citing the need for space for many more exhibits of special chapters of Naval Aviation history. Future exhibits will depict aviation medicine, aerial photography, electronic warfare and antisubmarine warfare, to mention a few.

VAdm. Schoultz reminded his audience that the museum ". . . is a living museum and because of this its work can never be completed. It deserves and must have all our support if it is to continue to tell the story of Naval Aviation as it should be told."

Super Stallion Joins the Fleet

The first CH-53E *Super Stallion* helicopter has joined the Navy. The three-engine helicopter officially received by Helicopter Mine Countermeasures Squadron 12 on March 11, is the first of five *Super Stallions* to be assigned to the training squadron for fleet pilots and maintenance personnel.

The CH-53E Super Stallion in flight.

The CH-53E will initially be used to augment carrier onboard delivery (COD) and vertical onboard delivery (VOD) services for underway non-aviation ships. The *Super Stallion* is capable of delivering 16 tons of cargo, making it ideal for accomplishing these missions.

Helicopter Combat Support Squadron Four (HC-4), the first operational Navy CH-53E squadron, is scheduled to be established at NAS Sigonella, Sicily, by mid-1983. HM-12 is hosting HC-4's personnel and aircraft until the unit's deployment to the Mediterranean. It will maintain its own VOD sea duty component of two CH-53Es to support the Second Fleet and also conduct training for all replacement CH-53E maintenance personnel and aircrews in the Navy.

Capt. Van Goodloe is HM-12's commanding officer.

Stingers Turn in Corsairs for Hornets

Commander William Pickavance, skipper of NAS Lemoore-based Attack Squadron 113, closed a chapter in the *Stingers'* 25-year history on March 23, by flying the squadron's last remaining A-7E *Corsair.*

"It's hard to give up," Cdr. Pickavance said. "I started flying A-7s in 1971 when now Rear Admiral James Busey was C.O. of VA-125. I have 2,500 hours in the A-7, including several combat missions. It took me to Vietnam and brought me back."

On March 25, the *Stingers* literally marched across the street to VFA-125 to begin their transition to the F/A-18 *Hornet,* which will be the seventh aircraft type to bear the squadron's nickname.

The unit was first commissioned as a fighter squadron (VF) in 1948 flying the F4U *Corsair.* During the mid-1950s it became an attack squadron (VA) and transitioned to the AD-1 *Skyraider.* Now it is scheduled to become Fighter/Attack Squadron 113.

"I like what I see in the *Hornet,*" said Cdr. Pickavance. "For years we [attack squadrons] needed protection to defend ourselves and now we have it."

The *Stingers* turned the last of their A-7s over to VA-25 and VA-122. They expect to have their first four *Hornets* by November and all 12 planes by early 1984. VFA-113 is scheduled to make its first operational deployment in 1985.

Chuting Stars

PH2 Jay McIntosh

The Navy Parachute Teams, "Chuting Stars" and "Leap Frogs," joined forces on January 24 in a jump out of an Air Force C-130 to form a record-setting, 25-man diamond over Coolidge, Ariz. Both teams were there last winter, training for the upcoming season. They set the previous record, a 16-member formation, when they made a jump over Puerto Rico in 1980.

Vice Admiral William I. Martin

Vice Admiral William I. "Bill" Martin, USN(Ret.), believes the old adage that if a man lives long enough his past will catch up with him. Well, it appears he's lived long enough for this to happen to him, because he is to be honored at two upcoming events for the contributions he has made to Naval Aviation.

At the 27th annual symposium of The Society of Experimental Test Pilots, September 28-October 1, Martin will be presented as one of the Society's new Honorary Fellows, an honor given only to individuals eminent in the aerospace field. He is being recognized for his WW II combat service at sea during which he developed, tested and implemented the U.S. Navy's first aviation doctrine and night carrier-based aircraft weapons system for around-the-clock search and low-level bombing in all-weather conditions, and for his service as experimental test pilot and director of the Tactical Test Division at the Naval Air Test Center, Patuxent River, Md.

On October 8, VAdm. Martin will be inducted into the USS Yorktown CV-10 Association's Carrier Aviation Hall of Fame in recognition of the decisive role he played in early carrier aviation. The first combat demonstration of night radar-guided bombing during the attack on Japanese strongholds on Truk transformed into reality the theory that had been promoted by Martin for many months. For his accomplishments in pioneering night carrier operations through three years of combat, he was awarded the Distinguished Service Medal, the youngest and most junior recipient of the award at that time.

Since his retirement from the Navy in 1971, Bill Martin has continued his interest in advancing new concepts of instrument and all-weather flying, as he did during his 37 years of active service.

Rescues

Last February, NAS Oceana was asked by the Coast Guard 5th District to aid in rescuing survivors of the collier *Marine Electric,* which had capsized in heavy seas 30 miles east of Chincoteague, Va. Pilot Lt.Cdr. B. Sontag organized the SAR team: Ltjg. K. Lynch, copilot; AMS2 S. Scarborough, first crewman; AMS2 J. McCann, swimmer; and HM1 W. Jackson, corpsman. They found the two life rafts empty and victims in the turbulent waters. AMS2 McCann was lowered from the H-3 to work with the Coast Guard rescue helicopter. While the Oceana crew searched for survivors, he succeeded in getting five victims hoisted into the Coast Guard helicopter before he himself had to be lifted out of the icy water. Through the efforts of the Oceana team, Coast Guard air and sea units, and other ships in the area, three survivors and the bodies of 24 crewmen were recovered.

Honing the Edge

Lt. Andy Mohler of VAW-121, has recently been selected to attend the Naval Test Pilot School (TPS) at NAS Patuxent River, Md. He will be one of the few E-2C NFOs who have attended TPS.

Anniversaries

The following units celebrated anniversaries recently: ComNavAirLant and NAS Patuxent River, 40 years; HC-1, 35; HMM-161, 32; VS-30, 30; HMM-764, 25; and NARU Alameda, 22.

Establishment

HSL-41 was established in January 1983 with Cdr. Michael B. O'Connor, Jr., as its first commanding officer, and with the new Sikorsky SH-60B *Seahawk* as its aircraft. The squadron's primary job is to train pilots, aircrew and maintenance personnel to staff the first two *Seahawk* fleet squadrons scheduled for establishment in 1984.

Awards

The 1982 CinCLantFlt Golden Anchor Award winners from the Naval Aviation community are: USS *John F. Kennedy*; VP-8; VF-31; VC-10; NAS Cecil Field, Fla.; and NAF Lajes, Azores. The Golden Anchor Award was established in 1970 to recognize excellence in career motivation programs. The Chief of Naval Material Golden Anchor Award was presented, for the first time, to NAEC Lakehurst, N.J., for FY 82. NAEC Lakehurst also received the 1982 Secretary of the Navy Environmental Protection Award.

VT-28's Lt. R. C. Shuller was selected as Instructor of the Year for 1982, during which he flew 628 hours. He has also accumulated over 1,000 accident-free flight hours in the T-44A.

The Silver Falcon Award was recently presented by the Association of Naval Aviation to Captain Billie Spencer of VTU-9494, NARU North Island, as the senior Reserve Naval Aviator.

Firsts

VR-55's 30,000th accident-free flight hour was achieved recently by the first female crew to fly a C-9B *Skytrain*: Lt. Jean M. Rummel, pilot; Lt. Patricia A. Welling, copilot; AE2 Caryl A. Hathaway, flight attendant; AD2 Rebecca H. Jacoby, loadmaster; AD2 Michele G. Pawlicki, crew chief; and AE2 Virginia A. Hall, flight attendant. The crew flew from the reserve squadron's home base at NAS Alameda to NAS Lemoore to pick up military personnel and return to Alameda.

Another milestone was recorded last March when an all-female flight crew from VRC-30 flew a carrier onboard delivery mission in a C-1A *Trader* to *Ranger* (CV-61), off California. Commanded by Lt. Elizabeth Toedt, the crew included Ltjg. Cheryl Martin, AD3 Gina Greterman and ADAN Robin Banks. This was the first time an all-female crew made an operational mission that terminated in a carrier arrested landing.

Change of Command

ASWOC 1080: Cdr. Ronald K. Meeker relieved Cdr. Frederick R. Chester.

ASWOC 1180: Cdr. Robert A. Gall relieved Cdr. Dennis L. Horn.

CVW-17: Cdr. James C. Roy relieved Cdr. Rexford E. Wolf.

HS-74: Cdr. Theodore V. Drozdz relieved Cdr. John T. Williams.

HSL-35: Cdr. Douglas H. Wassmer relieved Cdr. Michael J. Coumatos.

H&MS-16: Lt.Col. Jon M. Walters relieved Lt.Col. James M. Chapin.

MABS-31: Maj. George A. Zahn, Jr., relieved Maj. Gray Hutchinson.

MAG-29: Col. Ross S. Plasterer relieved Col. William H. Huffcut II.

NAS-0194: Capt. Gerald A. Smith relieved Capt. James Strickland.

NavAirLant 0293: Capt. Ferdinand A. Riddle relieved Capt. Harvey J. Lynch.

NARC Moffett Field: Cdr. Johannes Wytsma relieved Cdr. David A. Willard.

USS *Guadalcanal* (LPH-7): Capt. Paul W. Parcells relieved Capt. Thomas A. Mercer.

VA-34: Cdr. Garth A. Van Sickle relieved Cdr. Ben L. Liner.

VA-37: Cdr. Robert L. Ramsay III relieved Cdr. Leroy A. Farr.

VA-56: Cdr. G. S. McDaniel relieved Cdr. E. E. Shipe III.

VA-83: Cdr. William E. Franson relieved Cdr. Douglas J. Bradt.

VA-176: Cdr. Michael P. Currie relieved Cdr. Timothy R. Beard.

VC-8: Cdr. William C. Mackey III relieved Cdr. Frederick R. Purrington.

VF-21: Cdr. Roger P. Boennighausen relieved Cdr. Robert N. Tracy.

VF-301: Cdr. J. T. Hooks, Jr., relieved Cdr. T. F. Leonard.

VFP-306: Cdr. G. W. Riese relieved Cdr. L. E. Johnson, Jr.

VMFA-312: Lt.Col. Harry E. Lee III relieved Lt.Col. Randy H. Brinkley.

VP-9: Cdr. James C. Wyatt III relieved Cdr. Robert J. Quinn, Jr.

VP-40: Cdr. G. W. Dye, Jr., relieved Cdr. E. S. Wilson.

VP-47: Cdr. Stanley M. Brown III relieved Cdr. Bruce W. Barker.

VP-67: Cdr. David F. John relieved Cdr. Myron G. Hamm.

VP-93: Cdr. Robert W. Davis relieved Cdr. James T. Hendricks.

VS-24: Cdr. Richard J. Uhrie relieved Cdr. Stoughton Sterling III.

VS-30: Cdr. Dean Turner relieved Cdr. Richard L. Hulse.

The following candidates were recently selected for the LDO Aviator Program:

ET1(SS) G. W. Cherry, *USS Canopus*.
AT1 R. H. Forrest, NS Roosevelt Roads.
AC2 W. T. Hampel, NATTC Memphis.
AD2 T. R. Hinton, VT-27, NAS Corpus Christi.
AC1 D. J. Langford, NAS Kingsville.
AE1 S. P. Richards, VX-4, Point Mugu.
OS1 W. A. Rossi, FltComBaTraCenPac, San Diego.
AT1 S. A. Schulz, NAF Misawa, Japan.
AG1 C. J. Strickland, NavOceanComFac, NAS Jacksonville.
AW2 J. K. Tool, HSL-1, NAS Jacksonville.
AQ1 J. B. Cochran, VA-174, NAS Cecil Field.
ADC M. K. Gibson, VX-1, NAS Patuxent River.
ET1 L. E. Hehr, ServScolComDet, Chanute AFB.
CTM1 B. M. Huotari, NATTC Corry Station.
AD1 Richard A. Rees, VP-56, NAS Jacksonville.
AQ2 A. W. Robinson, NAS Lemoore.
AMSC H. R. Sanders, HSL-37, NAS Barbers Point.
AQ1 A. C. Stephens, NAS Miramar.
HM2 J. M. Thornhill, NRC Johnstown.

awards

Noel Davis Trophy

The Naval Air Reserve's top squadrons in the 1981-82 Noel Davis Trophy competition, based on mobilization readiness, have been named by the Chief of Naval Reserve. The winners are VF-202, NAS Dallas; VA-205, NAS Atlanta; VAQ-309, NAS Whidbey Island; VP-68, NAS Patuxent River; VR-58, NAS Jacksonville; and HAL-5, NAS Point Mugu.

The award memorializes Lt.Cdr. Noel Davis who advanced the interest of Naval Reserve Aviation in the early twenties. He was killed in 1927 when his plane crashed at Langley Field, Va., where it was being tested prior to attempting a nonstop New York to Paris flight.

CNO Safety Awards

The following are the winners of the 1982 CNO Aviation Safety Awards:

ComNavAirLant: VAs 105 and 85, VF-32, VS-22, VP-11, VAW-122, VRC-40, VC-10, HS-15, HSL-30 and HM-14.

ComNavAirPac: VAs 113 and 145, VF-1, VAQ-137, VS-21, VAW-116, VP-31, VS-41, VRC-50, VXE-6, HS-10, HSL-33 and HC-3.

CNATra: VTs 24, 23, 26 and 10 and HT-18.

ComNavAirSysCom: NATC Patuxent River, Md.

ComNavAirResFor: VA-204, VF-301, VP-68, VR-57, VAW-78 and HS-85.

CG FMFLant: HMM-263, HMH-461, VMFA-451 and VMAQ-2.

CG FMFPac: VMA(AW)s 242 and 121, HMM-163, HMT-301 and HMH-463.

CG 4th MAW: HMA-773 and VMA-124.

The 1982 CNO Readiness Through Safety Awards went to Commander Naval Air Force, U.S. Pacific Fleet and Chief of Naval Reserve as the major commands that contributed the most towards readiness, high morale and economy of operations through safety. Recipients of this award also receive the Admiral James S. Russell Naval Aviation Flight Safety Award, which will be shared by the 1982 co-winners.

SecNav Energy Conservation Awards

The following aviation units are the FY 82 winners of the Secretary of the Navy Energy Conservation Awards: NAS Whiting Field, Fla., large shore activity; USS *America* (CV-66), large ship; and VP-69, aviation squadron.

Recipients are commended for their efforts to reduce energy costs and to promote responsible energy management. Each winner is authorized to fly the SecNav energy flag for one year.

Conway Trophy

Naval Air Facility, Washington, D.C. was chosen as the winner of the Naval Reserve's Edwin Francis Conway Trophy for FY 81-82. In a formal ceremony at NAF, RAdm. Robert F. Dunn, CNavRes, presented the trophy to the air facility's commanding officer, Capt. Ronald E. Haley. RAdm. Dunn said, "NAF Washington, D.C. represented the best in the Naval Air Reserve, showing superior morale and readiness" from a field of 15 competitive sites nationwide.

Established in 1936, the Conway Trophy recognizes the reserve naval air station, naval air facility or naval air reserve unit judged to be the most effective in the performance of its primary mission. The award was first presented to the Navy by personal friends of Lt. Conway, who was commanding officer of Naval Reserve Aviation Base, Floyd Bennett Field, N.Y., at the time of his death in a plane crash aboard the base in 1933.

The two-foot-tall silver bowl is awarded biannually and remains with the winner until the next presentation of the award. A miniature replica of the trophy becomes the permanent possession of each winner.

letters

Moorer on Missiles

I always enjoy reading *Naval Aviation News*. Your August 1982 patrol issue, in particular, contains many interesting articles, not the least of which is one concerning the airborne missile. Accepting the possible charge that I am blowing my own horn, I would like to point out to you that the *Harpoon* does not trace its beginnings to the late sixties when the Egyptians demonstrated the potential of antiship missiles to all the world by sinking an Israeli destroyer. While Commander of the Pacific Fleet three years before the Israeli-Arab war of 1967, I wrote a letter to the Chief of Naval Operations recommending that we develop as rapidly as possible an air-to-surface missile. This would provide our patrol planes with a standoff capability to destroy surface ships, since during wartime the extended surveillance inherent in patrol plane operations would invariably bring them in contact with many enemy ships.

Action was slow in getting under way, however, and a year later when I became Commander of the Atlantic Fleet and NATO, I again wrote a letter to Washington recommending action be initiated forthwith. Finally, when I became CNO, I saw to it that we got started on the *Harpoon*. You are quite right in saying that the sinking of the Israeli destroyer was a big help in seeking funds from the Congress to initiate the development, but the operational concept predated the Israeli-Arab war by a few years.

Adm. Thomas H. Moorer, USN(Ret.)
6901 Lupine Lane
McLean, VA 22101

OV-10 Bronco

The May 1982 issue was an excellent tribute to the 70th anniversary of Marine Corps Aviation. I was disappointed to find no mention of the OV-10 *Bronco*. Every tactical aircraft in the Marine Corps inven-

tory was referenced except the OV-10A/D. It seems a shame that this multimission aircraft, capable of performing reconnaissance inserts and medevac missions, escorting and protecting the fastest and most powerful helicopters, making night observations, and designating targets in the most sophisticated manner, should be overlooked.

I'm sure the omission was by accident and that offense was not intended for the hundreds of North American Rockwell employees, commanding officers of MAG-29 (VMO-1), MAG-36 (flight section), MAG-39 (VMO-2), MAG-41 (VMO-4) and let's not forget our Navy personnel on *Saipan* (LHA-2) who helped prove that the OV-10 *Bronco* was not to be omitted from carrier operations.

MSgt. C. R. Dyson, USMC
MAG-15 Maintenance Chief
FPO San Francisco, CA 96603

Ed's note: We certainly did not intentionally overlook the OV-10's vital mission. We invite any reader in the Bronco community to submit an article on the subject, along with some good photos. We would be glad to consider it for publication in a future issue.

MCPO of the Navy

Your statement in "1982, The Year in Review," concerning the Master Chief Petty Officer of the Navy which appeared in *NANews*, February 1983, was incorrect. Excluding our present MCPON, there were two others with aviation backgrounds vice one. The first was AFCM John D. Whittet III, who held the position from April 1971 to September 1975.

ABEC W. R. Hamm
Recreation Services Dept.
Naval Amphibious Base
Coronado, CA 92155

Ed's note: After researching your letter, we found that we're both right. AFCM Whittet changed his rating to Master-at-Arms about mid-tour as MCPON, in 1973.

HC-1 Det 2's Sea Kings

The *Fleet Angels* of HC-1 Det 2 proudly fly the following aged H-3s: BuNos 149695, 9,280 flight hours; 149925, 8,186.4; and 151554, 7,933.4. Can anyone top our old-timers?

Ltjg. K. J. Burke
HC-1 Det 2
USS Midway (CV-41)
FPO San Francisco, CA 96631

Reunions, Conferences, etc.

All former VXN-8 Blue Eagle/ World Traveller officers interested in attending the ninth annual World Traveller Ball at the Cedar Point Officers Club, NAS Patuxent River, Md., on July 8, 1983, write: Lt.Cdr. Larry Corman or Ltjg. Kevin Dopart at VXN-8, NAS Patuxent River, MD 20670, or call (301) 863-4798/4485, autovon 356-4798/4485.

USS Forrestal (CV-59) reunion, July 15-17, 1983, Philadelphia, Pa. Call (215) 755-3677 or write USS Forrestal (CV-59), P.O. Box 59, Philadelphia Naval Shipyard, Philadelphia, PA 19119.

VMFA-323 Death Rattlers reunion, July 29-31, 1983, MCAS El Toro, Calif. Write C.O., Attn: Reunion Committee, VMFA-323, MCAS El Toro, Santa Ana, CA 92709.

USS Norton Sound Association reunion, August 26-28, 1983, Port Hueneme, Calif. For information: Robert Hovestadt, P.O. Box 487, Port Hueneme, CA 93041, (805) 485-6144.

NAS Twin Cities reunion, August 27, 1983, Naval Air Reserve Center, Twin Cities, E. 62nd St. and 31st Ave. S., Minneapolis, Minn. Contact Kirk Johnson, 7325-14th Ave. S., Minneapolis, MN 55423, (612) 866-7194.

Naval Aviator 1963 Pre-Flight Classes 33-36 reunion, September 1983, Pensacola, Fla. For information, write Stu Evans, 26741 Via Alcala, Mission Viejo, CA 92691.

VP-5 Mad Fox reunion, September 3-4, 1983, NAS Jacksonville, Fla. Contact Patron Five Reunion Assn., P.O. Box 2071, Orange Park, FL 32067.

USS Gambier Bay (CVE-73) reunion, September 15-18, 1983, King Henry VIII Hotel, St. Louis, Mo. Contact Tony Potochniak, 1100 Holly Lane, Endicott, NY 13760, (607) 748-3284.

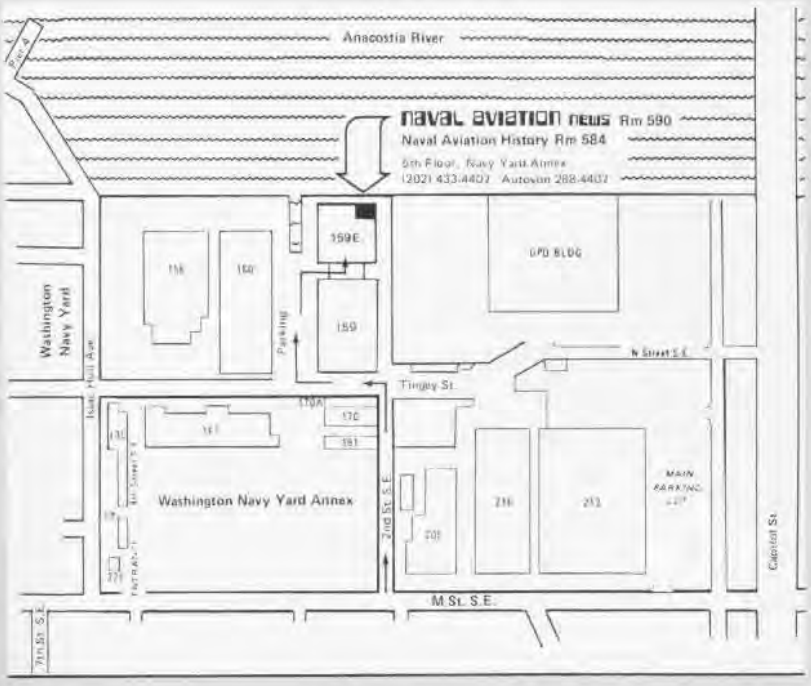
USS Wasp (CV-18) WW II ship's company and air groups reunion, September 16-18, 1983, Boston, Mass. Contact Bob Reilly, P.O. Box 83, Tufts University Branch, Medford, MA 02153.

USS Wasp (CV-7) reunion, September 16-18, 1983, Denver, Colo. For further information, write Mr. Duffy McDonough, 425 S. Michigan, Big Rapids, MI 49307.

USS Independence (CVL-22) WW II reunion, September 22-24, 1983, San Francisco, Calif. Write Lorin W. Smith, 4049 Dry Creek Road, Sacramento, CA 95838.

USS Langley (CV-1/AV-3) reunion, September 23-25, 1983, Horne's Coliseum Inn, 2000 W. Mercury Boulevard, Hampton, Va. 23666. For details, contact Earl Gainer, 184 Beechmont Drive, Newport News, VA 23602, (804) 874-7232.

WE HAVE MOVED




20
8200