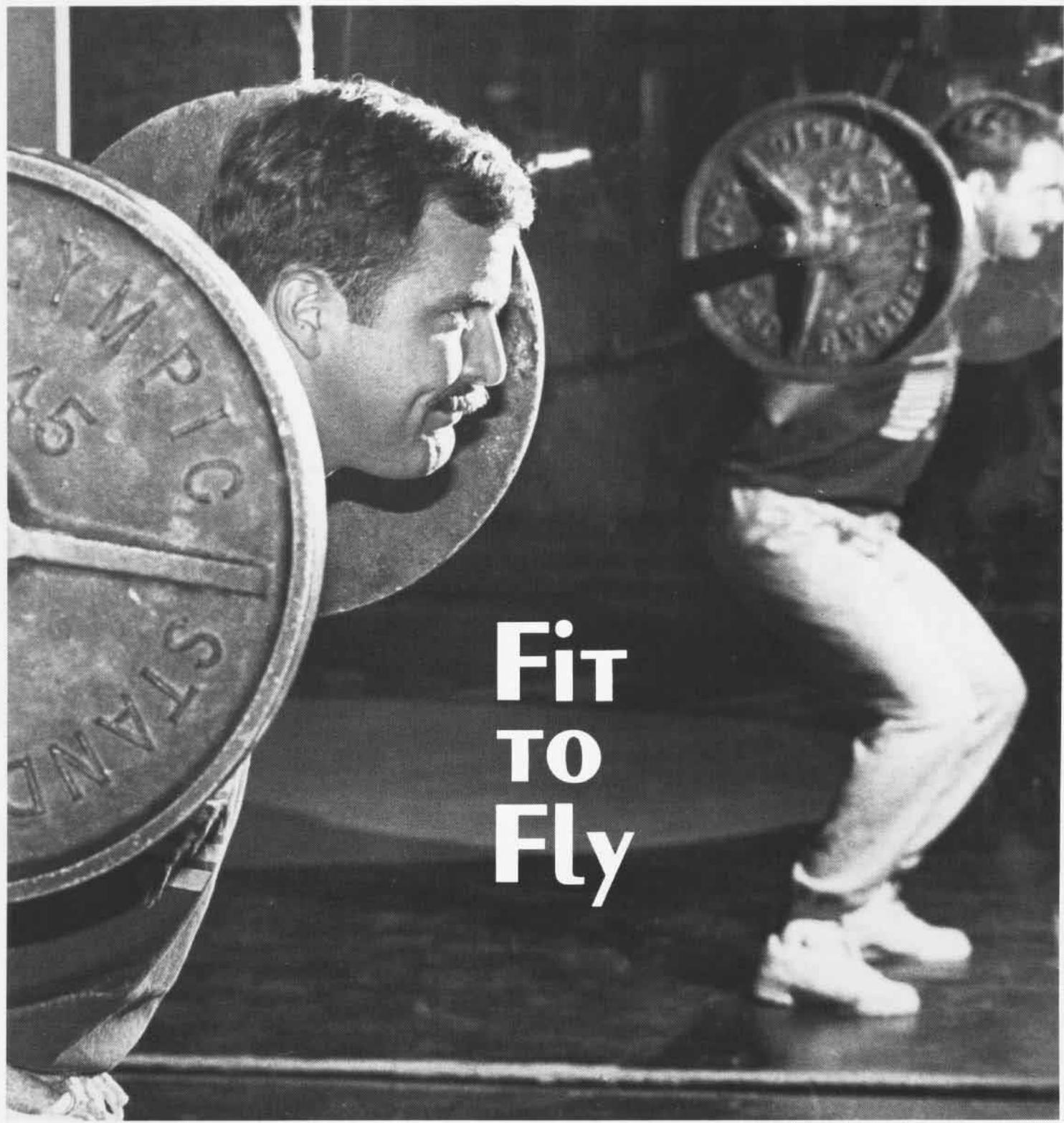


NAVAL AVIATION NEWS



**Fit
TO
Fly**

NAVAL AVIATION NEWS

Oldest U.S. Navy Periodical
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Flagship Publication of Naval Aviation

Vice Admiral Robert F. Dunn Deputy Chief of Naval Operations (Air Warfare)

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In an interview, the new DCNO (Air Warfare), Vice Admiral Robert F. Dunn, discusses the future of Naval Aviation, from people programs and safety to maritime strategy. **Page 4.**



More aviators and aircrew than ever are realizing the importance of physical fitness. The results of recent studies and recommendations on the subjects of physical fitness and good nutrition are examined. **Pages 6 and 8.**



We've already realized the advantages of the "One Navy" concept. Arrival of the F-14 Tomcat at Carrier Air Wings, Reserve 20 and 30 marks another step toward modernizing the reserves. **Page 10.**



Last year, Naval Aviator Maj. Greg Johnson flew coast to coast in his homebuilt Skybolt biplane. He recounts his adventures through 32 hours in the air, and landings at 22 airfields and one pig farm. **Page 16.**



Lt. Cdr. Beth Hubert was a young girl when she watched the first astronauts go into space. Now, at the Naval Air Test Center, she has carefully charted a course to follow in their footsteps. **Page 20.**



Naval Aviator "Max" Brainard passed away three days short of his 100th birthday, but not before telling Capt. Maury Cagle his colorful story of flying for the Navy in France during WW I. **Page 24.**



COVERS—Front, Ltjg. Chris Mather pumps iron at NAS Lemoore, Calif. (PH2 Ted Salois)
Back, an F-14 Tomcat prepares to land aboard USS Forrestal. (PHCS Terry C. Mitchell)

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Thomas Jefferson Awards Go To NANews Editor, Artist

For excellence in print media feature writing and graphic arts, the coveted 1986 DoD Thomas Jefferson Awards went to a *Naval Aviation News* editor, and a contributing artist.

Associate editor JO2 Timothy Christmann earned the distinction of being the Department of Defense's top feature writer for three of his stories published in *NANews*. The stories were: "Technology Transfer: America's Loss, Russia's Gain" (September-October 1985); "Modern Mines For An Aging Stockpile" (September-October 1986); and "Soviet Supercarrier Construction Continues" (November-December 1986). Petty Officer Christmann is well-known for his factual, in-depth and well-written pieces.

Coincidentally, when the Thomas Jefferson Award winners were announced, Petty Officer Christmann was in the process of leaving active duty for a position with a Washington-area defense weekly publication. During his four-year tour with *NANews*, he distinguished himself as a superb writer, photographer, typesetter and layout consultant and his contributions to the magazine during his tour drew praise from many readers.

The first place for published graphic art went to Mr. A. Michael Leahy who is a supervisory congressional affairs specialist in the Congressional and Public Affairs Office at the Naval Air Systems Command, and a frequent contributor to *NANews*. Of the five

watercolors submitted by Mr. Leahy that won him the award, four were published in *NANews*. They were: The Curtiss HS-2L, Marine F4Fs Scrambling, and Loading Up Tank-Killing Rockets on VF-24 F4U-Fs in the May-June 1986 75th Anniversary issue; and the Grenada cover on the November-December 1985 issue.

Mr. Leahy has made numerous contributions to *NANews* in recent years. He is particularly well-known for the watercolor renditions he did of the Grenada operation for the Navy Internal Relations Activity, which are on display at the Navy Combat Art gallery. ■

NANci Use Increases

NANci, *NANews'* electronic "paperless" magazine, has become very popular among those who share an interest in Naval Aviation and modem-equipped personal computers (PCs). Having been on line since September 1986, it has become so popular that we've had to increase its operating hours to 24-hours per day, and make a few other changes.

Beginning on February 15, 1987, NANci's public domain software offerings will be limited to those that increase the productivity of PCs used in the fleet and promote professionalism in the Naval Aviation community. No games will be available for downloading.

Two new menus have been added to NANci to support the Naval Historical Center and Foundation in Washington, D.C., which will raise the total to 14. The menus currently available are:

1. Naval Aviation News Stories
2. Naval Air History Facts/Lists
3. Naval Historical Center News
4. Naval Historical Foundation

5. Navy Opportunities (Officer Recruiting Information)
6. NANci Bulletin Files
7. PC-DOS Utilities/Files
8. Z-DOS System, Software and Files
9. PC-DOS Communications Files
10. Atari 8/16 bit Computer Files
11. Compaq PC Utilities
12. Miscellaneous ASCII Text Files
13. TCOMM Bulletin Board Software
14. Navy Recreation Information, Washington, D.C.

A growing number of squadron personnel are logging on NANci and uploading stories and information directly to the *NANews* editors. NANci's electronic mail feature has proven to be a quick and reliable way to correspond with fleet information sources, and get timely information for *NANews*. The Naval Aviation History staff also receives electronic mail request via NANci.

NANci's services also will be expanding to include support of Naval

Aviation "special interest groups." For example, members of the LAMPS MK III community could establish a special access area within NANci where they could leave messages and ideas to be shared with those given special password access to the group. Only those who have made prior arrangements with NANci's systems operator (SYSOP) would be allowed into that special interest area.

To help users get the maximum benefit of the data base, NANci offers MASTER.LST which is a complete printout of all NANci files, and GOUGE.DOC which contains information to help new users quickly get around NANci.

NANews readers are encouraged to log on NANci and upload stories, anecdotes, and ideas. It's available seven days a week.

NANci can be reached at (202) 475-1973, Autovon: 335-1973. Use seven bit/even parity or eight bit/no parity, one stop bit at 300 or 1200 BAUD. ■

GRAMPAW PETTIBONE

Switches and Glitches

The EA-6B *Prowler* crew had flown together on their last 30 shipboard sorties and were well attuned to each other's habit patterns. After breaking at the bow, the aircraft decelerated below 250 knots as the pilot lowered the gear and flaps/slats handles. The pilot reported, "Gear and flaps coming," as the bird approached the abeam position, continuing to slow down.

Electronics countermeasures officer (ECMO) I, up front, calculated a 127-knot approach speed and verified that the slats had begun to extend. He then directed his attention to adjusting the air conditioning system.

ECMO II monitored airspeed. As it decreased to 200 knots, he looked over his shoulder to check that the slats were down. To his surprise, the wing was clean — both flaps and slats were full up. He rechecked airspeed, now 152 knots, then transmitted, "Flaps are up." The pilot reacted sharply, and added power. Adjustments were made as the engines spooled up. ECMO II, with some relief, saw that the flaps and slats were now down.

After landing, the crew calculated the actual clean stall speed of the EA-6B to be 152 knots at idle power and 140 knots at maximum power. Since the pilot usually reduced the throttles to 80 percent in the break, the *Prowler's* stall speed was about 146 knots, six knots below actual airspeed.

The crew had tested the emergency flaps/slats operation in flight but no one confirmed that the switch, which has three positions — up, off and down — was properly reset.

Since normal flaps are prevented from operating when the switch is in the up or down position, selection of normal flaps/slats was overridden by the electrical emergency flap drive motor. The *Prowler's* checklist does not specifically require a check of the emergency flap switch in "off" after the four and one-half minute emergency flap extension and retraction cycle.



Grampaw Pettibone says:

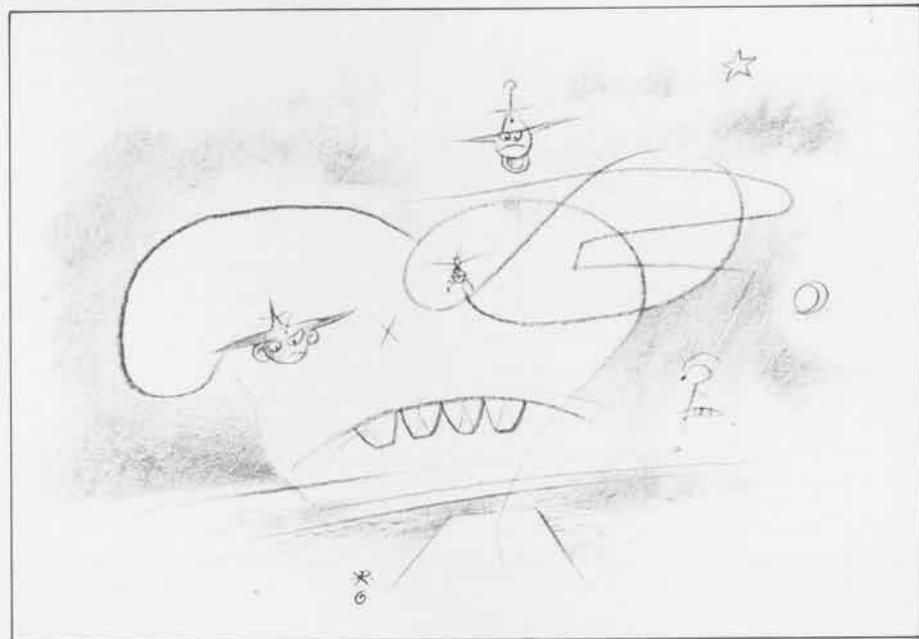
Good thing ECMO II made that quick call.

Shop talk in the ready room revealed somethin' that singed Ole Gramps' whiskers a bit. Another squadron



aircrew had made the identical mistake the week before. But didn't tell anybody about it!

Lesson learned: Don't let pride stand in the way. Share your experiences, the good ones and the bad. Remember, we're all in this together.



Formation Failure

An A-7 *Corsair II* made a righthand rendezvous on an A-6 *Intruder* abeam the carrier at 2,000 feet following launch for a night, war-at-sea exercise. Weather was 2,500 feet scattered; visibility ranged from three to six miles, although in some quadrants it was reduced to less than a mile at altitudes below 1,000 feet. Some observers said that a high, strong moon produced a milk bowl effect and a false sense of VFR.

The "starboard delta" rendezvous point was three miles from the carrier, which was used as a visual reference. Rendezvous speed was 270 knots. The *Corsair* was established in wing position. The lead, in the A-6, awaited a third aircraft to join the formation. After a time, the lead crew spotted a target thought to be the third plane, crossing from the 1:30 to the 11:00 position. Lead commenced a right turn, achieving an angle of bank that exceeded 30 degrees, to expedite the rendezvous and radioed the "third" aircraft to roll out on a northerly heading. There was no response to this transmission.

Lead began a descent and, at one point, passed within about 400 yards of and below the CV's plane guard helo, circling starboard of the ship. Not long after entering the rendezvous turn, and descent, the A-6 pilot and BN became distracted by the unexpected high closure rate and unusual light pattern on an aircraft ahead of them.

Both flyers scanned outside the A-6. Approximately 20 seconds passed without the lead pilot's making reference to the instruments. A SAR crewman in the plane guard helo saw the formation approaching his aircraft from the port side in a descent.

Passing through 1,000 feet, the BN initiated a UHF and ICS pull-up call. The transmission was not completed due to a malfunction that occurred after takeoff. The A-7 pilot on the *Intruder's* wing transmitted, "Check your altitude." Two seconds later, the *Corsair II* impacted what was later described as the glassy water, caught fire, bounced, and then settled into the sea in a ball of flame. The A-7 was destroyed, the pilot killed.

The *Intruder* executed a four-G pull at 300 feet, bottoming out at 100 feet, and climbed up to safety.



Grampaw Pettibone says:

Once in awhile, but only once in awhile, a Navy flyer — be he or she a pilot, NFO, flight engineer, whatever — can briefly relax while on duty in the air. Depends on the aircraft type, of course, how long those breathers last. Those who handle the tactical machines may get a break, say, while cruisin' at high altitude, autopilot on, bird trimmed up nicely, clouds few and far between, and all gear hummin' like those fancy computers I see in the offices around mine nowadays.

But most of the time, which means almost all of the time, there is no respite, especially for the folks in the fast, jet-driven jobs that often have to do their thing down low.

Those involved in this tragic accident knew that — and they weren't takin' a break. But they fell victim to a breakdown in scan patterns and crew coordination. They were well-rested, well-briefed and, except for the UHF difficulties in the *Intruder*, the aircraft were in good shape.

On the other hand, the A-7 pilot had flown one night formation hop a month before, but it was the only night form flight in the past five months.

Seems the *Intruder* was actually, and unintentionally, trying to join on the plane guard helo, thinking that it was the fixed-wing "third" aircraft. The moon effect and different ranges of visibility surely didn't help the crew. Neither did the inadvertent descent, later figured to be at 5,100 fpm.

The bottom line, though, is improper scan pattern. Workin' those eyeballs

between the gauges inside and the world outside is an absolute, never-stop-doin'-it *must*, under such circumstances. The BN's supposed to lend a hand by keepin' an eye on attitude and altitude. His UHF problems didn't help the cause in this case.

Another thing: The pilot didn't reset the radar altimeter from 50 feet after launch. Keep in mind that exceeding 30 degrees of bank at night makes things hard on wingmen and also knocks the radar altimeter off the line in the A-6. So, there was a piece of gear on board that might have helped, if set up properly.

You wingmen out there, don't get lulled into a false sense of security. Look out for yourself while you're lookin' at the leader.

Ole Gramps knows these are worn out warnings. But worn out as they are, they ain't ready for the rag heap yet!

What Inspection?

En route to NAS West Coast, the crew chief on a *Skytrain II* was in the rear of the aircraft gathering his personal belongings when he spotted a transparent plastic shopping bag under a passenger seat. Closer inspection revealed a 16-ounce can of charcoal lighter fluid. Due to the pressure differential, the can had swollen in size considerably but was not leaking. The crew chief immediately placed the can in a double plastic bag to contain any possible leakage and stowed the package in a metal container, where it safely remained until the flight was completed.

Investigation revealed that a 16-year-old dependent, who had been processed through passenger screening at NAS "Pacific," brought the fluid aboard. An air terminal employee certified in writing on a passenger search declaration that "An inspection of the following passengers and their luggage has been made and that no unauthorized explosive device or weapon was found."

The passenger was unaware that lighter fluid was prohibited aboard the aircraft or that it posed a hazard. He had supposedly gone through security and baggage screening where his carry-on luggage would have been checked. The can was not hidden but in plain sight in the plastic bag and could have been easily seen had it

been inspected — as was certified by the terminal.

Had the can ruptured and begun leaking, an extremely dangerous fire hazard would have occurred.



Grampaw Pettibone says:

Dang blast it! I'm gonna keep poundin' my gnarled fist on the tarmac til I see a turnaround on these hazardous cargo slipups. 'Cept "slipup" is too soft a sayin' for somethin' that could cost lives, not to mention a very big airplane.

There's a lot of emphasis on stoppin' terrorism, specially aboard transports. Can't argue with that. Truth is, a small can of fluid, with just the right source of ignition, can cause a disaster, too. Maybe that fluid ain't, technically, an "explosive" device, but those folks at the terminal oughta get with it and recognize a hazard when one stares 'em right in the face.



Vice Admiral Robert F. Dunn DCNO (Air Warfare)



Vice Admiral Robert F. Dunn became Deputy Chief of Naval Operations (Air Warfare) when he relieved Vice Admiral Edward H. Martin on January 15. VAdm. Martin is now Deputy Commander in Chief U.S. Naval Forces, Europe.

VAdm. Dunn was Commander Naval Air Force, U.S. Atlantic Fleet prior to his present post. He graduated from the Naval Academy in 1951 and served in a destroyer during the Korean War before entering flight training. He became an attack pilot and flew A-1 *Skyraiders* and A-4 *Skyhawks*. Among numerous assignments, he commanded VA-146 in Southeast Asian combat, Carrier Air Wing Seven, Carrier Group Eight, USS *Mount Whitney* (LCC-20), USS *Saratoga* (CV-60), the Naval Safety Center, Naval Military Personnel Command and was Chief of Naval Reserve.

NANews: What is your main goal as DCNO (Air Warfare)?

Dunn: To do whatever I can to enhance the capabilities of fleet commanders and subordinate aviation commands to maintain the current level of combat readiness. This must be done in the face of constrained budgets. We are not going to have as much money in 1987, 88 and 89 as we have had recently. Yet we must be able to meet operational commitments.

You have been described as being people-oriented? What does this mean to you?

I believe that the best incentive for people is to ensure that they realize they are important to their organizations. The enlisted personnel in Naval Aviation, especially, constitute its very strength. No matter what sort of fancy weapons systems, ships or aircraft we have, unless we have the people to make them go, we have nothing. If properly managed, informed, trained, led and respected, the people we have in our Navy will measure up to almost any challenge.

People "quality" is up in Naval Aviation. So is morale. But we have to keep working at it. We must continue to search for better ways to manage people. For example, the combining of certain enlisted ratings and breaking apart of other ratings is under consideration. Presently being established is a new concept for manning intermediate level maintenance departments in aircraft carriers and at shore stations.

New career patterns for both officer and enlisted personnel are in the offing. Organizations are being streamlined.

Naval Aviation had an unusually high number of major accidents in the early part of this year although, over the long pull, the rates have gone down dramatically in the past 30 years. Do you have any special thoughts on safety?

Safety is paramount, all elements of it: aviation, ground, recreational. We can never lay back. That's a given. And we did have a rough start this year in aviation. But there are also a number of commands who have flown many years mishap-free and I think it's important to remember that. We must stop any negative trends, of course, and take whatever action is necessary — from the bottom to the top of the chain of command — to prevent accidents. I am confident that our people ashore and afloat are acutely aware of this and that they are turning to, to keep Naval Aviation "up and operating" safely.

Would you comment on today's maritime strategy in terms of its effects on Naval Aviation?

Maritime strategy is understood by the people in the Navy better now than in the past. Tactical commanders understand the job they have to do. Equally important, the Congress of the United States and the decision makers who would deploy our forces are fully aware of the criticality of maritime strategy. They also realize that it is integrated with the strategies of the other services.

Tactical commanders must deal with the strategy on a day-to-day basis. From that derives a new tactical awareness; fleet commanders as well as members of the most junior or smallest units in Naval Aviation have become more "tactically aware." More and more people are studying and practicing tactics. They are becoming much more tactically proficient.

Therefore, with the increased understanding of maritime strategy, with that tactical awareness, and with the adequate funding to do the required training, dramatically improved readiness results.

It is important to add that improved readiness is also achieved from taking advantage of institutions which are either new to Naval Aviation or have been rejuvenated. They include the Navy Fighter Weapons School, Top Gun, Miramar, Calif.; the Navy Strike Warfare Center, Fallon, Nev.; Marine Aviation Weapons Tactical Squadron One, Yuma, Ariz.; and the newly established ASW Training Group, Atlantic at Norfolk, Va., formerly referred to as ASW University.

One of the key phrases you have used recently is "conservation of resources." Would you expand on this?

All of us should endorse this theme. As stewards of the taxpayers' dollars, it is incumbent on each of us to

maximize utilization of resources. Conserve people by affording them the right kind of leadership, assignment and training. Conserve dollars as though they came from your own billfold (including the frequent questioning of prices). Conserve material as though it were your very own which, as a taxpayer, it is.

It appears that the global demands on U.S. Navy presence is continuing unabated. Do you envision a reduction in those demands?

Not in the near future. All commitments are being met, fortunately, even though those commitments continue to grow. Navy ships deploy to all oceans of the world: the Atlantic, Pacific, Indian, Caribbean; the Mediterranean and even the Norwegian and Bering seas.

At the same time, CNO and SecNav have dictated that there won't be those long seven, eight and nine-month deployments. The maximum cruise length will be six months. When back from cruise, each ship will have a minimum of one year at home between cruises. In that one year at home, at least 50 percent of the time will be spent in home port or at home station. We must accept that emergencies may arise that could upset these schedules. But every effort is being made to adhere to the time parameters I have described and we're doing pretty well on them so far.

What are the major problems facing Naval Aviation today?

The central problem is people. As the Navy grows toward the 600-ship and 14-carrier air wing goal, it is obvious the need for people rises commensurately. In order to keep the fleet manned, shore stations have been drained. Consequently, shore stations are short of personnel they need to support the fleet. We must strive to correct this and that means strong recruiting. Demographics show that the man-power pool of recruit-age people in the 1990s will have shrunk to the point that all the services will be trying with unprecedented vigor to attract high school graduates. CNO, Admiral C. A. H. Trost, noted that, by 1995, the Navy needs to recruit roughly one in every two eligible high school graduates.

We were short more than 1,000 aviators in 1986, most notably VA and VF types. We need to improve retention in these categories. There are too few aviation storekeepers (AKs) in our aircraft carriers. This shortage came about because too many women were introduced to that rating. Women AKs have done a great job, but they are proscribed by law from going to sea. Fewer men are available for sea/shore rotation. We also need machinist's mates and boiler technicians and are working on these issues as well.

There are more and more women in the Navy today, in shore-based squadrons and noncombat units. They are doing a first-rate job, but the problem is that most of our women are nonrated, with most ratings closed to those women. They can't get promoted. We are moving to correct this.

What is the status of overall training in Naval Aviation today?

Training resources are short, but they've frequently been short. We have had continual problems getting adequate aircrew flying hours funded. For most active aviators, 30 or 40 hours per month in a tactical aircraft might be enough encouragement to stay in the Navy, despite deployments and regardless of bonuses. They don't get those hours today.

There are problems with steaming days for ships for the same reason — not enough money for fuel. There are

increasing problems with airspace, particularly on the east coast of the U.S. As the population grows, as the nation becomes more environmentally conscious, it becomes more and more difficult to find the routes needed for low-level navigation training, for high air work, like air combat maneuvering, and for targets required in air-to-ground weapons training.

There are new threats in the operational arena that we must train for. The potential enemy has quieter submarines. We have to continually upgrade airborne electronic warfare capability. We need new focus on shallow-water ASW.

What are the other problems?

As demonstrated in the Lebanon raid three years ago, and in the Libyan strike of last April, there is a very real need for more standoff weapons for tactical aircraft.

Search and rescue units are in short supply and not always immediately available.

Despite increasing efforts with the other services and within the Navy itself, communications connectivity is far from perfect. In logistics, we have to be wary of Naval Aviation becoming too dependent on a "shore tail." Too often there is excessive reliance on the carrier on board delivery aircraft, the COD, or the service force ship. That dependence on the logistics tail needs to be broken.

Does this mean you are less than optimistic about the future of Naval Aviation?

Not at all. I am confident that we will solve the problems, just as we have in the past, and press on. Indeed, I believe that the future is rather bright.

Soon, we will have the F-14D, with new engines and radar; and the A-6F, with new engines and the capability to deliver HARM, the high-speed, anti-radiation missile. We have a better minesweeping helicopter, the MH-53E, with longer range and endurance. The SH-60H LAMPS MK III helo, with dipping sonar, will replace the SH-3 *Sea King* which has been around since the 1950s. The advanced tactical aircraft (ATA) and advanced tactical fighter (ATF) are on the drawing board. There will be more use of remotely piloted vehicles (RPVs) for reconnaissance and targeting. Service life extension programs (SLEPs) for more ships will help us keep the carriers fit and ready. There will be technological advancements in ceramics and composites for use on new aircraft. There will be more extensive use of digital avionics, better communications equipment, and development of low observable aircraft. The tilt-rotor, turboprop, multimission V-22 *Osprey* is expected to be fully operational by the turn of the century and holds extraordinary promise.

There will be increased interoperability among Navy and Marine Corps units, so well demonstrated recently by USMC *Hornet* and EA-6B *Prowler* units in the Mediterranean. We will also be training with greater frequency with U.S. Air Force and U.S. Army squadrons and units.

Naval Aviation has received considerable visibility in the U.S. and around the globe in the last few years through headline-making action in the Mediterranean and important exercises in the northern Pacific and elsewhere.

Throughout 1986's year-long tribute to 75 years of a wonderful and flourishing heritage, we held ourselves up to public reflection and reaffirmed that we, and the citizens of our country, have much to be proud of. Whether as an officer, an enlisted man or woman, or as a civilian employee, I don't think there is a better time in history to be a part of Naval Aviation. The challenges are there and we have the dedicated people to meet them. That we will do. ■

JO2 Julius L. Evans contributed to this article.

Fit TO Fly

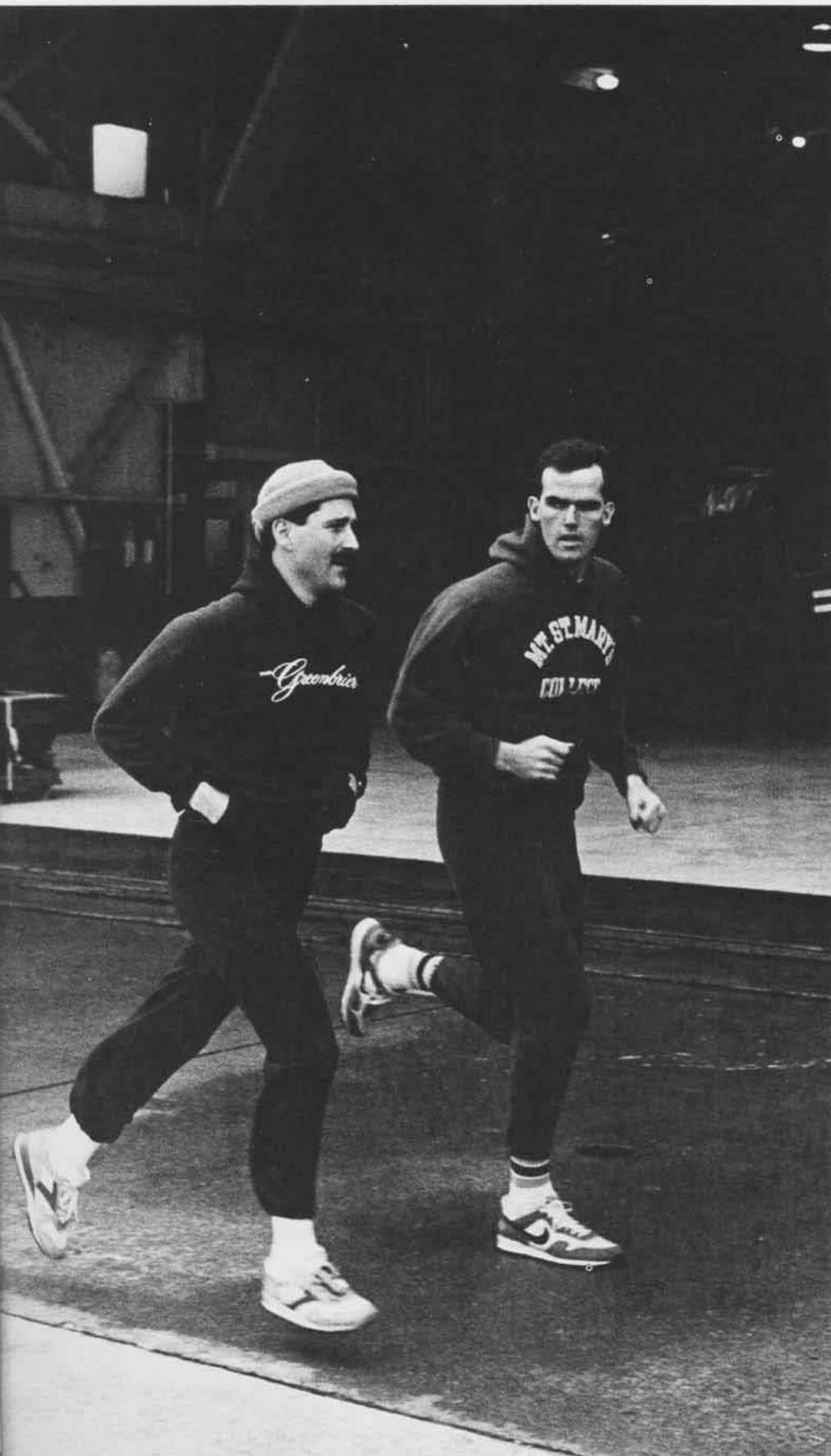
Study Shows Physical Fitness Increases G Tolerance

Story by JO2 Timothy J. Christmann
Photos by JOCS Kirby Harrison

In combat, Naval Aviators — particularly fighter pilots — depend on their aircraft, weapons systems and experience to defeat the enemy. But, according to a recent study conducted by the Naval Aerospace Medical Research Laboratory (NAMRL), NAS Pensacola, Fla., Naval Aviators must now depend on another critical area — physical fitness.

Last year, 23 Naval Aviators from Strike Fighter (VFA) Squadrons 195, 192, 161, 151 and 125 participated in a study to determine if intense physical fitness increased the pilot's ability to perform the M-1/L-1 maneuver, which requires a Naval Aviator to take a deep breath and tighten his leg, stomach and arm muscles. This increases G-tolerance and decreases the susceptibility to gravity-induced loss of consciousness (GLOC). The results showed two things: a weight training program (similar to the one NAMRL conducted) will enhance a pilot's ability to tolerate more Gs; and a more fit pilot will be able to function more effectively in a stressful environment.

Years ago, pilots were able to fly aircraft like the F-4 *Phantom* to the plane's G-capacity limit, which was about seven Gs. But today's



Staying fit, Lt. Bob Meagher (left) and Tim McDonnell run past the HC-8 hangar where they are stationed at NAS Norfolk.

sophisticated aircraft, such as the F/A-18 *Hornet*, were designed to have a higher rate of onset and higher G capacity than the average pilot is used to flying (about nine). High G loading causes blood to pool in the lower parts of the body, depriving the brain of blood. The pilot then experiences three phases: grayout, blackout and GLOC. "Tunnel vision" occurs during grayout. The pilot can still operate his aircraft, but his peripheral vision is nonexistent. Blackout, the next step, happens when the pilot is conscious but cannot see because too much blood has drained from his head. GLOC, the worst of the three, is when the pilot loses consciousness.

"GLOC can last from a few seconds to a half-minute," according to Commander W. O. King, former commanding officer of VFA-195, who participated in the NAMRL study last year. "But the problem is that you don't remember becoming unconscious. Fortunately, this has happened in two-seat [also in one-seat] airplanes where the instructor was okay but the student pulled himself into GLOC. The student swore he was pulling hard, but doesn't remember going unconscious."

Cdr. King, who is the F/A-18 program coordinator in the office of the Chief of Naval Operations, said that if an aviator pulls himself into GLOC at low altitude (about 500 feet), chances are he will crash before he can fully recover. However, if a pilot does it at high altitude, he should have ample time to regain control of the aircraft before hitting the surface.

"But there is no guarantee," he added. "The bottom line is that if a pilot is in a real combat situation and loses consciousness, he's going to lose the battle."

According to Cdr. King, Naval Aviators vary in their ability to tolerate Gs. But research shows that short people, or people who have a shorter distance between their eyes and heart, are able to resist grayout, blackout and GLOC longer than taller people.

"It is a simple function of the heart having a higher distance to pump blood to the brain," said King. "If a pilot could put his brain right on top of his heart, he wouldn't have to worry about GLOC...but people aren't made that way."

Today, Naval Aviators have some principles they can use to help them endure a high number of Gs. One is wearing an anti-G suit, which squeezes the lower extremities. The other is performing the M-1/L-1 maneuver. Both help keep the blood in the upper part of the body and, hopefully, the brain.

The NAMRL study showed that a

"A well-conditioned, well-trained aviator will make the difference between victory or defeat in the tactical ACM environment."

A Hornet pilot

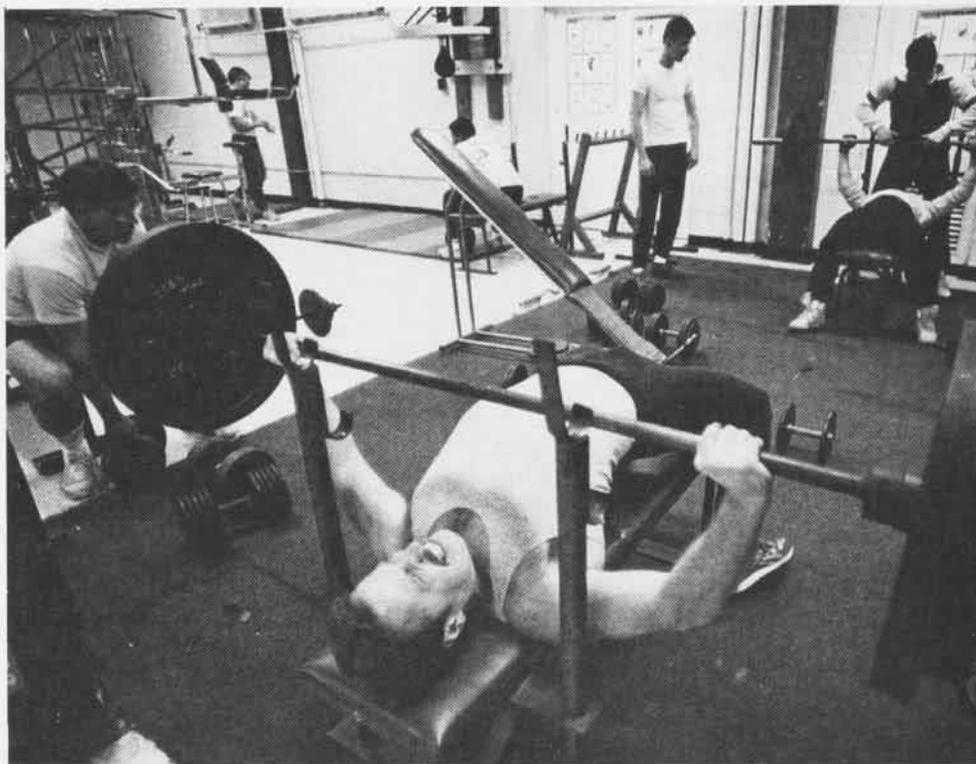
Naval Aviator who works out regularly will have more strength and endurance to perform the M-1/L-1 maneuver for a longer period of time. This means that if a physically fit fighter pilot is in a dogfight, he has the potential to operate in a high-G environment longer than a pilot who is less fit. The pilot's conditioning will enable him to prolong his M-1/L-1 maneuvering time and keep the dangerous effects of grayout, blackout and GLOC on hold. "To prevent GLOC, an aviator must perform maneuvers requiring isometric muscular contractions of high intensity and varying durations," the NAMRL report stated. "An aviator should also be able to continue to perform all tasks in the cockpit under this stress, allowing safe and successful flight operations."

The first thing that NAMRL did in its G-tolerance study was to put its 23 volunteers through a series of tests in a human centrifuge located at the Naval Air Development Center, Warminster, Pa. There, the aviators endured a G load that increased at one G every 15 seconds for a maximum of

10 Gs. Afterwards, NAMRL simulated air combat maneuvers by fluctuating from 4.5 to 7 Gs at 15-second intervals for as long a period as the aviators could tolerate. "It was a real experience getting into the centrifuge and having Gs constantly put on you like that," said Cdr. King. "In an airplane, you normally don't maintain Gs for that long."

He added that the tests were carefully monitored and adhered to several criteria, such as: If a pilot lost consciousness, lost peripheral vision, reached 10 Gs, or couldn't stand the pain any longer, the centrifuge stopped. "It was probably the worst pain I have ever felt," said King. "It is hard to explain. You're sitting there as the centrifuge starts putting more and more Gs on your body and it is very difficult to move. Your body is being forced down into the seat and it hurts all over [particularly in the legs, arches and ankles]."

After the initial centrifuge tests were completed, the 23 volunteers were divided into two groups. Cdr. King and 11 of his pilots in VFA-195 were the



Bench pressing 275 pounds, AE3 Craig Snow at NAS Norfolk grimaces under the strain. The 163-pound Snow has bench pressed 310 pounds.

experimental group and the pilots from the other squadrons comprised the control group. Unlike the control group, the experimental group endured a 10-week weight training program at its base at NAS Lemoore, Calif. The weight training, which was conducted using multistation exercise equipment (found in most gyms), consisted of two days of lifting for muscular strength and two days for muscular endurance.

"It was a good workout," Cdr. King said. "The exercises were designed to increase muscle tone from your ankles to your neck. We found that some guys wound up gaining muscle tissue...their clothes were getting tight."

While the experimental group grunted and sweated, the control group did nothing. "If they were on an exercise program of their own, they continued doing it," explained King. "They just didn't do anything special. And that was the difference between the two groups...to take people of close physical capacity, test them all in the centrifuge in the beginning, and then have one group exercise and the other not."

When the 10 weeks were over, both groups were retested in the centrifuge at Warminster. The result was that the experimental group increased its air combat maneuvering time 71 percent, while the control group increased only six percent.

Due largely to the results of this study, NAMRL investigators feel that a physical fitness (i.e., weight training) program will enhance a pilot's ability to function in a high-G environment.

"Naval Aviators are pressed tremendously for time," said Lieutenant Donna M. Murdoch, aviation physiologist at NAMRL, who was an investigator in this study. "Our guys [aviators who volunteered for the study] lifted [weights] after putting in 12-hour days." She said that if a fitness program is implemented, Naval Aviators should be allowed to work out as part of their job.

Cdr. King isn't sure if the Navy can legislate a mandatory fitness program for aviators but he said, "I think for an aviator's own self preservation and desire to win and live, he needs to have everything going for him. There is no second place in combat. If physical training turns out to be one of the keys to helping him, then I think most aviators will do it." ■

J02 Timothy J. Christmann, first-place winner of the 1986 Thomas Jefferson Award and former associate editor of *NANews*, is now a staff writer for *Defense News*, Springfield, Va.

You Are What You Eat

By JOCS Kirby Harrison

The physical fitness of Navy pilots and aircrews is at least partly dependent upon what they eat.

Some nutritionists are more emphatic. "We *are* what we eat," they say, and point to a daily diet that for many Americans depends considerably on what is described as junk food.

Other nutritionists take an opposing point of view. They claim most of the fast foods consumed today, and a great part of the junk foods, contain at least adequate amounts of the daily required nutrients. They say the harm is in the tremendous amount of calories consumed with those nutrients.

The Navy has no definitive studies advocating either opinion. Some Navy aviation physiologists do, however, have some recommendations for those concerned.

Lieutenant Donna M. Murdoch, an aviation physiologist at the Naval Aerospace Medical Research Laboratory (NAMRL), NAS Pensacola, Fla., has little doubt that the Navy's pilots and aircrews tend to take in a lot of what can only be described as junk food.

With time at a premium, meals often consist of whatever is convenient, and the squadron snack bar is certainly convenient. "In any squadron you can see them sitting at the preflight brief, a cup of coffee in one hand and a candy bar in the other," she said. "I'm not saying that, in itself, it's necessarily bad. But if it's all he or she is having today, it sure isn't good."



With that in mind, aviation physiologist Lieutenant Barbara Boyd at the Aviation Physiology Training Unit in Norfolk, Va., has a few suggestions.

She emphasized, most of all, a balanced diet. It may not improve upon normal physical and mental abilities, but poor diet may cause a loss in some areas.

There is no evidence that eating carrots and leafy, green vegetables improve eyesight, but the carotene contained is a precursor to vitamin A, and a lack of that vitamin may result in diminished night vision.

Candy bars may give a quick "sugar high," but the ultimate result may be a "low" that comes at the wrong time.

For example, explained Boyd, a fighter pilot may eat a couple of candy bars during preflight. A short time later, as insulin is introduced by the body in response to the sugar intake, the pilot becomes hyperglycemic and experiences a feeling of increased energy. Unfortunately, this energy peak is followed by hypoglycemia, and the

Below, a runner at NAS Lemoore makes his way along a back road as an aircraft turns out of the sun on final approach. Right, Lt. Ann Lawrence from VF-43 prepares to push off on the physically demanding swim phase of her tactical jet backseat qualification test at NAS Norfolk.

PH2 Ted Salois

pilot then feels fatigue. In some cases, depending on the individual, extreme fatigue. And it may come at a point when the pilot most urgently needs to be physically and mentally alert — for example, during a night approach for a carrier landing.

As for coffee, both Boyd and

JOCS Kirby Harrison



Murdoch agreed that pilots should be aware that it is a relatively strong diuretic. The pilot who has a few beers the night before, and assumes the solution is a couple of cups of coffee before flight the next morning, is compounding the problem.

Alcohol is also a diuretic and, combined with the coffee, may leave the pilot badly dehydrated.

On the subject of alcohol, a recent study of Navy pilots showed that "performance was worse in the hangover condition," and that condition existed as much as 14 hours after a two-hour drinking session ended. Perhaps more important, those in the control group who had been drinking had no perception of the hangover condition or impaired ability.

Lt. Boyd said proper nutrition has much to do with simple logic and a knowledge of what is and isn't good for you. "Moderation and common sense," she maintained, "can do a lot to improve nutritional habits. In the simplest terms, remember what your mother said was good for you, and eat it!"

She pointed out that there is no "magic diet." But there are some things that pilots and aircrews can do in terms of nutrition to keep physically and mentally fit.

Those involved on longer flights — such as patrol and logistics crews — may be able to maintain a steady level of performance by eating several small meals throughout the flight. Fruits and nuts are excellent choices. Fruit juices may be a good alternative to coffee.

Tactical jet aircraft crews whose flights are of a shorter duration may want to avoid foods that cause gas prior to flight. If you have room, take along something to munch part way through the flight. If you find yourself resorting to junk food during the day when time is at a premium, be sure and make up for it later with a balanced meal.

"Pilots should think of themselves as athletes," said Murdoch, who has participated in several triathalons and is backseat-qualified in tactical jets. "Fighter pilots, for example, may fly several ACM [air combat maneuvering] hops in a day, and believe me that is physically demanding.

"An athlete's body is trained to use oxygen more efficiently, and even a serious weight trainer will be able to resist gravity-induced loss of consciousness (GLOC) better than a pilot who is not physically fit."

Instructors at the aviation physiology unit in Norfolk show films of pilots experiencing GLOC, pointing out that, as they become more and more tired, they are less able to perform the M-1/L-1 straining exercise designed to increase resistance to the artificially-induced higher gravity.

As for smokers, aviation physiologists are unanimous in their recommendation. Don't!

Smokers develop anemic hypoxia, pointed out Boyd. "The difference between a pilot who smokes and one who doesn't is about 4,000 feet of altitude," she said.

She added, smoking substantially reduces night vision. Oxygen saturation of the blood at sea level is about 98 percent. Anything less than 87 percent saturation results in a reduction in night vision. A heavy smoker may have considerably lower levels than 87 percent.

In the final analysis, said Boyd, there is a relationship between good nutrition and an individual's best performance.

Murdoch agreed. "If we are what we eat, the last thing the Navy needs is a candy bar flying a jet plane." ■

More Reserve Tomcats

One, never to return, are the days of the Naval Reserve being equipped with obsolete equipment..." said Secretary of the Navy (SecNav) John Lehman early in 1986 as reserve squadron VFA-303 stood up with F/A-18 *Hornets*. Now the four reserve fighter squadrons are completing the transition from F-4 *Phantoms* to F-14 *Tomcats*. This is the story of how it happened.

In the fall of 1983, the Naval Reserve fighter squadrons, two each in Carrier Air Wings, Reserve (CVWRs) 20 and 30, were flying *Phantoms*. Because of catapult changes on the carriers, these squadrons would not be deployable after the fall of 1986. The reserve CVWRs also flew the last of the Navy's 25-year-old *Crusaders* in Photographic Squadrons, Reserve 206 and 306. Additionally, because these types of aircraft were to be retired, the experienced flight crews and technicians required to operate this equipment were difficult or impossible to recruit. Fighter Squadrons (VFs) 151 and 161, the last regular Navy squadrons to operate with *Phantoms*, were being transitioned to *Hornets*.

SecNav made it clear that modernization of the reserve forces was essential. The corporate will and the need was there, but the challenge was implementing it, and quickly. Where do 48 aircraft come from? Can the Navy support system of logistics, spares, standard depot level maintenance (SDLM) and training absorb the additional 15,000 flight hours a year these squadrons will

"If a ship were deployed in the Mediterranean and we needed to augment her with reserve forces in a crisis or to replace attrition aircraft in time of war, you certainly would want them to start with the exact capability that exists on the carrier in terms of equipment, support systems and the capability of their maintenance people. Under this premise, the reserve forces must be modern and updated."

Vice Admiral Edward H. Martin, DCNO (Air Warfare)

U.S. Naval Institute Proceedings, January 1987

generate? To complicate this concern and to meet the requirements of the 15-battle group, 600-ship Navy, the regular Navy had just stood up Carrier Air Wing (CVW) 14 and was scheduled to stand up CVW-10 in 1987. Each CVW has two squadrons of 12 *Tomcats*. These challenges had to be answered before any transition could begin.

In the summer of 1983, the Deputy Chief of Naval Operations (Air Warfare) convened a panel to study the feasibility of transitioning the reserve fighter squadrons to *Tomcats*. The panel concluded that 17 of the first production lots of this aircraft, used principally for research, development, test and evaluation (RDT&E), could be made available for possible transition in 1988 or 1989. These aircraft never deployed and many were specifically instrumented for development and test. They did not have current fleet deployable systems and capability installed. As these aircraft completed their "development" assignments, they were retired to desert storage at Davis-Monthan AFB, Ariz. Others were being stored at Naval Air Rework Facility (NARF), Norfolk, Va. The panel recommended that a program be developed and that funds be sought through the normal budget process to prepare these aircraft for service. Normally, the budget approval and updating and deployment process can take many years. The year 1988 was tentatively set as the beginning of the *Tomcats*' transition to the reserves.

The normal place to begin implementing such a program would be in the F-14 program management office, PMA-241, in the Naval Air Systems Command (NavAirSysCom). Then-program manager Captain Bill Bowes and his staff were busy working on development of the new updated *Super Tomcat*, the F-14D. If the

reserves were to transition to the F-14, someone other than the PMA staff had to be assigned to take charge. With NavAirSysCom billets limited, it was suggested that an experienced reserve officer, who could return to active duty for a short period to plan this effort, be identified.

Captain Jim Veccia, a Naval Reserve aeronautical engineering duty officer with extensive active duty and reserve training experience in NavAirSysCom and the office of the Chief of Naval Operations (OpNav), was chosen. He had recently sold his ownership in a commercial office building construction and operation business. Earlier he had careers with two defense contractors. His six-month assignment, which began in November 1983, was to establish the plan for the orderly transition of reserve fighter squadrons using the guidelines of the OpNav study panel.

When he checked into NavAirSysCom, Capt. Veccia realized his mobilization task was not only to plan a program, but to carry it out. Accordingly, he decided that while developing his plan he would concurrently begin implementing it. Besides, he reasoned, a plan that called for the reserve fighter squadrons to complete modernization by the early 1990s seemed unreasonable.

Early in the process he recognized that the number of aircraft suggested for the reserve units was not enough for two squadrons. Additional *Tomcats* were needed to make two, 12-plane squadrons. So he set about reviewing, by bureau number, all *Tomcats* in the Navy. He discovered that, since 1980, the loss rate of *Tomcats* had been substantially lower than predicted and lower than experienced prior to that time. However, procurement plans set in that year made provisions for the higher losses. In fact, after the stand-



A Tomcat is unloaded from the Super Guppy at Grumman's Calverton facility after a flight from Davis-Monthan AFB.



The first remanufactured F-14 flies to VF-201, NAS Dallas, on January 8, 1987.

up of CVW-14, as new aircraft were being delivered, older *Tomcats* with lesser capability — and requiring SDLM — were being stored. The storing of aircraft was directly related to the lower-than-predicted loss rate.

Cpts. Veccia and Bowes presented these findings to the Chief of Naval Operations (CNO) in December 1983 with the recommendation that the stored *Tomcats* be given the required SDLM and be used to transition the first two reserve squadrons. CNO granted approval to transition VFs 301 and 302 in CVWR-30 at NAS Miramar, Calif., using these aircraft with direction to begin in October 1984. To be identical to fleet squadrons, three of the *Tomcats* were to be configured with the tactical airborne reconnaissance system (TARPS). This would give them the opportunity to be fully mission-capable and at the same time retire the aging RF-8s.

Funding for the SDLM and updating to a compatible fleet configuration were to be provided by the reserve forces using rework dollars saved by the success of the recently implemented aircraft service period adjustment program for other aircraft

in the reserve fleet. The transition took place on schedule. After the concerns of the regular Navy forces about the impact on the station supply and maintenance departments were satisfactorily addressed, the transition went smoothly. In January 1986, when the two squadrons carrier-qualified, they were fully operational with 12 *Tomcats* assigned to each. Today, these squadrons are an integral part of the Navy *Tomcat* family at NAS Miramar, Calif., and are fully prepared to mobilize with CVWR-30.

This was only half the task. There was still the remaining two reserve fighter squadrons and the 17 original *Tomcats* recommended by the OpNav panel for transition. Additional F-14s were to be made available to complete two 24-aircraft squadrons. With the program for VFs 301 and 302 well under way, Rear Admiral Tommie Rinard, Commander, Naval Air Reserve Force, agreed to accept those early production models — called the Block 60/65 *Tomcats* — for transition with VFs 201 and 202, provided they were remanufactured and rewired. This was necessary so that their fleet performance would be equivalent to a

current production configuration, then called Block 135. As in CVWR-30, three aircraft were to be configured for TARPS. Block numbers are the production sequence given a group of aircraft as they are being manufactured. Usually, capability and design improvements are incorporated with block number changes. The Block 60/65 aircraft were the first in 1971. In 1984, the Block 135 was the latest. Because these *Tomcats* had flown, on the average, less than 1,000 flight hours when remanufactured and updated, they will still have a full, useful service life.

In the absence of specific NavAirSysCom funding for this effort, RAdm. Rinard advanced funds for the engineering to remanufacture and rewire these old aircraft to the new configuration. In September 1984, a contract was awarded to Grumman Aerospace Corporation to do the work. However, funding for the actual remanufacture of the *Tomcats* was not available in the Navy Department and the prospects looked bleak. In October 1984, Congress, agreeing with Secretary Lehman's desire to modernize the reserve forces,

appropriated funds specifically for this effort. It was specified that the transition was to begin in two years, during the first quarter of fiscal year 1987. The cost to remanufacture these aircraft was substantially lower than new aircraft procurement.

By now, Capt. Veccia had agreed to extend on active duty beyond the initial six months. He had a funded program and a challenging schedule to carry out. There was plenty of work ahead.

At least 12 of the aircraft had not flown in years and were in various states of cannibalization at NARF Norfolk and Davis-Monthan AFB. One was being used in a special nonflying test at the Boeing Company in Seattle, Wash. Veccia determined that the magnitude of the remanufacture dictated the work be done in the new aircraft production facility at Grumman in Calverton, N.Y. Capt. Bowes agreed. The aircraft in Norfolk were barged by

ocean tug to a port near the Grumman facility and towed over the public highway to the plant. The other nonflying aircraft were flown to Grumman aboard a *Super Guppy* transport used by NASA to move rocket assemblies between the manufacturer and the use point. The remaining aircraft in the program were flown to Calverton.

Capt. Veccia's biggest task was contracting for and coordination of the complex effort with a variety of activities. The challenge was compounded by his insistence that the remanufactured *Tomcats* be assembled and tested using new production specifications and that every aircraft be accepted, tested and certified as fully mission-capable when delivered to VFs 201 and 202. The only deviations allowed were for the slight performance variations of used equipment provided after rework by the Navy repair and supply system.

Over the years, some 400 engineering changes had been authorized for installation into F-14s. Most were also authorized for installation in the Block 60/65 *Tomcats*. Because of the use of these aircraft in a test and development role, only a few were ever installed in the Block 60/65s. No two of these aircraft were alike. Additionally, other engineering changes — including those to enhance combat capability authorized for newer aircraft — were necessary to incorporate into the "older" *Tomcats* to be equivalent to the Block 135 fleet configuration. Notwithstanding the differences between the individual aircraft, all the planes are being remanufactured to a common baseline configuration and, when delivered, will look alike.

Before the actual remanufacture of the *Tomcats* could begin, the necessary new material, such as complete shipsets of wiring harnesses, structural assemblies and electrical panels, had to be procured and built to be available when needed for installation in the aircraft. A major effort was conducted to collect the modification kits for the approved engineering changes prior to the required installation dates.

In addition to normal supply warehouses, kits were found on ships and in disposal facilities. Some were even located in storage facilities belonging to the amphibious fleet.



Eight *Tomcats* arrive by barge at James Point, Long Island, from NARF Norfolk.

Where none were found, replacement kits, as well as kits for the added engineering changes, were procured. While these aircraft were in storage, major assemblies such as wings, vertical stabilizers and radar components were removed to fill shortages in the fleet. All of these items had to be identified and replacements procured to permit the timely remanufacture of aircraft.

The actual remanufacture of the *Tomcats* is being performed by Grumman, while other private and government facilities are participating in the rework. Because the remanufacture of *Tomcats* was a new and different challenge for Grumman, management assigned a separate program director to work with the Navy and coordinate action by the many organizational components of Grumman. The company chose Mr. Bob Carlo, a long-time employee, whose prior experience as head of the *Tomcat* field modification teams made him eminently qualified for the task. The dynamic interaction between Carlo and Veccia has been instrumental to the program's success.

At least five other Grumman plants and many major original equipment suppliers are part of the remanufacture team. NARF Norfolk is reworking the engines, landing gear, hydraulic devices and electrical components. The Naval Aviation Supply Office, Philadelphia, Pa., although feeling the surge in supply requirements caused by the unexpected 33 percent growth of the *Tomcat* operational community in a little over three years, has admirably accommodated the demands for parts and material. The Naval Aviation Plant Representative Office at Grumman has dedicated part of its staff to the daily tasks of negotiation



Capt. Veccia (in cockpit) examines the new wiring harness and electrical panels installed in the remanufactured F-14s. Looking on are Bill Flynn (left), *Tomcat* remanufacturing manager, and Bob Carlo, Block 60/65 program director from Grumman.

with the contractor on individual discrepancies discovered as the aircraft proceed through the remanufacture process.

Concurrent with all this activity, Capt. Veccia directed the effort to ensure that NAS Dallas, Texas, had the capability to operate 24 *Tomcats*, in addition to the Marine *Phantoms* that were to remain on base. The aircraft intermediate maintenance departments, for example, had to be reconfigured to maintain a new type of engine and radar and to handle items unique to the *Tomcat*.

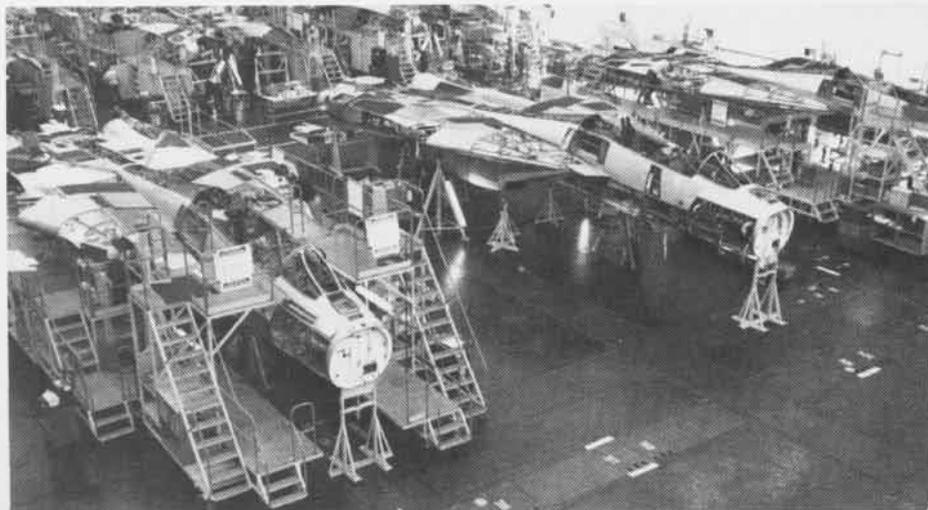
During the remanufacturing effort, dynamic changes were occurring in the *Super Tomcat* (F-14A (Plus) and F-14D) development. SecNav directed the acceleration of fleet introduction of the improved smokeless F-110 engine for the F-14A (Plus) aircraft. New operational capabilities had to be developed and a major remanufacturing program was approved to upgrade all *Tomcats* or

Super Tomcats beginning in 1990. Procurement plans for new aircraft were adjusted to reflect the lower loss rates and to maintain adequate fleet inventories through the year 2000. The effect of these developments on the Block 60/65 *Tomcats* for VFs 201 and 202 was that four specially instrumented aircraft scheduled for remanufacture were required to remain in the RDT&E program to develop and test new operational capabilities.

Recognizing the need to modernize the reserves as well as use scarce funding and resources efficiently, CNO directed that the four *Tomcats* not being remanufactured for VFs 201 and 202 be replaced with the last four new production F-14s. *Tomcats* manufactured after these four will have the new F-110 engines and be delivered to the fleet. The funding resources saved by not remanufacturing the four RDT&E aircraft and reinstrumenting replacements for them will be used for SDLM and to repair the fleet's eight long-time stored *Tomcats*, for which there was no identified funding.

Two remanufactured and two new *Tomcats* are presently flying with VF-201 at NAS Dallas. By April 1988, both VFs 201 and 202 will be fully operational with 12 *Tomcats* each.

A project that was to take eight years for two squadrons will be completed for four reserve fighter squadrons in four years. Now that the transition is in full swing, the requirements of SecNav and Vice Admiral E. H. Martin, former DCNO (Air Warfare), are fulfilled for modernizing the fighter reserves. The Naval Aviation community, with a special tip of the hat to Capt. Bowes and Veccia, can be fully satisfied that the reserve fighter squadrons no longer have obsolete equipment and that, for the first time, they are operationally equivalent to fleet fighter squadrons. ■



Tomcats, destined for the reserves, in remanufacture at the Grumman Calverton plant.

JRS-1

By Hal Andrews

Among the Navy's support aircraft, amphibians were a mainstay from the 1920s, when the first practical ones were built, into the 1960s, when water-based Navy aircraft operations were phased out. In the 1930s, they formed a major part of the Navy's utility/transport fleet — able to reach the many areas of naval operations where airports were not available — while not requiring special beaching gear and being able to operate "shore-based" whenever possible.

Early in the thirties, the first all-metal, twin-engine, land-based commercial transports went into production, followed by similarly modern, multiengine flying boats. In January 1935, a Sikorsky amphibian transport incorporating the same technology advances first flew. The S-43, as the

new twin-engine transport was designated, was designed to meet the needs of airlines operating in island and coastal areas. Along with contemporary flying boats — including the Consolidated XP3Y-1, prototype for the famed PBV *Catalina* — it featured a parasol wing with engines mounted on the leading edge, tail mounted directly on the hull, and reduced struts and external wire bracing. The twin Pratt and Whitney 750-hp Hornet engines had NACA cowls and turned controllable-pitch propellers.

Construction was all metal, except for fabric covering on the wing aft of the main spar, the ailerons and tail surfaces. The wing was joined to the hull by a centerline pylon and a pair of N struts. The main gear wheels retracted into cavities in the sides of the hull; the tail wheel remained partially exposed. Basic design was for pilot, copilot, flight attendant and 18 passengers.

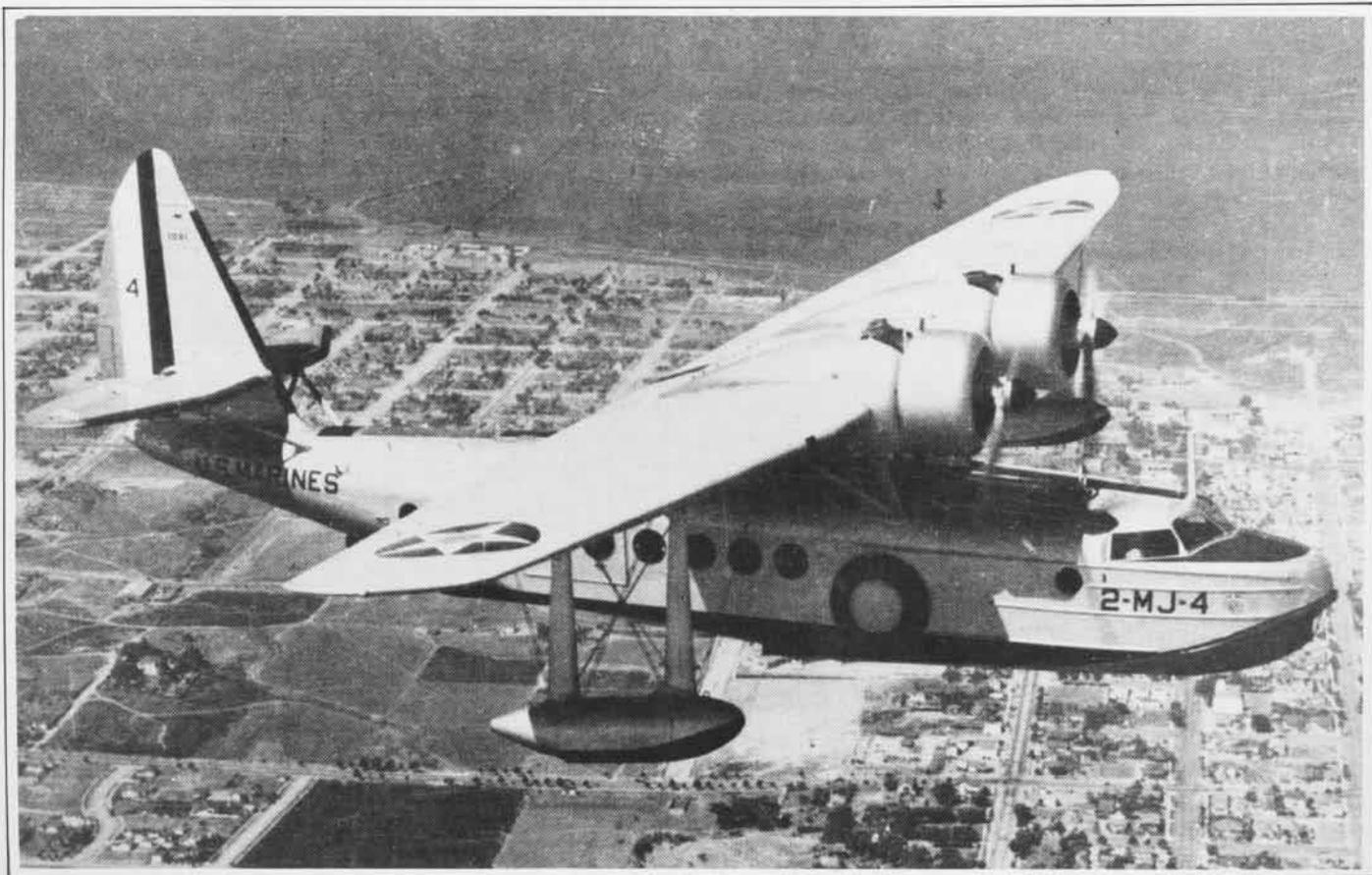
Performance was outstanding enough that the first S-43 set records in many categories for

large amphibian aircraft before being delivered to Inter-Island Airways in Hawaii. S-43s were delivered to many airlines around the world, including a number to Pan American Airlines for Caribbean operations. Some were operated as flying boats without the landing gear installed. In late 1936, both the Army and Navy ordered S-43s, the Army five as Y10-8s and the Navy three initially as JRS-1s.

No changes were made to the basic airframe for the Navy JRS-1s. However, the interior arrangements were extensively revised to provide mechanic and radioman stations, Navy radio equipment, camera installation and observer's positions. A target tow system was also installed. Other minor detail changes were made to fit Navy sea-based operations.



Capt. W. E. Scarborough





In May 1937, the first JRS-1 was delivered to NAS Anacostia for its Board of Survey (BIS) trials. Flight tests there, and at NAS Norfolk, Va., confirmed the generally excellent characteristics of the S-43. In fact, all of the performance results were better than the contract guarantees. It was noted that, in rough water, visibility in the initial takeoff run was obstructed by large amounts of water coming up over the hull into the windshield. However, full rough water tests were waived on the basis of satisfactory results in commercial service. After some hull damage — apparently due to striking an object in the smooth water tests — was repaired, the trials were completed and the airplane delivered to VJ-1 at San Diego, where it joined the other two of the first three JRS-1s purchased.

Ten more JRS-1s were bought on the next contract, including two for the Marines, with four more following on a third and final contract — for a total of 17. With delivery of the BIS trials aircraft for the second contract, the emphasis was on the rough water tests that had been waived for the original trials. In February 1938, these tests began at Norfolk in moderately rough water.

In addition to the water over the hull obstructing takeoff visibility, it also limited landing visibility and hull damage occurred in the first landing. Following repairs, the next takeoff was aborted after considerable damage occurred to the hull, windshield and a wing strut attachment lug. It was then decided to restrict the airplanes to operation in three-foot maximum

waves and the BIS trials were concluded using another airplane from this contract and the first of the final contract.

As the rest of the JRS-1s were delivered, most of the Navy's 15 went to San Diego and VJ-1, which operated eight of them. They were attached to USS *Rigel*, serving as the tender for the Pacific Fleet utility squadrons. The VJ-1 aircraft were delivered with the colorful squadron markings of the period and operated with these in their early years. By 1940, VJ-2 was also operating JRSs, and VJ-1's Hawaiian detachment had introduced them to regular operations in the Hawaiian islands, where the aircraft reached a high point in its Navy service.

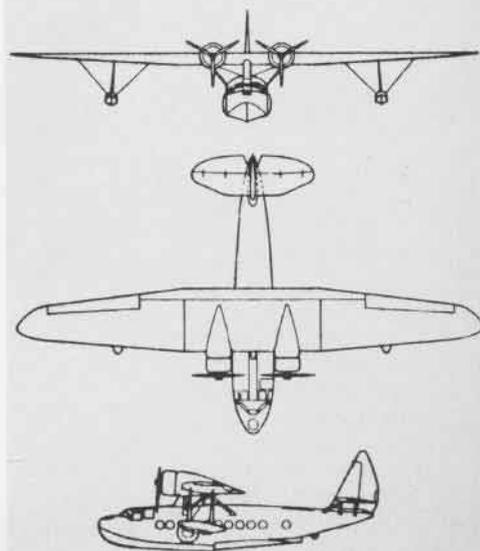
Marine JRS operations ended in December 1941. One aircraft was lost in a 1941 accident (the first lost after an early 1937 VJ-1 crash), and the second was damaged enough in the December 7 attack so that it was subsequently stricken. In the days following the attack, serviceable JRSs were pressed into use as patrol planes, complete with rifle-equipped Marines ready to fire out the cabin windows.

The JRSs continued in service during the early war years and were dispersed to more operating locations around the U.S. Two sank in the Pacific after forced landings. In mid-1943, phaseout began and the last was retired in November 1944. Fortunately, one aircraft survived and is among the National Air and Space Museum's inventory. Another, a commercial S-43 originally owned by Howard Hughes, is being restored in private hands. ■

JRS-1



Span	86'
Length	51' 1"
Height	20' 2"
Gross weight	19,500 lbs.
Power plants	
Two P&W R-1690-52	750 hp
Maximum speed	191 mph
Service ceiling	19,800'
Range	1,623 mi.
Crew	5
Passengers	14





The final stop of Johnson's unforgettable journey was the airport at Ramona, Calif., viewed here off the Skybolt's port wing.

A Real Cross-Country

By Major Greg Johnson, USMC

Thomas Wolfe said you can't go home again, that you can't recapture the past. He was right, but not entirely. I had the good fortune to emulate the flyers from the distant past — to pretend, so to speak, to be like the Sky Knight, my boyhood hero who existed only in a book but who flew the first mail runs in a surplus WW I biplane. His triumphs, defeats and sorrows never left me. Last year, I, too, flew a biplane on a once-in-a-lifetime, five-day sojourn from Virginia to California, following my transfer from Quantico to El Toro. My trip may not have included triumphs, defeats or sorrows, but memories of it will linger for a long time.

I had motored my bride and our

infant son from east to west and returned by commercial air to retrieve and ferry across the country my home-built, open-cockpit, red *Skybolt* biplane which I had hangered at a small airfield in Fredericksburg, Va. An experienced military pilot with 15 years of flying and 4,000 hours in the logbook, I hesitated to undertake what I figured to be an austere journey in an aircraft with limited navigational aids and no radios. Spoiled by modern technology, I was overwhelmed at how best to prepare my route to avoid controlled airspace and hostile terrain, yet find suitable refueling stops along the way with a 160-nautical mile capability.

Basics learned in flight school, such

as navigation and meteorology, were rusty to say the least. One basic ingredient that I decided would be as important as any other was common sense — the same common sense that had been hammered into me during flight school and which I eventually used as a training command instructor and in all other military flying assignments. Although I considered myself a disciplined aviator, I felt it was crucial to examine every facet of planning and execution with special fervor. For example, I always used a checklist in a military aircraft. Yet on balmy weekends at the airstrip, when the engine of my biplane burst into life and prop wash hit me in the face, I leaned somewhat toward a cavalier

attitude. Kick the tire, light the fire and let's go. I vowed to combat that irreverent mindset and spent countless hours planning the flight.

The weather was CAVU (ceiling and visibility unlimited) on day one at Fredericksburg which, incidentally, is George Washington's birthplace. I lumbered off, heavy with fuel and a front cockpit full of assorted tools, survival gear and clothes. I wore my flight jacket and hard hat. Passing over Thomas Jefferson's home, Monticello, in Charlottesville, I turned west, aimed at the Blue Ridge Mountains, into a 25-knot headwind which makes for slow going in a flying machine whose power plant generates a maximum of 150 horsepower. My indicated airspeed was 110 knots.

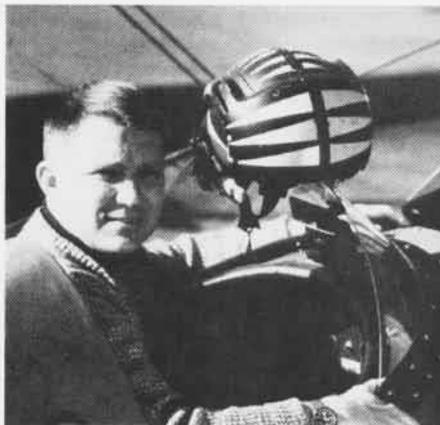
In scanning the vast, rolling expanse, I became acutely aware of the paucity of landing sites. My terrain map was misleading in the sense that it did not depict the winding roads and "put down" areas clearly enough for me. I had identified no less than 60 emergency landing fields for weather divers or aircraft problems. Playing it safe, respecting the winds and fuel consumption, I decided to land short of my original, day-one destination. Before departure, I had calculated I could cover the total distance in four days sans meteorological or mechanical setbacks. While setting down early the first day would add a day, it bothered me not. So, as the sun began setting in the west, I swung the *Skybolt* downward and alighted on the strip at Lonesome Pine, W.V. There were no accommodations nearby so I pitched my tent next to the biplane, ate some C rations and turned in early.

Day two featured a 6,000-foot overcast but, since the highest terrain I expected to encounter was 5,000 feet and the visibility was good, I launched. I needed carburetor heat even though there were no visible signs of moisture. It was 50 degrees F but there was a 70-degree temperature drop through the carburetor venturi and it was humid. Thus, ice formed and had to be countered. I escaped the potential wrath of the mountains and journeyed into the less threatening plains of northern Arkansas and Oklahoma, making numerous fueling stops along the way.

From the outset, I met only friendly people. They liked to look at the airplane and chat a bit, and inevitably sent me on my way with genuine best wishes for a safe trip. It seemed that when these folks learned I was a military pilot their eyes lit up with special interest. With rare exception, I was asked if I had seen the movie *Top*

Gun. (Not only had I seen it, but I was one of the lucky officers invited to the premiere showing in Washington, D.C., with Tom Cruise, the film's star, in attendance.) It made me feel good when people perked up at the notion that I was a Marine Corps aviator.

Passing over Oklahoma and into Texas on day three, I crossed many pale red rivers swollen from floods. At Antlers, Okla., I refueled not far from U.S. Air Force F-16s and A-7s flying at low 300-foot levels. Had I been aloft in my defenseless *Skybolt*, and spotted by



Author in biplane's rear cockpit. Johnson has logged 4,000 hours of military flying but the 32 hours (and 22 stops) he recorded en route from Virginia to California in the home-built *Skybolt* were as memorable as any of the others.

them, I was certain that they would have made a run on me.

In Texas, I landed at an old WW II bomber training base in Childress, a desolate place which must have been the hub of activity a couple of generations ago. The next day, fortified by a good forecast, I proceeded westward hoping to reach Grants, N.M. — flying low along the Red River Canyon, then west to the Prairie Dog Town Fork in the river. I added power to rise over a high, massive plateau called Llano Estacado. I bunted over the crest only to encounter a thick cloud layer at 2,000 feet. It ran from horizon to horizon, north to south. I motored underneath the lid of gray-white clouds confident that I could navigate with minimum trouble. But I was pressed lower and lower toward the ground. Wary of the hazard of running out of flying room, I punched up through a small opening to study the sky. At 3,500 feet, I saw that except to the east — from where I came — clouds ran in all directions.

Decision time. I elected to press on for 20 minutes westward. I had plenty of fuel and figured I could turn back if the weather didn't abate. After 20 minutes, the earth was still in its whitish shroud. I climbed up to 9,500 feet, at the tedious rate of about 350 feet per minute and 90 knots. As I did so, I imagined reading about myself in Grampaw Pettibone's column. "Am I



When the author touched down at Ramona's airport, he completed a once-in-a-lifetime adventure.

pushing too hard?" I asked myself.

Just then, I detected a hint of horizon to the west. As luck would have it, I was only six minutes from Hereford, Texas, my refueling stop. I descended over a cattle range and circled to get my bearings. I couldn't spot the field and got a bit itchy about my fuel state. Oh well, it's a farmer's field for me. I landed in what appeared to be, and ultimately was, a cow pasture. Brown deposits, of a suspicious if common nature, were dispersed liberally about. As a result, the tread of my tires got well caked. In a way, I really did grease my bird in for a landing, but it was a bumpy rollout, nonetheless. I taxied up to a fence that paralleled a hardtop road near a barn and a few houses.

I shut down, extricated myself from the cockpit and hopped over the fence. Happily, there were no cattle near the airplane. I had heard that the cloth on fabric-covered aircraft appeals to cows because of the dope in the compound used in construction. The bovine population could lick and chew on my bird and really play havoc with its lift characteristics.

A sizable old dog sat on the porch of the first house I approached. He eyeballed me rather angrily so I went further down the road where I saw a man going into a barn. I followed him and met up with five younger men who looked at me as if I had just landed from outer space. I explained my situation and asked if I could use a phone. They had one in the barn and I called flight service to cancel my flight plan. Then I asked the farmer where the airfield was located.

"Nine miles down the road to the south," said the older man.

I called the field and was told it was socked in but should clear in awhile. So I chatted with my hosts as they gave me a VIP tour of their pig farm. I smiled throughout and expressed sincere appreciation to them, all the while holding back sickening twists in my stomach. The odor was brutal. Pride and a sense of honor stood me well, however, and I didn't vomit. I had never smelled anything quite like that place.

They escorted me to my airplane and helped me turn it around for takeoff. As they showered me with questions, I answered as best I could. I cleaned my boots thoroughly and strapped into the *Skybolt*. Moments later, I sped over the bumpy pasture and leapt into the sky. I reversed course and made a low pass, rocking my wings in farewell. As I pulled up and headed south, I could see them waving vigorously at me.

Five minutes later, I landed in Hereford. I examined the engine and noticed two cracks in the starboard

exhaust stack. They had to be rewelded. I asked if there was a muffler shop in town. There wasn't, but a mechanic in the next hangar could weld it himself, I was told. My welder was "Pit" Pittinger, a tall, stout man in his early sixties.

"No problem," said Pit. "We can fix it."

It took us 20 minutes to pull the stack. We hauled it inside his large, impeccably clean hangar where I spotted an old WW II Cessna UC-78 "Bamboo Bomber." While welding the stack, Pit encouraged me to take a good look at the ancient bird. He had bought it a few months back and was restoring it. He told me a story while he worked.

Seems he was ferrying the Cessna from Colorado when the cabin entry door behind the left seat opened in flight. Pit couldn't reach the handle from his seat. While gripping the yoke, he got out of his seat and stepped back to try to close the door. Just as he grasped the handle, the Cessna went through a pocket of turbulence which rocked the airplane. Pit's knee buckled and he fell away from the yoke. The plane pitched nose up and Pit was thrown into the rear of the cabin. Somehow he managed to work his way back into the seat and stabilize the aircraft.

When he landed at an interim airport near Hereford, officials became suspicious of the old airplane that rumbled in without notice. Suspecting that he was a drug runner, they surrounded the plane but collapsed in laughter when they saw it was their old and harmless buddy Pit.

"Follow the hard road that leads out of Hereford until it comes to an end and turn right 10 degrees," advised Pit after repairs were completed. "Head west and you'll run into Santa Rosa. There's a good truck stop near the airport if you're hungry."

Another happy goodbye and I was aloft in a clear, windless sky. I flew

over a parched valley in seething acres of storm-raked sky until I found Interstate 40. Navigation was easy. On occasion, however, I dipped down to 500 feet to read road signs and ensure I was on track. When low to the ground, I couldn't help imagining myself as one of the Doolittle Raiders spending 30 seconds over Tokyo. I even hummed the music from the film.

After Santa Rosa, I set out for Albuquerque. Transiting the Tijeras Pass of the Sandia Mountains into the city, I met a gaggle of colorful hot air balloons. I learned later that it was Balloon Fiesta Week. After landing at Coronado airport, I settled in for the night. Next morning, I eluded the balloons which, like me, had launched at sunrise. I had to maneuver to avoid an intriguing hot air replica of Mr. Peanut (of Planters fame).

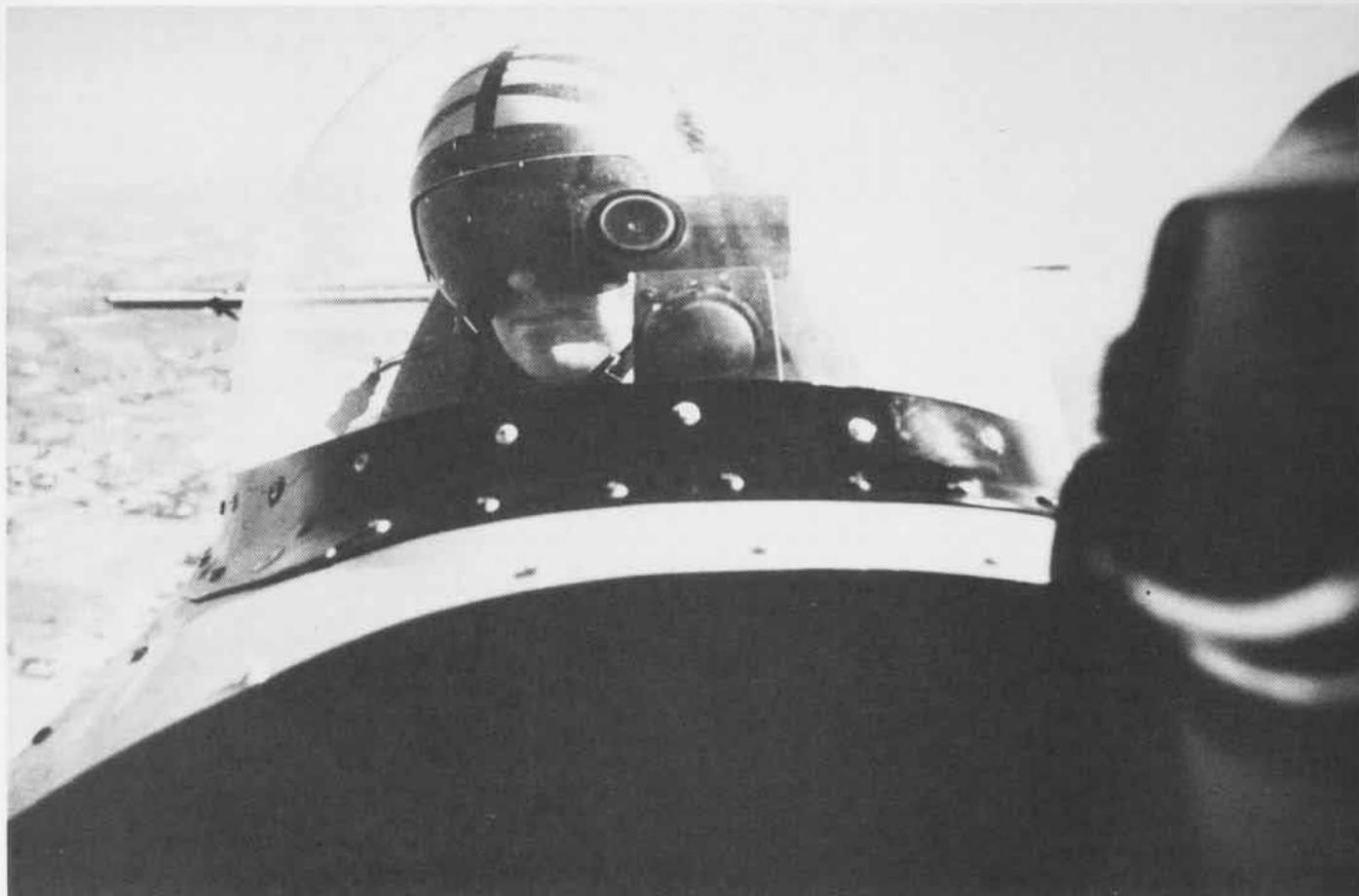
I landed at Grants, N.M., then Holbrook, Ariz., en route to which I marveled at the pastel hues of the Petrified Forest. I refueled at Flagstaff, but had to orbit a few minutes awaiting a green light for clearance since I had no radio. Unlike most of my previous landing points, this one had a manned tower. Then it was westward again to Kingman via Interstate 40. Kingman is a graveyard for DC-8s and their deteriorating hulks were a depressing sight. Too bad, I thought, that aircraft which have served us so well are committed to such an end.

I went on to Lake Havasu, famous as the location of the London Bridge. The Colorado River runs by. The landing strip is situated on a jetty of land in a bend of the river. It was a lovely sight as I rolled onto the runway at sunset.

At the hotel, I flipped on the television set only to hear weather warnings which included 100-knot winds. I hurried outside and hitched a ride back to the airport to arrange for hangar space. It was raining hard now and the wind was howling. The elevators were banging furiously and the cockpit cover had blown off the



Texas pig farmers were intrigued by the red *Skybolt* after Johnson landed in a pasture, short of his destination airfield.



Johnson had an eagle's eye view of an abundant stretch of countryside on the five-day sojourn.

machine. I fired her up and taxied through the dark and heavy rain to the hangar where I put the old bird to bed. Day five was ahead.

I crossed the London Bridge on the way back to the airport in the morning, manned up and flew by the Salton Sea to Thermal, Calif, my last refueling stop. I had flown 3,000 miles and now there were only 50 miles to go before closing out the final flight plan at Ramona, Calif. Trouble was, a NOTAM (notice to airmen) had been issued closing the field down for the day because of an Air Force exercise. I decided to fly to Borrego Valley, since it was 25 miles from Ramona, and landed at the airport only to get stuck in the mud. I taxied toward the only buildings on the airfield. As I swung around to park, my left main wheel and tail slipped off and sank into the soft ground. I was uncomfortably close to a parked Cessna so I shut my bird down, not a little embarrassed, and tried to wrestle it out of the mud and back up onto the apron. I grunted and growled, pushed and shoved, but without success. The nose of the biplane remained perpendicular to the line of stationary planes. Several people were in the area but paid little attention to

me. I tried to act casual about the dilemma. After an interminable period of stress and strain, I noticed an older gentleman leaning on the nearby fence. Apparently, he had been watching me for some time. Finally, he spoke.

"Kick your rear wheel around. Push the plane back in the same direction you went into the mud. Then go forward." His tone was authoritative. I obeyed. It worked.

We talked for awhile, then I asked, "Why did you wait so long to tell me how to get unstuck?"

There was a twinkle in his eye as he replied, "Just wanted to see you work up a little sweat and think the situation out first."

In the airport cafe, the waitresses chided me about my pretty red airplane in the mud. Too bad the wheels got dirty, they laughed. Apparently, I was the main source of entertainment at Borrego Valley that day. I paid up and appreciated the waitresses' wishes of good luck as I trudged over to the flight planning room.

I called flight service and learned that the NOTAM for Ramona had been lifted but that I'd better hurry because some weather was moving in. So I

hustled into the *Skybolt* and took off. I had to cross a 5,000-foot mountain range and weave my way through some valleys, just like the Sky Knight of yesteryear. It was exhilarating rather than frightening. I loved every minute of it — the sound of my engine purring nicely, the steady wind streaming over me, and knowing that I would soon see my wife and son and have a thousand stories to tell.

After the final landing, I did some quick calculations. I had logged more than 32 hours in the air and landed at 22 airports and one pig farm. I saw a very large portion of this great country of ours from the vantage point of an eagle. I met a wonderful cadre of people who were, invariably, friendly and supportive. It was a grand experience from beginning to end.

I am grateful for my military training. It helped immensely. I am equally grateful to the pioneers who made such journeys several generations ago and who inspired me to take up a career as a U.S. Marine Corps aviator. I am also especially grateful to the Sky Knight, and to my *Skybolt*, a small flying machine with a big heart. She was a great companion on a true cross-country flight. ■



Lt. Cdr. Hubert examines an F-4 Phantom's ejection seat before entering the cockpit.

Julius L. Evans

Reaching for the Stars

By JO2 Julius L. Evans

astronaut, but I didn't have a plan."

At that time, none of the branches were aggressively recruiting women for military service. "The recruiters came to the college campuses and lectured students about joining the service, but the lectures weren't geared toward women," Hubert explained. "I heard a radio announcement that the Navy had accepted eight applicants for an experimental flight training program for women, so I got as much information about it as possible."

She also got something she wasn't looking for — resistance. Almost every recruiter to whom Hubert spoke had other priorities over recruiting her. They explained there were no requirements for women in flying and they didn't think it would be worth her time.

Hubert remembered the ordeal the recruiters put her through while inquiring about joining the military. "The Air Force told me they would never accept women flyers. All their airplanes were tactical and women would never fly them," she said. "The Army and Coast Guard said female flyers were something for the future. The Marines just looked at me funny and laughed."

Hubert received little encouragement and it seemed she was fighting a battle all by herself. "Even after going back to the Navy recruiter, there was small incentive to join. Instead, he kept saying he didn't think there was much chance of this happening and it would end up being a big letdown for me.

The thought of being "let down" made her more determined. After the Navy recruiter told her to go back to whatever she was doing and forget about becoming a flyer, Hubert went out on her own and took private flying lessons.

"Beth saved her money to pay for the lessons," said Hubert's mother, Juanita Allison, of Sedro Woolley, Wash. "She was very persistent in trying to join the service."

Hubert pointed out, "Since I wanted to become a Navy flyer, I tried to prepare myself for it." She thought her private flying lessons would better qualify her as a future Naval Aviator, but she still had to go up against some tough competition.

Although it was not a requirement,

many of the women in the early training program had substantial flying experience. With only 20 flight hours under her belt, Hubert had her work cut out for her.

"I knew I didn't have the experience that many of the other selected women had, so I tried to find some way of making myself stand out from the crowd," Hubert said. She got a job at Washington State University's research nuclear reactor and, over the course of a year and a half, she managed to earn her license to operate it. At the time, the Nuclear Regulatory Commission told her that less than 10 women in the United States had possession of one. With that, she hoped it would give her an edge on getting into Naval Aviation.

When she was accepted at the Naval Aviation Officer Candidate School (AOCS) at Pensacola, Fla., in October 1977, she brought with her a bachelor of science in mathematics and physical sciences, and the resolution to succeed.

That determination enabled Hubert to graduate from AOCS as number one in a class of 30 students. She received her commission as an ensign on February 3, 1978, and went on to Training Squadron (VT) Six at NAS Whiting Field, Fla., to fly the T-28 *Trojan*.

Her advanced flight training took place at VT-28 in 1979 flying the twin-engine, turboprop T-44 *Pegasus* at NAS Corpus Christi, Texas, where she was later selected as the squadron's student of the year. One month later, she was awarded her Wings of Gold.

Finally, after completing a tour at Fleet Composite Squadron Two, Hubert was assigned to Attack Squadron 42 in October 1980 at NAS Oceana, Va., where she became the first woman to fly the carrier-based A-6E *Intruder*. With her new skills, Hubert achieved another milestone in her career.

In 1981, she was assigned to Aircraft Ferry Squadron (VRF) 31 at NAS Norfolk, Va. Her duties took her as far away as Japan and Puerto Rico, transporting aircraft from factories to squadrons. This gave her the opportunity to fly up to 15 different aircraft, including the P-3 *Orion*, E-2 *Hawkeye*, C-12 *Super King Air* and several other multiengine prop planes.

Alan Shepard's historic flight into space on May 5, 1961, was not only a major step for man in the field of aeronautical technology, it was also an inspiration to millions of people. Little did he know that his flight as the first American in space would have an impact on a small child in Spokane, Wash. From the moment Shepard blasted off, Beth E. Hubert knew what she wanted to do with her life.

The Navy's first female jet test pilot, based at the Naval Air Test Center (NATC), Patuxent River, Md., has had her heart set on flying high with the space program since childhood. Lieutenant Commander Hubert watched and charted each space mission starting at the age of seven. As she grew older, and further pursued her dreams, obstacles began to cloud her skies. If it weren't for the determination and will power she showed throughout her adolescence, the 32-year-old pilot may not have catapulted to the position she holds today.

"In the sixties and early seventies, most astronauts were military pilots," Hubert said. "I wanted to become an

However, even with the training she had acquired, she still was far from becoming an astronaut.

Keeping this in mind, Hubert applied to the Naval Test Pilot School (TPS), in Patuxent River, Md., one of the starting places for the past space travelers.

"The school, which is geared toward junior officers, targeted the pilot, at that time, with an average of 1,500 flight hours," she said, "but the average flyer wasn't leaving his first command with that many hours."

Hubert explained that even senior lieutenants, who had a sea duty tour, came back with about 950-1,200 hours, which disqualified them to apply for TPS. "The only guys who had the amount of time required were the ones that had another shore or sea tour and, by that time, they were getting pretty senior," she added.

The flight time requirement was therefore lowered to 1,000 hours. However, when Hubert first pursued enrollment, she was turned down because she had only 980 hours in the air. But her amount of flight hours weren't the only reason she was not accepted. She had no operational experience flying in tactical aviation.

One month after her tour ended in VRF-31, Hubert was transferred to VT-7 at NAS Meridian, Miss., for tactical refresher training in the TA-4J *Skyhawk* trainer jet. Hubert carrier-qualified in November 1982 aboard USS *Constellation* (CV-64). She then reapplied to Naval Test Pilot School.

While waiting for a response to her application, Hubert reported to Air Test and Evaluation Squadron (VX) Five, China Lake, Calif., in January 1983, to fly the *Skyhawk* in simulated tactical air strike scenarios. En route to VX-5, she was chosen as the first female fixed-winged pilot to attend TPS. In September, she was selected to participate in the NPS/TPS Cooperative Master's Degree Program at the Naval Postgraduate School (NPS) in Monterey, Calif. This program picks the best pilots to attend NPS for one year, followed by 11 months at TPS. Afterwards, aviators spend two years as test pilots in a test directorate at NATC. As a former mechanical engineering student, before a change in her undergraduate major, Hubert had the strong engineering background required for the cooperative program. She was the first woman to be enrolled in the NPS/TPS syllabus.

After three months' refresher training in the TA-4J at NAS Lemoore's VA-127 in California, Hubert came one step closer to making history as the second woman to attend the prestigious TPS (see "Navy's First

Female Test Pilot, November-December 1985). As a student test pilot, she flew 10 different aircraft, including the T-38 *Talon*, T-2 *Buckeye* and the F/A-18 *Hornet*.

Today, Hubert holds a master of science degree in aeronautical engineering and is assigned to NATC's Strike Aircraft Test Directorate in the Ordnance Test Section, where she presently flies the F-4 *Phantom*, A-4 *Skyhawk* and the OV-10 *Bronco*.

Hubert seldom looks back at all she experienced to get this far. But regarding the feelings occasionally expressed by her peers about her taking a seat that could belong to a sea-going male pilot, she said, "The thing they don't see is that I don't get the opportunity to do a lot of things the male officers do. I can understand their gripes, but I also know that the problem — if there is a problem — lies within the system, not with the individual. I'm working within the system the best I can."

Hubert may someday pay the price

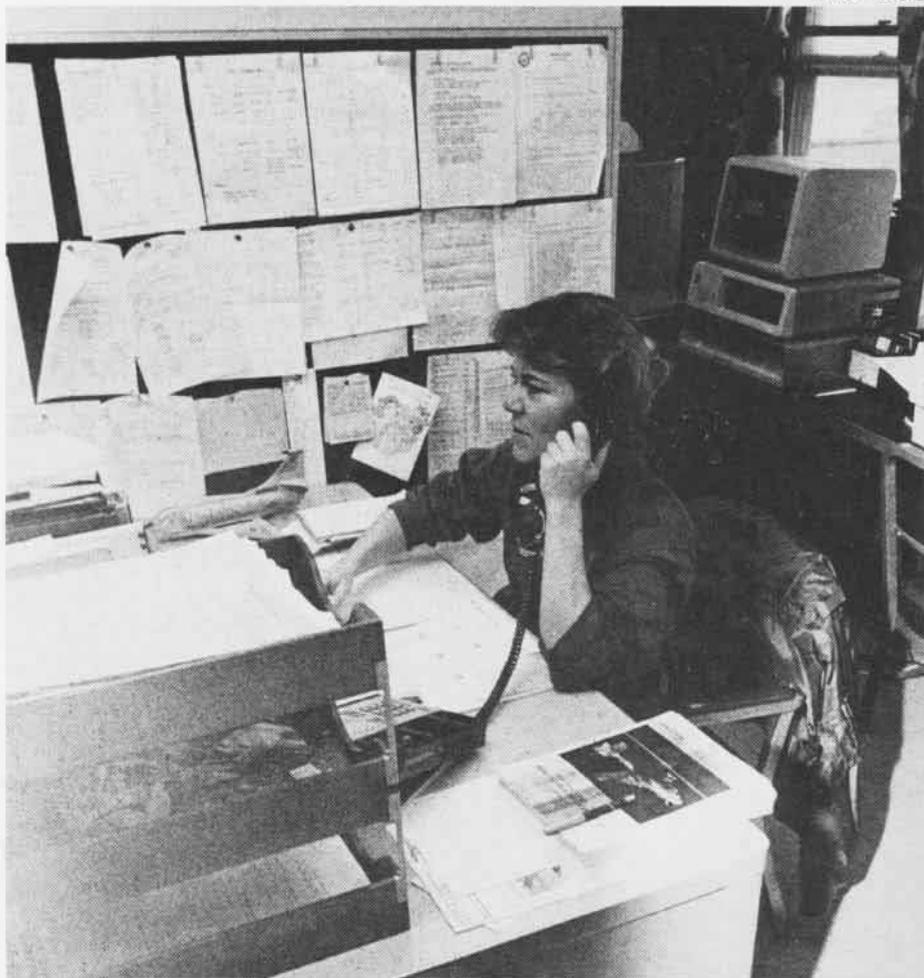
for working in that system. At least that's how her father sees it. While speaking to one of Beth's superior officers, Edward Hubert of Spokane, Wash., learned that if women pilots are ever allowed to engage in combat, his daughter will be one of the first considered to go.

While she continues to progress at NATC, Lt.Cdr. Hubert also awaits the opportunity to fulfill her lifelong ambition.

In November 1986, she applied for the astronaut program. The Navy approved her application and, recently, she was nominated for mission specialist training. Now, it's up to the National Aeronautics and Space Administration to make its 1987 selections.

Perhaps one clear morning another ambitious child will glance into the skies and behold the wonders that technology unlocks for those who dare to aim for the stars. For Lt.Cdr. Beth E. Hubert, the stars are practically within reach. ■

Julius L. Evans



A busy day as the operations officer is mere routine for Lt.Cdr. Hubert in the high-tempo Strike Directorate.



Cdr. Michael E. Nocton boards an A-6E Intruder at NAS Oceana during a drill weekend. In civilian life, he owns a farm in Indiana.

What does a squadron do, while deployed at sea, if one of its aviators is grounded for medical reasons? In short, it puts out a call for help and a replacement is supplied by the squadron augmentation unit (SAU) without disrupting the squadron's operational commitments.

An SAU is a squadron that provides flight crews and maintenance personnel to active duty squadrons in times of need. It is manned by naval reservists during their drill weekends and active duty for training periods.

Early last year, while VA-85 was deployed to the Mediterranean aboard USS *Saratoga*, a bombardier/navigator (BN) was grounded for a twisted ankle. The skipper, Commander Bob Day, requested immediate assistance from Medium Attack Wing One, NAS Oceana, Va. In the past, a stateside squadron would have to "give up" one of its BNs to the deployed squadron in need. Not today. The recent horizontal integration concept presents another option by using SAUs. VA-85's need was filled by a selected reservist from VA-0686, located at NAS Oceana.

In less than 48 hours, the BN replacement, Lieutenant Commander Thomas C. Stewart, arrived on board *Saratoga*. With little time and effort, he was integrated into the training schedule. Lt.Cdr. Stewart, fully qualified in the A-6E, is now the executive officer of VA-0686.

"This is the best job in the Navy now," states Lt.Cdr. Stewart. "It gives an individual an opportunity not only to participate in the 'One Navy' concept,

Squadron Augmentation at Work

By JO1 Don Savage, USNR-R

but to be able to join in real-time U.S. Navy contingency needs throughout the world. Before [the SAU], some exceptional people were leaving the reserves. The mission [then] was for major mobilization rather than to satisfy immediate needs. We can now step in and, within 24 hours, make a significant contribution."

"The barrier has been broken between the reserve and the active duty communities," says Commander Michael E. Nocton, commanding officer, VA-0686. Nocton spent over 199 days on active duty during 1986. Much of that time was spent deployed in the Mediterranean aboard four different aircraft carriers.

"I was lucky enough to be the first reserve augment pilot chosen to deploy with a tactical squadron," he says. "I also had the opportunity to fly as many hours last year as most regular Navy pilots, with 134 traps in five different squadrons."

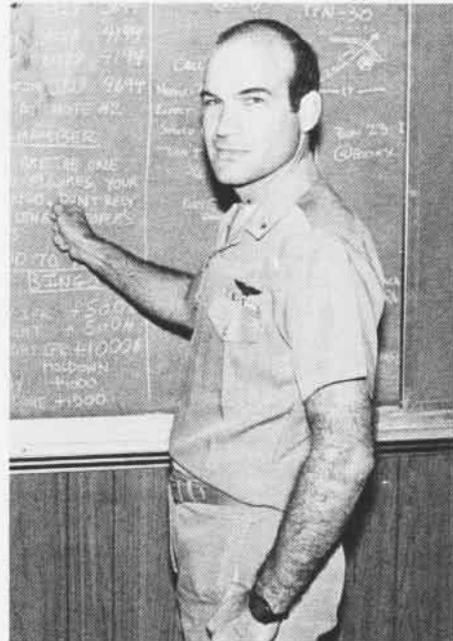
Staying "current," particularly as a reserve BN, requires a major commitment to the Naval Air Reserve. In addition to the one-weekend-a-month routine, reservists such as Cdr. Nocton and Lt.Cdr. Stewart sacrifice a tremendous number of weekends and holidays to work with their regular Navy counterparts.

"We want our people to fit in professionally," says Stewart. "Everyone here has a minimum of 1,000 hours of flight time and at least two deployments — our people are highly qualified in the A-6 mission."

VA-0686 has 16 officers and 38 enlisted personnel assigned but no aircraft. The aircrews fly A-6s belonging to VA-42 during their drill weekends. While on active duty for training, the personnel utilize the aircraft that belong to the squadron they are augmenting.

The enlisted personnel continuously train to support the A-6 in maintenance, supply and other ground

PH1 John Fleming, USNR-R



Classroom training is part of the job for Lt.Cdr. Thomas C. Stewart. As a civilian, he is associated with a New York investment banking firm.

support areas. They also must rely on another squadron's aircraft to stay current in their individual ratings.

A measure of the success VA-0686 has achieved since its first flight in 1983 is the fact that it is the only tactical A-6 SAU to achieve R-1 readiness status, the highest state of readiness in the reserve program. The training that members receive in the tactical squadrons puts them on the same level as their active duty counterparts. This cuts down the orientation period needed when they deploy. That could make the difference in an emergency situation.

Reservists realize that they can be ordered into combat at a moment's notice. That's part of what makes their jobs so exciting.

Squadron augmentation units provide the fleet with personnel who are trained to meet the readiness challenge and to carry on the tradition dating back to the American Revolution's minutemen. ■

NJROTC—Building Pride and Discipline

By JO2 Julius L. Evans

Imagine going through boot camp during your freshman year in high school. Reveille sounds at 5 a.m., allowing enough time to prepare for the 6 a.m. room and uniform inspections. Fifteen minutes are spent forming up and marching to eat breakfast at the chow hall. Then, the day begins.

It may not be quite as rigorous as described above, but presently 31,000 high schoolers in grades nine through 12 are taking advantage of the opportunity to develop a unique kind of discipline by experiencing Navy life — including Naval Aviation — firsthand.

The Naval Junior Reserve Officer Training Corps (NJROTC), headquartered at the Chief of Naval Education and Training (CNET), NAS Pensacola, Fla., offers students the opportunity to learn about patriotism, leadership and discipline — the Navy way. It is a high school program which allows both male and female students to examine the Navy up close. Classes teach citizenship and respect for our country, and give students a better understanding of military service.

The NJROTC classes earn students credits equivalent to science subjects in many schools, since some of the courses include oceanography, meteorology and navigation. In most schools, classes meet three times a week, students wear their Navy uniforms at least once a week, and they drill twice weekly. There are some junior naval academies — such as Farragut Academy in Sandy Hook, N.J., and St. Petersburg, Fla. — in which the entire student body is part of the NJROTC program.

Captain Earle Rogers II is the director of the NJROTC program, which comprises 241 units. CNET administers the program.

It is coincidental that the NJROTC program is home-based at a naval air station. But Capt. Rogers, a Naval Aviator, said, "Most of the men and women [in NJROTC] are so totally outstanding that I would love to serve in a squadron with them."

He emphasized, "We've found that the students enrolled in the program show a high degree of self-discipline,"

which is important when they take cross-country trips to see the Navy in action. Occasionally, students fly in military C-9s to experience military life at some of the major naval bases around the country.

In fact, two units from Florida and New Mexico paid a recent visit to Pensacola. The groups spent time aboard USS *Lexington* (AVT-16), at the Naval Aviation Museum, and in a flight simulator which allowed them to be "catapulted" from the deck of an aircraft carrier — an experience most people can only imagine.

Depending on the high school, NJROTC courses span three or four years but, once enrolled, the student is not obligated to continue in the program. Also, "If a student does not observe the uniform, personal conduct or academic requirements, he may be discharged from the program," Rogers said. There are times when the student may have to drop out for other reasons.

"A young person may get out of the program [at any time]," Rogers pointed out. "A lot of the people who are on their way to college may be in [NJROTC] for two years and must leave in order to fulfill their curriculum requirements with college-bound courses."

One way for a student to earn his way to higher learning is through one of the 75 full college scholarships that NJROTC offers to its outstanding students. For those who plan to join the Navy after high school, the program entitles — upon enlistment — recruits to immediate advancement to the paygrade of E-2 for those students who have completed two years of NJROTC, and E-3 for three and four-year graduates.

How prepared for naval service will the students be after NJROTC courses? "If you were a boot camp company commander," said Rogers, "you'd probably want this young person as your recruit chief petty officer." NJROTC students spend time after school and on weekends marching, preparing for parades and ceremonies, and keeping their military skills sharp.

An increasing number of high schools are beginning to offer the program, which explains the continuing growth in enrollment. "Right now, across the nation, there is a good,



Cadet Cosme, originally from Spain but currently a member of the NJROTC unit at Port St. Joe, Fla., High School listens to a simulator instructor prior to "launch" in the T-2 training simulator.

strong feeling about [NJROTC] which may have been different about 10 years ago when the U.S. was rebounding from the Vietnam era," Rogers said.

Capt. Rogers explained another way many people find out about the program: "When an NJROTC group returns from Pensacola or Norfolk, Va., on that C-9 and they land in some of the places [which seem] remote from the Navy, these kids talk for weeks about what they did." Living in the barracks, eating in the chow hall and seeing the *Blue Angels* are good recruiting tools.

"I'm encouraged about the future of America when I see these young men and women," Rogers continued. "It's a brilliant idea for the future because we've got a lot at stake. [The students] we are putting through the NJROTC program are going to pay great dividends to our national future because of what they've been exposed to and what they have learned."

One day, in an inland town, far from the coasts normally associated with the Navy, the townspeople may awake to the stomping of boondockers and calling of cadence by new recruits. The sounds reflect a newly acquired discipline of which NJROTC students can be very proud. ■

For information on the program, contact Commander Dave Hull, NJROTC Operations Officer, CNET, NAS Pensacola, Fla., 32508, autovon 922-4949 or (904) 452-4949.

A Caravan of Thieves

By Captain Maury Cagle, USNR-R(Ret.)



Last year's 75th Anniversary celebration provided many opportunities to rediscover the heritage of Naval Aviation. One of the more interesting glimpses of the early days came from an interview with a 99-year-old man who flew in France for the Navy in WW I.

Malcolm Sidney "Max" Brainard entered the Navy in 1907 and, by the start of WW I, was a chief radioman. He held one of the first international telegrapher's licenses and was an expert in sending and receiving Morse code. This expertise led to an early assignment in Europe, a promotion to gunner (warrant officer), and eventually to a post at U.S. Naval Air Station, Ile Tudy, France, on the coast of the Bay of Biscay.

Brainard was interviewed in the picturesque little town of Brookings, Ore., in a rest home where he had moved because of a broken hip a year earlier. He proved to be alert, salty, opinionated, full of good humor and able to vividly recall his days in aviation.

Cagle: If all your Navy experience was in radio, how did you end up flying?

Brainard: By the last year of the war, the Allies had gone through a lot of planes and pilots. The British and French could replace the planes but did not have the training organization to replace pilots, so they asked for American assistance. One day, the squadron C.O., Coast Guard Captain C. E. Sugden, told me I would be learning to fly — so I did.

So it was simply another duty?

That's right. The regular Navy people [like myself] formed the core of the outfit, and you were expected to do anything that was needed to get the job done.

What kind of training did you receive?

(Laughter.) Well, I remember this French captain who pointed out a sign on the dashboard which said, 'If you pull on the stick, you will go up. If you push...'

What kind of aircraft did you fly?

Mostly DDs, or Le Pen flying boats. Anything with a Hispano or Hispano-Suiza engine. They were the best.

They were better than the American HS flying boats?

Oh my, yes. Those were just too cumbersome, and the pilot had poor visibility. The H-16s weren't too good, either — they chewed up too much gas. Actually, none of the them were very good aeronautically. I think someone sitting at a desk — waffle bottoms, we called them — thought, 'This is a good design, let's order a hundred of them and dump them on the boys.'

So the Americans had to learn to maintain foreign equipment?

Yes, and I don't think enough tribute has been paid to the mechanics and carpenters who kept those planes flying. The motors were reliable but mostly because the Yanks took the time to do a good job. It was their first experience with the metric system. We had nuts and bolts all over the place.

Were parts hard to come by?

I'll tell you. We [at Ile Tudy] were disliked by the rest of the Navy air personnel, because we were just a caravan of thieves. That was the only way we could stay in the air. We were

"...we were just a caravan of thieves."

at the end of the supply line [due to our remote location] and if we waited for requisitions to get filled, we would have been out of business.

What was a typical maintenance problem?

One of the worst was the propellers we had. The laminations kept coming apart at the tips, from the saltwater, I guess. It became standard practice to trim the fuzzed ends with a hacksaw to eliminate engine vibration. Then there were pitot tubes which read zero downwind and 150 km against the wind, tachometers with smeared figures, busted glass in the oil pressure gauge, and empty holes in the dashboard where some instrument should have been.

Was maintenance an all-hands effort?

No, we kept our hands out of it. If we felt a vibration or heard a squeak on the plane somewhere, we'd tell the rigging master. The mechanics were good. One of the best was a fellow named Jim Baker from Kansas City. Whenever he'd tinker with a plane, he'd come out and say, 'Sparks, let's take this [plane] up and see whether we can fall out of it or not.' He didn't trust anyone else to advise him on how the motor was running. He'd be in a hurry on a hot summer day, and I'd be in my BVDs. We'd take off and I'd get up to 1,100 feet — then wham! We'd get hit by a blast of air off the alps at about two below zero. Jim didn't love me very much.

"We had a record of getting things done."

That brings up an interesting question. What kind of uniform did you wear when you flew?

Anything we could get our hands on. We were a sorry looking bunch most of the time. But it was windy and sometimes very cold in the open cockpits. We'd put on several sweaters and pairs of trousers. Then we got some proper stuff — long jackets and pants made out of horsehide. They were warm and soft, and we hoped we would keep them when the war was over. But some smart Supply Corps officer not only made us give them back, but saddlesoap them first! He wanted to be sent to Marseilles to close down the Navy facility there when he left us. But after that trick, I talked to a friend of mine at headquarters. Guess where he ended up? Murmansk!

When you weren't flying, what did you wear?

Whatever was handy. I was a CPO until I went to Europe. I bought all new stuff when I made gunner, but my trunk wasn't at Le Havre when I got there. It never showed up. The Brits outfitted me with serviceable clothing

taken off corpses — olive drab pants, tan blouse, light blue French beret. It didn't matter if it didn't match. The only real requirement was your rank and outfit insignia. The point is that we had to make do with whatever was there. I don't think most people in the States realized just how exhausted Europe was.

What were the facilities like at Ile Tudy?

The main building was an old sardine processing plant. It was smelly but it had all the facilities to prepare food. Most outfits had to bring their kitchens with them from the States.

How was the food?

We ate better than any other outfit, I really believe. You see, we were out in farming country. Those farmers knew their business, and they knew why we were there. Because they were used to tourists, they spoke some English. They also made some powerful cider brandy. We were lucky to be in Brittany!

When did you actually start flying?

I was designated a student aviator in March 1918 and flew until Armistice Day, November 11.

Did you earn your wings?

I was flying with both French and British wings for awhile. I came in from a flight one afternoon in May and there was a message for me to come to Paris to take a test for my U.S. pilot's license. I rode the train all night in a storm and got there tired, dirty and hungry. Commander Blankenship was to give me the test. I told him that I had not been able to study because I was flying so much, and I didn't want to waste his time. He said, 'Bet you \$10 you pass.' I left the room to wash up, and I never saw him again. Sometime later, my wings arrived.

Were you ever assigned a number?

No. A pilot who had been trained in the U.S., Kermit Smith, once looked at my wings and said they should be numbered. I told him it had taken so long just to get the damn things that I didn't worry about the number.

What kind of missions did you fly?

Convoy protection and observation. Our job — working with torpedo boats on the surface — was to see that the ships got to their destination. We'd fly from Ushant right out of Brest, but rarely got as far as Bordeaux.

You were mainly looking for submarines?

That's right. We had information on sightings from other outfits, so we'd watch for those. All along our route, there were high tides and sandy bottoms, so you could see 30 or 40 fathoms down. You couldn't put a sub in there, but there were other places that were deeper and we had to know

"We were proud of being Navy...."

where they were. Sometimes there would be a contact.

What could you do if you saw a sub?

We'd report it on the radio — not voice, but code — over one of the little buzzwangles we had. We also had a big bomb under each wing, and the damndest rig that was supposed to be a bombsight. They were mostly good for killing fish.

It seemed that every bureau wanted us to carry something — spare parts, tools, maps, instruction books, first aid, survival gear and parachutes. Ten pounds here, 15 there. If we tried to carry all that, we'd never have gotten off the water. We just chucked the whole business and flew. And we did a good job. Those convoys meant a hell of a lot to all of us. Three fellows got the Legion of Merit or Legion of Honor with palm for their efforts.

Were there losses in your outfit?

Yes, three — not from combat, but from mechanical problems.

It sounds like ingenuity and innovation were the keys in those days.

The important thing was to learn how to use whatever was handy. There were always shortages. We had a record of getting things done, and doing them the Navy way. We were proud of being Navy when most aviation was Army. And it was important, too, that at all these bases the key people were old-time Navy men, who taught the greenhorns how to operate a unit. That was one of our strengths, and it is probably one of the things that has handicapped the totalitarian armed forces.

When the war ended, Max Brainard shifted from aviation back to radio work full-time. He was promoted to ensign in December 1918 and became the radio officer for Admiral Sims' staff in London, where he witnessed the massive peace parade. While no longer in aviation, he was indirectly involved in one of Naval Aviation's proudest moments. He was the officer who sent the historic message from Lieutenant Commander A. C. Read, commander of the NC-4, which had just completed the first transatlantic crossing by air: 'We have safely crossed the pond.' ■

Malcolm S. Brainard died peacefully in Brookings, Ore., on November 18, 1986, just three days before his 100th birthday.

Tracing Squadron Lineage

Current U.S. Naval Aircraft Squadron Lineage

as of 21 Nov 86

Squadron Designation	Changes in Squadron Designation	Date	Squadron Designation	Changes in Squadron Designation	Date
*VF-103	VF-103 Established	1 May 1952	VFA-106	VFA-106 Established	27 Apr 1984
*VF-111	VA-156 Established	4 Jun 1956	VFA-113	VF-113 Established	15 Jul 1948
	VA-156 Redesignated VF-111	20 Jan 1959		VF-113 Redesignated VA-113	Mar 1956
	The newly redesignated VF-111 adopted the insignia of the old VF-111 which was disestablished on 19 Jan 1959. The new VF-111 can carry on the traditions of the old VF-111 which dates back to WW-II but lineage of the current VF-111 can only be traced back to 4 June 1956.			VA-113 Redesignated VFA-113	25 Mar 1983
	VF-111 Redesignated VF-26	1 Sep 1964	VFA-125	VFA-125 Established	13 Nov 1980
	VF-26 Redesignated VF-111	17 Sep 1964	VFA-131	VFA-131 Established	3 Oct 1983
VF-114	VBF-19 Established	20 Jan 1945	VFA-132	VFA-132 Established	3 Jan 1984
	VBF-19 Redesignated VF-20A	15 Nov 1946	VFA 136	VFA-136 Established	1 Jul 1985
	VF-20A Redesignated VF-192	24 Aug 1948	VFA-137	VFA-137 Established	1 Jul 1985
	VF-192 Redesignated VF-114	15 Feb 1950	VFA-151	VF-23 Established	6 Aug 1948
VF-124	VF-53 Established	16 Aug 1948		VF-23 Redesignated VF-151	23 Feb 1959
	VF-53 Redesignated VF-124	11 Apr 1958		VF-151 Redesignated VFA-151	1 Jun 1986
VF-126	VA-126 Established	6 Apr 1956	VFA-161	VF-161 Established	1 Sep 1960
	VA-126 Redesignated VF-126	15 Oct 1965		VF-161 Redesignated VFA-161	1 Jun 1986
*VF-142	VF-193 Established	24 Aug 1948	VFA-192	VF-153 Established	26 Mar 1945
	VF-193 Redesignated VF-142	15 Oct 1963		VF-153 Redesignated VF-15A	15 Nov 1946
*VF-143	VF-871 Reserve sqdn. to active duty	20 Jul 1950		VF-15A Redesignated VF-151	15 Jul 1948
	VF-871 Redesignated VF-123	4 Feb 1953	VFA-195	VF-151 Redesignated VF-192	15 Feb 1950
	VF-123 Redesignated VF-53	12 Apr 1958		VF-192 Redesignated VA-192	15 Mar 1956
	VF-53 Redesignated VF-143	20 Jun 1962		VA-192 Redesignated VFA-192	10 Jan 1985
VF-154	VF-837 Reserve sqdn. to active duty	1 Feb 1951	VFA-303	VA-303 Established	1 Jul 1970
	VF-837 Redesignated VF-154	4 Feb 1953		VA-303 Redesignated VFA-303	1 Jan 1984
VF-201	VF-201 Established	25 Jul 1970	Light Photographic Squadron		
VF-202	VF-202 Established (Formal establishment ceremonies 25 Jul 1970)	1 Jul 1970	VFP-206	VFP-206 Established	1 Jun 1970
*VF-211	VB-74 Established	1 May 1945	Patrol Squadron		
	VB-74 Redesignated VA-1B	15 Nov 1946	*VP-1	VB-128 Established	15 Feb 1943
	VA-1B Redesignated VA-24	1 Sep 1948		VB-128 Redesignated VPB-128	1 Oct 1944
	VA-24 Redesignated VF-24	1 Dec 1949		VPB-128 Redesignated VP-128	15 May 1946
	VF-24 Redesignated VF-211	9 Mar 1959		VP-128 Redesignated VP-ML-1	15 Nov 1946
VF-213	VF-213 Established	22 Jun 1955		VP-ML-1 Redesignated VP-1	1 Sep 1948
*VF-301	VF-301 Established	1 Oct 1970	*VP-4	VB-144 Established	1 Jul 1943
*VF-302	VF-302 Established	21 May 1971		VB-144 Redesignated VPB-144	1 Oct 1944
Strike-Fighter Squadron				VPB-144 Redesignated VP-144	15 May 1946
VFA-15	VA-67 Established	1 Aug 1968		VP-144 Redesignated VP-ML-4	15 Nov 1946
	VA-67 Redesignated VA-15	2 Jun 1969		VP-ML-4 Redesignated VP-4	1 Sep 1948
	VA-15 Redesignated VFA-15	1 Oct 1968	*VP-5	VP-17F (VP-17) Established	2 Jan 1937
VFA-25	VT-17 Established	1 Jan 1943		VP-17 Redesignated VP-42	1 Jul 1939
	VT-17 Redesignated VA-6B	15 Nov 1946		VP-42 Redesignated VB-135	15 Feb 1943
	VA-6B Redesignated VA-65	27 Jul 1948		VB-135 Redesignated VPB-135	1 Oct 1944
	VA-65 Redesignated VA-25	1 Jul 1959		VPB-135 Redesignated VP-135	15 May 1946
	VA-25 Redesignated VFA-25	1 Jul 1983		VP-135 Redesignated VP-ML-5	15 Nov 1946
VFA-87	VA-87 Established	1 Feb 1968		VP-ML-5 Redesignated VP-5	1 Sep 1948
	VA-87 Redesignated VFA-87	1 May 1986	*VP-6	VB-146 Established	15 Jul 1943
				VB-146 Redesignated VPB-146	1 Oct 1944
				VPB-146 Redesignated VP-146	15 May 1946
				VP-146 Redesignated VP-ML-6	15 Nov 1946
				VP-ML-6 Redesignated VP-6	1 Sep 1948
			*VP-8	VP-201 Established	1 Sep 1942
				VP-201 Redesignated VPB-201	1 Oct 1944
				VPB-201 Redesignated VP-201	15 May 1946

PROFESSIONAL READING

By Commander Peter Mersky, USNR-R

O'Leary, Michael. *U.S. Sky Spies Since World War II*. Blandford Press, Ltd., England. 1986. 232 pages. Illustrated. \$7.95.

The ambitious title notwithstanding, this paperback book is basically a picture book with half-page black and white photographs of various aircraft used by the U.S. The title is somewhat misleading, since aircraft depicted were not always utilized in spy activities. Many of the aircraft were ASW platforms, perhaps with secondary intelligence gathering duties.

However, the photos are an interesting collection and make the book valuable. The balance between the Navy and Air Force is fairly equal. The captions accompanying the photos complement the pictures with facts and data.

Dartford, Mark. *Falklands Armoury: The Weapons, Webbing, Insignia and Trophies from the Falklands*. Sterling Publishing Co., Two Park Ave., New York, N.Y. 10016. 1985. 104 pages. Illustrated. \$17.95.

A new addition in the growing library of publications on the 1982 Falklands conflict between Britain and Argentina, this profusely illustrated volume is decidedly pro-British in the selection of photos and main text.

However, there are several areas of interest in this book, especially for non-British readers who might not be familiar with units and insignia of the UK forces. Some sections discuss specific aircraft, ships and arms, and their particular mission or part in the conflict.

The final section is a listing of the various British organizations and units engaged in the war and the awards garnered by unit members — including two Victoria Cross awards, both posthumous, awarded to men of the Parachute Regiment.

Humble, Richard. *United States Fleet Carriers of World War II*. Blandford Press, Ltd., UK. 1986. 160 pp. Illustrated. Indexed. \$9.95.

This paperback book is a short and ready reference for facts such as commissioning dates, combat records and important wartime personalities. Most of the photos have been seen many times and, indeed, several are improperly captioned since they distinctly show aircraft serving in postwar squadrons, especially during the Korean War, 1950-53. The halftones are "clotty" in appearance and render many of the photos hard to see.

Interest in aircraft carriers, both modern ships and those during WW II, has grown in recent years if the number of books on the subject is any indicator. If you need a cheap, quick source of information, this book is worth considering.

Boyne, Walter J. and Steven L. Thompson. *The Wild Blue*. Crown Publishers, Inc., New York, NY. 1986. 656 pp. \$19.95.

Though not a story about the Navy, this book will appeal to many readers, especially those with a historical interest.

It covers the 30-year period from the immediate post-WW II years to the late 1970s and tells the story of the U.S. Air Force through the careers of several contemporaries and rivals — officers, enlisted personnel, pilots and ground-pounders. Walt Boyne will be known to many readers as the Director of the National Air and Space Museum, Washington, D.C. He recently left that post to develop his other interests, including writing. As a retired Air Force colonel, he is well qualified to write about this formative period of Air Force history.

This novel is candid and accurate in relating actual events and situations. Problems with aircraft development programs, political considerations and personal career and family problems ring true for anyone with experience in these areas.

This is an interesting modern tale and a fine first effort in the demanding area of fiction writing.

Lopez, Donald S. *Into the Teeth of the Tiger*. Bantam Books, New York, NY. 1986. 248 pp. \$2.95.

Several books have detailed the P-40's career, mainly in the American Volunteer Group, the famed Flying Tigers. This wartime memoir covers the period in the China-Burma-India theater (CBI) immediately after the Flying Tigers' heyday. It follows the wartime exploits of a young USAAF pilot and his squadron, the 75th Fighter Squadron, 23rd Fighter Group.

Done in the now-familiar Bantam "specially illustrated edition" format, devoid of photos but featuring line drawings of various aircraft, this paperback covers an area of WW II which seldom made the headlines. The CBI became a backwater of the Pacific air war, although it certainly equalled other areas for day-to-day fighting and all-around effort for those involved.

By 1943, the P-40 had been relegated mainly to second-line units and was used only in a ground attack role in southern Europe and the CBI. But to the young pilots of the 75th, the type remained queen of the skies and, until the later introduction of the P-51 *Mustang*, they did their job in the aging *Warhawk*.

Winters, Captain T. Hugh. *Skipper: Confessions of a Fighter Squadron Commander 1943-1944*. Champlin Fighter Museum, Mesa, AZ. 1986. 156 pp. Illustrated. \$16.95.

This is a real down-home, folksy type of wartime memoir. No tactical pontifications, only fond memories of people and events. The author recalls the predeployment training and high jinks in Hawaii, parties and confrontations with Navy brass, all in the spirit of fun.

As the narrative moves into combat, there is occasional bitterness, especially when he tells of a squadronmate who, after being shot down and climbing into his raft, was captured and murdered by the Japanese — then cannibalized. The case is documented and there is small grim satisfaction in noting that the two Japanese officers most involved were tried and executed after the war.

Capt. Winter's first-person story is a short, readable account of the air war in the Pacific.

Anniversaries

On November 10, 1986, the 3d Marine Aircraft Wing turned 44 years old, on the same day the Marine Corps celebrated its 211th birthday.

Awards

HS-15 received the CVW-6 Golden Wrench award for its performance as the best maintenance department in the wing. The *Red Lions* earned the honor during the first half of their 1986 Mediterranean deployment.

Achieving an athletic goal is a full-time job. But Ensign Stefani Cuthbert reached this milestone while attending the Naval Academy when she became the second service athlete to receive the prestigious Southland Olympia Award. Ens. Cuthbert earned the award on the basis of her track career at Annapolis, during which she set 10 individual records, participated in six relay records and achieved All-American honors four times.

Ens. Cuthbert is currently assigned to HSL-41 as its air intelligence officer.

It's never too late to honor a hero, even after 44 years.

While looking through an Annapolis annual, Gerald F. Child "accidentally" discovered he had been awarded the Distinguished Flying Cross (DFC) for heroism during WW II. A personal friend, Congressman Norm Dicks, confirmed the fact for Child.

Ensign Child earned the award when he and his PBY-5 crew from VP-23 located the Japanese fleet at the Battle of Midway and radioed its position to U.S. forces. The PBY and its crew remained airborne until its fuel supply ran out, causing the aircraft to ditch. Child was in the water for 17 hours before being rescued.

After serving only two years in the Marine Corps, Cpl. Milton E. Webb, VMFA-115, was named 2nd MAW Aviation Ordnanceman of the Year. In addition to receiving savings bonds, a trophy, plaque and a letter of commendation, Cpl. Webb was meritoriously promoted to his present rank.



PH2 Karen Denman

Retired Admiral James S. Russell pins on the DFC that Gerald F. Child earned in 1942, at a recent award ceremony arranged by Cdr. W. H. Thomas, commanding officer, N&MCRC, Tacoma, Wash.

Last December, the Wright Brothers Banquet, sponsored by the Los Angeles Chamber of Commerce, saluted the 75th Anniversary of Naval Aviation and honored four outstanding Navy personnel. Lts. Robert S. Spratt, Jeff Crutchfield and Richard C. Harned were each presented the Junior Officer Award for achievements in aviation. Lts. Spratt and Harned, stationed at

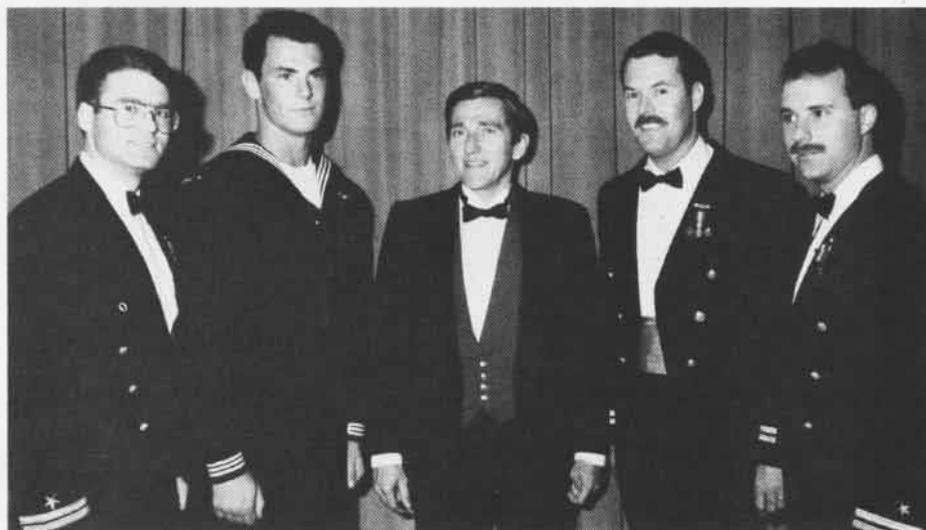
NAS Oceana, Va., were cited for their exemplary accomplishments as Naval Aviators. Lt. Crutchfield, a former chief petty officer, stationed at the U.S. Test Pilot School, Patuxent River, Md., was singled out for his overall achievements in Naval Aviation.

The fourth recipient, AW3 Sean Tracy received the prestigious Kitty Hawk Youth Award, which includes a \$2,000 cash grant and is presented to individuals 21 years old or younger. At night and in heavy seas, he rescued survivors of an aircraft crash off the Pacific coast. AW3 Tracy is currently assigned to HS-14.

Also during this banquet, Secretary of the Navy, John F. Lehman was presented the Kitty Hawk "Sands of Time" military award on the occasion of Naval Aviation's Diamond Anniversary.

Records

The following units achieved safe flying time: HC-5, 10,000 hours and 1.10 years; HMM-164, 15,000 hours and 3 years; HT-8, 228,000 hours and 9 years; HT-18, 300,000 hours and 6.5 years; NRL (flight support det) 35,000 hours and 24 years; TraWing-5, 100,000 hours; VA-203, 50,000 hours and 13 years; VAW-114, 28,697 hours and 16 years; VAW-115, 2,000 hours and 1 year; VAW-116, 20,000 hours and 11 years; VC-13, 5,208 hours and 1 year; VFA-106, 20,000



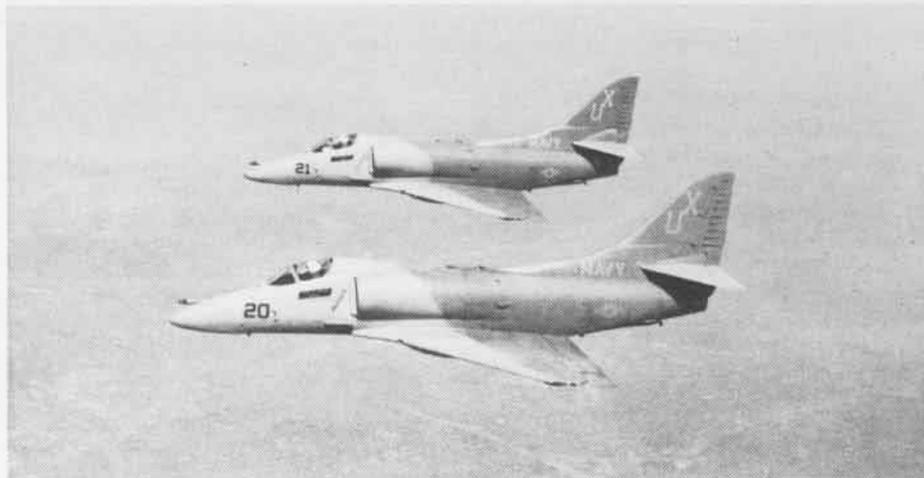
The four honorees pose with Secretary of the Navy Lehman (center) at the Beverly Hilton Hotel where the banquet was held. From left to right are Lt. Harned, AW3 Tracy and Lts. Crutchfield and Spratt.

hours and 1.5 years; VFA-132, 10,000 hours and 2 years; VMGR-152, 135,000 hours and 24 years; VMGR-234, 43,000 hours and 15 years; VMGR-252, 290,000 hours and 26 years; VMGR-352, 100,000 hours and 12 years; VP-9, 50,000 hours and 5.7 years; VP-49, 168,500 hours and 24 years; VP-60, 60,000 hours and 16 years; VP-90, 30,000 hours; VS-29, 61,400 hours and 15 years; VS-37, 17,744 hours and 4 years; VS-38, 46,000 hours and 13 years; VT-6, 200,000 hours and 4.5 years; and VT-10, 200,857 hours.

Et cetera

The Lone Sailor statue, the focal point of the U.S. Navy Memorial in Washington, D.C., has been sent to the Tallix Foundry, Beacon, N.Y., to be cast in bronze. The owner of this company, Richard Polich, is a former Naval Aviator who flew the F9F before leaving active service in 1959.

Mr. Stanley Bleifeld, the sculptor, selected Tallix because it specializes in servicing the art community. "The Tallix organization is first rate," says Bleifeld, "and I am very pleased to have them engaged for the final stages of the Lone Sailor's creation. And it is fitting that the boss is an ex-Navyman."



Flying the A-4E, VC-13 provides air combat maneuvering training for Navy, Marine and Air Force fighter squadrons.

The statue and the memorial will be ready for dedication by this year's Navy birthday, October 13.

Change of Command

ASO: RAdm. P. F. McNall relieved RAdm. R. K. Squibb.

ComResPatWingLant: Capt. Gerald H. Mollencop relieved Capt. Michael A. Nash.

Coral Sea: Capt. Bruce B. Bremner relieved Capt. Robert H. Ferguson.

HC-3: Cdr. William T. R. Bogle relieved Capt. Eric L. Peterson.

H&HS MCAS Iwakuni: Lt.Col. Ronald L. Kaba relieved Lt.Col. Roger D. Marlow.

H&HS-37: Maj. Thomas Malzahn relieved Maj. Larry Shreve.

HMM-268: Lt.Col. Robert Garner relieved Lt.Col. Michael Butler.

HS-2: Cdr. Kendall W. Curtis relieved Cdr. Harry J. Zinser.

HS-12: Cdr. Bill Young relieved Cdr. John K. Marshall.

HSL-40: Cdr. Earl W. Shaut relieved Cdr. Frank X. Vazquez.

Lexington: Capt. Haywood G. Sprouse relieved Capt. Paul M. Feran.

MWSS-374: Lt.Col. Alan Sullivan relieved Lt.Col. Gregory Parsons.

NAR Memphis: Capt. Kenneth McCluskey relieved Capt. Roger Murray.

SATD, NATC: Capt. Virgil F. Jackson, Jr., relieved Capt. Lewis W. Dunton III.

VA-52: Cdr. Loyd D. Sledge relieved Cdr. James M. Burin.

VA-75: Cdr. Alfred G. Harms, Jr., relieved Cdr. Gregory C. Brown.

VAW-115: Cdr. Franklin S. Achille relieved Cdr. Ronald B. Weber.

VAW-116: Cdr. J. A. Reaghard relieved Cdr. D. S. Wallace.

VC-1: Cdr. Dennis Fitzgerald relieved Cdr. John Porter.

VF-33: Cdr. Toney M. Bucchi relieved Cdr. Craig W. Hoffman.

VF-45: Cdr. John W. Warren relieved Cdr. Peter Westby-Gibson.

VMFA-451: Lt.Col. Dave Seder relieved Lt.Col. David Percy.

VP-48: Cdr. Charles P. Isele relieved Cdr. Gregory A. Bushnell.

VP-56: Cdr. Robert G. Simpson relieved Cdr. H. Michael Wilson.

VS-22: Cdr. J. W. Reddinger relieved Cdr. R. E. Montgomery.

McDonnell Douglas Corp.



The first two-seat version of the McDonnell Douglas AV-8B Harrier II made its maiden flight over the aircraft plant in St. Louis last November. The TAV-8B will be used by the Marine Corps to train pilots in the V/STOL aircraft. The forward fuselage of the Harrier II is longer to accommodate a second cockpit and student pilots will use controls identical to those in the AV-8B. The first production TAV-8B is scheduled to arrive in the early spring at NATC Patuxent River, Md., for full-scale development testing.

Naval Aviation of Old

The following is a copy of a bulletin discovered by the Naval Aviation History Office while examining a collection of old documents acquired recently. It is reprinted here for general interest:

1-2-712

BULLETIN NO. 473

Navy Department

June 11, 1914

The aeronautic ship MISSISSIPPI has been directed to proceed to Pensacola, Florida, where the Aeronautic headquarters are established, in order to repair the aeroplanes and other aeronautic equipment which has been seriously damaged by continued use, under trying conditions, without ability to effect repairs.

The work of the Aeronautic Division is in keeping with the splendid accomplishments of our Navy in Mexican waters during the present unsettled conditions in Mexico. Great credit is due the personnel of the Navy's Aeronautic Service. Lieutenant Commander H. C. Mustin, in command of the Aeroplane Training Ship MISSISSIPPI, was busy at Pensacola establishing an aeronautic center. Lieutenant John H. Towers, in charge of the flying school, was thinking only of the Navy flyers he was training. In the midst of all this work, the unexpected orders to proceed to

Mexico were received by telegraph. Without a hitch, two aeroplane sections, fully equipped, left for Mexico in a few hours after the orders were received. The MISSISSIPPI, with one section, went to Vera Cruz and the other section to Tampico. The section at Tampico was not called upon to do any flying and was later sent to join the other section at Vera Cruz.

The section that went to Vera Cruz was in [the] air five minutes after the MISSISSIPPI dropped her anchor. Every day since then, for forty-eight days, rain or shine, in all kinds of weather, the Navy's aeroplanes have been flying. They have responded to every call for scouting duty, and at other times have trained those aviators who were not fully qualified air pilots.

For one month before the aeroplane section from Tampico arrived at Vera Cruz, Lieutenant Commander Mustin and Lieutenant [P. N. L.] Bellinger were the two qualified air pilots that had to take charge of the aeroplanes in flight. Lieutenant R. C. Saufley, Ensign M. L. Stolz and Ensign W. D. LaMont were the assistant air pilots who also made sketches, took photographs and made notes for the reports of the scouting flights. The small nucleus of our air service for the Navy has met the requirements of actual service when called upon. This reflects much credit upon the officers who have had charge of the organization and development of the service and the training of the personnel.

A True Copy
[signed H. C. Mustin]
Lt. Comdr., U.S.N.

Patches Wanted

I am a college freshman and an avid Air Force patch collector. However, I've recently seen the light and wish to acquire patches from as many Navy units as possible — especially VFs 1 and 102, VT-10, TraWing-6 and the Navy Fighter Weapons School.

Douglas Snow
2405 S. 11th St.
Terre Haute, IN 47802-3625

Locator

I need assistance in locating the following WW II Navy fighter pilots who were at NAS Anacostia: Eddie Reuel Sanders, 63101; Floyd E. Ellis, 319258; Clyde C. Andrews, 104215; R/A Charles Thomas Booth, 70290; Fitzhugh Lee Palmer, Jr., 77102; Darrel H. Jay, 337659; Edward Morgan Owen, 77583; and Carl Emil Giese, 62501.

Information on these gentlemen or their next of kin would be greatly appreciated.

Norman Malayney
519 Semple St. #3
Pittsburgh, PA 15213-4315

Correction to NANews, January-February 1987:

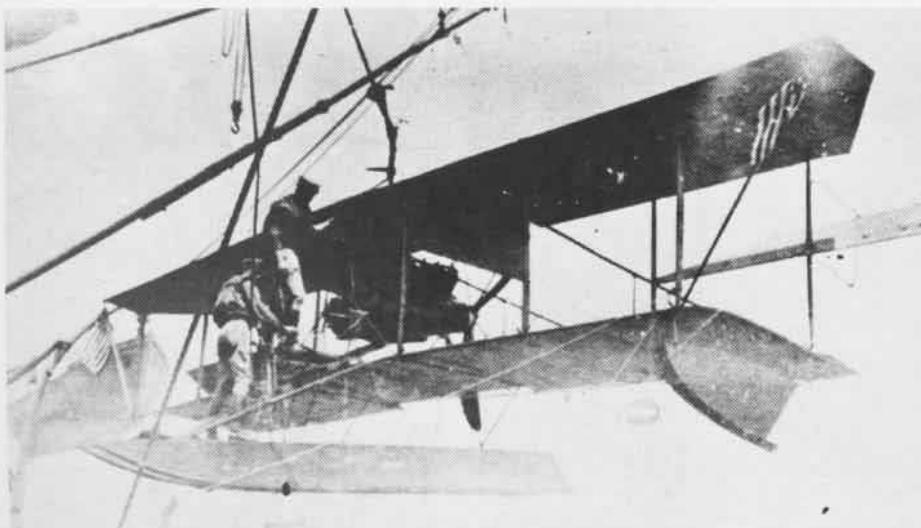
Page 24 — The "Changes in Squadron Designation" column for VAQ-130 should read:

VAW-13 Established
VAW-13 Redesignated VAQ-130

Squadron Lineage

Regarding your January-February 1987 issue, my almost 50 years of Naval Aviation background shrivel up and cringe at the words "establishment" and "disestablishment." The *only* time I ever heard that term used was recently at NAS Miramar when VF-194 was commissioned. And I'm sure many proud sailors [were upset] when those signs went up to direct people to the ceremony.

I commissioned six squadrons in my career and was on board for three redesignations but *never ever* an establishment or disestablishment! The words don't even fit into a sea service vocabulary.



Pilot Bellinger and observer Saufley being lowered from Mississippi for the A-3's baptism to combat flying.

I suggest that we make an attempt to retain some of our traditions and distinctive vocabulary and not try to make everything black and white. I also mention in passing that none of my orders ever read: "Report to . . . for the 'establishment' detail."

Lt.Cdr. Al Jeanguenat, USN(Ret.)
13011 Lakeview Granada Dr.
Lakeside, CA 92040

Ed's note: Your points are well taken but, as our historian explained in the introduction to the squadron lineage list, current verbiage has changed. Today, when CNO sets up or disbands a squadron, the official terms are establishment and disestablishment.

Naval Aviation is much younger than the surface Navy and the problem lies therein. When aviation squadrons were first established, the naval terms applying to ships naturally carried over for a time. At some point, perhaps because of its unique mission, Naval Aviation began to acquire a "language" of its own. But semantics and traditions do not change the facts: Together, the aviation and surface communities comprise an unbeatable team.

Jeep Carriers Book

I'm writing a book and want to talk with aviators who were aboard the jeep carriers *Card*, *Core* and *Bogue* during 1944. Please call collect at (818) 783-4974 or write:

Rhys Thomas
5301 Willis St.
Sherman Oaks, CA 91401

DDE-413 History

I am writing about the naval engagement off Samar during the battle for Leyte Gulf, using as a focus the history of USS *Samuel B. Roberts* (DDE-413). I would appreciate hearing from survivors of the *Roberts*, as well as learning about any past or future reunions.

Barbara C. Schaaf
400 Streamside Dr.
Harvey, IL 60426

Guadalcanal

I am researching a definitive narrative history of the battle of Guadalcanal, November 12-16, 1942. I need detailed personal accounts from participants in any of the naval surface

actions, air actions, or rescue and salvage efforts associated with the battle.

Eric Hammel
1149 Grand Teton Dr.
Pacifica, CA 94044

Combat SAR Book

I am writing a book on combat SAR. I would like to make contact with former members of HCS-7/HC-7 (1965-73) or anyone connected with U.S. Navy combat SAR during the Vietnam conflict. Call (603) 625-1165 or write:

Mark S. Starin
457 Varney St.
Manchester, NH 03102

Patches Wanted

I would like to obtain patches and stickers associated with F-14 squadrons at NAS Miramar, Calif., and NAS Oceana, Va. Please send information to:

Ted DeLaCruz
758 Trambley Dr. E.
Jacksonville, FL 32221

Reunions, Conferences, etc.

U.S. Naval Test Pilot School reunion, May 2, Cedar Point Officers' Club. Contact Reunion Coordinator, USNTPS, NATC Patuxent River, MD 20670-5304, (301) 863-4107 or autovon 356-4107.

USS Enterprise (CV-6) Marine Detachment reunion, May 16-19, Pensacola, FL. Contact Louis Michot, 3125 Pinhook Rd., Lafayette, LA 70508.

Navy/Marine Air Traffic Control Symposium, May 12-14, La Quinta Royale Hotel, Corpus Christi, TX. Contact ACCM Jimmy Brown or AC1 Michael Keith, ATCF, Bldg. 60, NAS Corpus Christi, TX 78419-5000, (512) 939-2503/4 or autovon 861-2503/4.

PatWing 4 (WW II Aleutian squadrons) reunion, August 26-30, Oak Harbor, WA. Write PatWing Four Airdales, P.O. Box 1978, San Leandro, CA 94577.

NAS Glenview 50th anniversary and Expo '87, July 18-19. For information,

contact Lt. Michael Filippel, PAO, NAS Glenview, IL 60026-5000, autovon 932-2107.

USS Essex CV/CVA/CVS-9 reunion, June 10-12, Milwaukee, WI. Contact Jack Gallagher, P.O. Box 3156, Lakewood, CA 90711-3156 or Max Boschke, 5057 S. 19th St., Milwaukee, WI 53221.

USS Enterprise (CV-6) Marine Detachment reunion, May 16-19, Holiday Inn, Pensacola Beach, FL.

Last Navy F-8s' disestablishment ceremony, March 28-29, Washington, DC. Contact Cdr. John Peck, OinC, VFP-206, NAF Washington, DC 20390, (301) 981-4100 or autovon 858-4100.

NavCad Classes 81-C through 109-C 50th anniversary, May 7-10, Pensacola, FL. Contact Capt. Gordon P. Chase, USN(Ret.), P.O. Box 17652, Pensacola, FL 32522.

USS Santee (CVE-29) reunion, June 25-28, Omaha, NB. Contact Bill Walsh, 205 S. 16th St., Denison, IA 51442, (712) 263-2737.

VF-3 (1943-45) reunion, March 21-28, Pensacola, FL. Contact Cdr. Edward Baumann, USN(Ret.), 5001 E. Apache Trail #1012, Mesa, AZ 85206.

VPs 14 and 91/RNZAF Squadrons 5 and 6 reunion, September 1987, New Zealand. Contact Warren Martin, 60 Cheviot Road, Mangawhai, R.D. 4, North Auckland, New Zealand.

USS Wake Island (CVE-65)/USS Pybus reunion, June 26-27, Oregon. Contact Richard J. Turner, 2384 SW Madison St., Portland, OR 97205, home (503) 223-4733 or office (503) 226-6786.

USS Bon Homme Richard reunion, August 14-16, Ramada Inn, Tupelo, MS. Contact Ralph Pound, P.O. Box 1531, Tupelo, MS 38802, home (601) 842-8247 or office (601) 842-0572.

Dayton International Airshow and Trade Exposition, July 23-26. Contact Mr. George J. Wedekind, Jr., Room 214, Terminal Building, Dayton International Airport, Vandalia, OH 45377, (513) 898-5901.

Flight Test Division (NATC Patuxent River, Md.) symposium and reunion planned for October 1987. Former flight testers may request information from Vernon Whorl, RR 4, Box 398, Lexington Park, MD 20670, (301) 994-0486.

USS Independence (CVL-22) reunion, August 21-23, Philadelphia, PA. Contact Ted Vawter, 4032 Woodruff Rd., Lafayette, PA 19444.

USS Pocomoke (AV-9) reunion, September 20-22, Maxim Hotel, Las Vegas, NV. Contact Jim Malley, 5141 Indian River Dr. #293, Las Vegas, NV 89103, (702) 362-8468.



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