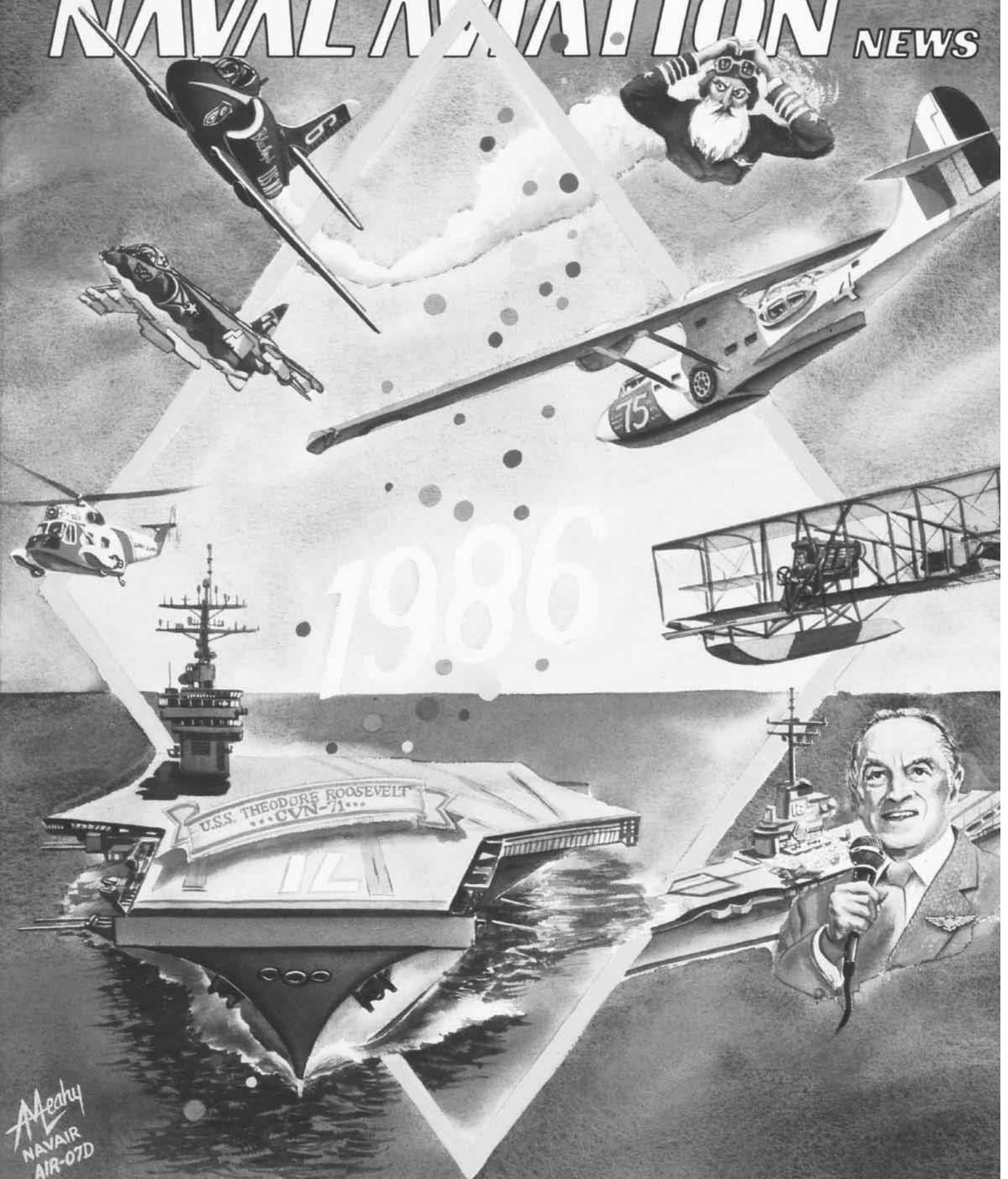


November-December 1986

The Voice of Naval Aviation

U.S. Navy

NAVAL AVIATION NEWS



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NAVAL AVIATION NEWS

Oldest U.S. Navy Periodical
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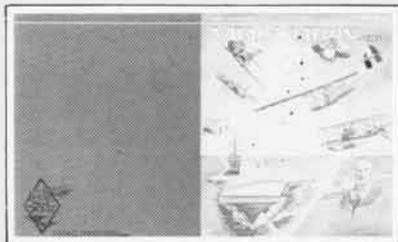
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COVER—This watercolor rendering by A. Michael Leahy is a wrap-up of some of the major events and contributions during the Diamond Anniversary Year of Naval Aviation.

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Theodore Roosevelt (CVN-71), commissioned October 25, sailed for the first time September 22. The carrier experienced 74 hours of builder's trials off the coast of Virginia. Results were "superb." **Page 4**



Some consider the flight deck of an aircraft carrier one of the most challenging, exciting and frightening places in the world to work. The photo essay of *Enterprise's* (CVN-65) flight deck bears this out. **Page 12**



The Navy offers its enlisted personnel the opportunity to attend a variety of schools for a variety of skills. And the education is as challenging for students as it is expensive for the U.S. Navy. **Page 18**



In order to attract more qualified people into the Naval Aviation community, the Navy reestablished the Naval Aviation Cadet (NavCad) program on June 1. Read about what the new program offers. **Page 20**



Although the LAMPS Mk III SH-60B can track and destroy a submerged enemy submarine, the helicopter's crew can do little more than curse if the sub is surfaced. This will change beginning in the 1990s, when the Navy equips its SH-60Bs with the *Penguin* missile. **Page 22**



For years, the EC-130 TACAMO communications plane has been considered an excellent platform for relaying nuclear control orders to ballistic missile submarines. But the plane has shortcomings that its replacement, the E-6A, will amend. **Page 24**

From the

EDITOR'S NOTEBOOK

NANci: Paperless Naval Aviation News

Modem-equipped personal computers are becoming increasingly popular as an alternative to communicating on paper. And, because they also are becoming commonplace in the fleet, *Naval Aviation News (NANews)* is using this powerful medium to exchange information with its readers by means of an electronic bulletin board called NANci, for *NANews* computerized information.

The electronic "paperless" magazine has many powerful capabilities that help *NANews* to do its job better. One is its ability to send and receive information and stories unattended, thus freeing the staff to concentrate on other duties. This streamlines the flow of information by bypassing the otherwise slower mail service and it helps the staff get fresh information out to *NANews* readers fast.

Since NANci went on line September 7, more than 300 have logged onto the system. Many have sent *NANews* information via NANci. The systems electronic mail and large library of public domain software have made it very popular.

NANci is a reliable source of the latest information from *NANews* and it is available seven days a week, around the clock. It is updated almost daily. Often, stories can be read on NANci before they appear in *NANews*.

Operated by the *NANews* magazine editors at the Navy Yard Annex, Washington, D.C., NANci's mission is to support the professional and informational needs of the

Naval Aviation community by providing stories, facts and historical information, which promote professionalism, safety and esprit de corps.

The remarkable thing about NANci is the great return on the investment of time and money. It was a mere \$63 software investment, excluding the cost of a personal computer which was already in the office. The system requires little effort to maintain because all of the information composed on the magazine's word processors is fed electronically into NANci. That means that a squadron, or anyone, with a computer and a modem can have direct access to the editors and enhance coverage of their outfit.

Because of the limited space available in *NANews*, many excellent stories cannot be printed. But, with NANci, these stories can be published electronically and read by all NANci users.

Information on NANci, unless specifically copyrighted, may be downloaded and published at no cost. This will open many publishing opportunities for those in the fleet.

NANci is a spin-off of DIANA, the highly successful electronic bulletin board used to support the Diamond Anniversary of Naval Aviation. During its nine months of operations, DIANA received more than 6,500 inquiries.

We strongly encourage our readers to give NANci a try.

To Access NANci, dial

(202) 475-1973 [Autovon: 335-1973]

Use

7 bit/even parity or 8 bit/no parity

1 stop bit

300 or 1200 BAUD

Hours of Operation

Monday - Friday, 0800-1700

Monday - Thursday, 1700-0800

Friday, 1700 - Monday, 0800

NANews and History Assigned to Naval Historical Center

As of October 1, 1986, the *Naval Aviation News* and Naval Aviation History staffs were administratively moved from the Naval Air Systems Command to the staff of the Naval Historical Center at the Washington Navy Yard, Washington, D.C. The staff will remain at its present address in the Navy Yard Annex.

Pressure and Precision

An A-6 *Intruder* crew was on an A-20-R training hop that included a high-altitude transit, joining a radar-target identification/low-level route to the target with score based on both time-on-target (TOT) and practice bomb placement. They had launched under afternoon VMC conditions with target weather at the night TOT forecast to be marginal VMC.

The low-level portion of the mission began at twilight but, as the A-6 neared the target, it was dark and visibility was sharply curtailed due to a blanket of fog extending from the surface to 700 feet. (The squadron's nighttime minimum run-in altitude was 700 AGL.) Clouds were scattered in layers to 300 feet.

As they neared the target, the crew reported to the Navy controllers/spotters that they were at "nine miles for a straight path."

Sensing that timing was off, a crew member said, "We're going to be early." Then someone reported, "Put the boards out." Next the pilot apparently said, "I'm going to do a real quick S-turn." Shortly thereafter the *Intruder* crashed. A tower spotter noted a flash in the night, and the sound of jet engine noise lasted for several seconds before there was silence. The pilot and BN were killed on impact. The subsequent investigation revealed that the aircraft was in a steep turn when it went down.

This squadron had been unusually busy and, due to senior types being away on assignment, the Lieutenant BN in the mishap A-6 was filling the operations officer's shoes, writing the flight schedule and doing an excellent job. He was determined to get competitive exercise quals completed by all available crewmen, including himself.

The pilot returned from 11 days leave the day of the mishap, but had over 18 hours and a fair ration of night and actual instrument time in the last 30 days.



Grampaw Pettibone says:

Dang blame it! Please learn from this one. Don't anyone press on like these unfortunate aviators did! Not in



sound judgment and poor risk. In peacetime, it's better to accept a lesser score than cross over into the zone of risk.

The Way It Was, 1943... Metamorphosis of a Navigator

Some pilots learn by study, others by observation, but some learn only the hard way.

A review of the circumstances under which the pilot of an OS2U-3 got himself completely lost on an antisubmarine patrol may prevent other and less lucky pilots from getting lost the same way.

This pilot knew that his surface wind at the time of departure was 15 knots from 045 degrees. He had the radioman take a drift sight at 2,000 feet. The radioman reported this wind to be 35 knots from 127 degrees.

Using this wind, the unsuspecting pilot went blithely on his way.

This was the basic error.

The radioman didn't know how to use the drift sight, and the pilot should have known this. Anyway, knowing the surface wind, he should have been suspicious of the wind as reported at 2,000 feet.

peacetime, specially! These young flyers were hard chargin', dedicated men. But that old demon pressure to hit the mark right on the money persuaded the crew to make a perilous turn down low, in murky weather.

End of lives. End of A-6.

At times there's a thin line between



We pick up our unsuspecting pilot again four hours later, when his flight should have been completed. But there was no land in sight. As one wag put it, he was completely "at sea."

Finally suspecting the drift sight, the pilot reworked his navigation, using the surface wind. This put him approximately 50 miles south of his base.

He then requested his radioman to take a direction finder bearing of the base. This was reported as 214 degrees.

But the radioman, apparently, wasn't any handier with the direction finder than with the drift sight.

The pilot did suspect the accuracy of this bearing and asked for a repeat and then another bearing. "No change — 214 degrees."

The pilot then "reluctantly" flew on his heading, thereby committing another grievous error.

A glance at his map, or familiarity with the terrain around the base, should have immediately shown the pilot that the bearing could not be correct, or they would then be over land.

Whether this bearing was entirely erroneous, or possibly a reciprocal bearing, was never cleared up.

What finally happened? Oh, about the time the gasoline supply was exhausted,

a tramp steamer came along and the pilot landed alongside and got a tow.



Grampaw Pettibone says:

There being more airplanes than ships, don't depend on a tramp steamer to cover up your faulty navigation. Also, there is no good substitute for common horse sense. (Reprinted from June 1, 1943)

Shakes and Bakes

The P-3 *Orion* was at 9,000 feet, straight and level on a nighttime patrol mission. There were scattered clouds, some broken layers and haze. Suddenly, the four-engine aircraft experienced severe turbulence which lasted 10 seconds. The aircraft lost 300 feet in the disruption. An in-flight technician was tossed five feet into the air. He landed, painfully, suffering a broken right kneecap.

A petty officer second class was standing on a C-130 *Hercules* to wash the upper fuselage. He lost his balance and fell 15 feet to the concrete ramp. He sustained injuries that resulted in 10 lost workdays. The fuselage was slick with

water and a cleaning compound. The petty officer was unrestrained and wore inadequate footwear.

It was windy and humid as the plane captain cleaned the canopy of an F-14 parked on the bow. At one point, he stood between the nonskid area and the fuselage. He slipped and fell to the flight deck, landing with both legs straddling a tie-down chain. He was hospitalized for five days.

Under circumstances similar to the above, another F-14 plane captain fell to the deck and fractured his leg. An injury that required medevac to a shore facility for an operation and two months in the hospital.

An *Intruder* maintenance man slipped when transferring his weight from the boarding ladder to the wing. He fell to the ground head first, arms extended. He broke both wrists.

The ejection seat of an A-4E *Skyhawk* parked in the hangar had been removed for maintenance. A man was working in the cockpit when the seat's rocket fired into the overhead of the hangar. The worker suffered first and second-degree burns on both arms and left leg. A 12 x 4-inch hole was created in the roof.



Grampaw Pettibone says:

Sounds like the Monday morning injury report after a hot and heavy-hittin' Sunday in the National Football League. Trouble is Naval Aviation plays every day, 365 days a year.

Old Gramps has a special place in his heart for the troops who keep 'em flyin' (specially those folks in colored jerseys on the flight deck). It hurts me when they hurt themselves whether it was their fault or not. And ain't it amazin' how airplanes can cause headaches, not to mention broken wrists, kneecaps and what-have-you even when they're sittin' still.

Supervisors: Lean on the troops to go by the book. The correct procedure is the safest procedure. And everybody, especially you officers, junior and senior alike, keep an alert eye on the action and play a part in stopping costly boners.



On the pier alongside the Navy's newest aircraft carrier, shipyard workers looked up and waited.

On the flight deck of the massive flattop, sailors and civilians who helped get the warship ready looked down and waited.

Then it turned 0800.

The ship's colors were hoisted.

The carrier's fog horn blared.

Theodore Roosevelt (CVN-71) was underway.

After six years of construction at the Newport News Shipbuilding and Drydock Co., Va., *Theodore Roosevelt*, backed her way into the James River and sailed toward the Atlantic Ocean on September 22. It was her first day at sea.

The occasion? Seventy-four hours of builder's sea trials.

The result? "Superb," according to Captain Paul W. Parcells, commanding officer of the ship, whose commissioning October 25 at Newport News Shipbuilding occurred during the shipyard's 100th, and Naval Aviation's 75th, anniversary year.

Mr. W. B. Miffleton, Jr., the ship's construction project manager, was as enthusiastic as Capt. Parcells. "From [the shipyard's] point of view, there are always things [to fix]. After all, anything as big as [*Roosevelt*] is going to have problems," he said. "But, overall, I think the ship performed very well during the trials."

Thanks to the assistance of a 900-ton gantry crane and revolutionary modular construction techniques the Newport News Shipyard was able to piece together the carrier's 60,000 tons of steel 17 months ahead of schedule. It is a technique that is being used to build the next two *Nimitz*-class carriers, *Abraham Lincoln* (CVN-72) and *George Washington* (CVN-73). Both carriers are scheduled to be commissioned in 1990 and 1992, respectively. *Washington* will be the Navy's 15th large-deck aircraft carrier — counting whatever carrier is undergoing 28 months of the service life extension program (SLEP) at the Philadelphia Naval Shipyard, Pa., at that time.

Once operational, *Washington* will allow the aging *Coral Sea* (CV-43), commissioned in 1947, to replace the training carrier *Lexington* (AVT-16). By 1992 the Navy hopes to have another nuclear-powered carrier laid down to replace *Midway* (CV-41), which was commissioned in 1945. Eight conventional carriers will reach age 45 between 2000 and 2010, and replacements must be authorized in the 1990s if the Navy is to retain 15 deployable flattops.

According to Miffleton, Newport News had to push itself to get *Roosevelt* to builder's trials. He said the ship's tight construction schedule prompted management reorganizations and adjustments in trading procedures.

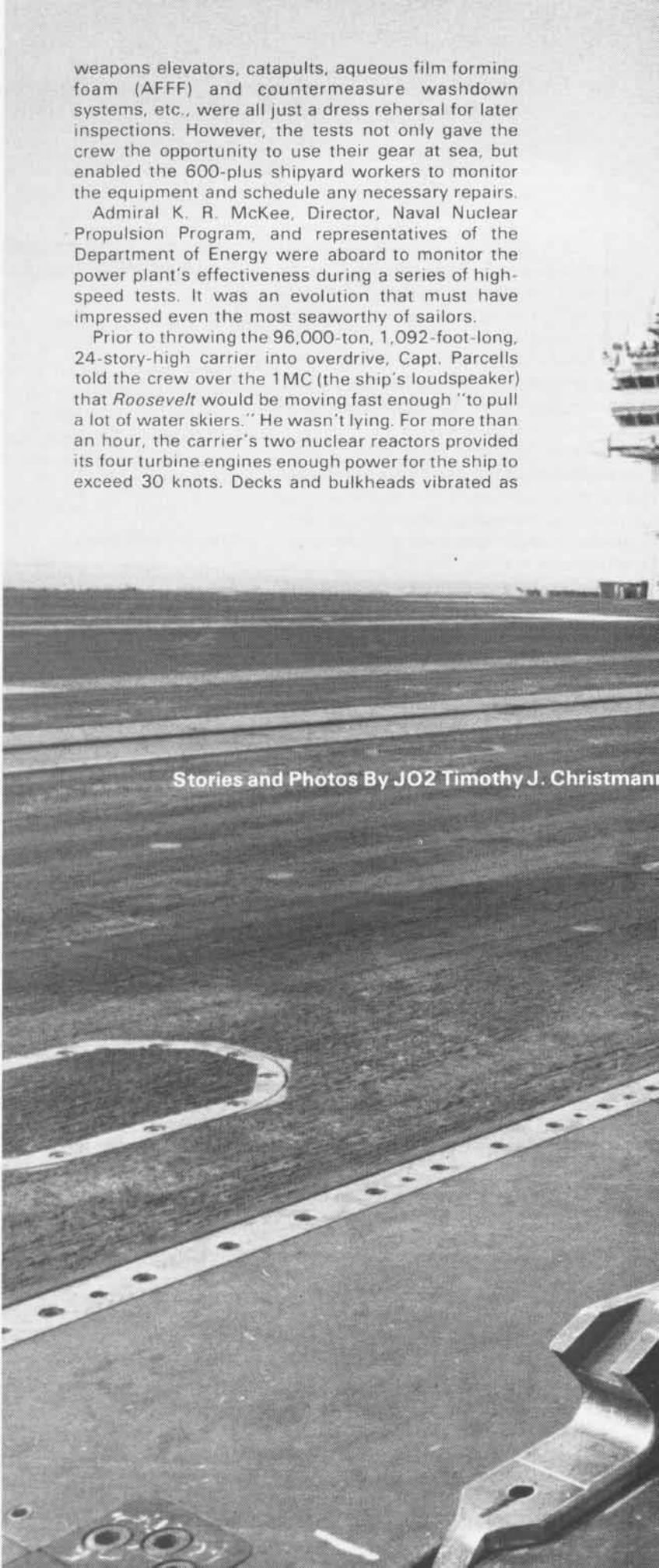
"Trade balance is a significant factor in building a ship and imbalances can be initiated by a schedule compression...problems like not having the right trade at the right time," said Miffleton, who has been building carriers at Newport News since 1974. "We have to have a lot of material to build a ship [like *Roosevelt*], so a compressed schedule is not a question of everyone running faster, it is a factor of who is supposed to run faster and when."

Practically all of *Roosevelt's* major systems were tested during the cruise off the Virginia coast, but the principal reason for the deployment was to experiment with the ship's propulsion plant. Tests on other systems like the ship's infrared communications, air traffic control systems, close-in weapons systems (CIWS) radar, aircraft and

weapons elevators, catapults, aqueous film forming foam (AFFF) and countermeasure washdown systems, etc., were all just a dress rehearsal for later inspections. However, the tests not only gave the crew the opportunity to use their gear at sea, but enabled the 600-plus shipyard workers to monitor the equipment and schedule any necessary repairs.

Admiral K. R. McKee, Director, Naval Nuclear Propulsion Program, and representatives of the Department of Energy were aboard to monitor the power plant's effectiveness during a series of high-speed tests. It was an evolution that must have impressed even the most seaworthy of sailors.

Prior to throwing the 96,000-ton, 1,092-foot-long, 24-story-high carrier into overdrive, Capt. Parcells told the crew over the 1MC (the ship's loudspeaker) that *Roosevelt* would be moving fast enough "to pull a lot of water skiers." He wasn't lying. For more than an hour, the carrier's two nuclear reactors provided its four turbine engines enough power for the ship to exceed 30 knots. Decks and bulkheads vibrated as



Stories and Photos By JO2 Timothy J. Christman



Roosevelt's four 66,000-pound, 21-foot propellers formed a 254-foot-wide wake that stretched to the horizon.

In addition to speed tests, the ship endured a series of steering exercises that ranged from mild turns to turns so steep one sailor commented that "they were trying to put the ship's island structure under water." The island stayed dry, but the 30-plus-degree turns were enough to send an occasional wave of spray into the hangar bay. This delighted the more than 200 sailors and shipyard personnel observing the spectacle — many of whom will never get the opportunity to witness a carrier put through such rigors.

"The crew worked very hard to get this ship ready, and a good percentage of [*Roosevelt's*] success is due to them," said Capt. Parcells, who served as executive officer aboard USS *Nimitz* (CVN-68) and commanding officer of USS *Guadalcanal* (LPH-7) prior to coming to *Roosevelt*. He added that personnel in both the nuclear and nonnuclear areas of the ship

were responsible for making sure the shipyard delivered the product for which it was responsible.

"This required very rigorous testing standards...[which] taxed the crew," he said. "They had to make sure everything on board [worked]."

According to Commander (Captain-selectee) Charles S. Abbot, *Roosevelt's* executive officer, three weeks before builder's trials many people felt the cruise might be delayed because there was just too much work to do.

"But, as is often the case, when there is a tough job that needs to be done, that seems to solidify the effort," said Cdr. Abbot, formerly commanding officer of Attack Squadron (VA) 86. "The shipyard, and the ship's force, rallied and got the job done — and done successfully."

Not only was *Roosevelt* prepared to go to sea, but Abbot was pleased to add how clean the crew had made her by the time she left Newport News on September 22. "That's not easy to do in a shipyard environment," he said.

Roosevelt Sails

New Carrier Leaves Shipyard

Roosevelt's vast 4.5-acre flight deck was graced by only a few helicopters during her builder's trials in September. But, the ship's shiny new catapults will be busy beginning in November when *Roosevelt* embarks Carrier Air Wing Seven. The ship is scheduled to embark Carrier Air Wing One during workups in 1987. It has not been determined what air wing will ultimately be assigned to the ship.

"All of us who have been here for awhile can remember when we couldn't even walk around the hangar bay without ducking under welding cables and dodging machinery and armies of painters with buckets," added Cdr. Abbot, a Rhodes Scholar and former test pilot. "So it's satisfying to get the ship to sea. The crew wants to go to sea. They want to shoot planes, launch missiles, go to Europe...in fact, if the captain got on the 1MC and said we were getting underway [for a major deployment], most of the guys would jump for joy."

Aviation Electrician Master Chief Duane R. Bushey, concurred. "They're green, but they're also enthusiastic as heck," said Bushey, *Roosevelt's* command master chief. "By green, I mean we have a lot of senior personnel who are aboard an aircraft carrier for the first time. But they are top-quality, handpicked people. And, you wait, we're going to be the number one carrier in the fleet. I've already been run off *Nimitz* and the *Kennedy* (CV-67) for saying that."

Bushey, who was handpicked for the job by Capt. Parcels, said many people considered the period leading up to builder's trials like waiting for the birth of a baby. Everyone was waiting for something to happen and when it finally did their outlook changed. Morale skyrocketed. The crew finally had a ship that could sail.

"I think everyone wanted to take this ship to sea," said Commander W. A. Dwinelle, *Roosevelt's* operations officer. "It is like a new car. You want to take it out and drive it, not just leave it in the garage and have it polished. The [trials] gave us the chance to operate our own systems, whereas before, in port, the shipyard was standing over our shoulders [preventing] us from doing what we wanted."

He added that he was impressed with the crew's team spirit. On some of the ships he has been assigned, Cdr. Dwinelle remembers a few departments being too preoccupied with their own responsibilities to assist a department in need.

"You don't see that [on *Roosevelt*]," he said. "For example, when the ship was getting ready to go on for builder's sea trials, the supply department, which was undermanned, had a lot of spaces its personnel had to clean. Supply didn't have enough manpower to do it, so the other departments volunteered to help. Even though this required extra work for departments like operations, weapons, air and the AIMD, the guys didn't complain because they wanted the ship to look good."

Cdr. Dwinelle attributed this attitude partly to the skipper.

"Capt. Parcels is one of the finest

V-3 Uses Duds for Training



ABHAN Mark Price shows AN Alex Boyd how to maneuver an engineless F-4 Phantom around *Roosevelt's* hangar. V-3 Division used two F-4s to help train its less experienced aircraft handlers before the carrier embarks real planes in November.

Although *Roosevelt* had her first foreign object damage walkdown only minutes after leaving Newport News September 22, she carried no aircraft on her 4.5-acre flight deck, or in her hangar bay. At least no aircraft that anyone needed to safeguard against foreign particles.

In the hangar bay, however, crewmen from the ship's V-3 division spent a lot of time during the trials moving, parking and chocking two engineless F-4 *Phantoms* that were delivered weeks before from NAS Norfolk, Va.

"It is hard when you first start, but once you get the hang of it it's easy," said Aviation Boatswain's Mate (Hydraulics) Airman (ABHAN) Mark Price.

ABHAN Price was one of a group of V-3 personnel temporarily assigned aboard a deployed aircraft carrier for training prior to builder's trials. He said that being stationed aboard USS *Forrestal* (CV-59) for three weeks at sea made him realize the responsibility involved with moving \$20 million aircraft around a crowded hangar bay.

Despite his own limited experience, however, Price was showing the newest members of V-3 division how to move the *Phantoms* around with flat, boxlike trucks (nicknamed mules).

"I think it's good that they can train moving the duds before the real planes fly aboard," said Price. "I'd rather see them crunch these than the real thing."

According to Commander W. A. Dwinelle, *Roosevelt's* operations officer, Carrier Air Wing Seven will be embarked in the carrier through the remainder of 1986. During her workups in 1987, the ship will host Carrier Air Wing One. He said it hasn't been confirmed what air wing *Roosevelt* will ultimately embark for her first scheduled six-month Mediterranean deployment in 1988.

ABHC Carl Leabo, V-3's leading chief, said that only three of the division's 58 crewmen have been stationed aboard aircraft carriers — including himself. Leabo, who served aboard six carriers prior to *Roosevelt*, said the lack of experience has forced the division to concentrate on training.

In addition to having his men move the *Phantoms* around the hangar bay, he has sent many of them to a variety of schools (i.e., fire-fighting, FRAMP, safety, etc.) to help teach them the basics necessary for working around aircraft.

"I wish I had a dime for every hour I've spent on training," said Leabo. "Sometimes you have to start from scratch with a lot of the guys because they come here right from 'A' school. They've never been aboard a ship, so you not only have to teach them how to do their job, but teach them how to exist. They have to be shown where to eat, sleep, get their linen...everything is a training evolution, and it puts a lot of pressure on the experienced people that have to help train them."

Still, Leabo said that despite their overall inexperience, his guys will do okay.

"They're ready to go to work...they're just waiting for planes to come aboard," he added. "Heck, they were excited just to get the duds." ■

commanding officers I've ever worked with...and I'm not saying this because he is my boss," he said. "The C.O. demands that everyone does their job to the best of their ability, but he does it in a supportive way. He doesn't chew people out and beat them down. He motivates you to do a good job."

Master Chief Bushey, who is Capt. Parcell's main conduit to the crew, added that the C.O. is very concerned about his men. "He gets around a lot for a man who works such long hours," said Bushey, holder of a variety of aircraft qualifications, including bombardier/navigator on the A-6 *Intruder*. "He is sincerely honest about people coming first. But he can't get to everyone on the ship, so I'm his extension."

The master chief remembered a time following a tiring 12-hour-plus workday in the yards, when he walked into Capt. Parcell's office and found him leaning over a mountain of paperwork. He looked haggard.

"The captain always looks like he just walked off a poster...well-rested, not a hair out of place," said Bushey. "But that day I took one look at the C.O. and actually felt sorry for him. He was beat."

The master chief wanted to talk to Capt. Parcell about personnel-related issues, but told the C.O. that they could wait. "After that, he took off his glasses and said 'Master Chief, lets get something straight right now. People come first. I can replace that machinery room, but I can't replace those people. Don't ever hesitate to talk to me about them.'"

So, AECM Bushey sat down and talked with Capt. Parcell for an hour about the issues that needed to be discussed. "He gives me all the time I need," he said, "and I talk to him almost every day."

Capt. Parcell, a test pilot and fighter jock who flew more than 150 combat missions in the F-4 *Phantom* during Vietnam, said that his primary goal as C.O. is to make the crew operationally capable of handling any mission.

"You accomplish this by training them and exposing them to certain operating conditions," he said. "But, more important, you take care of them. If you give a sailor — and I used to be a white hat — a reason for what he is doing, and take care of him properly, he will do able work...assuming he is of respectable mettle to start with. You always get bad eggs."

Every week, Capt. Parcell meets with a new group of sailors reporting aboard. He takes pleasure in these meetings.

"I talk to them about the importance of getting along with people. There are more than 3,000 men aboard [over 6,000 when the air wing is embarked], and that is a lot of people in a small place," he said.

"I tell them why the Navy says 'no' to

Phalanx & Seasparrow

Aside from her aircraft, *Theodore Roosevelt* will be equipped with two weapons systems to help protect the ship against enemy aircraft and missiles. They are the *Phalanx* close-in weapons system (CIWS) and the NATO *Seasparrow* surface missile system.

CIWS (which is similar to the gun used on the F-14 *Tomcat*) is basically a six-barrel gatling gun on a radar-guided computer. It is considered the last defensive weapon the ship can use to stop incoming enemy missiles. CIWS, more than 300 of which are installed on 182 U.S. Navy warships, is designed to stop targets ranging in size from a six-inch projectile to a B-52 bomber. It does this by blanketing the target with up to 3,000 rounds a minute.

Fire Control Technician (FTC) Chief W. Banks, *Roosevelt's* CIWS group supervisor, said *Phalanx* doesn't have to fire that many rounds to achieve a kill. In fact, its depleted-uranium 20mm projectiles, which are almost three times heavier than those made of steel, are durable enough to chew through the skin of a ship and penetrate several compartments.

"Whatever it hits it goes through," said Banks, who taught the system to students at Naval Station, Great Lakes, Ill., prior to coming aboard last December. "It is a great system."

He said the *Roosevelt's* four *Phalanx* systems, which weren't armed during the trials, successfully tracked a variety of targets.

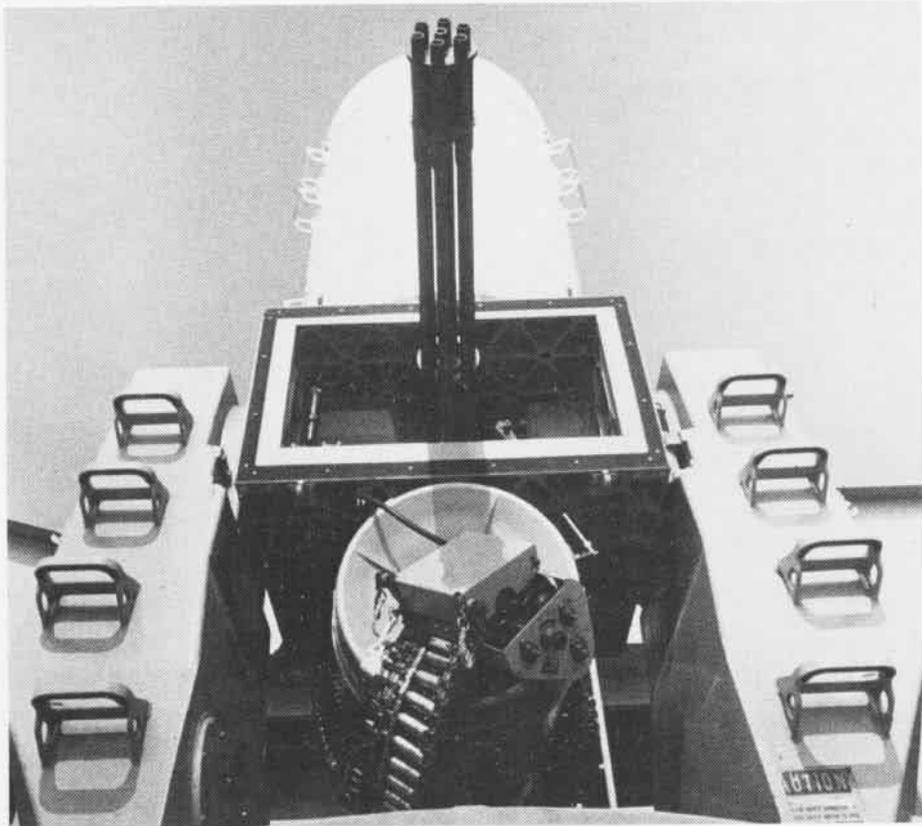
"This system cannot distinguish our planes from an enemy's planes," said Banks. He added that both CIWS and *Seasparrow* complement each other by providing the ship's with significant coverage.

"They both are very reliable," added FTC Michael Santner, *Roosevelt's* *Seasparrow* group supervisor.

He said that if *Seasparrow's* 24 missiles, which are distributed evenly in three boxlike launchers (two aft and one on the bow), cannot destroy a target, the shorter-ranged *Phalanx* will.

The medium-range (20-plus miles) RIM-7M *Sparrow*, a conversion of the air-launched version, is about 3.5 feet long and weighs around 500 pounds. It is a combat-proven missile that is currently equipped aboard 53 U.S. Navy and 40 NATO warships. Although successful, *Sparrow* is incapable of hitting a target on its own, and must rely on the ship's radars to illuminate the target before the missile can make impact.

Both Santner and Banks said they have confidence in their systems as well as the more than 15 people needed to fix and operate them. They are looking forward to November when *Roosevelt's* CIWS and *Seasparrow* are fired for the first time against aerial targets. ■



Phalanx is a radar-guided gatling gun that can spit up to 3,000 20mm rounds per minute. It, along with the *Seasparrow* surface missile system, will provide *Roosevelt* a significant radius of protection against enemy aircraft and missiles.

dope. Why the Navy makes them get their hair cut...I try to make them understand a little about me and what I think is important about their time on board."

If *Roosevelt's* builder's trials were an indication of the crew's allegiance to their captain, the bond is strong. In fact, a large number of shipyard personnel commented that *Roosevelt* trials may have been the best ever conducted by a *Nimitz*-class carrier.

Named after America's 26th president, the fourth ship to bear his name, *Theodore Roosevelt* is almost identical to her three sister ships: *Nimitz*, *Dwight D. Eisenhower* (CVN-69) and *Carl Vinson* (CVN-70).

"I spent two years on *Nimitz* and [*Roosevelt*] feels and handles the same," said Capt. Parcells.

But there are a few differences, the most notable of which concerns the ship's combat direction center (CDC), a new term for combat information center (CIC).

Inside *Roosevelt's* CDC is the advanced combat direction system which Capt. Parcell's calls "the closest thing to Star Wars that exists."

It is a large blue screen which uses a variety of white symbols to identify air, surface and subsurface contacts located at a *significant* range from the carrier.

"The large screen display [allows] the tactical action officer (TAO) to better make a decision how to defend the ship and fight with force," said Cdr. Dwinelle. "It is similar to the system used on the *Aegis* cruisers in terms of the decision-making process in combat — in fact, it is really an outgrowth of that system."

Roosevelt is the first carrier in the fleet to have this system. *Eisenhower*, which is currently being overhauled in Newport News, will have it by the time the ship rejoins the fleet.

"Eventually, all U.S. Navy carriers will have it," said Dwinelle. He added that the combat direction system is superior to systems used aboard other *Nimitz*-class carriers due to its information display, speed, reliability and compactness.

"In a conventional CIC, you don't have large-screen display and the TAO has to walk over to a particular [ASW, surface and subsurface] console and look over somebody's shoulder," said Commander Johnny Roberts, *Roosevelt's* CDC officer, who found a lot of time to work with the system during the trials. "This displays information, updates it automatically, and that should reduce the reaction time for the ship and the battle group commander in responding to a problem."

If *Roosevelt* is approached by hostile aircraft, the intruders would first be detected by the ship's long-range SPS-48 and SPS-49 radars. Then, the CDC would not only display the planes' positions on

the screen, but would be able to determine their speed, altitude and heading.

Such a system would be ideal in tracking Soviet long-range strike aircraft like the *Bear*, *Backfire*, *Blackjack*, *Bison*, *Badger* and *Blinder*. All are capable of carrying over-the-horizon antiship cruise missiles that some critics say make large-deck aircraft carriers vulnerable. Such criticism, however, has been repeatedly dismissed by Secretary of the Navy John Lehman and many other government and military leaders. In fact, they say carriers are less vulnerable in a conventional war

than other ships (with the possible exception of submarines).

For instance, a two-carrier battle group can cover an operating area of 58,000-square miles. This means that if the carriers were located as far apart as Richmond, Va., and Baltimore, Md., their fighter aircraft could shoot down enemy planes and missiles as far north as Boston, Mass., as far south as Columbia, S.C., and as far west as Detroit, Mich., and Cincinnati, Ohio. And the carriers' strike aircraft could bomb enemy targets as far away as St. Louis, Mo., and Atlanta, Ga.

V-4 Division: Ready to Fuel

Young, inexperienced aviation boatswain's mates (fuels) (ABF) assigned to *Roosevelt's* V-4 division got a small taste of what they will be doing once Carrier Air Wing Seven joins the carrier in November. Although no planes graced CVN-71's flight deck during the trials, purpleshirts fueled several helicopters used to ferry some inspectors on and off the ship.

"For many of them it was the first time they fueled helicopters," said ABFC Van Burst, V-4's leading chief petty officer. "They were excited. For the first time, they realized they were an important part of this ship."

Like the hangar bay aircraft handlers in V-3 division, and the catapult and arresting gear personnel in V-2 division, V-4 sent detachments of its inexperienced personnel to deployed aircraft carriers for training during precommissioning.

"A majority of our 83 people came right out of A school and boot camp and have no experience," said Chief Burst. "The only way to train them is to send them aboard carriers and, under supervision, let them pump up fuel, run filters and [gas] aircraft. After all, we can show them pictures and give them books [detailing] what they are supposed to do, but they won't really know until they actually do it."

However, Chief Burst isn't worried about them not being able to handle the job. "Once the planes show up, these guys will perform like seasoned veterans," he said.

V-4 division is responsible for maintaining a complex fueling system that can store, pump and purify three-and-a-half million gallons of JP-5. It is a demanding, dirty job that requires expertise, dedication and long hours.

"We operate on the flight deck, hangar deck, and all the way down to the seventh deck where our pump rooms are located," said Burst, who spent five years aboard *Nimitz* (CVN-68). "We have someone on watch 24 hours a day and, at sea, we have shifts that work around the clock."

Roosevelt has two large pump rooms (one forward and one aft) which are connected to 30 service stations on the flight deck that enable purpleshirts to fuel 50 to 60 planes per hour. The ship also has the capability to fuel aircraft and a conventional escort ship at the same time.

"I can use my forward pump room tonight while I do maintenance on my aft pump room, and tomorrow I can switch," said Chief Burst. "This is a luxury. Sometimes *Forrestal*-class carriers, which have only one pump room, can't shut down at all. Depending on [flight operations], they have to keep going."

Roosevelt, which can carry 50-percent more aviation fuel than conventional carriers, also has four purifiers (two in each pump room). These machines are capable of removing water and sediment from JP-5 at 200 gallons a minute. But it doesn't stop here. All JP-5 goes through an exhaustive series of purification evolutions that can last days.

"It's a lot, but it's necessary," said Burst. The goal is to fill all embarked aircraft with the purest JP-5 that V-4 can provide.

Aside from training, V-4 division spent a large chunk of *Roosevelt's* precommissioning period making sure that Newport News Shipbuilding installed the ship's fueling network the way it was supposed to be installed.

"It has been a big job that has taken a lot of hours," said Burst, "but we luckily identified most of the problems early."

He added that V-4 personnel have put together a volume of "lessons learned" information to pass on to the crews of *Lincoln* (CVN-72) and *Washington* (CVN-73) which will hopefully reduce the number of trouble spots their fuel divisions may encounter during construction. ■

"Our carriers and their embarked air wings are still our major edge over the Soviet Navy," said Lehman. "They realize this. [That's why] they are building their own." (See *NA News*, November-December 1985.)

According to Cdr. Dwinelle, simply by looking at the combat direction display, the TAO can decide what weapons he needs to counter the threat. He can launch combat air patrol airplanes, vector nearby aircraft to the area, or order surface ships to engage the targets. The carrier's multi-layered defense would lead all the way in to the ship's NATO

Seasparrow surface missile system and *Phalanx* close-in weapons system (CIWS).

If the carrier was operating without a battle group, the TAO would make a decision of defending the ship. But, if a *Roosevelt* is operating with a battle group, the battle group commander's TAO would be responsible for protecting the entire force.

The combat direction system is so sophisticated that it can identify land-based surface-to-air missile sites. "It would have been great against Libya," said Cdr. Roberts.

CVN-71 was named after the fiesty, walrus-mustachioed Theodore Roosevelt because many historians believe that he was solely responsible for turning the U.S. Navy from a weak naval power in 1897 to one that wielded "big stick" prowess by 1910. As Secretary of the Navy and later President of the United States, Roosevelt — an admirer and friend of Captain Alfred Thayer Mahan — advocated the need for "a great navy." And, while president, he not only authorized the construction of six battleships and other warships, but proved the effectiveness of gunboat

A V-4 purpleshirt rushes toward a helicopter turning on the flight deck. During builder's trials, many of V-4's less experienced purpleshirts got the opportunity to fuel several helicopters that were used to ferry some inspectors on and off the carrier.



diplomacy by sending the Great White Fleet on a flag-showing mission to Japan. Many historians think the deployment, which Roosevelt called his greatest contribution to peace, was pivotal in reducing Japan's adventurism in the Pacific.

Roosevelt's namesake will wield a bigger diplomatic stick than all of the navies combined during his era. As one of America's mightiest warships, *Theodore Roosevelt* will be a principal conventional and nuclear striking element. A warship that will

embark an air wing of 85 aircraft capable of reaching 73-percent of the globe to counter all types of air, surface and subsurface threats. A vessel that can travel more than 300 miles a day, steam at high speed for an extended period of time, and conduct sustained maximum air operations without logistic support. A necessary tool that the president and military hierarchy have counted on for decades to respond quickly to international tensions around the globe.

Chances are good the former president would be very impressed. ■

Roosevelt's aqueous film forming foam (AFFF) system was tested during builder's trials. More than 50 AFFF nozzles, located on the flight deck and island structure, sprayed hundreds of gallons of the sudsy fire-fighting agent on the deck. This test was followed by an equally successful test of the ship's water washdown system.

Below left, a shipyard worker dressed in a rubber suit and helmet, opens a container then turns into a stream (right) of AFFF being fired from the island structure. The shipyard worker needed a sample of AFFF to analyze its concentration. Bottom, Roosevelt's Air Department personnel use brooms to push AFFF off the flight deck.



1986 Sailors of the Year

Pillars of the Navy

By Sherri R. Jones

Recognition as "the best" is an honor bestowed on a select few in the Navy's enlisted ranks through the Sailor of the Year (SOY) program. The final selection is limited to the top four sailors from the Pacific and Atlantic fleets, the Chief of Naval Operations (CNO) shore establishments and the Commander, Naval Reserve Force (ComNavResFor).

Two out of the four 1986 selectees are from the aviation community. This is impressive considering they were selected from a field of 347,000 shipmates.

The 1986 Sailors of the Year are:

AEC(AW) David G. Knauth, Atlantic Fleet. Throughout his naval career, Chief Knauth has demonstrated that he strives to be the best. He was selected as the Sea Sailor of the Month three times, as well as the Sea Sailor of the Year, while attached to HSL-32. He was HSL-30's Maintenance Pro of the Quarter. Chief Knauth has earned two Navy Achievement Medals, two Meritorious Unit Commendations, one Good Conduct Medal, one Battle "E" award and two Sea Service ribbons. AEC(AW) Knauth is currently serving a one-year tour as special assistant to the Atlantic Fleet Force Master Chief.

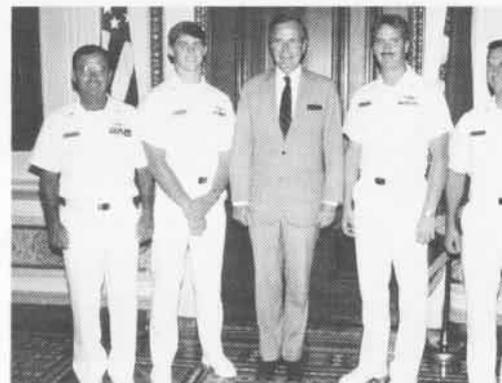
ATC Gordon E. Johnson, Naval Reserve. He is attached to VAK-208, NAS Alameda, Calif. Chief Johnson served four years active duty in the Navy and, seven years later, reestablished his naval career by joining the Naval Reserve. In his civilian career, Johnson works for Naval Air Rework Facility, Alameda, as an electronics integrated systems mechanic. He was a designated aircrewman on the HU-16 and EA-1F, and an electronics expert in A-3, A-6, A-7, P-3 and S-3 avionics systems. Chief Johnson was the VAK-208 Sailor of the Quarter twice and the VAK-208 SOY for 1985. He has earned 15 Air Medals, one Navy Commenda-

tion Medal, two Navy Unit Commendation Medals, one Navy Meritorious Unit Commendation, three Battle "E" awards, the Armed Forces Expeditionary Medal (Vietnam), the National Defense Service Medal, two Naval Reserve Meritorious Medals and the Navy Expert Pistol Medal.

QMC(SW/DV/PJ) Keith T. Williams, Chief of Naval Operations, Shore. He was assigned to the Explosive Ordnance Disposal Training and Evaluation Unit (EODTEU) Two, Fort Story, Va., and is now serving a one-year tour as special assistant to the Master Chief Petty Officer of the Navy. As shown by his special designations, Chief Williams has broadened his knowledge in various areas — Surface Warfare Specialist (SW), Second Class Diver (DV) and Parachutist (PJ). He has earned numerous letters of commendation and appreciation, Sailor of the Quarter honors and was the EODTEU SOY for 1985. He is currently working towards a bachelor of science degree in civil engineering and has earned a Navy Achievement Medal, one Good Conduct Medal, the Humanitarian Service Medal and Expert Pistol Medal.

ETC(SS) Karl A. Lado, Jr., Pacific Fleet. He is currently attached to Naval Technical Training Center, Corry Station, Pensacola, Fla., as an instructor. Chief Lado was chosen as the Sailor of the Month twice and Commander, Submarine Development Group One's SOY for 1985. In addition to numerous letters of commendation, he has earned three Navy Achievement Medals, the Navy Unit Commendation, two Good Conduct Medals, the Navy Expeditionary Medal, two Battle "E" awards and one Sea Service Deployment ribbon.

After attending numerous dinners and banquets held in their honor, the four 1986 selectees were awarded a Navy Commendation Medal by Admiral Carlisle A. H. Trost, Chief of Naval Operations.



A meeting with Vice President George Bush was one of the many memorable experiences that the SOY's shared during their tour of Washington, D.C., in July. Left to right are ATC Johnson, ETC(SS) Lado, Bush, AEC(AW) Knauth and QMC(SW/DV/PJ) Williams.

Additionally, Under Secretary of the Navy James F. Goodrich meritoriously advanced all four sailors to their present rate.

The SOY program began in 1972 to recognize one outstanding sea sailor from both the Atlantic and Pacific fleets. In 1973, it was expanded to include one sailor chosen from the shore establishments. In 1982, the program was broadened to include a representative from the Naval Reserve.

In the aviation community, candidates (E-4 through E-6) are nominated by a board in their squadron/unit and final selection is approved by their commanding officers. For example, a regular Navy patrol squadron located on the Atlantic Coast forwards its sailor of the year nomination package to the patrol wing, where the competition begins to get tougher. When the wing selects one sailor from among all the squadrons' nominations, the package is then sent to Commander Patrol Wings, Atlantic. Narrowing down the field, one person is chosen and the nomination is forwarded to Commander Naval Air Force, U.S. Atlantic Fleet. Final selection is made by Commander in Chief, U.S. Atlantic Fleet. The process is similar in the Pacific Fleet, CNO and ComNavResFor.

All four sailors have proven themselves worthy of the Sailor of the Year distinction by hard work, by exhibiting outstanding leadership abilities, and by demonstrating that challenges and demands can be met in the true Navy tradition. ■



Big E Flight OPS

Photo Essay by PHC Chet King

It's a world of blood, sweat, steam and the smell of JP-5.

It's a 4.5-acre world of armor-plated steel, searing jet exhaust and spinning, razor-sharp propellers.

It's an intolerant world where mistakes are not forgiven.

It's a world where 200 men in a rainbow of colored jerseys conduct a high-speed, precisely-timed performance in the launch and recovery of multimillion dollar aircraft.

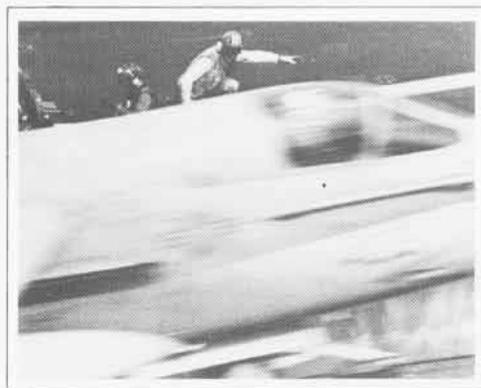
It's the world of flight operations aboard the Seventh Fleet nuclear-powered aircraft carrier USS Enterprise (CVN-65), one of 15 of the mightiest warships afloat.



Top, an F-14 Tomcat from VF-114 grabs the arresting cable as it pounces aboard Big E. Right, ABM1 Paul Fitz-Randolph waits for the signal to launch an A-6E Intruder from VA-95.



Left, a pilot briefs a squadron troubleshooter after a mission. Below, an A-7E Corsair II becomes a blur as it is catapulted off Enterprise. Bottom, leaning into the wind, a catapult officer launches an F-14 Tomcat.

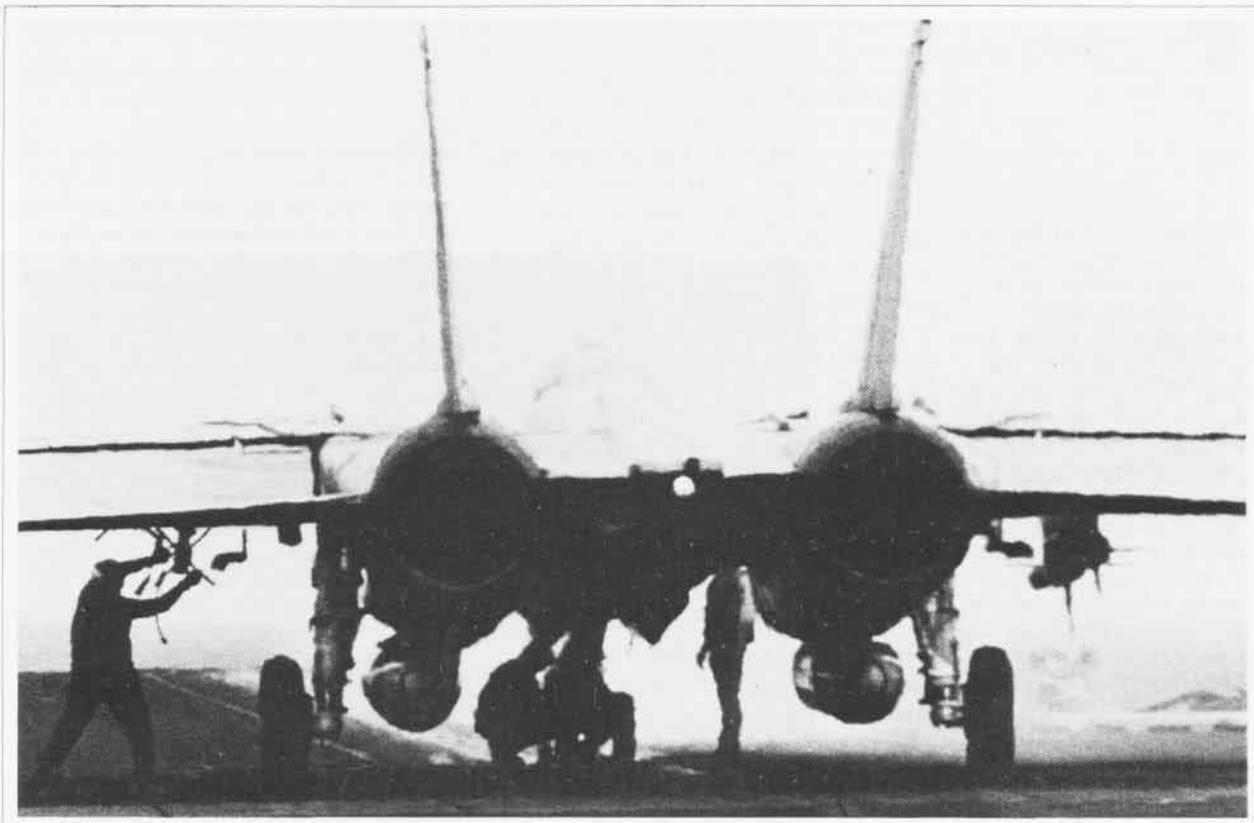




An E-2C Hawkeye from VAW-117 passes over USS Arkansas (CGN-41) during the plane's approach to land on Big E.



Counterclockwise: With afterburners flaring, a Tomcat from VF-114 becomes airborne. A "greenshirt" gives the "thumbs up" signal to launch an F-14. Air department and squadron personnel prepare an F-14 for launch. Aviation ordnancemen race across the flight deck to load Sidewinder missiles aboard an F-14.





Marshall Lefavor

F-21 Kfir

By Hal Andrews

When the *Kfir* fighter joined Fighter Squadron (VF) 43, NAS Oceana, Va., last year, it brought with it more than outstanding adversary fighter combat performance. As the F-21A, it became the first foreign-designed and built fighter to operate with the U.S. military services carrying a U.S. fighter designation. Its introduction into the DOD inventory specifically for adversary combat training is also unique. And no other fighter is operated on a lease basis with contractor support.

Along with these unusual aspects of its Navy and Marine Corps service, the *Kfir* (young lion in Hebrew) also has its special story from original conception to operational service in its native land, Israel.

Going back nearly 20 years to the seven-day war in 1967, Israel ordered 50 French Dassault *Mirage* 5Js for its air force to supplement *Mirage* III-CJs

already in service. A year later, France cut off the supply of arms to Israel, including the *Mirage* 5Js. With the earlier *Mirages* requiring upgrading to maintain their effectiveness and a need to add a small fighter of even higher performance to its inventory, the Israeli Air Force (IAF) worked with Israel Aircraft Industries (IAI) to jointly arrive at an answer. After upgrading their *Mirage* IIIs and putting them in production, they married the U. S. General Electric J79 engine—coming into Israeli service in their F-4 *Phantoms*—to a modified Israeli-built *Mirage* 5 airframe. The J79 provided a 35-percent afterburner (A/B) thrust increase over the French SNECMA Atar used in the *Mirages* without a significant increase in weight or drag. At the same time, other combat improvements were introduced.

Following prototype installations in both French and Israeli-built airframes in the early 1970s, and modifications found necessary from flight tests, the production *Kfir* was developed. Meanwhile, a license was obtained by IAI to produce the J79. The shorter length of the J79 with A/B necessitated a cut-back aft fuselage, and considerably more cooling of the A/B was required. This resulted in the addition of a large dorsal intake, built as a forward extension to the vertical fin. Other modifications were made, including inlet

changes to meet the J79's higher airflow requirements, and many other improvements in airframe and systems for greater capability. The *Kfir* was optimized as a fighter interceptor, emphasizing its speed and maneuverability.

The *Kfir* entered service in 1975. By then, an improved model had been designed as the *Kfir* C2 with aerodynamic changes to further improve its combat maneuvering performance. Appearing a year later, the new *Kfir* had fixed, swept-back canard surfaces mounted to the upper portion of the engine intakes, just forward of the wing root leading edge, and outboard wing leading edge extensions. Small strakes were less prominent on either side of the nose. All were added to give greater maneuverability in the "upper left-hand corner."

As the *Kfir* C2 became the primary air superiority fighter, the *Kfir* 1's air-to-ground role was emphasized. In recent years, F-15s and F-16s have taken over much of the Israel Air Force's first-line fighter duties. Thus, when an adversary fighter was needed to "sit in" for the latest threat fighters, arrangements were made for the use of the IAF *Kfir* C2s. VF-43 received the first dozen, and another 13 to provide the same adversary capability will go to the Marine Corps at MCAS Yuma, Ariz., in mid-1987. ■



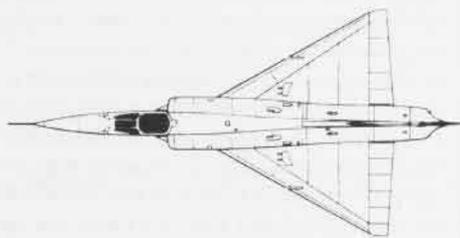
Marshall Lefavor



F-21



Length	51'3"
Height	14'11"
Wing span	26'11"
Gross weight	32,410 lbs.
Maximum speed	Mach 2.2
Service ceiling	58,000'
Power plant	One J79-GE-J1E (-17)
Armament	Two 30mm cannon; two to four air-to-air missiles; or up to 8,820 lbs. of bombs, rocket pods or air-to-surface missiles.
Crew	One



Enlisted Schools:

Training to be the Best

By JOCS Kirby Harrison

Every year thousands of young men and women join the Navy for an education. According to Captain F. S. Bobo in aviation manpower and training in the office of the Chief of Naval Operations, they can get what they joined for and more.

A Marine Corps LDO aviation maintenance officer, Capt. Bobo has been in the training tracks and plans section for two years. "Technology growth is the key to readiness in Naval Aviation," he says. "And education is the only way to keep up."

Keeping pace with advancing technology was somewhat simpler in the past.

In June 1949, the school for aviation electronics technicians and aviation electronicsmen convened. Their motto was "Anyone Can Learn Electronics," and classroom policy was that the key to learning was repetition. As a final test at the end of 28 weeks, each student was issued a metal box, a diagram and an assortment of tubes and wires. From this kit, he was to build a six-tube alternating current radio receiving set.

Tubes and wires have long since given way to computers and solid state electronics, and students with orders to "A" school for aviation electronics technician could probably pass the 1949 test as an entry requirement.

"At times, we joke here that we have to create computer scientists just to perform maintenance on our aircraft," says Bobo. "That may be an exaggeration. But more and more of the ground support people must become, at the very least, computer literate."

"In aircraft like the new F/A-18 *Hornet* and F-14D *Tomcat*, on-board computers assist in preoperational tests and actual preflight, signaling ground personnel and aircrew of malfunctions. The computer assists in finding the problem area and signals again when the malfunction has

been corrected.

The systems on the *Hornet* and *Tomcat* are what Bobo says are the first steps toward artificial intelligence in the maintenance and operation of aircraft.

Approximately 33,000 sailors and 8,000 Marines annually go through one or more formal aviation training schools.

Students come to A school directly from basic training. There they are taught the basic skills and general knowledge for their particular specialty. The A schools range in length from five to 21 weeks and are located at Naval Aviation Technical Training Centers (NATTCs) at NAS Memphis, Tenn., and NAS Lakehurst, N.J.

There is no more "B" school. Graduates from A school are normally sent directly to "C" school where highly specialized aspects of the field are taught. With few exceptions, the student is sent to an aviation unit for duty only after completion of the school. The C schools are located at 20 major naval air stations on the East and West coasts. There are also C schools at NAS Cubi Point, Philippines, and NAF Atsugi, Japan. These are, however, geared for refresher training and microminiature repair.

The next point in formal training are the Avionics and Aviation Electrician "C-7" schools. C-7 students are normally first class through senior chief petty officer levels where supervisory skills are essential. Those in the C-7 curricula learn a greater appreciation of how to manage people and material assets. The schools are located at NAS Memphis, under control of the NATTC. Also under guidance of Aviation Technical Training are the Fleet Aviation Specialized Operational (FASO) training groups. Their purpose is to enhance managerial and administrative knowledge in specific areas: 3-M, supervisory, quality assurance, aviation intermediate maintenance, department officer/supervisor familiarization, Naval

Aviation division and branch officer, and work center administration.

"At FASO, we formalize all the past training and on-the-job experience so the student can go back into the field better tuned to the specific job," says Capt. Bobo. "Managerial skills are not something you're born with. Some people are born leaders, but even born leaders must learn the management system before they can lead effectively toward a goal."

At any point in a career, an individual may also be sent to one of the "F" schools for specialized training in areas where a team concept is indispensable. The Aviation Boatswain's Mate (plane handler) School at NAS Lakehurst is one of these.

Prior to and following a deployment, handlers come off the carrier to follow a three to six-week course in the specifics of how to guide million-dollar airplanes safely and quickly around a crowded flight deck. Included is a practical application of the team concept in fire fighting.

There are also F schools at Memphis, Norfolk and several other major naval air stations. In some cases, F schools are under the joint "ownership" of surface and aviation and the two communities collaborate on curricula and standards.

Every school run by the Navy is under constant evaluation. Some are still in the developmental phases. Others are being phased out.

Reciprocating engine training programs are an example of those being phased out. The engines are being stricken from the Navy inventory, so it is no longer cost-effective to run a formal training program.

F-4 *Phantom II*-related training is being cut back. At the same time, F/A-18 *Hornet* systems training is a rapidly growing area.

"We are constantly considering better ways to train, and especially looking for better ways to train for less money,"

emphasizes Capt. Bobo.

One of these ways is the Maintenance Training Improvement Program, known as MTIP. It is a testing program to register the retained knowledge of those who have completed a formal training course. MTIP is given to individuals shortly after reporting back to an aviation unit following school.

The results of the testing is fed back to the school to identify deficiencies in the training environment and allow for corrections of any problems.

Bobo says the MTIP testing has shown a direct correlation to aircraft readiness.

"If we find that the readiness of a particular squadron is very high, and the results of the MTIP testing for that squadron are high, it indicates the effectiveness of the formal training."

Since individual type commands do the testing following formal training and again following a deployment, it is also possible to see if on-the-job training and practical experience enhance the classroom learning.

Marine Corps Aviation is looking at an even more extensive program than MTIP. They call it MATMEP, for Maintenance, Training, Management and Evaluation Program. It takes MTIP a step further.

MATMEP actually tests the skills of the individuals to accurately assess whether they can apply the knowledge in a practical manner.

Both MTIP and MATMEP will eventually be totally computerized, in the interest of eliminating the labor-intensive aspect of collating information and making sense of it.

Capt. Bobo points out that every formal training program in Naval Aviation is constantly undergoing change. And there are more programs under consideration "with so many new challenges I can't begin to start talking about them.

"But we have to keep moving. Training is the only way to keep up with what is going on today. This system we have is the most cost-effective one we know of and it is paying dividends in the form of aircraft readiness. Equally important, better maintenance means we're saving lives. We're good, and we're going to be even better." ■

For What Its Worth

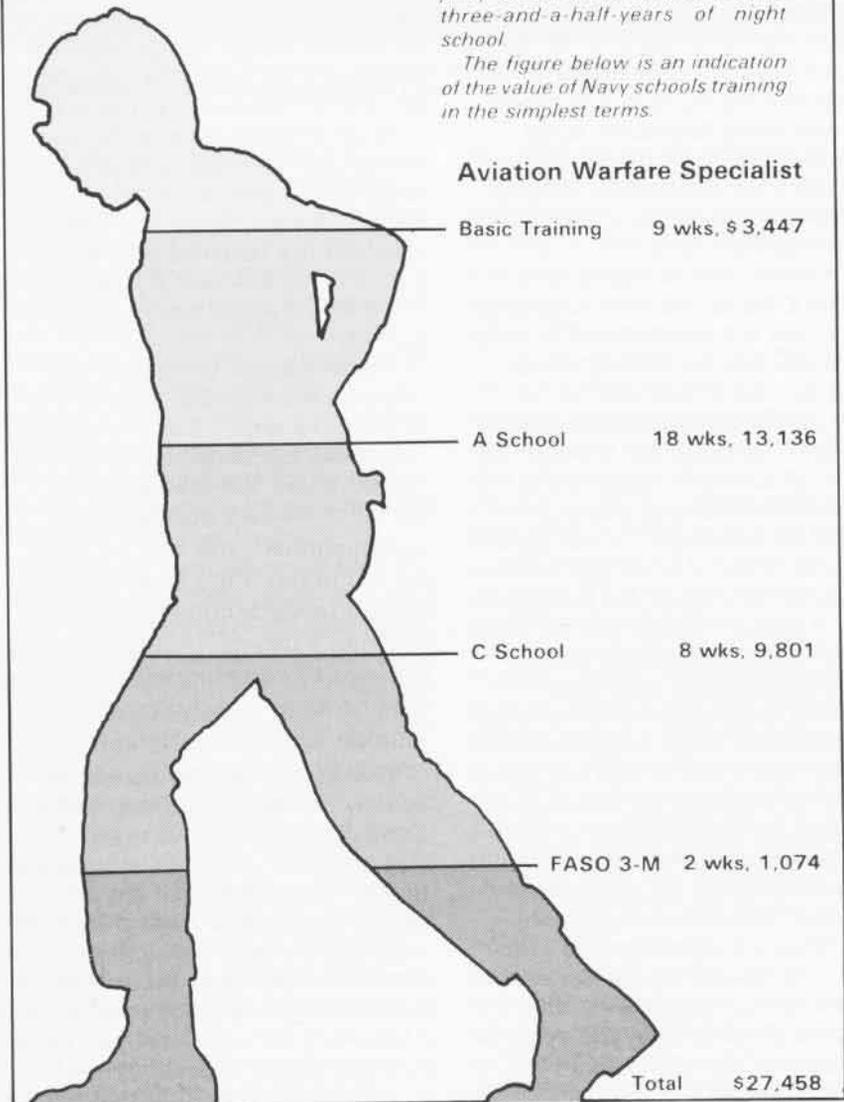
You are worth more than you think. If you measured that worth to Naval Aviation in terms of education, perhaps considerably more than you think.

In a world that is rapidly changing from an industry to information-based economy, skills acquired as a Navy man or woman are invaluable. That worth is measured not only in monetary terms, but in job satisfaction and self-image, man-hours, aircraft availability, safety

and lives. The value placed on your formal training and subsequent experience can be seen in major college and university programs where application for credits may be made based on that training and experience.

One young petty officer, with five years in the Navy, enrolled at The American University in Washington, D.C. and was awarded 12 credits for the schools he attended in the Navy and 30 credits for his military experience. These 42 credits, worth about \$11,500 at American University, enabled the petty officer to earn a B.A. in only three-and-a-half-years of night school.

The figure below is an indication of the value of Navy schools training in the simplest terms.



NavCad Program Returns

By Sherri R. Jones

Maintaining a force of motivated, combat-ready Naval Aviators is a continuous goal in the Navy. To broaden the aviation accession base, various programs are made available to attract qualified people to join and stay in the Navy.

The notable Naval Aviation Cadet (NavCad) program was reestablished on June 1, 1986, by the Secretary of the Navy to assist in this endeavor.

Originally introduced in 1935, the NavCad program provided a viable means of securing the number of Naval Aviators needed to keep Naval Aviation strong and ready. With the normal attrition of Naval Aviators each year, this objective is a challenge to meet.

Compared to the original program, the goals, requirements and guarantees are the same. The only difference in today's program is that it is open to women.

The NavCad program is available to anyone between the ages of 19 and 24 who has completed 60 college credits, with a grade point average of 2.5 or greater. Enlisted personnel already serving in the Navy may also apply for this program, if they meet all the requirements.

Service accepted equivalent schooling is considered for enlisted personnel who wish to join. The few "musts" involve age and the service commitment. A NavCad must not reach his or her 25th birthday before completing the 14 weeks of training, and the cadet must fulfill a six-year obligation.

Additional requirements to join the program are that the cadet be single with no dependents, and have a score of 5/5 on the aviation qualification test (AQT) and the flight aptitude rating (FAR) examination. Both tests are administered before the contract

is signed.

Once cadets enter the program, they receive the same training as aviation officer candidates (AOCs) at the AOC School, NAS Pensacola, Fla. "They compete for the same seats and status," said Commander John Patton, aviation officer programs manager in the office of the Chief of Naval Operations. "The main difference between the two programs is that NavCads are not commissioned as ensigns until they earn their wings. AOCs, however, are commissioned after completing the initial 14 weeks of training."

Another difference is the pay structure. The AOC is entitled to the enlisted pay status of an E-5 until commissioned, while the NavCad receives the benefits and allowances of an E-4 and 50 percent of an ensign's salary until commissioned.

"Even though the pay is low while in training, the program is still a good deal," Cdr. Patton said. "Because the cadet is required to live on board the station at the bachelor officers quarters until commissioned, and the Navy is willing to pay for a cadet's college tuition towards completion of a bachelor's degree, if desired. It's difficult to come up with any good arguments as to why someone shouldn't join the program."

Visitors to NAS Pensacola can usually see the AOCs and the NavCads marching to and from classes. And, even though the aviation officer candidates are commissioned before NavCads, they both wear the same khaki uniform. The distinction between the two is the NavCad's gold anchor collar device. After AOC School, NavCads wear a breast insignia as well, consisting of a horizontal gold bar and anchor within an oval in the center. When primary training is completed,



This breast insignia designates a NavCad's status after completing AOCs.

another bar is added.

After commissioning, all cadets are designated 1315s (unrestricted line officers, aviation) in the Naval Reserve. There are no restrictions on NavCads concerning advancement or application for service in the regular Navy.

Perhaps one of the most successful NavCads still on active duty is Admiral James B. Busey, Vice Chief of Naval Operations, who was commissioned and earned his wings in August 1954. He later attended the Naval Postgraduate School, Monterey, Calif., and earned both a B.S. and master's degree in management.

"It seems hard to resist when you put the program into black and white. The Navy not only trains you to fly million-dollar aircraft, but also pays for you to complete your college degree," Cdr. Patton emphasized. "I can't think of too many companies that will put so much trust, time and money into any individual."

Recruiting goals are set for approximately 250 cadets to enter training each fiscal year. This will maintain a continuous influx of aviators into the Navy.

Anyone interested in the Naval Aviation Cadet program should contact the officer programs recruiter at a local Navy recruiting office or a command career counselor. ■

A Former NavCad Touts the Program

By Sherri R. Jones

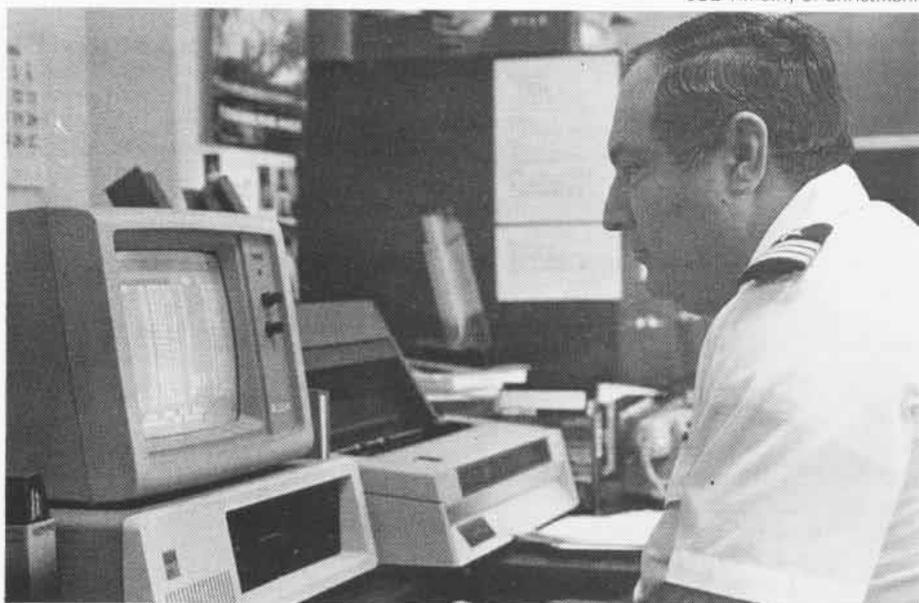
Commander Matt Costarakis, a reservist on temporary active duty on the 75th Anniversary of Naval Aviation project staff, from June 1985 to September 1986, began his naval career in July 1959 when he joined the Navy under the Naval Aviation Cadet (NavCad) program.

"It's nice to see the Navy bring back a program that has so many advantages," he said. "Even though I don't have a bachelor's degree, I've been able to serve my country as an officer and a Naval Aviator because of the NavCad program."

When the program first began, the age requirement was 18-24. "We were called cadets until we received our commissions. Back then, we wore a half-width chin strap braid on our covers [hats] and the shoulder boards had one star, no stripes. We were commissioned ensigns after completion of our second successful carrier qualification during our advanced training."

After going through preflight training, Cdr. Costarakis learned to fly the T-34B and T-28 before accomplishing his carrier qualifications on *Antietam* (CVS-36) in a T-28C. From there, he went on to advanced flight training at NAS Corpus Christi, Texas, and flew the S2F.

He had a break in flying while going through weapons training and spending four months attached to Patrol Squadron (VP) 30. Costarakis explained, "My first real squadron assignment was VP-5, NAS Jacksonville, Fla., and I was immediately deployed to Rota, Spain, for six months. I not only



Cdr. Costarakis was a familiar sight to those who visited the 75th Anniversary staff as he continually updated and monitored DIANA's files.

got to fly, but went places I never visited before. The recruiters had lived up to their promises as far as I was concerned."

Although he is originally from New York, Jacksonville became the commander's home. After completing his active duty obligation to the Navy, he joined the Naval Reserve. "This was the ultimate option for me," he said. "I was able to work full-time for a civilian company and still be a part of the Navy and continue to fly."

One of the best opportunities to come along for Cdr. Costarakis was the 75th Anniversary program. His love of flying is equal only to his love of computers and, on the 75th staff, he was involved in both. Even though he didn't get to fly, he worked as coordinator of flight demonstration team appearances at various air shows throughout the anniversary. "This year I saw more air shows involving naval aircraft than ever before," he said. "There is so much opportunity out there for Naval Aviation to be visible to the public and increase its awareness."

But as much as his enthusiasm builds when talking about flying, his real love today is computers, which was his area of expertise on

the anniversary staff.

Shortly after arriving on board, Cdr. Costarakis became involved in setting up the staff's computer systems. Once the equipment was received, he implemented an electronic bulletin board.

Known as DIANA, for Diamond Anniversary of Naval Aviation, the bulletin board answered inquiries via personal computer from all over the country, 24 hours a day, seven days a week. Information on everything from aviation history to current events of the 75th Anniversary to air show schedules was available through DIANA.

Because of the success of DIANA, which handled more than 6,500 callers, the staff of *NAVNews* decided to continue the service and converted the board in September to *NANci*, which stands for *Naval Aviation News* computerized information. (See *NAVNews*, September-October 1986 for more details.)

"I know the NavCad program helped me achieve numerous goals," said Cdr. Costarakis. "It's a program that shouldn't be overlooked. Incentives are the key to maintaining a strong naval force. With college costs continuously rising and jobs so hard to find, NavCad for many is the way to go." ■

Penguin Missile:

By JO2 Timothy J. Christmann

The LAMPS Mk III's SH-60B *Seahawk* has the technology and firepower to locate, track and destroy a submerged enemy submarine anywhere in the world. But, if the submarine surfaces, the helicopter's seven-man crew can do little more than curse and spit.

"It's frustrating," said Commander Jack D. McAfee, light airborne multi-purpose system (LAMPS) Mk III program coordinator in the office of the Chief of Naval Operations. "But the SH-60B doesn't have guns or missiles to sink a surface target."

This will change beginning in the 1990s, when the Navy modifies its SH-60Bs to carry the Norwegian-built *Penguin* antiship missile.

The 800-pound, short-range *Penguin* is a modification of a missile used on Norwegian patrol boats and F-16 fighter jets. Its effectiveness was tested by the U.S. Navy in 1982, and an evaluation into the feasibility of employing *Penguin* on the *Seahawk* was conducted in 1984. The evaluation concluded that the missile offers the LAMPS Mk III SH-60B "tactical advantages that cannot be obtained by other means."

According to the Navy, *Penguin* is unlike many other air-to-surface missiles, because it has a selective targeting capability that can strike primary targets in close proximity to other vessels (i.e., commercial shipping). Developed in 1972, the fire-and-forget missile is 10 feet long, 12 inches in diameter and has an 18-mile range.

Aside from being the Navy's first helicopter air-to-surface missile, *Penguin* will be the first weapon which meets the Chief of Naval Operations' insensitive munitions program requirements. This program, which evolved out of lessons learned from the Falkland Islands conflict, is geared to make shipboard weapons incapable of detonating from fire, banging, etc.

Although the LAMPS Mk III SH-60B operates from *Ticonderoga*-class guided missile cruisers, *Spruance*-class destroyers and *Oliver Hazard Perry*-class guided missile frigates, *Penguin* will be carried only by the last of these three ships. The Navy plans to modify 33 *Perry*-class frigates to accommodate the missile to enhance the ship's antisurface warfare capability without significantly affecting its antisubmarine warfare mission.

During testimony before the Senate Armed Services Committee last year, Rear Admiral David M. Altwegg, formerly assistant Deputy Chief of Naval Operations (Surface Warfare), said that the frigate magazines would have been modified anyway to accommodate the new air-and-surface launched Mk 50 advanced lightweight torpedo.

"[The Navy] will put *Penguins* in each of the ship's magazines, displacing a like number of torpedoes," the admiral stated. "It will give us, frankly, additional antisurface warfare capability."

Cdr. McAfee said that there are a number of air-to-surface missiles, mostly foreign made, that could be carried on the SH-60B, but the Navy thinks *Penguin* is the best weapon for the LAMPS Mk III.

The LAMPS Mk III is a revolutionary computer weapons system that integrates the SH-60B's antisubmarine and antiship warfare capabilities with the ships the helicopter operates from. Some 9,000-pounds of LAMPS Mk III electronics (2,000 of which are on board the *Seahawk*) allow the helicopter and its assigned ships to exchange acoustic, radar, electronic support measures and tactical information via a data link.

The LAMPS Mk III SH-60B, which extends the ship's surface and subsurface detection capability by some 28,000 square miles, specializes in antisubmarine warfare. In fact, since it joined the fleet in 1985, the LAMPS Mk III has accomplished some spectacular feats such as tracking two submarines simultaneously.

"It's difficult enough tracking one sub — but two is a major breakthrough," said Cdr. McAfee, prospective commanding officer of HSL-47, NAS North Island, Calif. "The system's reliability constantly exceeds the CNO's goals. The Navy has gotten what it paid for."

In war, if the SH-60B locates an enemy submarine with its advanced sensor suite, the helicopter crew can (with assistance from its parent ship) destroy the vessel by firing up to two Mk 46 torpedoes. But, if the SH-60B is conducting surface surveillance (the LAMPS Mk III's second mission) and locates a target, it can only provide over-the-horizon classification and targeting information for the ship. The ship, not the helicopter, would be responsible for destroying the enemy surface target with one of its long-range (60-plus miles) *Harpoon* missile.

But in the future SH-60Bs assigned to *Perry*-class frigates can help ensure the demise of a large 28,000-plus-ton enemy vessel by launching a *Penguin* in unison with a *Harpoon* strike from the ship.

Penguin with its compact, high-explosive warhead can demolish the upper levels of a ship's superstructure or knock off a crippling portion of its stern.

Yet, aside from providing extra antiship firepower to *Perry*-class frigates, the *Penguin* will give the SH-60B the ability to strike targets beyond the range of the ship's *Harpoon*.

This doesn't mean, however, that a *Seahawk* pilot is going to use his *Penguin* to hunt a 28,000-ton Soviet *Kirov* cruiser. Theoretically, one *Penguin* could put a *Kirov* out of action, but tactically the missile is geared to be employed against less fortified targets.

"[An SH-60B pilot] may not be able to sink a large ship with *Penguin*, but he could definitely zero out a coastal combatant like a [700-ton guided missile] *Nanuchka*, whose offensive capability is significant against LAMPS Mk III ships," said Cdr. McAfee. "Additionally, *Penguin* will give us the ability to sink surfaced diesel submarines." The Soviet Union has more than 180 diesel subs, and in war all of them would have to surface periodically to recharge their batteries.



Penguin can cripple a large warship by knocking off a portion of its stern, as demonstrated in photo.

Antisurface Firepower for the SH-60B



The SH-60B LAMPS Mk III will be a menace to enemy ships and diesel submarines when armed with the Penguin missile.

According to McAfee, the major factor in arming the *Seahawk* with *Penguin* is that it provides the Navy a capability that does not exist today.

"The missile complements the Navy's overall antisurface warfare picture and complicates the enemy's [defense capabilities]," he added.

Said Commander Brian Buzzell, program coordinator for *Penguin* in the office of the Chief of Naval Operations, "Once this missile gets to the fleet, it is going to make it difficult for the enemy to react. If he turns on his fire control radar to lock onto the SH-60B, the first thing he is going to get is a *Penguin* missile. And, if the enemy stays quiet, he is still going to get hit with a *Penguin* missile. So, he's going to have real problems."

The Navy plans to configure SH-60Bs deployed aboard *Perry*-class ships to carry only one *Penguin*. Although the helicopters could be modified at a later date to carry two *Penguins*, Cdr. McAfee thinks that the helicopter's mission and sensitivity to weight will preclude this from happening.

"I would like the SH-60Bs to have at least a dual launch capability," said McAfee. "After all, what aviator ever goes into combat saying he's going to hit his target on the first shot? But helicopters in general are very sensitive to weight. If you put something on it, you'll have to take something off."

In the 1990s, the SH-60B will have three weapon stations to carry one *Penguin*, two Mk 50 torpedoes (which are about 800-pounds each), or a combination of these weapons and auxiliary fuel tanks for extended range.

"I would like to see [*Penguins*] on all LAMPS Mk III ships," said McAfee. "If you put helicopter missiles on board, you'll have to take another weapon off. Space is that tight."

Over the years, the concept of arming helicopters with missiles has been popular in the U.S. Navy's rotary-wing community. However, many critics feel that putting air-to-surface or air-to-air missiles on helicopters would encroach on tactical aviation's responsibility. After all, why arm an antisubmarine warfare helicopter with air-to-surface missiles when it usually operates inside the battle group's tactical umbrella? And, why investigate the possibility of putting air-to-air missiles on board a LAMPS Mk III aircraft? Submarines don't fly.

According to Cdr. McAfee, arming helicopters with air-to-air missiles to fight other enemy helicopters is a concept the Navy will have to address soon because of the progress Europe and the Soviet Union are making in this area.

However, equipping helicopters with air-to-surface missiles has already proven to be effective in combat. One prime example of this was the Falkland Islands war between Great Britain and Argentina. During that conflict, Royal Navy *Lynx* helicopters used *Sea Skua* and *Aerospatiale* AS-12 antiship missiles to sink an Argentine submarine, patrol boat and tug boat. The helicopters also helped fixed-wing aircraft destroy a cargo ship.

Due in large part to the success of Britain's missile-toting *Lynxes*, the U.S. Navy began a study which led to the evaluation of arming LAMPS Mk III SH-60Bs with *Penguin*.

Since LAMPS Mk III ships won't always be fortunate enough to operate under the protective umbrella of carrier F-14 *Tomcats*, F/A-18 *Hornets*, A-6E *Intruders* and A-7E *Corsairs*, Cdr. McAfee said that there are dividends to arming *Seahawks*.

"We are facing deployment concepts for the LAMPS-capable ship where the only organic air element it will have is the SH-60B, especially in the third world contingency scenarios," he said. "So there is definitely a need for *Penguin*."

He added that people who are anti*Penguin* are critical of the missile's short range.

"They want a missile with a bigger standoff capability," said McAfee. "Theoretically, we could put a [1,100-pound] *Harpoon* on the SH-60B, however, the missile is so big and heavy that the helicopter wouldn't be able to carry anything else. But the SH-60B is too expensive a platform just to go out and shoot one *Harpoon*. The SH-60B needs some air-to-surface missile capability, and *Penguin* will provide it."

Added Cdr. Buzzell: "Right now [the SH-60B] is like a policeman with a walkie-talkie. If the pilot sees trouble, the only thing he can do is call in the good guys. But with *Penguin*, the *Seahawk* will be a policeman with a walkie-talkie and a pistol with one hell of a bullet. It is going to stomp the enemy dead." ■

New TACAMO Aircraft

E-6A to Replace EC-130

By JO2 Timothy J. Christmann

If a nuclear war began today, many deployed U.S. *Trident* and *Poseidon* ballistic missile submarines would receive nuclear control orders from Lockheed EC-130 TACAMO (take charge and move out) communications aircraft.

Since the late 1960s, modified C-130 *Hercules* have been used as a "survivable link" between the U.S. National Command Authority and the least vulnerable sea-based leg of America's nuclear triad. However, this will change in 1989 when the aging EC-130s begin to be replaced by Boeing E-6A TACAMO II aircraft.

Weighing nearly 350,000 pounds, the E-6A is more than twice the size of the EC-130. It is virtually identical to the U.S. Air Force's E-3 *Sentry* airborne warning and control system (AWACS) and will be the heaviest aircraft the Navy has ever flown.

Boeing is currently building a prototype that should be completed by December, thus making the E-6A the only new U.S. Navy aircraft constructed during the Diamond Anniversary year.

Although the plane won't be test flown until 1987, the Navy began procuring the E-6A five years ago. According to Captain Ernest Lewis, CNO airborne strategic communications program manager, this is an unusual process since new planes typically aren't procured until after they are tested. "But this is not considered a high risk because [the Navy] is using a proven airframe [a derivative of the 707], proven engines [CFM-56s] and a proven communications system," he said. "The combination of these will greatly improve the TACAMO capability."

Fifteen E-6As are scheduled to replace a retiring fleet of 20 EC-130s by late 1990. Eight E-6As will be flown by Fleet Air Reconnaissance Squadron (VQ) 3, currently based in NAS Barbers Point, Hawaii, and the remainder by VQ-4, currently at NAS Patuxent River, Md. Over the years, both squadrons have earned awards for mission readiness and safety.

"[The EC-130] is doing the job today," said Capt. Lewis. "But to meet the needs of the future, we desperately need the E-6A. It has been recognized as one of the Navy's highest priority programs and has the complete support of the White House

and the Defense Department."

According to Mr. Donald C. Latham, Assistant Secretary of Defense (Command, Control, Communication and Intelligence), "The capabilities of the E-6A provide the necessary connectivity to our ballistic missile submarine force so that it may be effectively utilized as the most surviving and enduring component of the strategic offensive forces."

Mr. Latham said that the Defense Department conducted a TACAMO Alternative Study which lasted two years and concluded that the E-6A "remains the strongly preferred [choice]" for communicating with the submarine fleet.

Although the EC-130 is still considered an excellent platform for the TACAMO mission, it has deficiencies that the E-6A will amend. These enhancements will include upgraded communications equipment, greater speed, increased range, habitability improvements and an in-flight refueling capability.

Except for a few modifications, the E-6A will carry the same communications gear that is currently used aboard the EC-130. But, before the 21st century, the new TACAMO aircraft is scheduled to receive communications system upgrades which will enhance the platform's capabilities well into the next century.

According to Capt. Lewis, the 1990s upgrades will affect the plane's amplifier and antennae system which he said are the "heart and soul" of the TACAMO communication's package. They are essential for relaying very low frequency (VLF) radio communications from airborne command posts to any of the Navy's 37 ballistic submarines.

"The very low radio signals are transmitted by using two trailing wire antennae [on the aircraft]," said Capt. Lewis, a former attack pilot with 3,500 flight hours and 600 carrier landings. "The longest of the two antennae is more than five miles in length. When the TACAMO aircraft is airborne, it is capable of extending that wire and transmitting to submarines...it is essentially a radio relay link."

Using VLF is crucial because its wavelengths can penetrate 30 to 40 feet of water, thus enabling the deployed submarines to receive transmissions without exposing their antennas.

In peacetime, deployed U.S. ballistic missile submarines consistently receive message traffic from VLF, low-frequency (LF) and high-frequency (HF) land-based stations. But in a major war, the impact of enemy nuclear and conventional weapons would reduce or eliminate the effectiveness of East and West Coast



Although the EC-130 TACAMO is considered an excellent platform for the mission, it has deficiencies that the bigger, faster E-6A will amend.



At nearly 350,000 pounds, the E-6A will be the heaviest aircraft the U.S. Navy has ever flown. Overall, it will be the biggest plane the Navy has flown since the 1950s.

land-based radio stations in relaying messages to the submarines and to TACAMO aircraft. Therefore, airborne command posts (at least one of which is always flying) on both coasts are in charge of transmitting strategic communications to TACAMO aircraft. The orders to transmit strategic information to the fleet will originate from the President or surviving military and government leaders.

The U.S. military has many redundant methods of communicating with submarines, including launching radio-equipped *Minuteman* missiles capable of transmitting prerecorded messages (to TACAMO aircraft).

"Without pontificating on the subject, [the U.S. military] is going to use enough redundancy to ensure we can survive and achieve the best level of protection that is feasible and affordable," said Capt. Lewis. "[Today] the reliability of getting the message through [to ballistic missile submarines] is very, very high."

Last year, the Government Accounting Office concurred. It investigated VQs 3 and 4 and discovered that their mission-capable rate is "excellent" according to Navy standards.

The E-6A will have twice the speed (600 mph) of the EC-130 and a significant extended range (more than 3,000 miles). Of course, with the E-6A's refueling capability, its range and time on station can be lengthened considerably if the situation dictates.

The long-range and high-speed aspects will enable the aircraft to operate from remote staging bases thus reducing its vulnerability to surprise attack. And, unlike the EC-130, the E-6A will have the ability to monitor emergency warning networks while on ground alert so it can get airborne quickly.

"You want to have an escape time to get off the runway and get out of there if you get a warning that nuclear weapons are on their way," said Latham. "The E-6A can get out faster [than the EC-130]."

Since the E-6A will have more than twice the room of the EC-130, there will be more area space for equipment and the TACAMO crew.

"[Right now] the EC-130 is crowded and the crew's performance is really stressed in a long [10 to 12] hour mission because they have no place to rest," said Capt. Lewis. "The E-6A not only has better crew accommodations, but [is large enough] to bring other personnel along [for training purposes, etc.]."

He added that space is so tight on the EC-130 that the aircraft's communications officer doesn't have his or her own chair and instead must sit on a metal box used to carry communications publications.

Perhaps the best habitability improvement on the E-6A is a section for bunks, so that up to eight of the average 14-member crew can rest periodically.

"Crew rest is very important for a mission like this because everyone has to be on constant alert," said Capt. Lewis.

According to Commander Mike Davidson, CNO assistant program coordinator for the E-6A, the EC-130 has a few crew bunks forward and aft, but most are nothing more than pipe racks with mattresses thrown over them. "The problem with [the aft racks] is that they are located in the noisiest areas of the plane and the potential for getting any meaningful rest is minimal," he said. "[On the other hand], the E-6A's bunk area is separated by bulkheads which minimize noise and provide an environment for rest."

One U.S. senator, who saw the full-

scale E-6A mock-up and also flew in the EC-130 during a mission, said in a Senate Armed Services Committee hearing last year that the difference between the aircraft "is like night and day." He added that the layout inside the E-6A offered significant improvements in crew comfort and ability to handle mission equipment.

At least one TACAMO aircraft is operating over both the Atlantic and Pacific oceans 24 hours a day, 365 days a year. They are typically away from their main operating bases (NASs Patuxent River and Barbers Point) for two week tours.

The EC-130's coed crew consists of three pilots, one communications officer, one navigator and a variety of system operators who are capable of fixing the aircraft's equipment if a malfunction occurs.

"The whole concept of this is to make the aircrews as organic as possible so they can take care of themselves," said Cdr. Davidson, an EC-130 pilot with 4,000 flight hours. "After all, TACAMO aircraft can't land every time there is a problem."

He added that training is the most important part of a TACAMO flight. In fact, because of the squadron's mission and turnover of personnel, VQ-3 and 4 aircrews get hands-on training on every flight.

"We train people in everything that is necessary to execute the mission," said Davidson.

This is one of the major reasons why VQs 3 and 4 look forward to the E-6A's arrival. The new TACAMO plane will be conducive to training, thanks to its spacious working environment and quiet CFM-56 engines. Although reliable, the EC-130's T56 turboprop engines are not only loud but cause the plane's airframe to vibrate.

To many people, it may seem difficult for TACAMO crews to maintain a high state of readiness. After all, for almost 20 years, the mission has essentially been a process of waiting — waiting for communication that both VQ squadrons hope they never receive. Yet, according to Capt. Lewis, the Navy's TACAMO community has "top-notch" professionals who understand the importance and sensitivity of the mission.

If TACAMO crews can perform excellently in a cramped, noisy, 25-plus year old EC-130s, they should peak in the E-6A.

"The E-6A is the best single improvement in TACAMO history," said Cdr. Davidson, "It's long overdue." ■



An aerial view of NAS Cubi Point in May 1956.

NAS Cubi Point Radford's Folly

By Lieutenant Gary E. Cerezo

This year marks the 30th anniversary of NAS Cubi Point in the Bataan Province, Republic of the Philippines. Without the efforts of one man, the air station would not exist today.

In 1950, while Admiral Arthur W. Radford was Commander in Chief of the Pacific Fleet, he envisioned a naval air base in the Western Pacific to enhance Seventh Fleet capabilities. The Army Corps of Engineers recommended the jungle-covered mountain side adjacent to the naval base at Subic Bay.

Proposals for the air base were met with astonishment and skepticism. The project was deemed impossible by civilians and no contract bids were ever made. The cautious contractors branded the proposal for the base "Radford's Folly."

Other plans were given consideration

prior to construction of the airstrip, including the relocation of the Subic naval base along with the proposed airstrip to the southern Philippine Island of Cebu. But Cebu presented some potential problems. It was not geographically desirable for warships. Surrounded by other islands, there was no easy access to the open sea, and shipping lanes could easily be blocked by enemies. Airfield construction would require relocating residents and interrupting local farming areas.

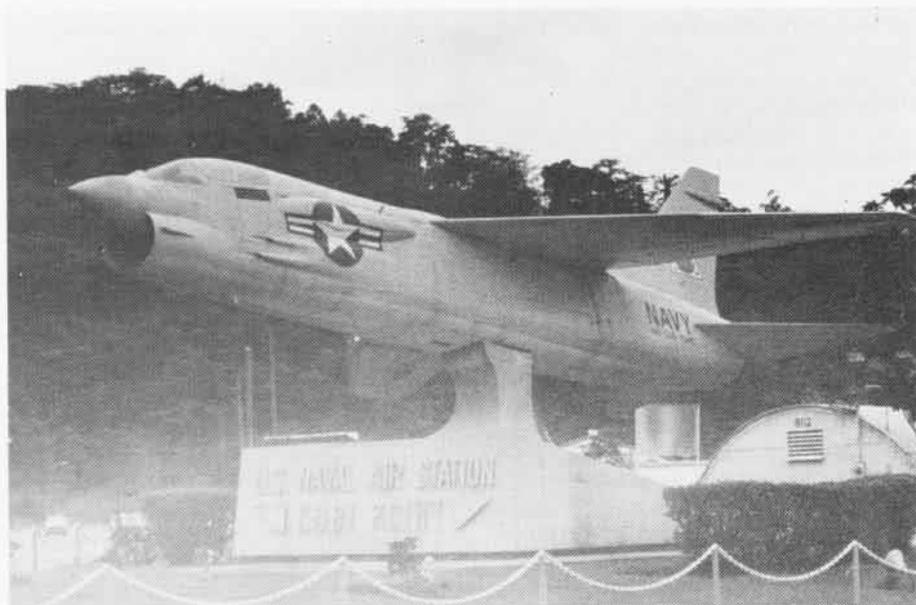
In contrast, Subic Bay, an established investment, offered immediate access to the South China Sea. Also, only one small fishing village required relocation for airfield construction.

Expansion of Sangley Point air base's existing airstrip, located near Manila, was also considered. However, it, too, was ruled out due to the number of people who would require relocation. The original Army Corps of Engineers' recommendation stood.

Following WW II, money for the construction of new projects was scarce. Military budget cuts and fiscal restraint were the order of the day. Ironically, the Navy Seabees, who were on the verge of demobilization, were given the challenge of building the air base.

According to one source, the name "Cubi Point" was derived from the acronym "CUBI," which stood for Construction Unit Battalion 1. The "I" was symbolic of the number 1 and the first Seabee battalion to work on the air station.

The challenge at hand was to build a one and one-half mile runway with an adjoining aircraft carrier pier, offices, living spaces and utility plants to support the entire base. In short, a small



Since no physical barriers separate NAS Cubi Point from NS Subic Bay, this F-8 proclaims "brown shoe" territory.

Lt. Gary E. Cerezo

city was to be built from scratch.

Surveying and clearing of the dense jungle began in 1951. A small fishing village was relocated to nearby Olongapo. Demolition experts blasted the mountain. Trucks and other equipment hauled away the loosened earth. Living quarters, water reservoirs and fuel depots were built.

On May 10, 1952, Adm. Radford made the first landing at Cubi Point. Piloting a North American SNJ training plane, he landed on a 2,500-foot dirt portion of cleared runway.

Equipmentman Master Chief (EQCM) Donald Turner, currently serving with Mobile Construction Battalion 9 in the Republic of the Philippines, has fond and vivid memories of the Cubi Point project. The then 20-year old constructionman (E-3), earning \$103 per month, arrived in 1955 after a 30-day ship transit from Port Hueneme, Calif.

Prior to his arrival, the "vertical" work of leveling the terrain and clearing the jungle had been completed. The "horizontal" work of establishing the foundation then paving the airfield had just begun, EQCM Turner recalled.

The rock quarry located across the bay provided material to create land for the 8,000-foot runway. Swamps and portions of the bay up to 98 feet deep were filled with the crushed rock.

Dredging coral from the bay had a twofold effect. It deepened the bay for shipping and provided coral to fill any soft clay spots in the airstrip. The coral, stated EQCM Turner, "allowed for 100-percent compaction and made the runway harder than the back of your head."

An industrial batch plant was established to handle the 36,000 tons of asphalt and concrete that the Seabees would eventually use to cover runways, taxiways and apron areas.

There was continual construction throughout the Cubi area. The amount of equipment used was staggering. EQCM Turner remembers, "It was just amazing. As far as the eye could see, there were booms of every kind, size and length."

Units from Mobile Construction Battalions 2, 5, 9 and 11 worked a three-shift operation, 24 hours a day. Nearly 3,000-men strong, their average age was 22.

Dangers were inherent in constructing the air base. The brutal dry season generated temperatures of 135 degrees fahrenheit. Dust generated by vehicles blinded drivers and caused accidents.

The greatest construction impediment, however, was the rainy season. Construction removed much of the area's surface vegetation. Without the jungle cover and roots to stabilize the soil, mud destroyed previous con-

struction and hampered equipment operation. Replacement parts were hard to get and had to be shipped from the States. But the Seabees persisted and gradually the airstrip took shape. An administration building, bachelor officers and enlisted quarters were completed as was the ammunition depot.

USS *Boxer* (CVS-21) tied up to the newly constructed pier on July 27, 1955, its air wing ready to test the newly completed runway.

By 1956, the Seabees had moved over 20-million cubic yards of earth. Fifteen miles of road were cut through the dense jungle where monkeys and wild pigs are still seen today. If one man had attempted this feat, it would have taken 9,120 years to complete. In all, 78 million man-hours were expended.

After five years of construction, Cubi Point was established as a naval air station on July 25, 1956. The ceremony's principal speaker was Adm. Arthur W. Radford, Chairman of the Joint Chiefs of Staff. Beloved Philippine President Ramon Magsaysay joined in dedicating NAS Cubi Point "to the peace and security of the free world."

In 1968, 1,000 feet of runway were added to form its present length of 9,000 feet.

NAS Cubi Point's original \$85-million price tag is a steal by today's standards. The 9,000-foot airstrip, transformed from mountainous jungle, combined with the existing Subic naval base to create a formidable team.

On December 21, 1972, the airfield at NAS Cubi Point was named Arthur W. Radford Field. In his dedication address, Adm. Radford called NAS Cubi Point "... the backbone of security and defense for all friendly nations in the Western Pacific, and those who are not our friends know about it, and know what kind of power can be generated here." The man whose idea and vision had been dubbed "Radford's Folly" was vindicated.

Today, NAS Cubi Point hums with activity. Twenty-two tenant organizations and 3,500 enlisted, officer and technical personnel provide training and support to the Seventh Fleet.

Diverse services are offered at NAS Cubi Point. An aircraft carrier can off-load its air wing at the air station, which allows flight deck repairs to the ship. Pilots hone and retain flight proficiency with field carrier landing practice, utilizing the carrier silhouette marked on Radford Field. In addition to aviation services, support organizations provide medical and dental care, jungle environment survival training, calibration and rework capability.

Averaging a landing every four minutes around the clock, Radford Field accommodates a variety of aircraft. The flying club's Cessna 150, CH-53E helicopters and the Air Force's C-5A reaffirm with each landing Adm. Radford's original vision of a dynamic, versatile naval air station.

In 30 years, NAS Cubi Point's mission is unchanged: quality service to the Seventh Fleet. ■



Adm. Radford spoke at the dedication ceremony for Arthur W. Radford Field on December 21, 1972.

STATE OF THE ART

Battery Life Extended

The Aircrew Survival Systems Program, Weapons Quality Engineering Center, NWS Yorktown, Va., recently completed an evaluation of the batteries used to power the AN/URT-33 emergency survival beacon. The task was to determine if the 24-month service life could be extended to help solve a battery shortage problem.

Yorktown's engineers obtained AN/URT-33 batteries from the fleet that had exceeded the 24 months. Using a special computer program, they simulated the batteries' continuous resistance load of 100 ohms. The evaluation results showed that the batteries were still capable of operating the beacon up to 36 months, for 15 hours above the six-volt cutoff level.

Old batteries may — and do — die, but the batteries for the AN/URT-33 had a hidden potential for an extra 12 months of service to fleet pilots and their crews.

New Life for Parachute Canopies

Parachute canopies used by naval aircrews now have a 10-year service and 13-year total life thanks

to personnel in the Aerosystems Department, Textiles Engineering Branch, Naval Weapons Center (NWC), China Lake, Calif. The three years of added life will result in an initial savings of more than \$4 million for the Navy, and about \$300,000 a year thereafter.

The original standards for parachute canopies were established after WW II, based on data obtained when nylon personnel parachutes were used to replace the silk and cotton ones used during the war. Very little scientific data was found recently to support the initial age limits. Unlike silk and cotton, nylon fabrics are not subject to attack by insects and mildew. Nylon is damaged by ultraviolet light, but its exposure is limited since emergency egress parachutes are used only once and they are otherwise exposed only when they are unpacked for inspection or modification.

Data revealed that overage was the only reason 92 percent of the canopies were removed. Parachute experts concluded that substantial savings could be made by extending the existing service and total life to the maximum safe value of the canopies.

NWC personnel stressed test canopies by subjecting them to high-speed, controlled openings and measuring their descent rate before and after the stress tests. More than 200 new and overage parachute canopies have been tested to date.

PROFESSIONAL READING

By Commander Peter Mersky, USNR-R

Shaw, Robert L. *Fighter Combat Tactics and Maneuvering*. U.S. Naval Institute, Annapolis, Md. 21402. 1985. 432 pages. Illustrated. \$28.95.

This is one of the most unique aviation books to be published in many years. The only photograph among the nearly 150 illustrations is that of the author on the dust cover; the remainder are drawings and graphs depicting the various arms and maneuvers which are discussed within. This volume amounts to a Ph.D.-level dissertation on aerial combat, beginning with a discussion on gun sights, missiles and ammunition. The text is salted with quotes from such fighter illuminaries as von Richtofen, Boyington, Olds, Hartmann and Cunningham, but this is not a historical book. It is a professional manual and unless the reader has some knowledge of the fighter pilot's work, much of the information in the book will be totally alien. This book could easily serve as a textbook for the student fighter pilot.

Power at Sea: A Portrait of U.S. Naval Aviation. International Defense Images. Distributed by Howell Press, Inc., 2000 Holiday Dr., Charlottesville, VA 22901. 96 pp.

U.S. Naval Aviation is more aware of itself in this 75th

Anniversary year than ever. One result of the new self-image is the burgeoning number of picture books dealing with U.S. Navy aircraft and crews.

International Defense Images has produced a paperback book with stunning full-color photography, which captures every aspect and every community of U.S. Naval Aviation today — from its beginnings at Pensacola to Atlantic and Pacific fleet squadrons.

This book is a fine visual overview of a fascinating, timely subject and is supported by an all-inclusive text.

Advanced Technology Warfare. Crown Publishers, Inc. 1985. 208 pages. Illustrated. \$12.95.

Filled with color illustrations and photographs, this paperback book explores the flourishing area of high-tech weapons and counter weapons, as well as the technology which has allowed the creation of an entirely new type of combat. The contributions of all nations are considered as are the different arenas: aerial, submarine, surface and land, and space. Subjects such as nuclear, stealth technology, camouflage and antisubmarine warfare advancements are covered in detail.

This volume is a valuable addition to a squadron intelligence library. The names of the various contributors will be well-known to those interested in the areas of discussion.

Awards

Lt. James E. McAloon, VF-31, was recently selected as the East Coast Fighter Radar Intercept Officer (RIO) of the Year for 1986. In addition to being honored as the best F-14 RIO in the Atlantic Fleet, Lt. McAloon also received VF-31's Tomcatter Trophy. This award recognizes the junior officer who contributes the most to the combat readiness and morale of the squadron through superior leadership and managerial skills.

Lt. McAloon has accumulated more than 1,300 flight hours in the F-14 and 350 carrier arrested landings.

Anniversaries

HS-6 celebrated its 30th anniversary while at sea aboard *Enterprise*. This was an appropriate setting since the squadron was commissioned at sea on June 1, 1956, while cruising on board *Princeton* in the South China Sea.

NAS Meridian, Miss., personnel — past and present — spent two days celebrating the air station's 25th anniversary in grand style on July 18 and 19.

Records

The following milestones were achieved:

HS-10: Skipper Cdr. Mack Thomas landed his SH-3 at NAS North Island completing his 3,000th hour of flight time in the *Sea King*.

HT-18: Lt. Greg Norris achieved 1,200 mishap-free flight hours during his first 12 months with the squadron.

Kitty Hawk (CV-63) marked her 250,000th carrier deck landing less than three months after celebrating

her 25th anniversary. Cdr. Mike Cooper, VAW-110's X.O., and Ltjg. Vicki Fischbeck trapped aboard the carrier in an E-2C *Hawkeye* to mark this milestone.

NAS Dallas: The station's C-12, utilized for transport of passengers and cargo, surpassed 6,000 mishap-free flight hours.

NAS Iwakuni: Sgt. Walter Oliver, a crew chief in the station's HH-46A SAR Division, reached his 1,000th flight hour in the H-46.

Ponce (LPD-15): During Exercise *Sardinia 86*, the *Proud Lion* logged her 25,000th accident-free landing. An aircrew of HMM-263, consisting of Lt.Cdr. Nickle, pilot; Capt. Macnamara, copilot; Sgt. Herman, crew chief; and LCpl. Anselmi, first crewman, made the record landing in a CH-46E.

VA-12: Cdr. Harry M. Conner, C.O., logged his 3,000th hour in the A-7E *Corsair II*.

VA-105: Ten centurion certificates were presented while aboard *Forrestal* to: Cdr. Johnson, C.O.; Cdr. Lewis, X.O.; Lt.Cdrs. Welch and Mayer (who also logged his 2,000th hour in the A-7E *Corsair II*); and Lts. McCue, Fitzpatrick, Carter, Clarkson, Shoemaker and Speicher (who marked his 1,000th hour in the A-7E). One other *Gunslinger*, Lt.Cdr. Fitzpatrick, logged his 200th *Forrestal* arrested landing.

VP-40: In a little more than 13 years, ADC Robert Hancock surpassed 5,000 flight hours, all achieved in P-3 aircraft.

The following units recorded safe flying time: HS-10, 56,619 hours and 10 years; SOMS MCAS Kaheohe Bay, 25,000 hours and 14 years; VAW-110, 44,600 hours and 11 years; VMA(AW)-242, 10,000 hours and 3 years; VMAT-102, 47,700 hours and 7 years; VP-67, 50,000 hours and 15 years; and VS-22, 34,965 hours and 7 years.

Et cetera

Have you ever wondered how the Navy tests missiles for effec-

tiveness? One way is the use of the F-86 *Saberjet* NOLO (no live operator). At the Pacific Missile Test Center, Point Mugu, Calif., an average of 40 NOLO target aircraft fly hops in support of test operations. The NOLOs are flown to San Nicolas Island where the pilot lands and the aircraft is taken over by remote control for the test phase. An "operator" at Point Mugu flies the *Saberjet* through its evolutions. If it isn't shot down, the aircraft is landed and the pilot takes over for the return flight to the mainland. Eventually, all NOLOs are shot down.



Bruce Trambley

This pilotless F-86 NOLO turns on final approach at San Nicolas Island, 60 miles off the coast of Point Mugu. The aircraft's final mission was in April 1986 when it was hit by a *Sidewinder* missile. It had survived 10 previous flights, including one in which it lost about half of the tail section.

Another field opens up to women. Donna Puckett, a civilian employee at the Navy Astronautics Group, Pacific Missile Test Center, Point Mugu, Calif., became the first woman to qualify as a navigation satellite controller. As the duty civilian satellite controller, she coordinates the operation of the system that provides navigation information to more than 80,000 users worldwide.

Making her dreams come true . . . Cpl. Gail Stevenson, an electronics technician, is also a crew chief aboard a T-39. This job enables her to fulfill her love of flying and has also earned her distinction as the only woman Marine T-39 crew chief at the Station

Operations and Engineering Squadron, MCAS Cherry Point, N.C.

Speaking of firsts . . . In June 1986, Coast Guard SN Kelley Mogk became the first woman to graduate from the Rescue Swimmer School, Pensacola, Fla. She is currently assigned at the Rescue Swimming Unit, Astoria, Ore. Since the Navy usually puts its rescue swimmers in combat operation units, there are no plans for women to be included in the program.

A \$1.9-million modification agreement was reached between ComNavResFor and NARF Pensacola, Fla., to test, repair and update the 24 electrical systems in seven A-7Es for use by reserve squadrons.

This is a new "product" for NARF employees to rework. In the

past, NARF Jacksonville, Fla., was the rework center for A-7s. However, due to hangar space constraints and an overload of P-3 aircraft rework, the facility was unable to handle the additional workload.

The first aircraft was completed in October. The last one will be finished in FY 87.

A new aircraft and new talent are scheduled for the *Blue Angels'* 1987 season. Lt. Clifford A. Skelton was recently selected as a member of the Navy's Flight Demonstration Squadron and brings with him an essential quality — the accumulation of over 500 hours in the F/A-18 *Hornet*. The *Blue Angels* are changing from the A-4 *Skyhawk* to the *Hornet*. Lt. Skelton is currently attached to VFA-106 and will remain with the East Coast F/A-18 fleet replacement squadron to assist in the *Blues'* transition to the aircraft in December.

Change of Command

ComTacGru-2: Capt. Allan D. Parnell relieved Capt. Edward D. Estes.

CVW-1: Cdr. William Copeland, Jr., relieved Capt. Jay Johnson.

HC-1: Cdr. Terry W. Waldbeesser relieved Cdr. John T. Francel.

HMH-461: Lt.Col. Terry P. Swanger relieved Lt.Col. John A. Tucker, Jr.

HMT-301: Lt.Col. Frederick Leek III relieved Lt.Col. William Hinds, Jr.

HS-7: Cdr. Thomas C. Davis relieved Cdr. Ronald L. Christenson.

HS-10: Cdr. James David Ellington relieved Cdr. Mack Allen Thomas.

HS-14: Cdr. Rickie G. Reynolds relieved Cdr. James P. O'Brien.

HS-15: Cdr. Christopher L. Addison relieved Cdr. Charles W. Woomer III.

HSL-31: Cdr. Jon L. Cook relieved Cdr. Kevin F. Delaney.

HT-18: Cdr. Richard D. Childers relieved Lt.Col. Jack R. Wagner.

MACG-38: Col. Thomas Jones relieved Col. John Spivey.

MAG-42: Lt.Col. C. F. Sprietsma relieved Lt.Col. M. C. Abajian.

MAG-46: Col. Thomas M. Conley relieved Col. John C. McDonald.

MAG-49: Col. Thomas A. Bowditch relieved Col. Daniel B. McDyre.

MATCS-28: Lt.Col. T. Gotta relieved Lt.Col. M. M. Henderson.

MATSG Cecil Field: Col. James L. Lucas relieved Col. Robert C. Korman.

MATSS-901: Maj. Thomas B. Isaac relieved Maj. George F. Martin.

MAWTS-1: Lt.Col. Frederick McCorkle relieved Col. Randy Brinkley.

MCAS Yuma: Col. W. T. Adams relieved Col. R. B. Savage, Jr.

NAMTraGruDet Jacksonville: Cdr. Peter J. Sedun relieved Cdr. Duane L. Brown.

NAMTraGruDet-1012: Cdr. Robert W. Mantel relieved Capt. Terry G. Olson.

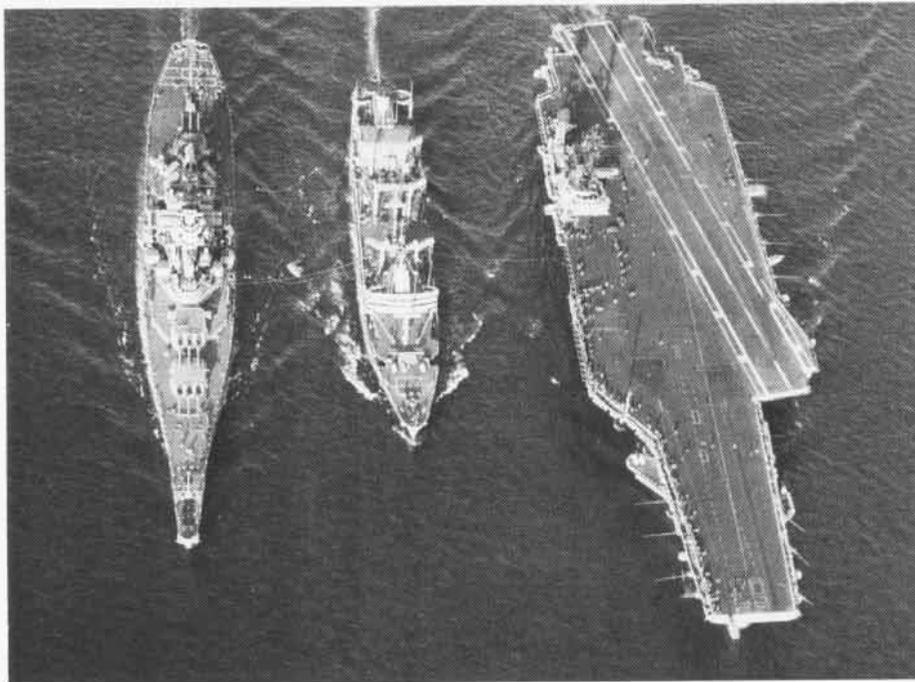
NARCen Moffett Field: Cdr. Paul W. Kinneberg relieved Capt. David E. Tanner.

NARF Norfolk: Capt. Garland F. Skinner relieved Capt. Richard L. Breckon.

NAS Barbers Point: Capt. Walter D. West III relieved Capt. Harry B. Robins, Jr.

NAS Pensacola: Capt. James W. Dickson relieved Capt. Bradley A. Butcher.

NAS Sigonella: Capt. Francis L. Hudnor relieved Capt. William R. Spearman.



USNS *Kawishiwi* (TAO-146) simultaneously refuels *Missouri* (BB-63) and *Kitty Hawk* (CV-63), during the first meeting for the two warships. *Missouri* and *Kitty Hawk* were conducting operations off the southern California coast at the time of the underway replenishment.

PH3 Tom Hensley

NavPro Grumman: Capt. Wendell Brown relieved Capt. James Charles.

NWC: Capt. John A. Burt relieved Capt. John W. Patterson.

PatWing-1/ComTaskFor-72: Capt. Charles C. Nute relieved Capt. Anthony R. Maness.

PatWing-5: Capt. John M. Evans relieved Capt. Peter H. Cressy.

PatWing-10: Capt. Melvin E. Thompson relieved Capt. William R. Broadwell.

PatWing-11: Capt. Jon S. Coleman relieved Capt. Byron E. Tobin, Jr.

2nd MAW: Maj.Gen. John R. Dailey relieved Maj.Gen. Richard M. Cooke.

SOMS MCAS Yuma: Lt.Col. Frank L. Kocevar relieved Lt.Col. Roger H. Gingrich.

TPS: Cdr. Kenneth M. Carlton relieved Cdr. Thomas J. Clothier.

VA-55: Cdr. W. Craig Chewing relieved Cdr. Robin Y. Weber.

VA-81: Cdr. Jay Munninghoff relieved Cdr. Ken Cech.

VAW-110: Cdr. Harry M. Highfill relieved Cdr. Robert P. McClendon, Jr.

VMA(AW)-121: Lt.Col. Newell J. Weston relieved Lt.Col. Warren P. McPherson.

VMFA-115: Lt.Col. H. L. Logan relieved Lt.Col. J. D. Wojtasek.

VMFAT-101: Lt.Col. Charles O. Hoelle, Jr., relieved Lt.Col. Clarence B. Cheatham.

VP-5: Cdr. Edwin W. Dews relieved Cdr. Richard G. Kirkland.

VP-9: Cdr. Phil M. Lenfant relieved Cdr. William G. Bozin.

VP-31: Cdr. John R. Ryan relieved Cdr. Michael D. Haskins.

VP-47: Cdr. Fred A. Cast, Jr., relieved Cdr. Karl O. Krumbholz.

VR-59: Cdr. John K. Barnett relieved Capt. James G. Baird.

VRC-30: Cdr. Douglas D. Eller relieved Cdr. Theodore A. Mitchell.

VS-29: Cdr. Grant W. Sassen relieved Cdr. Daniel M. Hacker.

VT-4: Cdr. Randy Leddy relieved Cdr. H. Wayne Kelly.

VT-22: Cdr. Timothy L. Thorsen relieved Cdr. William K. Bodenweber, Jr.

VT-24: Cdr. Terence L. Anderson relieved Cdr. Daniel J. Stone.

VT-25: Cdr. Steven L. Counts relieved Cdr. Billy J. Craig, Jr.

VT-86: Lt.Col. William C. Westfall, Jr., relieved Cdr. Philip C. Lame.

FLIGHT BAG

NANews' First Editor Dies

Joy Bright Hancock, 88, NANews' first editor, died of respiratory arrest on August 20 at the Naval Medical Command, Bethesda, Md. She was buried in Arlington National Cemetery.

Bright enlisted in the Navy as a yeomanette in WW I and was stationed in Philadelphia, Pa. In 1922, she moved to Washington, D.C., to work in public relations at the Bureau of Aeronautics (BuAer) and became the first full-time editor of the *Daily Aviation News Bulletin*, which was changed to *Naval Aviation News* in 1943.

In 1942, the Women Accepted for Voluntary Emergency Service (WAVES) was formed and Hancock was commissioned a lieutenant junior grade in the Naval Reserve. Throughout the war she was assigned to BuAer where she helped train WAVES to do various jobs in the Navy's air division.

At war's end, at the rank of captain, Hancock was transferred to the Bureau of Personnel as assistant chief of personnel for women. There, she helped lobby legislation to give women a permanent place in the

Navy which, in 1948, became law. Capt. Hancock was one of the first six women to receive commissions in the regular

Navy. She retired in 1953.

She authored *Lady in the Navy*, a memoir published by the U.S. Naval Institute in 1972.

Her survivors include a brother, Cooper Bright, and sister, Honor Allen.

NC-4

The following is an edited version of a letter to VAdm. Edward H. Martin, DCNO (Air Warfare), from Dr. Paul Garber, a historian emeritus and Ramsey Fellow at the National Air and Space Museum (NASM), Washington, D.C. NASM's Silver Hill restoration facility in Suitland, Md., is named for Garber. He joined the Smithsonian in 1920 and is credited with acquiring a large portion of its current aeronautical collection.

"I was honored to receive your letter referring to my efforts to assist with the reenactment of the NC-4's historic transatlantic flight in May 1986. I was thrilled and grateful for every moment spent on the PBY flights, first to Rockaway and then Hammondsport, N.Y.

"I may have been the only person at those occasions who personally remembers the NC-4. I saw her first when she came back from Plymouth, England, aboard ship, and was taken to Central Park in New York City for assemblage and display. I was in the Postal Air Mail Service at the time. Later, I saw her in Washington, D.C., and Philadelphia, where there were plans

to survey her.

"Back in Washington, I talked with Admiral Moffett who agreed that she should be preserved. I had no place for her assembly but brought the hull to the hangar in what was then called the Aircraft Building. The wings were stowed in the Torpedo Building in Alexandria, engines in Norfolk, and the remaining parts in Portsmouth, Va. One day during WW II, I saw a wing from the NC-4 being carried out of a hangar in Norfolk — for surveying, I was told. With the help of long-time friend Admiral Pat Bellinger, the NC-4's destruction was postponed once again. (Bellinger had given me for the museum the pennant he flew from his flying boat at Vera Cruz in 1914 when he was fired upon by the Mexicans, receiving the first bullet holes in a Navy aircraft by enemy action.)

The NC-4 parts remained at Norfolk's Cheatham Annex until after the war when they were restored and assembled on the Mall in Washington for the flight's 50th anniversary. The NC-4 is presently on loan to the Naval Aviation Museum, Pensacola, Fla. But when we get a building at Dulles airport

for our larger aircraft, I want her back.

Again, sir, my gratitude for your very complimentary letter."

Paul Garber

Mine Warfare Info Wanted

NANews' JOCS Kirby Harrison and JO2 Timothy J. Christmann are compiling information on mine warfare from personnel who have

been involved with mine laying and mine hunting/sweeping since 1938. In particular, we want to interview people who participated in mine-sweeping operations in Wonson, Haiphong and the Red Sea/Suez Canal. Write or call us at *Naval Aviation News*, Room 512, Bldg. 159E Washington Navy Yard Annex, Washington, DC 20374-1595, (202) 433-4407/8/9 or autovon 288-4407/8/9.

Patches Wanted

I would like to buy patches from any fighter squadrons. Is there any way to order them?

Joe Springer
Box 192
Lederach, PA 19450

Pen Pal Wanted

I am 17 years old and interested in Naval Aviation. Here in my coun-

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try, it is very difficult to learn about U.S. military aviation. Therefore, I would like to start a pen pal network in the United States. I am interested in exchanging information and photographs with others who share my interests.

Marcus Pugel
Fuerstenbrunnerstr.2a
A-5082 Groedig, Austria

USS Chenango Book

I am writing a book on the WW II escort carrier USS *Chenango* (CVE-28) and seek communication with former shipmates of Air Groups 25, 28 and 35 who served aboard. Please call me at (301) 320-5312 or write:

Mr. Brooke Hindle
5114 Dalecarlia Drive
Bethesda, MD 20816

Reunions, Conferences, etc.

Professional Aviation Maintenance Association Symposium, February 17-19, Houston, TX. Contact Patti Campbell, PAMA, P.O. Box 248, St. Ann, MO 63074, (314) 739-2580.

VF-11 reunion, January 31, 1987, NAS Oceana, VA. Point of contact: Lt.Cdr. S. E. Benson, VF-11, FPO New York 09501-6102.

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			Hayward, Adm. T. B.	Jul-Aug	34	Naval Aviation	May-Jun	4
			Lehman, John F.	Sep-Oct	9			
			Moorer, Adm. T. H.	May-Jun	12	Space, <i>Challenger</i> crashes		
			Pride, Adm. A. M.	May-Jun	13		Mar-Apr	32
			Smith, Lt.Gen. K. A.	May-Jun	12			
			75 years, history	May-Jun	4	Squadrons		
			Naval Cadet			MABS-31,		
			program returns	Nov-Dec	20	disestablished	Sep-Oct	30
			Naval Historical Center,			MWSG-27 B Det,		
			<i>NAVNews</i> to	Nov-Dec	1	disestablished	Sep-Oct	30
			Navy Fighter	Sep-Oct	18	MWSS-273, established	Sep-Oct	30
			Weapons School	Sep-Oct	18	VA-27, Gramps Trophy	Jan-Feb	7
			NC-4, historic flight	May-Jun	16		Mar-Apr	26
			reenactment flight	Jul-Aug	4	VFA-136, established	Jan-Feb	31
			reenactment planned	May-Jun	18	Strean, VAdm. B. M.,		
						Golden Eagle recalls	Jan-Feb	26
						TACAMO, new aircraft	Nov-Dec	24
						Terrorism, Navy strikes		
						Libya	Jul-Aug	15
						Top Gun, mission	Sep-Oct	18
						Training		
						aerospace engineering	Jul-Aug	32
						amphibious warfare	Jul-Aug	30
						enlisted aviation		
						electronics	Nov-Dec	18
						helo, HLT	Sep-Oct	26
						Navy fighter weapons	Sep-Oct	18
						Veterans Administration,		
						benefits	Jul-Aug	18
						Warner, Paul, Gramps		
						Trophy	Jan-Feb	4
						Watkins, Adm. James D.,		
						goals	Jul-Aug	10
						Wings, enlisted aviation	Mar-Apr	13

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