

NAVAL AVIATION

NEWS

NOVEMBER 1976



NAVAL AVIATION NEWS

FIFTY-EIGHTH YEAR OF PUBLICATION

Vice Admiral Frederick C. Turner
Deputy Chief of Naval Operations (Air Warfare)

Vice Admiral F. S. Petersen
Commander, Naval Air Systems Command

THE STAFF

Captain Ted Wilbur	Head, Aviation Periodicals and History
Cdr. Rosario Rausa	Editor
Dorothy L. Bennefeld	Managing Editor
Charles C. Cooney	Art Director
JOC Bill Bearden	Associate Editors
Helen F. Collins	
Sandy Nye	Assistant Editor
■	
Cdr. Nicholas Pacalo	Contributing Editor
Harold Andrews	Technical Advisor



COVERS -- Front, overhead to snap VF-24 F-14A Tomcats was Lt. David H. Graves in his VFP-63 Det 1 Crusader. Back, photo of USS Tarawa, subject of feature article beginning on page 8, is from Ingalls Shipbuilding Division of Litton Industries. Here, PHCS(AC) R. L. Lawson filmed CVW-9 aircraft from an Intruder during 1974's Operation Midlink off Karachi, Pakistan. At upper left are VA-146 A-7Es. Below them is a KA-6D from VA-165. In front of Lawson and his A-6's fueling probe is a VAQ-131 EA-6B. Another Intruder is in front of it. An F-4J of VF-92 is also visible in upper right of photo.

editor's corner

Numbers. From the *Corsair II Attack Report*, August 1976: "Sometime in the next few weeks (according to Vought compilations) an A-7A/B/C/D/E or H pilot will unknowingly reach a milestone — the 2,000,000th flight hour for an A-7. If the editor's math passes muster, that would be equivalent to one airplane, flying eight hours a day, starting flight in the 13th century and still being up there. Or, if George Washington, on his 21st birthday in 1753, had jumped into an A-7 and had flown it around the clock, day in and day out, he would still be several years short of the mark (and tired of flying). In other words, 2,000,000 hours is a lot of flying." No quarrel there.

From the Griffin. Retired Commander H. W. Masterman sent us a vintage issue of the *Griffin*, VP-4's squadron newspaper. The January 1939 version included words on a unit social gathering: "The athletic events seemed to be a huge success. Records of these were kept but from what can be gathered there should not be any sore arms from trying to pat yourselves on the back. Some of the athletes must have had a few beers, too, for there was some equipment missing. It is hoped that another picnic of this kind can be arranged in the near future. The past one was financed by Welfare entirely. It is probable that the next one will cost the men. But then where can you find so much beer and real enjoyment for so little money?"

In another section of the paper was the following comment: "They say that a chief is supposed to know everything. Is that why old ladies ask him for information in railway stations, on trains and in busses?"

"A chief is a white collar worker with gypsy blood in his veins." Never heard a CPO described like that.



Out of the past. Mr. Berkley B. Schutt, a Naval Aviation mechanic in the mid-1920s, loaned *NANews* a couple of photos from his scrapbook which are of interest. Curtiss O2C-1 *Helldivers* from Reserve Squadron VN-6R fly over the nation's capital in 1934 while Curtiss CS-1s are aligned along the beach at Loma Cay, Cuba. An aviation machinist's mate, Schutt was selected to assist in the Wright *Apache* aircraft's quest for an altitude record during operations at NAS Anacostia. He worked closely with Lt. Clarence C. Champion who, after several attempts, finally achieved



the record by piloting the plane to 37,995 feet over Anacostia on the 4th of July, 1927.

Schutt recalls that, on an earlier try, "Seven cylinders, their pistons and connecting rods, departed from the plane. One cylinder fell through the office building of the old Hoover Airport on the site where the Pentagon is today. The pilot landed the plane with the remaining cylinders (there were a total of nine), whose heads were badly cracked and which also had lost pistons and rods." After active duty, Schutt served with the reserves.

DLIFLC. That is the Defense Language Institute Foreign Language Center which boasts the world's smallest air force base. It's located in Monterey, Calif., and positioned atop a 12 by 12-foot table. MSgt. Arnold Worster, SSgt. Richard Alston and Mr. Rudy Albrecht created the airfield, modeled after Mather AFB,

for the purpose of reinforcing important concepts about military terminology. Instructors can act out operations over the field with a model airplane while a dozen students, with individual headphones, listen to various instructions in whatever language they're studying. Videotape films also provide visual cues for training.



Changes of Command

The November 1 retirement of Vice Admiral Kent L. Lee resulted in two changes of command. Former DCNO (Air Warfare) Vice Admiral F. S. Petersen became Commander, Naval Air Systems Command on October 29 assuming the post vacated by VAdm. Lee. Vice Admiral Frederick C. Turner is the new Deputy Chief of Naval Operations (Air Warfare). Until he assumed his new command, he was wearing two hats, Commander, Sixth Fleet and Commander, Naval Striking and Support Forces, Southern Europe.

Modern Battery

The Navigation Technology Satellite-2 (formerly *Timation*) spacecraft will be launched early next year. Under an agreement between the Naval Research Laboratory and the International Telecommunications Satellite Organization, NRL will integrate a nickel-hydrogen battery into the spacecraft's energy storage system. This will be the first operational use of this new generation of longer life, high energy density battery cells.

NTS-2 will be the first satellite launched in the joint services NavStar Global Positioning System. It is being built by NRL for a three-year minimum operational life at full power level and a five-year design life. The flight plan is to use the nickel-hydrogen batteries as the prime power source during solar eclipse periods. At other times, energy from solar cells will not only provide power for the satellite operations, but will also be used to recharge the nickel-hydrogen batteries.

New Spline Design

A recent marriage of high strength thermoplastics and a new spline profile has demonstrated a remarkable capability to endure for thousands of hours in the severe aircraft environment with little evidence of wear or failure. Aleck Loker of the Naval Air Test Center, and Harry Brown, ARINC Research Corporation, predict that the days of spline wear are over.

A new generation of self-aligning, self-lubricating spline couplings has proven through laboratory and fleet service to be essentially immune to the processes of fretting, corrosion, abrasion and wear. In addition to its proven life, the new coupling requires no lubrication or cleaning during service. It has been designed as an accessory interface coupling to connect equipment such as generators or constant speed drive power transmissions to engine-driven gearboxes. Three improvements in design account partially for the new coupling success: the circular cross section of each tooth provides a more uniform surface loading, thereby reducing tooth stresses; the crowned spline accommodates more angular misalignment before tooth jamming; and the process of fretting is virtually eliminated because there is no metal-to-metal contact.

The new spline would probably not offer such a significant improvement in service life were it not for the spline adapter that accommodates the new circular spline shape on the inside, and has the standard involute appearance on the outside. The new circular spline design uses a non-metallic muff that fits tightly into the mating spline rather than loosely as in the metallic spline adapter. The material most successfully tested so far is a high-strength, self-lubricating polyimide plastic. Since the adapter's internal circular spline is a plastic part, its configuration very quickly conforms to the shape of the circular-splined accessory shaft with minimal wear. Because the adapter material is able to deform plastically without fracture and conforms to the circular tooth profile, tooth loads or pressures are distributed more evenly over the inner surface of the adapter. This results in a long service life devoid of any significant wear. To date, prototype circular spline couplings have been designed for and flight tested on A-4, P-3 and EC-130 aircraft.

NADC Third Computer

The Naval Air Development Center (NADC), Warminster recently installed the third major unit in its central computer system. The new unit expands the capability of its computer department and in addition is faster, cheaper and more reliable. The CDC (Control Data Corporation) Cyber 170 Model 175 has a 131,000-word solid state memory and consists of 21 computers. Of these, 20 are peripheral processors which handle all input and output from and to such sources as tape drives, disc drives, line printers, card readers, card punches and remote terminals all over the country. The 21st computer, the central processor unit, contains separate functional units for mathematical operations. The Cyber 170 Model 175 can perform six million multiplications per second, according to Ralph Lachenmaier, chief of the system improvement branch. Five new disc drives have been installed which add a storage capacity of 100 million words and increase the central computer system's extended core storage from 125,000 to 500,000 words. Any current program will run on the new computer with no modifications, as it is totally compatible.

NADC also provides computer services to 82 remote terminals throughout the country at Navy facilities and at plants of contractors working for Naval Air. The computer department runs about 18,000 jobs a month. It operates 24 hours a day, Monday through Friday, and during the day on Saturday and Sunday.

Fly-By-Wire

After nearly three years of downtime during which a new digital computer system was installed, NASA's fly-by-wire F-8 aircraft returned to flight status on August 27 at NASA's Dryden Flight Research Center, Edwards, Calif. It was the first flight for the new control system which is being developed by NASA to meet the requirements of a new generation of aircraft. System flight testing marks this second phase of the test program, which began in 1972. According to Project Manager Cal Jarvis, the program is expected to last through 1978, with approximately 30 flights planned.

The conventional aircraft control systems in the F-8 are replaced by lightweight wires to translate pilot signals to the plane's control system. Three digital computers are used for primary control. A three-channel analog system is available for emergency control if the digital system fails. During Phase II the triplex digital system will be flight tested to evaluate the practicality of design concepts for multi-channel operation.

Aircraft manufacturers' studies indicate that digital fly-by-wire systems are essential to the application of active control concepts which will allow new approaches to aircraft design and potential improvements in future aircraft efficiency.

Jet Fuel Sources

A Naval Research Laboratory team, headed by Dr. Robert N. Hazlett, has been studying oil shale, tar sands and coal as potential alternative sources of fuel for Navy jet aircraft. Their research is part of the coordinated synthetic fuel research and development program of the Navy, elements of DOD and other government agencies.

The materials were selected because they have been processed to have properties close to those of Navy's primary jet fuel, JP-5. All coal products were prepared by the char oil energy development process, followed by distillation and hydrogenation. Shale oil products tested came from the Paraho Co. and the Laramie Energy Research Center, and a tar sands fuel was produced by the Great Canadian Oil Sands Co.

Dr. Hazlett has concluded that suitable jet fuels can be made from any of the alternate energy sources, oil shale, tar sands or coal. However, refining processes may have to be modified and processing conditions made more rigid before fuels from alternate sources are produced. Properties

which are problems are fuel stability, freezing point and combustion behavior.

The team's findings are being presented to the American Chemical Society's Division of Fuel Chemistry meeting in San Francisco.

Naval Reserve

In a restructuring of the naval reserve, effective October 1, management functions have been transferred from naval districts to the reserve readiness commands. In addition to their training responsibilities, the commands now control assigned naval reserve units and their programs and function as field managers for assigned resources. Command and control of the reserve readiness command, including the selected air reserve, remains with the Chief of Naval Reserve.

New Advanced Trainer

The Naval Air Test Center at Patuxent River is going to put the Beechcraft *King Air* Model 90 through a formal test and evaluation program before it begins service as the Navy's new multi-engine advanced trainer. The *King Air*, which will be changed only slightly as it becomes the T-44, will replace the aging piston-engine-powered TS-2A *Trackers*. Antisubma-



rine Aircraft Test Directorate's VS branch will manage the local test and evaluation program which is expected to begin next March and last until late June.

"There will be three T-44As in the initial testing program but only two of them will be at Pax River," explains project engineer Max Carver. "The third will remain at the company's plant in Wichita to serve as a platform for reliability and maintainability testing. The first T-44A should arrive about March 15 for a structural demonstration, followed a month later by the second for a performance demonstration." Testing at NATC will cover all areas, with emphasis on characteristics pertinent to its intended Navy use as an advanced trainer. This emphasis will include items such as the landing gear, since the aircraft will be subjected to numerous and often imperfect landings as a trainer. Testing is expected to be completed by the end of June and student training will begin shortly after at the training command.

Since 1964, when the first *King Air* 90 rolled off the line, 877 civilian and military models have been delivered. The Army and Air Force use it as the C-12A transport. The Navy plans to purchase about 70 of the new trainers. After completing their instruction in the T-44A, multi-engine students will join squadrons which fly P-3 *Orions* and E-2C *Hawkeyes*.



grampaw pettibone

Low-Level Caper

A Naval Aviator, a replacement pilot (RP) with an A-7E training squadron, was scheduled for his first low-level instructional flight with a qualified instructor flying chase. The RP had considerable experience, with 2,300 total hours and over 500 hours in the *Corsair*.

The briefing began as scheduled and followed the squadron briefing guide. The route of flight, checkpoints, obstructions and related emergencies were all covered. Takeoff took place as scheduled and the flight was proceeding well with the instructor judging the initial part to be above average. The RP remained on track, crossing checkpoints on time, with fuel being consumed as planned.

As he was approaching one of his checkpoints, he verified his track using crossing roads. He could not position himself accurately, however, because of the swampland he was over. He was on track at the last checkpoint and was flying the pre-planned heading. Minimum altitude for this leg of the route was 200 feet. He was looking for significant landmarks because the elapsed time for the leg was expiring. There were some towers, one on either side of the track, which were circled in red on his chart. The instructor was flying the prescribed chase position on his right wing, 600-700 feet aft and 200 feet stepped up. Weather was generally good with the visibility in excess of five miles.

At this time, the instructor saw a bend in a road and determined the flight was about one-and-one-half miles left of track. The RP was looking for the towers but did not see them and started to turn on time. After determining the flight's position by checking the area to his right, the instructor looked back to the left and saw the RP hit the top of one of the towers. The RP felt a thump, thought it was a bird strike and started to climb. The *Corsairs* diverted to a



nearby airfield where the A-7 was given a slow-flight check. An uneventful arrested landing was made. The aircraft sustained substantial damage requiring more than 1,500 man-hours to repair.



Grampaw Pettibone says:

Great gallopin' ghosts! This one ought to tell us all something—regardless of how much planning and briefing you do, you've still gotta keep your head outta the cockpit. We've been preachin' this for years and it becomes even more important on a low-level flight.

One thing still bothers me. If this gent and the chase pilot couldn't spot the towers and knew they were there—why didn't they climb up until they found themselves again? Obviously, low-level training is necessary. But, bustin' up a machine doin' it ain't!!

Letter to Gramps

Dear Grampaw Pettibone,

A section of A-6s departed NAS Coast on a cross-country, low-level training mission. Forecast weather for the route called for VFR with isolated thunderstorms in the vicinity. The flight progressed uneventfully until the middle of the route when the section was forced to deviate around a thunderstorm cell. The section climbed to an appropriate VFR altitude and hoped to pick up the remainder of the route on the other side of the storm. However, decreasing visibility and ceiling caused the lead aircraft to attempt to remain VFR on top by climbing.

At 12,000 feet it became apparent that the only way to remain VFR was to enter the positive control area (PCA). The wingman reminded lead that a clearance would be required but lead stated that CAVU weather couldn't be more than a few miles ahead. Passing 24,000 feet, the wingman again asked lead to obtain a clearance and was told, "If the flight is not able to descend VFR past the next cloud bank, I'll contact center." Fifteen minutes after entering the PCA, and skimming the cloud tops at 30,300 feet, lead realized that VFR flight would not be possible. He had previously secured his Mode C squawk and asked his wingman to ensure they were squawking standby.

Lead then contacted center, gave his position and requested clearance to FL 310. When center requested his altitude, he reported 17,500 feet. Center then asked lead to squawk Mode C. Lead reported that he was, but his squawk was reported as oper-



ating intermittently. This time everyone was lucky. Several minutes later the section received a clearance to FL 310 and the rest of the flight proceeded uneventfully.



Grampaw Pettibone says:

Great gallopin' ghosts! This really frosts my pumpkin! Why do we have to put up with these three percenters who obey the rules only when it fits their schedule?

I printed this letter knowin' full well that the majority of people in Naval Aviation go by the rules. It's that small percentage we have to watch out for! Sez something about C.O.s knowing their aircrews.

I'm fully aware that this letter lets it all hang out, but before I'm buried under letters, just expend your efforts in preventin' this type of occurrence in your own unit.

Mr. Cool

A Naval Aviator and his Naval Flight Officer were scheduled for a daylight training flight. They were scheduled to depart the aircraft carrier in the evening for a 1.5-hour sortie. The brief, preflight and man-up operation went as scheduled and the crew departed in an F-4 Phantom without incident. The pilot was a senior officer with over 5,000 hours total, more than 2,000 in Phantoms.

The aircraft climbed to altitude and began conducting a practice air intercept control mission. While proceeding outbound at 11,500 feet and 300 knots, the crew felt and heard a muffled explosion followed by a left yaw. The pilot had begun checking

his instruments when he felt the rear canopy and seat leave the aircraft, very shortly after which he was ejected himself.

During the ejection, the pilot felt a flailing sensation and the airstream pulling at his helmet. The seat tumbling and the flailing soon ended and he was sitting in his seat — falling in a stabilized, somewhat upright position. He was concerned about automatic seat separation and considered pulling the harness restraint release. But he decided to wait a little longer. Convinced there was a failure, he pulled the emergency harness release and the seat bucket fell away.

After separating from the seat, the pilot could not find his left riser, the D-ring or the parachute pack where he expected them (on or above his left shoulder).

He then noticed his parachute pack swinging fore and aft around his right leg. He saw only one riser. He pulled it and the parachute pack to his chest. This action created spinning and tumbling so severe that the horizon was no longer discernible.

Placing the parachute pack between his legs and spreading his arms to stabilize himself, he now noted about a foot of white cord coming from the top of the parachute pack. He pulled it. This resulted in the parachute starting to appear. He ripped at the parachute and it freed itself.

opening with a severe shock to him.

Once stabilized in his chute, he opened the seat pan and inflated the survival raft. The raft was oscillating which caused a similar effect on him. He pulled the raft up to him which eased the pendulum swinging.

Looking down, he realized water entry would occur soon, so he let the raft fall. The raft lanyard subsequently wrapped around his right foot. As he entered the water, he was dragged face down for a short distance. He rolled over on his back and was able to free his right parachute Koch fitting. The dragging stopped. After freeing the left fitting, he inflated his life preserver with difficulty, holding his breath while searching for the toggles underwater. He then untangled the raft lanyard which was wrapped around his right foot and pulled himself into his raft.

The NFO's ejection was without incident. Both were rescued by helo shortly after water entry.



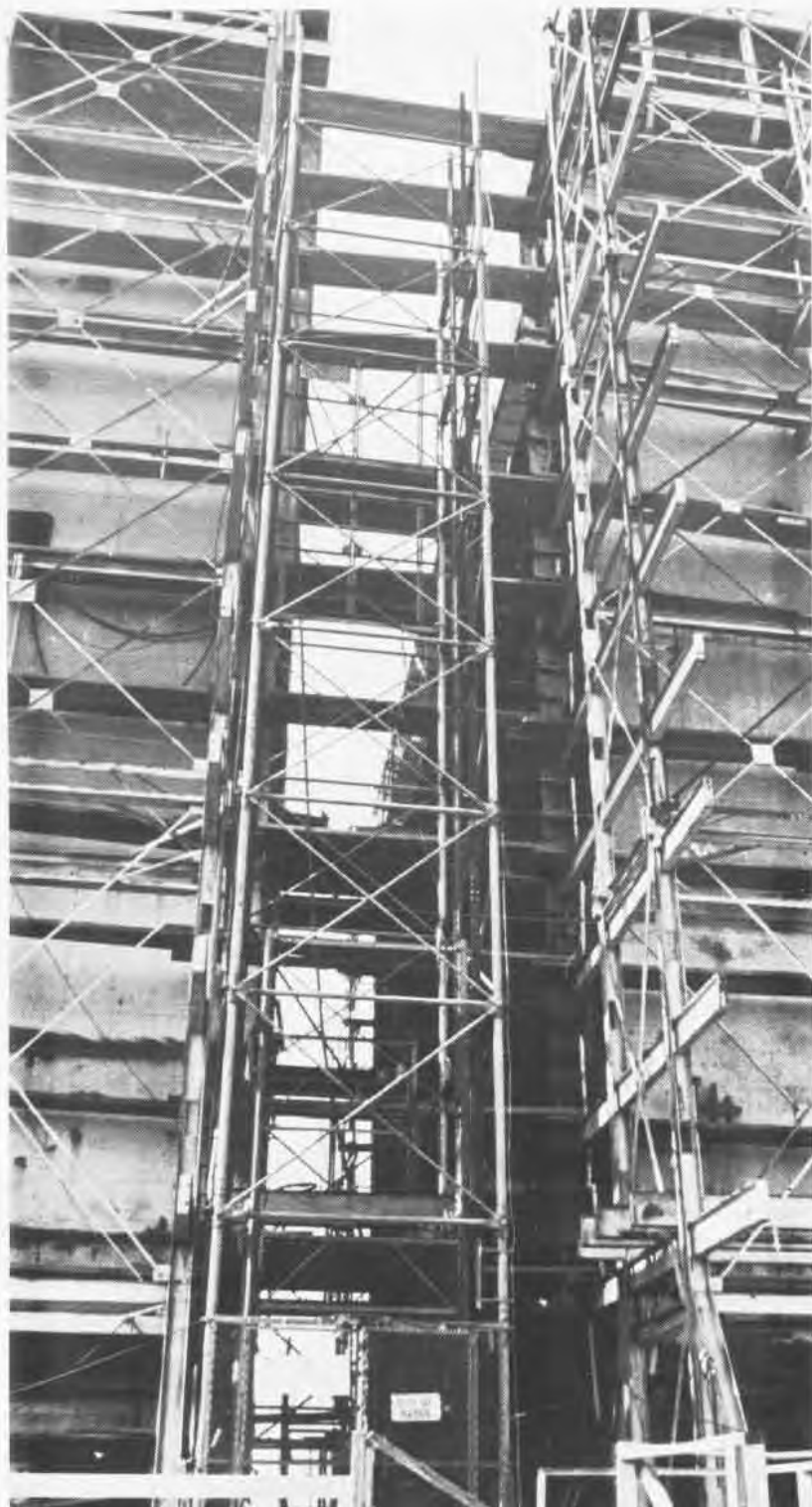
Grampaw Pettibone says:

Holy Hannah! Talk about problems, this gent had them all, including the unprogrammed ejection. I picked this story, however, for other reasons. Once this pilot was ejected and encountered all those problems with the chute, he displayed a coolness which was fantastic. Can you imagine unpackin' your own chute on the way down? Well, he stayed calm and did exactly that. Makes you proud to be part of Naval Aviation. A cool performance by Cdr. Rod Kauber.



Tarawa

Eagle of the Sea



Ever try to put together a 40-thousand-ton, 820-foot puzzle — that floats? The pieces would number in the hundreds of thousands.

Recently, thousands of persons pieced together such a puzzle for the Navy in a small town along the Mississippi coast.

It started several years ago when the Navy and Marine Corps decided they needed a new type amphibious ship. They wanted a design that would meet the needs of both services. One of these puzzles has been completed and four more are being constructed at Ingalls Shipbuilding in Pascagoula.

The five ships are being constructed using advanced shipbuilding techniques, a prefab method whereby modules or large sections are assembled separately and joined together later on a shipway.

This system of modular construction is used at a number of modern shipyards, including two in the United States and several in the Soviet Union. The first of the five puzzles, USS *Tarawa* (LHA-1), is a general purpose amphibious assault ship.

The LHA is unlike any other amphibious ship the Navy has had. Amphibious ships in the past have placed primary importance on getting the payload to the combat area. Working and living accommodations for the crew and troops were secondary. Not so with the LHA.

The LHA is a large ship with a relatively small crew. *Tarawa* is 820 feet long at the flight deck and 20 stories high, 15 of which are above the waterline. Full complement is approximately 2,800 officers, sailors and embarked Marines. She is second in size only to a modern-day aircraft carrier. She displaces approximately 39,000 tons when fully loaded and is capable of speeds in excess of 20 knots.

To enable the crew and troops to concentrate on the principal mission



of the ship, it was essential to incorporate a high degree of automation and many work savers that would eliminate or greatly reduce the man-hours expended in mundane house-keeping chores of painting, polishing, cleaning and fixing.

This was a challenging task for both the Navy and Ingalls. The LHA has about 1,400 compartments, hundreds of men that work and live aboard ship for weeks at a time, flight and hangar decks with many large helicopters and the largest boat harbor and multi-level vehicle garage afloat.

As one ship designed to do the job of four (LPH, LPD, LKA, LSD), the LHA incorporates many unusual features. Tons of munitions, supplies and general cargo will be

Tarawa

loaded on, and offloaded from, landing craft and helicopters. But no one will have to "tote that barge or lift that bale." Most cargo will move with ease automatically on an extensive system of conveyors, transporters and elevators. Trucks can drive on ramps from one deck level to another. And under operational conditions, the ship uses a sophisticated and well integrated cargo and personnel flow procedure to load and off-load men, supplies and equipment in the fastest possible time.

Two key factors in this plan are a monorail cargo-carrying system operating overhead in the well-deck level and a system of nine elevators, five for freight and cargo, two for helicopters and two for personnel and medical patients. Most cargo moved on the system will be on pallets in one-ton units.

The LHA monorail has 11 trains, each with an operator and a load capacity of two tons. A central dispatcher, located in a control tower atop the massive pier that bisects the well deck, routes rail traffic to and from the landing craft. Horizontal and vertical conveyors, in combination with elevators and forklift pallet transporters, take the cargo elsewhere in the ship and in or out of the helicopters.

To keep things moving and prevent traffic jams, the LHA has a computer-operated interior communications system and closed circuit TV.

Mechanics will be right at home on the LHA where they have complete repair shops for maintenance of helicopters, landing craft, trucks and other motorized equipment.

The LHA is designed with extensive hospital facilities. It is capable of providing medical assistance to 300 casualties, more than any other ship operating with the fleet with the exception of some hospital ships.

Whether it's a typhoon in the Philippines, an earthquake in Nicaragua or a hurricane along a U.S. coast, the LHA will be able to provide transportation, food, water, clothing, shelter, medical care and communications to victims of disaster. With its 20-knot speed, the ship can steam quickly

to any disaster scene where its helicopters and landing craft can shuttle between ship and shore.

The major medical facility includes two main and two emergency operating rooms, two x-ray rooms, a blood bank, laboratories and wards.

In a disaster operation, the vast communications systems aboard the LHA could become the rescue command post. From here a commander could direct rescue operations and maintain communications with the population on shore.

The LHA has an electrical power system which develops enough electricity to light 11,500 homes, and it has the capacity to create fresh water each day to supply the normal needs of 6,500 people.

Today, the Navy operates about 60 amphibious ships, all of relatively recent construction and capable of traveling anywhere on the seas at a sustained speed of 20 knots or more.

Now that the puzzle is completed, *Tarawa* has officially joined the fleet.





Tarawa

Tarawa was commissioned May 29 at the Ingalls shipyard. She officially joined the Pacific Fleet after transiting the Panama Canal for her new home port at San Diego.

Appropriately, the Assistant Commandant of the Marine Corps, General Samuel Jaskilka, delivered the principal address at the commissioning ceremony. The Honorable John Stennis, U.S. Senator from Mississippi and Chairman of the Senate Armed Services Committee, also addressed those in attendance.

Other distinguished guests included: Navy Secretary J. William Mendenhall II; Chief of Naval Material, Admiral Frederick H. Michaelis; Commander, Naval Surface Force, Pacific Fleet, Vice Admiral Emmett H. Tidd; and Mayor Tom Moody of Columbus, Ohio.

The ship's sponsor, Mrs. Robert E. Cushman, wife of the former Marine Corps Commandant, was also in attendance. Mrs. Cushman christened *Tarawa* in December 1973.

The Commandant, Sixth Naval District, Rear Admiral Julian T. Burke, read the commissioning directive. Captain James H. Morris then assumed command.

Primary mission of *Tarawa* is amphibious assault. She is able to embark, deploy and land a fully-equipped Marine assault force by helicopter, landing craft or a combination of the two. A single *Tarawa*-class ship can perform many of the functions which now require four different types of amphibious ships.

The LHA is a combatant ship and will normally travel in company with other ships. She is capable of providing much of her own defense. Armament includes three light-weight 5-inch, 54-caliber guns, a defensive missile system capable of eight missiles per launcher and six 20mm machine guns.

Tarawa will normally operate about 25 helicopters — most of which will be CH-46 *Sea Knights* supplemented by CH-53 *Sea Stallions* and UH-1 *Hueys*. *Tarawa* may also be adapted to employ AV-8 *Harriers*. Although *Tarawa* is capable of landing and launching light fixed-wing aircraft, the

maintenance and storage of fixed-wing aircraft is not a prescribed mission of the ship.

The helicopters assigned to *Tarawa* provide an airborne ship-to-shore delivery system for troops, vehicles and cargo as well as gunfire support and surveillance.

The second ship to bear this name, *Tarawa* was named for the battle for the strategic atoll which opened the path to the Central Pacific's Gilbert and Marianas Islands during WW II. It was one of the proudest testaments to valor in Marine Corps history.

The price of victory on *Tarawa* was high — 1,020 Marines killed and 2,296 wounded. Only 146 of the approximately 5,000 Japanese defenders on the island survived when the battle ceased on November 23, 1943.

Marine Corps historians recall that a Japanese admiral boasted that it would take the Americans "a million men and a hundred years" to take *Tarawa*. The Marines did it in 76 hours.

Tarawa, whose nickname is *Eagle of the Sea*, is the only ship to be presented and to display the Marine Corps Colors and Battle Streamers — those of the Marine Detachment of the former aircraft carrier *Tarawa* (CV-40). She is the only ship in commission to have a Marine Corps unit insignia in her emblem: that of the Second Marine Division which stormed the beaches of *Tarawa*.

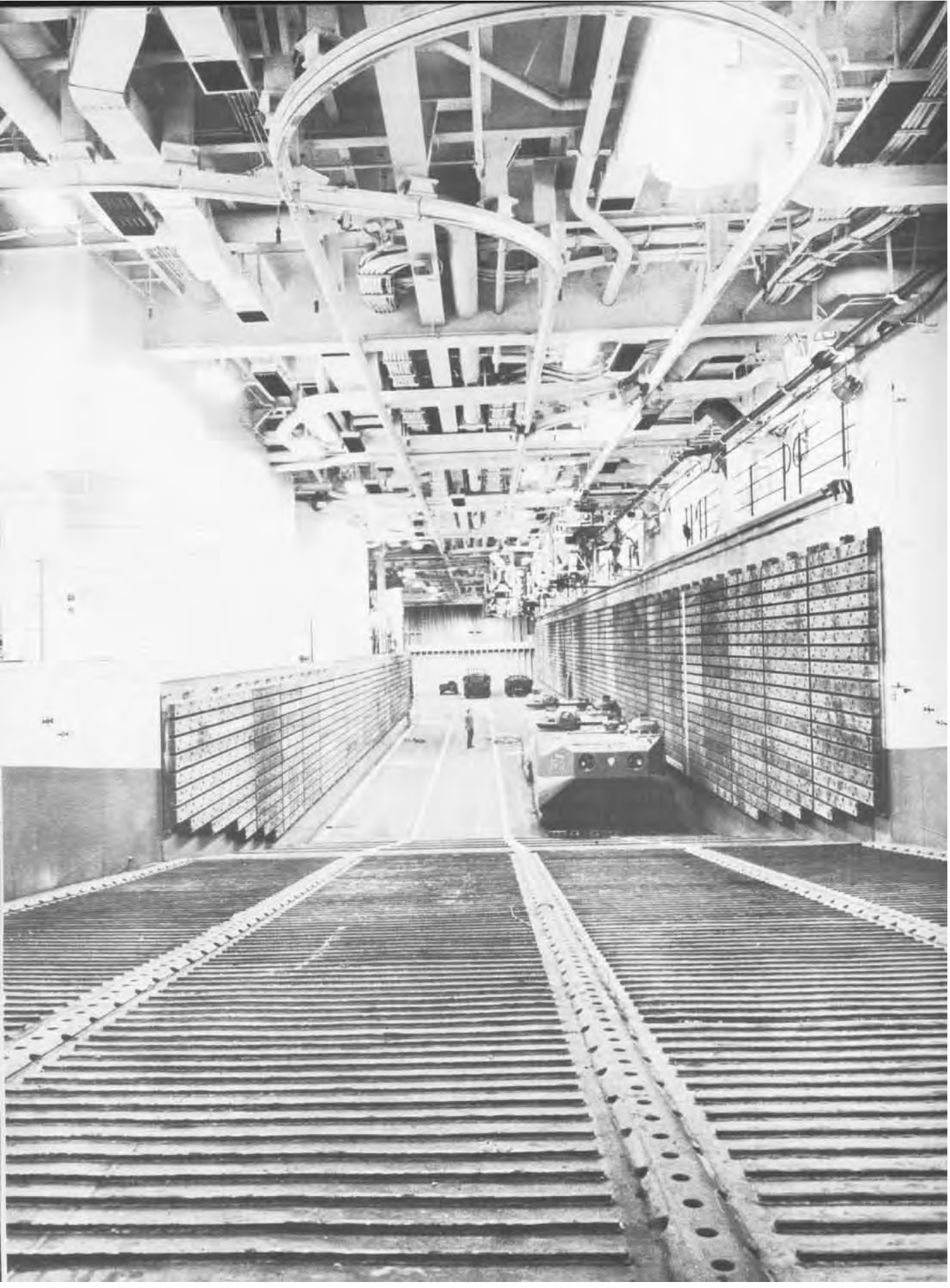
To represent those brave Marines, Mrs. Julian C. Smith, wife of the general who commanded that division at *Tarawa*, was in attendance at the commissioning. Also present was former Marine Sgt. Fannie B. Ladd (pictured lower left raising the commissioning pennant on *Tarawa*). Ladd, a veteran of that historic battle, received the Silver Star for his actions there.

Tarawa's design combines the amphibious warfare experience and technology of over 30 years, since the first specialized ships for this purpose were constructed in the early 1940s.

Tarawa and her sister ships are the dreams-come-true of those persons dealing in amphibious warfare.







Tarawa



Today's Fleet Marines are going to have easier living conditions aboard ship, at least aboard *Tarawa*-class ships.

Resembling an aircraft carrier, this new type is the largest amphibious ship in today's Navy. *Tarawa* was designed and built from stem to stern, keel to mast with the ship's crew and embarked Marines in mind. Careful consideration was given to every detail concerning the health, safety, comfort and convenience of the men.

This means the embarked sea-going Marines will have the finest accommodations possible. The troop berthing compartments, divided to provide semi-private spaces, are fully air-conditioned and have the best bedding and lockers available, with special racks and storage areas for weapons and field equipment.

During the men's leisure time, facilities available include a library, closed circuit television, ship's store for personal needs, snack bar and ice cream parlor for that afternoon ge-dunk and numerous vending machines throughout the ship.

For those who want to stay in physical condition there is gym equipment in a special climate-controlled space. It is designed to enable Marines to become climatically conditioned to a tropical environment.

On board are the most up-to-date food handling and catering services provided by both cafeteria-style and dining room facilities. The Marines will be eating their meals in a civilian-type environment on regular plates and dishes instead of from shipboard metal trays.

The ship also has a hobby shop with photo lab and barber shops.

Sharks

etc.

By Bernard J. Zahuranec



The oceanic biology program of the Office of Naval Research and the Naval Ocean Research and Development Activity has very little to do with survival gear for airmen since marine biology has little effect on airmen's survival. However, there is one aspect that catches the imagination of almost everyone: the danger from sharks.

Recently there has been a great deal of publicity about sharks and about the Navy's chemical shark repellent, commonly called "shark chaser." Statements have been made about its effectiveness in repelling sharks—the implication being that it doesn't work, never has worked and may even attract sharks. The Air Force has stopped providing the chaser as a piece of survival equipment. Navy is doing the same, intending to ultimately remove it from the standard military specification lists.

The obvious questions are: Does shark chaser work? If it doesn't work, why has it taken so long to find that out? Why has the Navy been using it for so long?

It turns out that, as with most situations where man is involved with nature, the actual story is more complex and simple yeses and noes are not fair answers.

Shark chaser, developed in an accelerated program during WW II, has been issued as a piece of survival equipment for more than 30 years and remains essentially unchanged. The story of its development is related by Richard L. Tuve in *Sharks and Survival*. Tuve, employed by the Naval Research Laboratory, was involved in the original testing and development.

The initial ideas (in 1943) on what kinds of chemicals to test as shark repellents came from shark fishermen. They had noted that if a dead shark was left on a line, no other sharks would come into that vicinity. This suggested that a natural shark-

repelling chemical was present in the rotting flesh—a promising place to start. Most prominent among the decomposition products was ammonium acetate.

In the meantime, a number of preliminary tests conducted at Woods Hole Oceanographic Institution, using dogfish sharks and a variety of chemicals that seemed as though they might repel sharks, provided several possibilities, including maleic acid and copper sulfate. During subsequent tests a combination of the copper and acetate was judged to be effective. Since it was more stable than ammonium acetate, copper acetate was used as the main ingredient. Later an intense black dye, nigrosine, was added to the mixture to make it visible in the water. To this mixture was added a water soluble wax—to hold it all together in a solid bar.

One of the problems in those initial experiments was that it was difficult to consistently find numbers of sharks under natural conditions.

Since it was assumed that sharks probably attacked people because they were hungry, actively feeding sharks were sought in tests conducted off Mayport, Fla., in the northern Gulf of Mexico and off the coast of Peru.

During these and earlier tests, it was obvious that none of the chemicals worked 100 percent of the time and one concern was the degree of effectiveness a chemical needed in order to make it useful as a shark repellent. The opinions in 1943 ranged from effective half of the time to nearly always effective. Curiously, no one held out for complete effectiveness, perhaps because they realized that would be difficult, if not impossible, to attain. In any case, it was agreed that a chemical which worked two out of three times would be worth pursuing.

As Mr. Stewart Springer, one of the early investigators, pointed out, it was recognized that a primary practical purpose of a shark repellent was to

improve morale. It was reported, from battle areas of WestPac, that there was a very real reluctance on the part of many men to take risks that might result in their ending up in the water—even though sharks were portrayed as "skulking cowards" who would not attack live humans in the water. It was anticipated that having a shark repellent available might induce men to take the risks and then remain calm if they did end up in the water—which, in itself, would lessen the chance of attracting sharks.

What has been discovered since WW II and why doesn't shark chaser work any longer? Bear in mind that in those early days little was known about sharks. Some of what was passed on as fact was based on hearsay and old wives' tales. It was not even known which species were most dangerous to man, nor how dangerous they were, or even how to tell many of the species apart. As a result, largely through ONR, the Navy supported a variety of investigations into the basic biology, taxonomy and behavior of sharks.

We now know that there are more than 200 species of sharks in the world, only about 20 dangerous to man. We also know that those sharks which are dangerous to man are efficient predators, extremely well adapted to their environment and to the job of catching and eating prey such as fish. They have strong jaws and razor-sharp teeth, constantly replaced when lost, broken or dulled. They can smell certain organic chemicals, such as amines and hemoglobin, even in minute concentrations. They are attracted by low-frequency, intermittently-pulsed sounds underwater—kinds of sounds produced by a struggling or wounded fish. There are indications that they have excellent vision including the ability to distinguish colors. Finally, at close range they are able to detect extremely weak d.c. electrical fields of the type emitted by many marine organisms.

This research indicates that sharks, particularly those dangerous to man, are able to find their prey by a variety of means.

It has been stated that the only thing predictable about a shark's behavior is that it's unpredictable. Although we still know relatively little about their behavior, those few species that have been investigated in some detail show very definite behavior patterns, not at all what would be expected of fish that have been characterized as unpredictable. It appears more and more that the various species are quite predictable.

Part of the research conducted since WW II has involved the testing of a wide variety of passive shark repellents including not only chemicals but electric repellers, lights, sounds, and a bubble curtain to protect swimming areas. In addition to passive techniques, there are active anti-shark devices such as the bang stick or power head and the CO₂ dart with which the shark is actively attacked and disabled or killed. At first it might seem that active devices would provide the surest defense against sharks. But most of them are lethal weapons, dangerous not only to sharks but to the person using them. Their correct use requires a great deal of skill—or the person may find himself next to an injured and very agitated shark. Consequently, much of the testing of anti-shark devices has been concentrated on various passive devices.

Passive shark repellent tests were conducted in the tropical areas of both the Atlantic and Pacific Oceans. The Atlantic studies were carried out largely at the Lerner Marine Laboratory of the American Museum of Natural History at Bimini, Bahamas, and at the Mote Marine Laboratory, Sarasota, Fla., under Drs. Perry Gilbert and Robert Mathewson. The Pacific studies took place in Hawaii and at Eniwetok Atoll under Dr. Albert Tester and his associates.

Among the many chemicals tested were the copper acetate and nigrosine dye components of the shark chaser. Interestingly enough, copper acetate was found to be largely ineffective in repelling those dangerous species of sharks tested, despite the fact that it was originally intended to be the active principal component of the chaser. In retrospect, however, this

conclusion had largely been reached by the time of final formulation of shark chaser, because it was found that up to 20 percent of the total mixture could be copper acetate without impairing the effectiveness of the nigrosine dye. Since the copper acetate was distasteful to dogfish sharks (and some others as well), why not include that small percentage? Thus the active ingredients in shark chaser came to be 20 percent copper acetate and 80 percent nigrosine dye.

The situation turned out to be quite different when the nigrosine was tested. Not only were the same species reluctant to enter a cloud of nigrosine dye (except for nurse sharks), there were also some indications that the dye was an irritant and was distasteful to some species. Perry Gilbert concluded in 1970 that "of more than 100 chemical compounds tested from 1958 through 1968 at the Lerner Lab shark pens, nigrosine dye has been found to be most effective as both a feeding inhibitor and repellent." But some of the time and for some species, it was less effective or not effective at all (as with the whitetip sharks). They seemed to ignore shark chaser in the water even though no food was present. In general, it appeared that when food was present, the nigrosine dye no longer repelled. This even extended to some species such as the gray reef shark, one of which was seen swimming off with both the bait and the cake of dye in its mouth. Though the dye appeared to act as a visual repellent, this only occurred when high concentrations were present. At lower concentrations, it no longer repelled. It didn't attract either. It merely elicited a "curiosity" response from the blacktip sharks being tested. Thus, it was determined that nigrosine dye is not an effective shark repellent for some of the species tested, when active feeding is occurring and when it has been diluted.

Furthermore, there can be some conditions, admittedly rather artificial, under which shark chaser does attract, at least initially. When the cloud of dye is a long stream rather than a passive, dark solid-looking cloud, a shark may be visually attracted. Obviously, a streaming cloud can only occur when water is passing by a fixed cake of shark chaser—as from the tidal currents in a shark pen—or when a cake is being car-

ried by an individual when swimming. However, if the individual is drifting with the water, the dye in the water will tend to stay around him and diffuse slowly rather than be carried away in a stream. In open ocean surface waters, even a dense, coherent cloud of dye that has not begun to diffuse can attract. In the same way, any object floating on the surface of the open ocean seems to attract large fish. Because of their many sensory capabilities, sharks might be attracted by sound, smell or even a weak electric field, as much as by what they see.

Another device, developed several years ago, shows promise as a passive anti-shark system without some of the disadvantages of shark chaser. The "shark screen" was developed by C. Scott Johnson at NUC San Diego. It works essentially the same way as the cloud of nigrosine dye, blocking the shark's view of the person in the water. The shark screen is a large black plastic bag held up on the surface by an inflatable ring. The person inside is completely blocked from view and any blood or other body fluids are contained by the bag instead of spreading out to attract or excite sharks. There is still the problem of having to climb inside the bag, which might prove impossible for an injured person.

When first developed, the shark screen had another disadvantage: it was a much bulkier package than the shark chaser. Now, by using more modern materials, it makes a packet of about the same size as the chaser.

Recently, NavAirSysCom has leaned toward more extensive deployment of the one-man life raft. Use of the raft not only helps the shark hazard problem by getting the person out of the water completely, it also helps solve another serious problem: heat loss.

Use of a life raft does not mean complete safety from shark attack. There have been cases of aggressive sharks attacking and bumping life rafts. It is pretty obvious that there is no ideal solution to the shark hazard.

Fortunately, with modern search and rescue techniques, the average time spent in the water is relatively short. The slight possibility of encountering a shark in that short a time, coupled with the shark's normally unaggressive behavior when not aroused, means attacks are a rarity.



MAN YOUR

Naval Air Station 608, a reserve unit attached to NAS Atlanta, Ga., spent 14 days at NAS Corpus Christi, Texas, this summer performing active duty training.

Personnel of NAS-608 are trained to man a naval air station in the event of mobilization, either by replacing or supplementing station personnel or by reactivating a station.

At Corpus Christi, members of 608 polished their skills in various areas: medical, air operations, maintenance, administration, dental, enlisted dining facility, supply, photo lab, security, etc.

Captain Ted Levy and Commander Jack McLaughlin are the C.O. and X.O. of the reserve outfit.



STATION



Some of today's older Naval Aviation personnel recognize Martin as the manufacturer of flying boats. Martin SP-5Bs were the last Navy flying boats in service. They, their earlier versions and the P6M jet-powered boats were the last of the "big boats."

Martin's introduction into the flying boat world began with the winning of a contract for production versions of the Naval Aircraft Factory-designed PN-12. Douglas had the first production contract building the PD-1s (*NANews*, July 1975). By May 1929, when the first PD-1 flew, the Navy placed the second production contract with Martin.

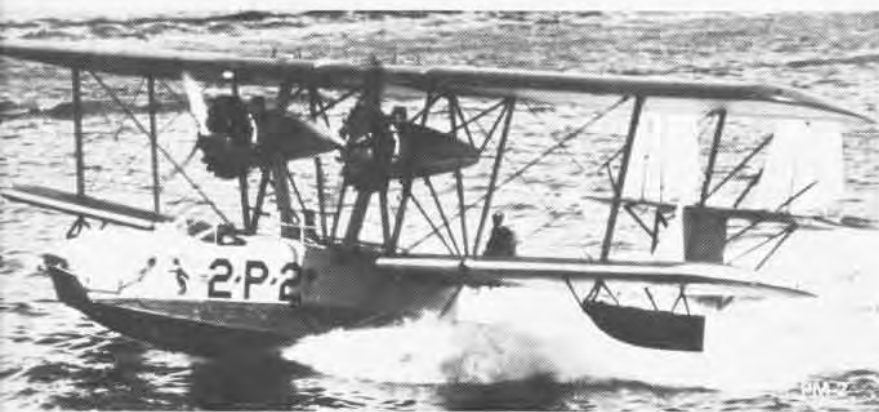
The PM-1 followed its predecessors closely with all-metal construction except for fabric-covered wing and tail surfaces. Engines were similar to Wright R-1750 Cyclones. Details differed, and armament was increased to four machine guns and four 500-pound bombs. The first PM-1 was delivered to Anacostia for flight testing in July 1930. While there, it was test flown with an aerodynamically balanced rudder, but the PN-12 rudder was continued in production in spite of very high rudder forces. In August the first fleet aircraft went to VP-8S.

While PM-1s were being delivered, improved PM-2s were ordered. These included more powerful Cyclones, twin vertical tails and increased fuel capacity, along with other less significant improvements. The new fuel tanks stretched across the hull, so that crew members had to climb out along the top of the hull between the forward and aft compartments.

Fifty-five PMs were built. During their years in service they were improved, including incorporation of an enclosed pilot's cabin and replacement of the PM-1 R-1750s with R-1820s, the same as those on the PM-2s. The last fleet aircraft, a VP-16 PM-1, was withdrawn in April 1938 as increased numbers of PBVs were delivered. The remaining PMs continued in training duty at Pensacola until all were replaced there by P2Ys and PBVs.



N PM



Span		72'10"
Length	-1	49'5"
	-2	49'0"
Height	-1	16'4"
	-2	16'9"
Engines	-1	Two Wright R-1750D 525 hp
	-2	Two Wright R-1820E 575 hp
Max speed	-1	118 mph
	-2	123 mph
Range	-1	1,318 miles
	-2	1,269 miles
Service ceiling	-1	8,500'
	-2	8,800'
Crew		five
Armament		four .30 machine guns
		four 500-lb. or
		two 1,000-lb. bombs



Journey to Plymouth



Cdr. Richard C. Knott conducted this interview with Walter Hinton, Pompano Beach, Fla., in July 1976. Mr. Hinton was one of the pilots on the Navy Curtiss NC-4, first aircraft to fly the Atlantic. He is 87 years old and the only surviving member of that historic May 1919 flight.

Cdr. Knott: Mr. Hinton, I understand that you first enlisted in the Navy in 1908 at the age of 18?

Mr. Hinton: That's right — February 12 to be exact.

And you spent the first part of your naval service aboard ship as a quartermaster?

After three months' training, I was assigned to my first ship, USS *Olympia*, Admiral Dewey's flagship.

I've been aboard *Olympia*, She's tied up now in Philadelphia.

Yes, I understand she is. Did you see where Dewey stood? [Reference to footprints marked on the bridge where Adm. Dewey stood at the Battle of Manila Bay.]

Yes, sir, I did.

I helped mark that spot. Skeets Billings, another quartermaster on the ship, said, "Walter, they're always asking where Dewey stood. Suppose we answer that question. Go down to the carpenter shop and ask Chips for a handful of copper tacks." I got the tacks, planted my left foot down and he drove the tacks in the shape of a shoe. Then, as we went from city to city, people would come aboard and ask where Dewey stood when he gave his famous order to Captain Gridley. "He stood here," we would answer pointing to the outline of my foot. "Where was his other foot?" some would ask suspiciously. "He had that on the rail," we would answer. [Two footprints are now marked on the bridge. One of them is probably Walter Hinton's.]

[Hinton later served aboard USS *Dixie*, an old Morgan liner used by the Navy as a supply and repair ship. He recalls her operating out of Guan-

tanamo Bay as a tender for a force of destroyers, several of whose officers were later advanced to flag rank and became famous in World War II. One of these was a young lieutenant named Chester Nimitz.]

When did you first become interested in flying?

In 1915, I was assigned to duty on USS *Seattle*. It was equipped with a catapult and five airplanes. The aviators assigned to the ship used to visit the bridge frequently. There was no air conditioning in those days and the most pleasant spot on the ship was the chart house. Kenneth Whiting, one of the great pioneers of Naval Aviation, used to come up quite often and a couple of times he found me reading his books on aviation. One day he said, "Hinton, are you interested in aviation?" I said, "I'd like to be." He said, "I understand they're going to take some enlisted men. It looks like we're going to get in this war [World War I], and I might be assigned to Pensacola, Fla. I'd like to help you all I can. You put in your application and I'll sign it and follow it up."

[He was as good as his word and Hinton went to Pensacola for training in April 1917. The following month Whiting took the first U.S. Aviation Detachment to Europe.]

The only thing sailing north from Guantanamo Bay was the collier *Cyclops*. It had a civilian crew and the captain invited me up to the bridge. One day I was up there and there was a cross sea running. The bow would stand still and the stern would move, then the other way around. The captain said, "You know, some day this ship is going to twist itself to pieces and I hope to God I'm not aboard when it happens." [One year later, in March 1918, *Cyclops* and her entire crew disappeared at

sea without a trace. The incident remains one of the great unsolved maritime mysteries.]

I took a train from Norfolk to Jacksonville and then to Pensacola. I studied hard for my examinations. I burned the midnight oil because I was shy on education, but I passed.

L. B. Chase was my instructor. I have always appreciated his method of instruction. He would give me my turns, one after another at about 50 to 100 feet above the water. "Anyone can fly up there," he said, "but if you can make the turns and shoot landings from low altitude then I'll know you can fly." When he was finished he said, "You'll make out all right." And I did.

[Hinton was designated a Naval Aviator and appointed a warrant boatswain in November 1917. In April 1918, he was commissioned an ensign.]

As soon as I qualified, they made me a flight instructor. About three months later, a flying boat came in that was copied after the British *Felixstowe*. Two men assembled it at Pensacola and whenever I had a little spare time I would go over there and watch them. I was interested in anything that was bigger and it seemed that nobody else was. Richardson was always around. [Holden C. Richardson, Naval Aviator #13, was with Curtiss at the birth of the flying boat in 1912. He did graduate work at MIT and was an authority on hydrodynamics. Later, he designed the hulls of the NC Boats.]

I would help out in any way I could. One day they were ready to test it and Richardson sent a messenger down for me and told me to bring my helmet and goggles. I was to go along as an observer. So I stood between the pilot and copilot in back of the seats and Richardson made the first takeoff. After the copilot had tried it, he let me fly. When we came

in he said, "You're going to be the instructor on this." But that never came about because it was relegated to the experimental junk pile.

Aircraft with the first Liberties began to come in about that time. The parts were all made by different companies. [The famous Liberty engine of WW I was remarkable in that its components were mass produced as standardized units by a number of different manufacturers. The units could be brought together and assembled in six, eight, or twelve cylinder models depending on the power requirement of a particular aircraft.] They had some faults. The crankshafts were too light and they would break at number one main bearing — always that one spot. But we got the bugs out of them.

Do you think that it was a good engine overall?

Overall it was a very good engine.

Can you tell us something about the events that led to your being selected as one of the pilots for the transAtlantic flight?

Yes, Byrd [Richard E.] came to Pensacola for twin-engine instruction and I would take him out for flights. He told me about some giant planes that Curtiss was building which were going to fly across the Atlantic. He asked me if I would like to be in on such a trip. I said, "Of course." "I'm going to Washington," he said, "and I'll keep you in mind." One day he called and said, "The planes aren't anywhere near ready but they're assigning me as commanding officer in Halifax, Nova Scotia, and I'd like you to go with me." I joined Byrd as his operations officer.

The station boasted six flying boats. Our job was to escort ships and to patrol for submarines. We had a lot of fog and, as the weather got colder, we had an epidemic of flu. We put everyone who was sick in a huge mess tent. We had plenty of blankets but everyone had to sleep on the ground. The corpsmen would go around every so often and give each man a shot of whiskey. We never lost a man.

While we were there, Byrd experimented a lot with aircraft navigation. He made some improvements to an Italian drift meter he had gotten hold

of and got it to the point where it was a useful instrument. We took the ordinary boat compass which was mounted low in the cockpit and set it right in front of the pilot's eyes. That's how it was on the NC-4.

One day a Canadian lieutenant named Parker came to the base with a sextant fitted with a miniature spirit level to represent the horizon line. I took him to Byrd and I went on patrol. When I came back, Byrd was all smiles. He had bought it for \$50.

So that was the origin of the Byrd sextant?

Yes. But, of course, it was improved upon and the basic idea has been in use for years.

Was it Byrd who got you transferred to the NCs at Rockaway?

I think both he and Richardson had a lot to do with it.

Byrd wanted to go on that trip [transAtlantic flight], too, didn't he?

Yes — well, he worked very hard for that and he saw to it that I had a chance, too. [Byrd did not go on the trip, a great disappointment to him.]

When you finally arrived at Rockaway, what was your impression of the NC? What did you think of it?

I thought it was wonderful. I wanted to be a part of all these new things that were coming out.

What were some of its most unusual characteristics?

Well, I think the refinement to the hull; what it could take. I can't explain my feelings or give enough praise to the thought and the work that went into those boats.

Another thing that impressed me was the strength of the hull at the point on the extreme aft end where all the supports came together. That carried those booms and the tail assembly. Those booms were hollow, you know, and had sections in them. It was hard for me to anticipate the strength in them. If we got in a rough sea and it came to a landing, what might happen to the tail? Was it seaworthy? Could it take it?

That was also brought home to me by Commander Porte who came over and looked at the NC. [Cdr. John Cyril Porte was the British pilot who had contracted to fly the original Curtiss America across the Atlantic in 1914. The flight was never made because of WW I. Porte was also well known for his hull designs which were incorporated in the Felixstowes.] He and Richardson were looking it over. Porte looked and shook his head. He thought it wouldn't work.

Then, too, the rear struts got lighter as they went aft. Here was this overhang and you're banked for a turn. This is where you needed the strongest member, not the weakest. One day I looked back in a turn and Smoke [Chief Machinist's Mate Smokey Rhoads, mechanic on the NC-4] in the rear cockpit had a worried look on his face. After we landed, I asked him why he looked so troubled. He said, "Did you see that rear strut out there bend? I'm waiting to see that carried away someday and that'll be it." So I was careful to bank enough but not too much.

It never broke.

I was surprised when we went to make the test flight. Stone beat me to the right seat.

During the test flight?

Yes, I said, "Elmer, you've got my seat." Whether Read had talked this over with him I don't know — I never asked. Stone said, "You have the experience needed on a trip like this — that's your place [the pilot's seat]. Read [LCdr. Albert C. "Putty" Read, NC-4 aircraft commander and navigator] was standing on the deck about midway between his cockpit and ours. I looked at him and he gave me a smile and nodded yes.

Were you also in the left seat on the trip from Newfoundland to the Azores?

On all flights, I was in the left seat!

[Assembly of the NC-4 was completed only a short time before the historic flight. The crew had an opportunity to fly it only once prior to leaving for Newfoundland, the test flight on May 1, 1919. Ltjg. Hinton, as the junior aviator, was officially listed as copilot and Lt. Elmer Stone,

the Coast Guard's first aviator, was the pilot. However, because of his considerable experience in flying boats, Hinton apparently flew all flights from the left seat and made all takeoffs and landings.

[All three NCs left Rockaway, L.I., on May 8, 1919, bound for Trepassey Bay, Nfld. — jumping off point for the trip across. Parts of NC-2 were used to refurbish NC-1. NC-2 did not make the trip. It was on this leg north that NC-4 was forced to land in the open sea off Cape Cod due to engine failure.]

I didn't realize the strength of that hull until we were forced down at sea approximately 100 miles east of Chatham, Mass., on Cape Cod.

A horseshoe washer in a valve fitting broke where the valve stem goes up and down. This allowed the valve to drop down and when the piston came up, the pieces went everywhere.

Was this on the center-line tractor?

Yes, the tractor. The oil tank supplied both engines, so we lost the oil for both engines. [The two center-line engines on the NC-4 were mounted back to back, one a tractor and the other a pusher.] We couldn't stay up on the two outboards so we came down and I landed. The sea was pretty rough. Read gave me a course and Stone worked on the rudders. Stone was a short man and the plane

was not constructed for short men. He had to stretch to get at the rudders.

There was no adjustment mechanism in those days. We had to hold a course that was approximately southwest for 15 hours. The starboard engine was the only one that was of any use to me for taxiing because of the wind direction.

We were going downwind from about 20 degrees off the tail on the starboard side and there were whitecaps. We had to go fast enough to make the windstream operate on our rudders. [The NCs were not equipped with water rudders or hydroflaps.] We would plow into one wave and go over it and then come down and hit the next one. But we had to keep going to stay on course.

We were moving at a fairly good clip and the hull took a beating while we were taxiing. That's where I acquired my great regard for the construction of that boat.

It was important to stay on course; otherwise we would lose control and the plane would weathercock into the wind. If that had happened, the cross sea would have surely broken off a pontoon. And if a wing had dipped, we might have flopped over completely and hung upside down.

It took you 15 hours to taxi in?

Yes, 15 hours and some minutes. I could smell someone frying bacon as we taxied in to Chatham the next morning.

None of the station ships were able to find you?

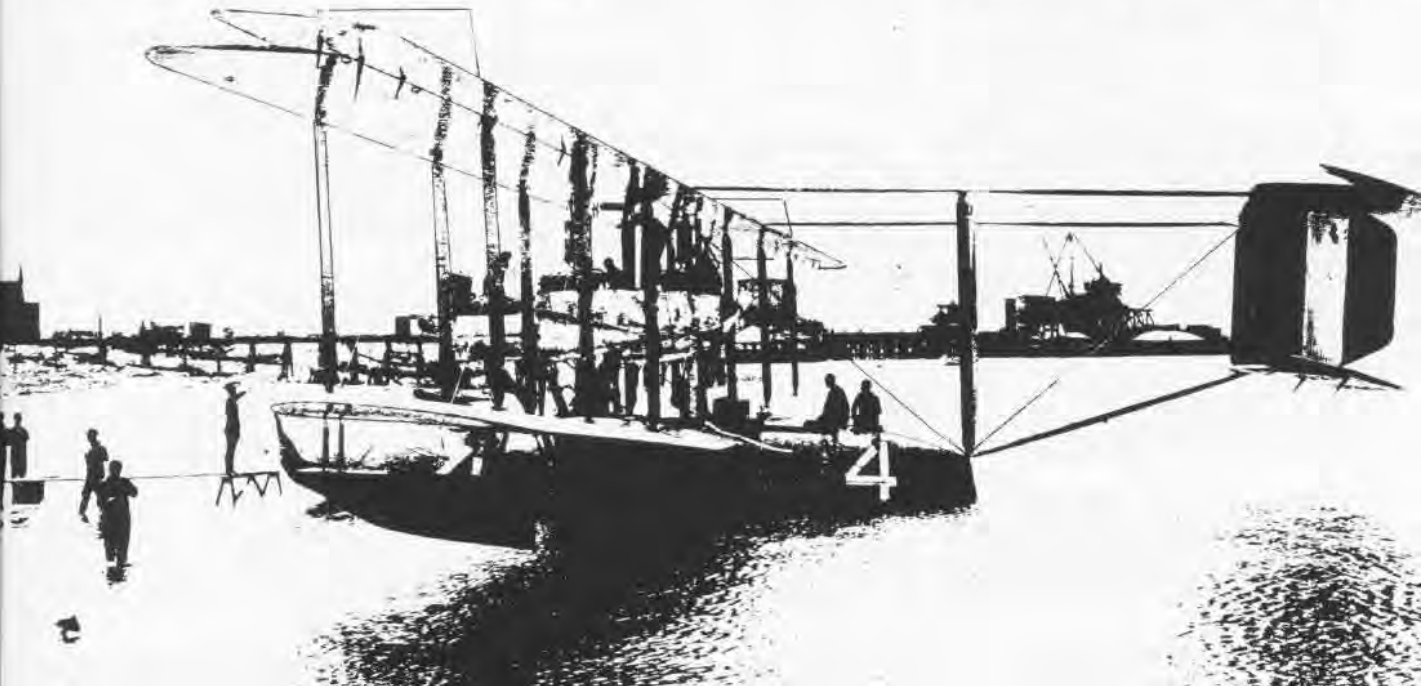
There was a destroyer that passed near us. Smoke was firing the flares but I think the ship was too near. They were looking further out. But, to tell the truth, I was glad they didn't see us because they couldn't have towed us. If they had tried, we would have been out of the picture for sure. [Hinton indicated that the NCs could not be towed in a heavy sea without serious damage to the aircraft.]

After we changed the engine at Chatham we had to wait for the weather. We were hung up there for three or four days. The engine we installed was a rework and, when we caught up to the other two planes in Trepassey Bay, we had to change it again.

You didn't haul the airplane out — it was still in the water — when you changed the engine at Trepassey Bay?

There was no place to haul it out. But the water was calm. We had to shift all the fittings from one engine to the other and that was quite a job. We worked hard on it. The next day we were ready to go.

[On the day NC-4 arrived at Trepassey Bay the weather over the Atlantic had improved and Commander John Towers, Division Commander, made the decision to leave without them. NC-1 and NC-3 attempted a takeoff but were unable to



get airborne. Just then NC-4 made her appearance and Towers decided to delay one more day so that all three planes could make the crossing together.]

Why weren't NCs 1 and 3 able to get off the first time they tried?

They weren't using the proper technique. They thought that using the proper technique was too great a risk.

[NC-1 and NC-3 had elected to make their takeoff crosswind in order to have the full length of the bay for their run. But with their unusually heavy fuel load, it appears they needed a direct headwind for liftoff. They did not take off across the bay into the wind because, shortly after they broke water, they would have to fly over land at a very low altitude. This was considered unsafe. According to Hinton, there was no alternative.]

Read conned me out to where we should take off and told me to head right for the other side of the bay.

We were headed right into the wind, taking off across the bay — the narrow part.

We couldn't get off any other way.

I read an account that said the reason they couldn't get off at first was because they had too much gasoline on board. That's not right?

No.

[NC-1 and NC-3 tried again the next day to take off crosswind and the result was the same.]

They put off an engineer on NC-3. They took off the spare emergency radio. But they couldn't make it. But after we did it, we flew around for about 15 minutes before they showed any signs of doing it. So we landed. We didn't want to use up all that precious fuel. So we did it a second time.

[All three NCs finally got off from Trepassey Bay on the evening of May 16, 1919, bound for the Azores on the first leg of their historic flight. Only NC-4 made it all the way.]

When you all took off from Trepassey Bay was it your intention to fly in formation? Were you going to make the crossing together?

Yes. Everything was all right until it got dark. Then we didn't get any calls from Lavender, the radio operator on NC-3. It turned out that his ground [wire] to the air-driven generator was not connected. That was the first thing that happened. [NC-3 with the division commander aboard was the lead aircraft.]

Anyhow you were split up and you proceeded independently the rest of the way?

Yes, shortly after that we separated. We were faster than the others for some reason. I throttled back as far as I could and still maintain altitude.

NC-1 was really a composite of -1 and -2 and that made it slower?

Yes.

I understand that NC-3's lights were out, not working properly. And that before you separated, both NC-4 and NC-1 almost collided with NC-3.

Yes, those facts are true, although I could only see the gestures between Stone and Read.

How about the weather on the leg between Newfoundland and the Azores. It was pretty good at first, wasn't it? And you had some moonlight?

The weather was very good and, as I remember, the moon came up late, so we had little moonlight.

Where did you start encountering bad weather?

I'd say it was about three-quarters of the way.

Was anybody ever concerned that you might not be able to find the Azores? It's really just a pinpoint.

Yes, and we had some very rough weather before that. We ran into a very turbulent situation. Read thought we were in a spin. The bottom just dropped out. Even the bilge water was coming up. No control. With a slow plane in rough air you just fight it out with the controls. It's prolonged at 77 knots average speed. We just wallowed in it. Read crawled back

and pulled my leg. He thought I'd fallen asleep or something had happened to me. But I just had no control. We got out of that and straightened. But that seemed like a close one. [NC-4 climbed on top of the overcast after this incident.]

When you climbed on top of the overcast, did you see the station ships anymore? Were you able to use your radio compass?

No to both questions. We only used the compass once and that was when



we left the Azores. No one believed in it.

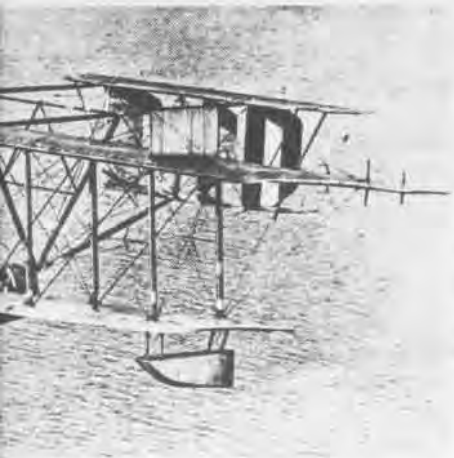
After you climbed on top and couldn't see the station ships, do I understand that the only thing you had to navigate with was dead reckoning and that's how you proceeded?

That was it. And I kept my eye on that lubbers point all the time.

Read was a pretty good navigator and a wonderful fellow to work with, very conscientious. I don't know about the others, but he took his instruction from Byrd. He got out there and practiced at night and worked with Byrd. He tried out the sextant when we had moon.

[NC-4 flew for some distance using dead reckoning as its only means of

navigation. As they approached the Azores, Read sighted the island of Flores through a hole in the clouds. He signaled Hinton to descend under the weather and they skirted the shoreline. Continuing on, they descended further to stay under the weather until they were skimming along at about 100 feet. Read made a quick decision to head for the island of Fayal and its harbor at Horta, instead of the original destination of Ponta Delgada. They came upon the island a short time later and landed, only to discover that the little bay



they had chosen was not Horta. Taking off again they quickly located Horta and landed near the base ship, USS Columbia.]

Was most of the trip from the Azores to Lisbon uneventful compared to the first part?

Oh, yes.

And you got a pretty big reception both in the Azores and in Lisbon?

That was a surprise to us. It caught me in clothing that looked as though I were

Well, you looked like you had been working. Were there dignitaries to meet you when you got to Lisbon?

Yes, Admiral Plunkett, the Ambassador and other dignitaries. They gave us quite a celebration. It lasted all night in the best club in town. We won't talk about that!

You went from there to Plymouth, England. You had to stop along the way. Did you have an engine problem?

Yes. The left engine was heating up. We could control it but not stop it. There was a ten-gallon auxiliary tank in the hull. An aluminum tube ran from the radiator vent to the auxiliary tank in case the engine boiled over. We could then pump the water collected back into the radiator. But the pump wasn't working properly and the problem got worse. Read signaled me to land in a river in the northern part of the country. [The estuary of the Mondego River near the town of Figueira da Foz, Portugal.] The tide was going out and there were sand bars all around us. We fixed the radiator and were ready to go but we had to wait for the tide to come up before we could take off.

Meanwhile the natives had started to gather around and plan a party. It would take quite a while to get the water we needed to take off so we went to the banquet. All the hoi-polloi were there and it was quite a send-off.

When we got off, we knew we would be very late getting into Plymouth so we put in at the Spanish naval base, El Ferrol. American ships were all around. They had a club that had some sleeping quarters and we were put up there. And that was another party.

There was fog the next day and it didn't clear up until about 11 o'clock. As soon as we could, we took off. I remember that, as we left the bay, I looked back and the mess pennants were going up on the American ships, so I know it was noon or shortly after.

There was a low fog when we hit the main coast, so we came down to about a hundred feet over the water and flew the 112 nautical miles to Plymouth. Three twin-engine planes came out to escort us in, but they didn't find us. We were flying near the water and they were above the clouds. We just went in and landed and they had to radio out

to get their planes back.

We were met at the same place the Pilgrims had left. Now they have a plaque there with our names on it. I've never been back to Plymouth.

The adventures of Walter Hinton did not end with the flight of NC-4. In 1920, a Navy free balloon in which he was flying took off from Long Island and was blown north until it came down in northern Canada near Hudson Bay. He and the other occupants seemed to vanish from the earth and were not heard from for 31 days. Many gave them up for lost, but they walked back to civilization.

Leaving the Navy in 1922, Hinton became the first to fly from New York to Rio de Janeiro on a goodwill flight sponsored by The New York World in 1923. While in Rio, he became acquainted with Dr. Hamilton Rice and subsequently joined one of the Rice expeditions which probed deep into the Brazilian wilderness in 1924 and 1925. As the pilot of a small Curtiss flying boat he and an army officer, Capt. Albert W. Stevens, were the first to explore and chart the far reaches of the Amazon basin where civilized man had never been before.

Later he made a series of flights across the country for the Exchange Clubs of America and founded the Aviation Institute of U.S.A.



PEOPLE PLANES AND PLACES

Under a new program, the Navy's first family-practice flight surgeons, Lieutenant Commanders Leon Davis and Barry Mullen, have been designated at Pensacola. Generally, aviation personnel are treated by a flight surgeon while the family receives care from another physician.

Air test flights have begun at the East Coast ACMR now being constructed off Cape Hatteras. This follow-on system to the Yuma ACMR (August 1972, p. 14) will provide air combat training for East Coast squadrons. The instrumented systems track aircraft operating within the range's airspace, compute and display all significant flight data in real time, and record all data for playback during aircrew debriefing.

Ray Rowley of the Naval Air Engineering Center displays a shadowbox which is a specially designed tool box with a specific space for each tool. As director of the Navy's tool control program, Rowley advocates the use of this type of tool kit to help cut down the number of aircraft accidents. Investigation records show that loose tools are sometimes found in the wreckage of Navy aircraft. In use, special kits would be prepared for specific jobs. For example, if a mechanic is going to replace a generator, he would check out a kit which included only the tools he would need for that job. He would inventory the tools when he returned the kit and if any were missing, an immediate search would be launched.



Henry Otto, far right in this old photo, poses with Igor Sikorsky and five U.S. Army Air Corps pilots selected in 1944 to learn to fly the R-4. By 1945 he was flying rescue missions in Burma. He rescued a Navy ensign along the Burma Road that year.

Otto was special guest of Capt. W. O.



Wirt recently at NATC Patuxent River. Wirt is one of the first Naval Aviators to be designated a helicopter pilot.

Otto received an orientation flight in a UH-1 *Cobra* gunship, and afterwards commented: "It was mind-boggling. Simply the greatest thrill of my life. Unless Sikorsky himself envisioned such a future for helicopters, I don't think any of us in 1944 ever dreamed they could be improved upon so much."

As for firepower of the *Cobra* compared to that of his 1945 helicopter, Otto reveals that helicopter pilots then didn't even carry so much as a pistol. "I think all of us were convinced that if anybody ever fired a gun from a helicopter, it would come to a stop or start backing up."

A Navy C-117 from NAF Kadena delivered 4,000 pounds of Project *Handclasp* disaster relief supplies to the tiny typhoon-ravaged Ishigaki Island in an effort to help islanders whose homes and crops were destroyed by Typhoon *Billie* in August. The relief goods were chiefly food and medical supplies.

Winds up to 120 knots hit the southern Ryukyu's Yaeyama group of islands and destroyed more than 100 homes, half of the sugar cane, a third of the pineapple and all of the vegetable crops. These crops are the islands' chief economic support, valued at \$9 million.

The pilot was LCdr. G. R. Schaeffer, copilot was Lt. M. Plowman. Crewmen were ADR1s R. R. Friesen and George Murray, and AT3 T. R. More.

The C-117 last flew to Ishigaki in March with 3,000 pounds of *Handclasp* goods for Yaeyama charitable institutions and needy island residents.

Kadena Middle School in Japan was the scene of a mass reorganization recently when 96 sailors and three Marines from local commands pitched in and helped reorganize equipment from 23 classrooms on one side of the school grounds to the same number on the other. Now all science classes are in one area, math classes in another, and so on. School principal Betty Oshiro commended the men and women for performing "a tremendous service to the community."

The sixth annual Aviation Boatswain's Mates Convention was held at NAS Oceana recently with 155 ABs—active and retired—attending. A highlight of the convention was the naming of the first AB Honormen of the Year. They were ABE1 R. L. Whalin, Naval Air Test Facility Lakehurst, and ABH2 Buscher, Atlantic Fleet, VA-145, Pacific Fleet.

Personnel of *Coral Sea* have been honored by the city of San Francisco for their efforts during that city's Twin Bicentennial celebration. *Coral Sea* was host ship and received 215,000 visitors during her three-day stay, the first time she had docked at the Embarcadero.

Synonymous with the new Navy image is the ever emerging Navy couple. Falling into this category are the Stricklands, AMS3 Terry and AE3 Lisa, of HT-18. They are a young married couple with futures invested in Naval Aviation as qualified H-1 helicopter aircrewmen.

As part of the flight crew, the Stricklands operate as trained observers, alert for signs of other aircraft in the area. They brief passengers concerning safety and emergency procedures while assuring their comfort. Navy regulations prevent them from flying together.

Cdr. David Boaz, C.O. of VA-304, was trapped aboard *Forrestal* in an A-7A on August 12 for a night carrier landing. His arrestment marked the beginning of a process whereby all pilots of CVWR-30, a reserve unit, will become day and night carrier qualified prior to their active duty aboard *Ranger* this fall.

In two days on *Forrestal*, CVWR-30 qualified 20 pilots. The first was Lt. Jerry Wilmot of VA-304. In one night, pilots of the air wing made 85 traps.

NAS Brunswick-based VP-44 flew 4,500 pounds of clothing and medical supplies, donated by Maine residents, to Homestead AFB, Fla., for shipment to earthquake victims in Guatemala. Included was a complete operating room, X-ray unit, baby cribs and assorted clothing. The two VP-44 P-3As were piloted by Lieutenants Pat Watts and Charlie Dale.

CVW-8, commanded by Cdr. "Moon" Moreau, *Nimitz* and *California* (CGN-36) were photographed in the Mediterranean



by Cdr. Mike Madden and Ltjg. Tom Carlson from an RVAH-9 *Vigilante*.

Operation *Varsity Knight*, a 14-day fleet exercise which integrated regular and reserve naval forces under combat conditions, was conducted offshore and along the beaches of southern California recently. Nearly 12,000 persons participated, including some 1,700 naval reserves. There were 36 ships and 19 specialized units involved.

The Navy's last operational amphibian, an HU-16, made its final water landing in Pensacola Bay near *Lexington* on August 13 and was turned over to the Naval Aviation Museum. The HU-16 was flown from Guantanamo Bay by Cdr. Charles Larzelere, C.O. of VRF-31, LCdr. Mike Burke, and ADRC Joe Saldivar.





The NAS Lemoore SAR team recently airlifted a mountain climber from a 13,500-foot mountain in the Sierras in one of the highest helicopter rescues on record.

When a handhold gave way where he was climbing, Don Burgess fell 300 feet down the side of Mt. Haeckel, coming to rest on a ledge. The SAR crew landed and after locating Burgess, splinted his arm and treated his wounds before carrying him back to the helicopter by rappelling over the ledge with him in a stretcher.

The SAR team included Ltjg. John Sullivan and Lt. Bill Manning, pilot and copilot, respectively, crewmen Robert Beatty and Robert Wildharber, and HM3 Daniel Vetesy. This was the team's fifth rescue in four days, all above 9,000 feet. The others were two doctors, a woman and a 14-year old boy. The photo shows the team during a training exercise.

A boy from the Northern Nevada Children's Home in Carson City sits in an A-4F Skyhawk cockpit at NAS Fallon, Nev. With him is Capt. John Murray, a pilot with VMA-142, a Jacksonville, Fla.-based element of the all-reserve 4th Marine Aircraft Wing. Squadron personnel, while performing their two-week annual training duty at the NAS, staged a Christmas-in-August program for about 60 underprivileged Nevada youths.



Adm. Noel Gayler, retiring CinCPac, passed the Gray Eagle trophy to RAdm. Martin D. Carmody in a dual ceremony aboard *Ranger* in Pearl Harbor, August 31. RAdm. Carmody, Inspector General of the Navy, became the 26th Gray Eagle, the officer on active duty who has been a Naval Aviator the longest. Adm. Gayler, the first man in history to receive three Navy Crosses, has held the Gray Eagle title since August 1975.

Changes of command:

CinCPacFlt: Adm. T. G. Hayward relieved Adm. M. F. Weisner.

Com6thFlt: VAdm. H. D. Train II relieved VAdm. F. C. Turner.

ComNavAirPac: VAdm. R. P. Coogan relieved VAdm. R. B. Baldwin.

ComLantWingPac: RAdm. R. P. McKenzie relieved RAdm. W. H. Harris.

Nimitz: Capt. R. T. Gaskill relieved Capt. B. W. Compton.

America: Capt. R. B. Fuller relieved Capt. D. C. McCormick.

Constellation: Capt. M. A. Peele relieved Capt. L. F. Eggert.

CVW-1: Cdr. J. C. Presley relieved Capt. D. D. Timm.

CVW-3: Cdr. J. D. Taylor relieved Cdr. C. M. Johns.

CVW-8: Cdr. R. F. Moreau relieved Capt. J. H. Fetterman.

CVW-15: Cdr. Bert Terry relieved Cdr. D. A. Pedersen.

VAW-117: LCdr. G. F. Ghrer relieved Cdr. E. S. Baker.

Naval Weather Service Facility, Yokosuka: Cdr. N. F. O'Connor, a frequent contributor to *NANews*, relieved Cdr. J. L. Gilchrist.

NAS Oceana: Capt. M. G. McCanna, Jr., relieved Capt. W. D. Knutson.

NAS Key West: Capt. J. E. McCardell relieved Capt. H. R. Lovelace.

NAF Detroit: Capt. A. N. Schaaf relieved Capt. H. H. Borvers.

VC-5: Cdr. R. C. Briggs relieved Cdr. L. A. Cossairt.

VA-27: Cdr. Dale Iverson relieved Cdr. James Kenney.

VA-65: Cdr. D. L. Hahn relieved Cdr. G. H. Strohsahl.

VA-81: Cdr. R. Birtwistle III relieved Cdr. R. V. Sallada.

VA-83: Cdr. J. M. Waples relieved Cdr. A. H. Henderson.

VA-113: Cdr. H. D. Lesesne relieved Cdr. M. Munsinger.

VA-146: Cdr. R. I. Howson relieved Cdr. L. A. Sanders.

VA-174: Cdr. J. S. McCain III relieved Cdr. J. L. Terrell.

VP-60: Cdr. S. G. Snipes relieved Cdr. R. C. Riebe.

LAMPS Det



Det One's helo joined those of other nations in Seychelles flyover, top right. FF-1093 plows through Suez, top left. Above, Ltjg. Dave Lincoln, OS1 Calvin Deakle and Ltjg. Bill Bristow monitor LAMPS tactical movements. Right, Det One personnel and their helo seem small compared to Concorde SST. Far right, fisheye lens view of H-2 aboard Capodanno.



HSL-36 Det One is a LAMPS helicopter unit embarked in USS *Capodanno* (FF-1093), currently deployed with Middle East Forces and operating in the Indian Ocean, Arabian Sea and Persian/Arabian Gulf.

At sea, Det One and *Capodanno* spend many hours honing the anti-submarine and anti-ship missile defense capabilities of the LAMPS team. Exercises with various navies are also part of the schedule, providing a variety of operations.

As the only U.S. Naval Aviation unit afloat with the Middle East Forces, the Det finds itself in some unusual situations.

Capodanno, in the harbor of Port Victoria, Seychelles, when the Republic of Seychelles attained its independence from Great Britain in June, joined ships of the French, Indian, Iranian and Australian Navies in saluting the new nation. Det One's H-2 *Seasprite* joined helicopters of the Indian and Australian Navies in a rotary-wing fly-by on Independence Day. A *Nimrod* ASW patrol plane, a *Vulcan* bomber from Great Britain and an Australian *Orion* also participated in the aerial salute.

When *Capodanno* was in port at Bahrain for mid-deployment upkeep and resupply, Det One operated from Bahrain International Airport. There the pilots had the memorable experience of flying a landing pattern with a British Airways *Concorde*.

Det One is the first detachment deployed by HSL-36 which celebrated its first year of operation in September. Commanding officer of the squadron is Commander Neil R. Sparks. Lt. Robert Wolfe is OinC of the Det.

HSL-36 and *Capodanno*, commanded by Commander Robert D. Frey, are home-ported in Mayport.



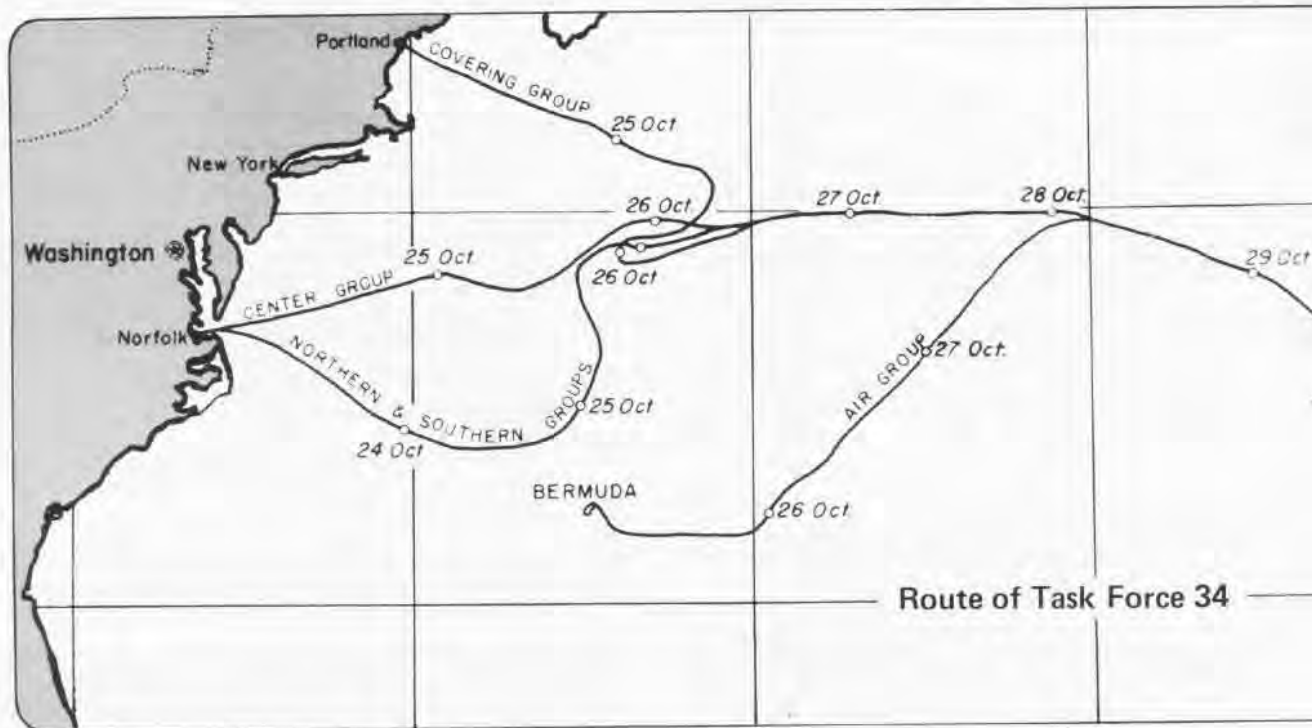
- 1909 Lt. George C. Sweet flew as a passenger in first Army Wright plane at College Park, Md. He is credited with having been first Navy officer to fly in a plane.
- 1910 Eugene Ely, a civilian pilot, took off in a 50-hp Curtiss plane from wooden platform on bow of *Birmingham* in Hampton Roads. Ely landed safely on Willoughby Spit.
Glenn H. Curtiss wrote to SecNav offering flight instruction for one naval officer without charge as a means of helping "in developing the adaptability of the airplane to military purposes."
- 1912 The Navy's first successful launching of an airplane by catapult was made at Washington Navy Yard by Lt. T. G. Ellyson in the A-3.
Navy's first flying boat, the C-1, was tested at Hammondsport, N.Y., by Lt. Ellyson. Its performance was "circular climb, only one complete circle, 1,575 feet in 14 minutes, 30 seconds, fully loaded. On glide approximately 5.3 to 1. Speed, eight runs over measured mile, 59.4 mph fully loaded."
- 1914 Director of Naval Aeronautics established to designate the officer in charge of Naval Aviation, Capt. Mark L. Bristol, already serving in that capacity, was ordered to report to SecNav under the new title.
- 1915 LCdr. H. C. Mustin, in the AB-2 flying boat, made the first catapult launching from a ship — off the stern of *North Carolina* in Pensacola Bay.
- 1916 In order to develop high speed seaplanes for catapulting from ships, Chief Constructor David W. Taylor solicited designs from various manufacturers. Among the requirements were a speed range of 50 to 95 mph, two and one-half hours' endurance and a radio.
- 1917 A Curtiss flying bomb, also called an aerial torpedo, was delivered to Sperry Flying Field at Copiague, L.I., for testing. It was designed for automatic operation carrying 1,000 pounds of explosives with a range of 50 miles and a top speed of 90 mph.
The Secretary of War approved a recommendation that priority be given by the War Department to naval needs for aviation material necessary to equip and arm seaplane bases.
U.S. aerial coastal patrols in European waters began with Tellier seaplanes from the seaplane patrol station at LeCroisic, the first of eight in France.
Twelve men organized as the Second Yale Unit, who had taken flight training at their own expense in Buffalo, N.Y., were commissioned ensigns, USNRF.
- 1918 Armistice was signed, ending WW I. In 19 months of participation, Naval Aviation had grown to a force of 6,716 officers and 30,693 men in Navy units, and 282 officers and 2,180 men in Marine Corps units, with 2,107 aircraft, 15 dirigibles and 215 kite and free balloons.
NC-1 took off from Rockaway Beach, N.Y., with 51 persons aboard, establishing a new world record for number of people carried in flight.
- 1919 Engineering plans for conversion of the collier *Jupiter* to an aircraft carrier were modified, and a summary specification was issued by Bureau of Construction and Repair. In addition to an unobstructed "flying-on and flying-off deck" stowage space for aircraft and facilities for their repair, the new plans also provided for catapults to be fitted on both forward and aft ends of flying-off deck.
- 1922 Cdr. Kenneth Whiting, in a PT seaplane, made the first catapult launching from *Langley*, at anchor in York River.
- 1924 Lt. Dixie Kiefer made successful night catapult launch from *California* anchored in San Diego Harbor. The launch was aided only by searchlights trained about 1,000 yards ahead.
Qualifications for flight surgeons were set, requiring medical officers to complete a three-month course at the Army School of Aviation Medicine and three months' service with a Naval Aviation unit. The requirement that a qualified medical officer also make flights was limited to emergencies and personal desire.
Langley reported for duty with the Battle Fleet, becoming first operational aircraft carrier in the Navy.
- 1929 First flight over the South Pole was made in a Ford Tri-Motor, the *Floyd Bennett*. Cdr. R. E. Byrd was the commander and navigator.
- 1931 *Akron* made a 10-hour flight out of Lakehurst, carrying 207 persons, a new record for the number of people carried by a single aircraft.
- 1933 The sum of \$7,500,000 was allotted to Navy under 1933 National Industrial Recovery Act for new planes and equipment, permitting BuAer to maintain its 1,000-plane program and improve naval aircraft.
- 1934 The Naval Aircraft Factory was authorized to manufacture and test a flush-deck hydraulic catapult, Type H Mark I, designed to launch landplanes from carriers.
BuAer requested that space be reserved on *Yorktown* and *Enterprise* for two bow catapults on the flight deck, and one athwartships on the hangar deck.
- 1940 Administrative reorganization of the fleet divided the forces between two oceans, the beginning of independent development of forces according to strategic requirements.
First general meeting of the Radiation Laboratory was held at MIT. The Laboratory later developed many aspects of airborne radar.
BuAer established a catapult procurement program for *Essex*-class carriers—installation of one flight deck catapult and one athwartships hangar deck catapult on each of 11 carriers.
- 1942 NAS Patuxent River established to serve as a facility for testing experimental airplanes, equipment and material, and as a NATS base.
Aircraft from *Ranger* and escort carriers covered landings of Army troops in North Africa and supported their operations ashore until enemy forces capitulated.
Naval Aviation's first night fighter squadron, VMF(N)-531, was commissioned at MCAS Cherry Point.

NOVEMBER

- 1943 Naval Ordnance Test Stations established to research, develop and test weapons, and provide primary training in their use.
Navy carriers and aircraft participated in invasion and occupation of the Gilbert Islands.
Prototype of the Martin *Mars* flying boats delivered to VR-8 at NAS Patuxent River. In first operational assignment, a *Mars* carried 13,000 pounds of cargo from Patuxent River to Natal, Brazil, in a nonstop flight of 4,375 miles which took 28 hours, 25 minutes.
A department of Aviation Medicine and Physiological Research was authorized—to study physiological factors as they related to design of high speed and high altitude aircraft.
- 1945 Naval Air Training Command reorganized.
- 1946 At Cleveland, Ohio, an F8F Grumman *Bearcat* piloted by LCDr. M. W. Davenport took off in a distance of 115 feet from a standing start and climbed to 10,000 feet in 94 seconds.
- 1947 *Norton Sound* was assigned to Operational Development Force as an experimental rocket-firing ship.
- 1950 Navy carrier forces took part in attacks against enemy targets in Korea. In strikes against bridges crossing the Yalu River, Navy jets encountered enemy MiGs for the first time, and LCDr. W. T. Amen in an F9F *Panther* became the first Navy pilot to shoot down a jet aircraft.
- 1952 The helicopter's capability as an aerial minesweeper was demonstrated in the first of a series of tests by VX-1 pilots flying an HRP-1 off Panama City, Fla.
- 1955 CNO requested that 12 mirror landing systems be procured for installation on angled deck carriers.
The flagship of RAdm. George Dufek, Commander, Task Force 43, sailed from Norfolk to rendezvous with other ships for southward voyage from New Zealand to Antarctica. The mission of Operation *Deep Freeze* was to establish bases on Antarctica for geophysical studies.
- 1956 Navy *Stratolab* balloon, manned by Lieutenant Commanders M. D. Ross and M. L. Lewis, soared to 76,000 feet over Black Hills of South Dakota. The flight broke the world altitude record previously set and gathered meteorological, cosmic ray and other scientific data to improve safety at high altitudes.
- 1958 The first permanent Marine Aviation detachment afloat was activated on board *Boxer* to support operations of Marine helicopter squadrons and combat troops.
- 1959 The Airship Training Group at NAS Glynco was decommissioned, ending lighter-than-air training in the Navy.
- 1960 *Polaris* fleet ballistic missile became operational as USS *George Washington* left Charleston with 16 of the tactical missiles.
- 1961 *Antietam*, with helicopters from Training Squadron 8 and Marine Squadron 264, aided in relief operations in British Honduras after hurricane *Hattie*, transporting over 57 tons of food, water and medical supplies, and relief personnel.
- 1962 Naval blockade of Cuba was discontinued and ships at sea resumed normal operations when agreement was reached over removal of missiles and bombers from Cuba.
- 1964 Helicopters of HMM-162 from *Princeton* delivered 1,300 tons of food and clothing to people in inland areas of South Vietnam flooded during a typhoon.
- 1966 USS *Wasp* made last recovery of the *Gemini* program, picking up astronauts James A. Lovell, Jr., and Edwin A. Aldrin, Jr. They were lifted from their spacecraft to the ship by an SH-3A of HS-11.
All-weather carrier landing system demonstrated on *America*, allowing pilots to make hands-off landings.
- 1967 An SP-5B *Marlin* of VP-40, NAS North Island, made the last operational flight by a Navy seaplane, ending over 50 years of seaplane patrol operations. The flight marked final phase of transition of antisubmarine patrol units to landplanes.
- 1968 In response to orders from the President, all bombing of North Vietnam was halted.
- 1969 *Apollo 12* astronauts, all Naval Aviators, Richard F. Gordon, Jr., Charles Conrad, Jr., and Alan L. Bean, were recovered by HS-4 and *Hornet*.
- 1970 Landings by a 12,500-pound HH-2D *Seasprite* aboard USS *Sims* confirmed adequate ship deck strength for helicopter operations.
- 1972 An RF-3D *Orion*, a Project *Magnet* aircraft, with Cdr. P. R. Hite as chief pilot, flew a non-stop new world's distance record of 5,461 nautical miles in 16.5 hours from Patuxent River to the magnetic North Pole, and return.
- 1973 In the first test of a full arsenal of *Phoenix* missiles, an F-14 fired six *Phoenix* missiles over the Pacific Missile Range Sea Test Range and guided them simultaneously at six separate targets 50 miles away—scoring with four direct hits.
- 1974 *Constellation* entered Persian Gulf to make U.S. naval presence known—first carrier to enter the Gulf since 1948. She participated in *Midlink 74*, a CENTO exercise in the Arabian Sea.
- 1975 It was announced that the number of active Navy ships had dropped from 976 in 1968 to 483. Both SecNav and CNO called for a rebuilding of the active fleet to about 600 ships by the mid-1980s, to include 14 aircraft carriers, 8 V/STOL support ships, 102 cruisers/destroyers, 136 submarines, 133 frigates and patrol ships, 68 amphibious ships, 139 support and other types. Together with air wings, VP squadrons and supporting aircraft, this gave the active fleet the necessary capabilities to carry out national security objectives.

TORCH

By Clarke Van Vleet



Batter up! Play ball! These were code words for Naval Air action during the invasion of Morocco on November 8, 1942.

Operation *Torch* has begun. Action reports start coming through.

"Traffic heavy on *Ranger's* flight deck. Sometimes pilots never leave their planes between flights. Some have time to get to ready room and grab a cup of coffee while intelligence officers interrogate."

(*Ranger* is packed with 54 Grumman F4F *Wildcat* fighters and 18 Douglas SBD *Dauntless* dive bombers.)

The escort carrier, *Santee*, loaded with 14 *Wildcats*, nine SBDs and

eight Grumman *Avengers*, has already sent one report.

"In pitch-like darkness, an hour and twenty minutes before daylight, launching on *Santee's* limited flight deck is a hard test for the best of pilots."

After sending off F4Fs and TBFs, escort *Suwannee* announces, "Torpedo bombers attacking enemy ships and shore installations in vicinity of Casablanca in face of heavy AA fire. Bombs being dropped on enemy submarines, cruisers and Vichy French battleship, *Jean Bart*."

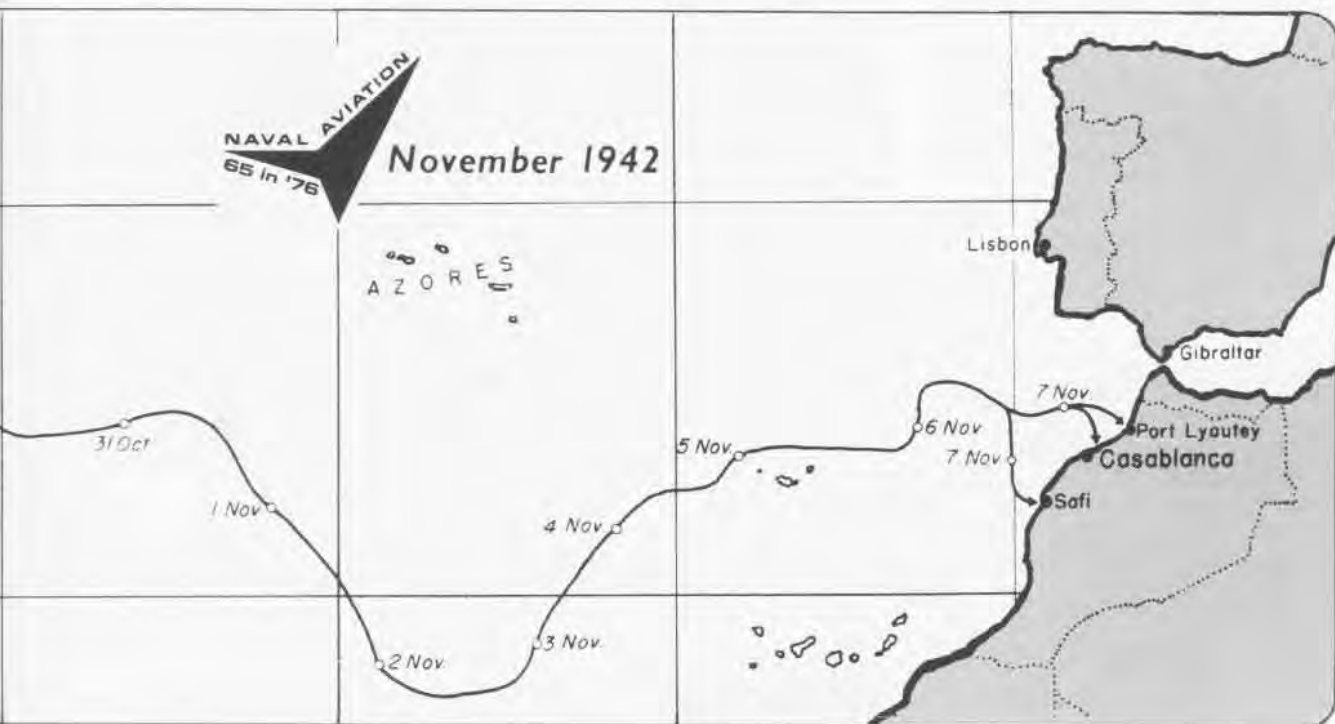
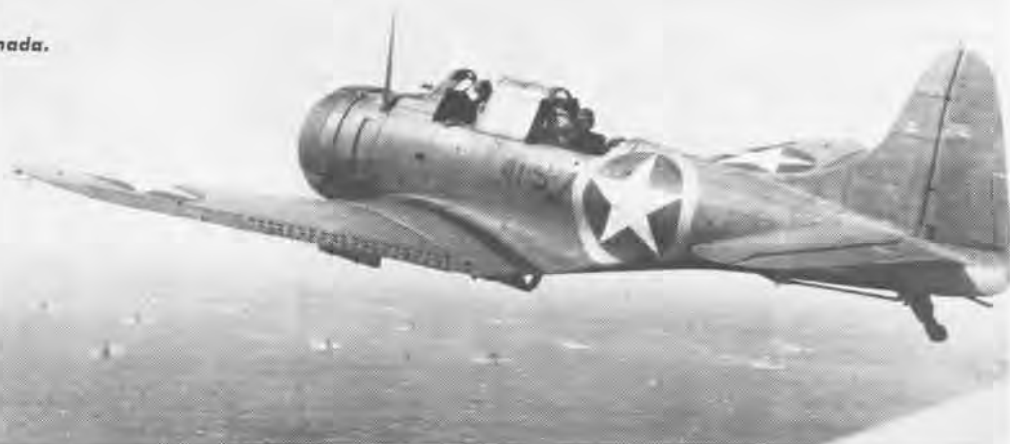
From CVE *Sangamon* (with a mix of *Avengers*, *Dauntlesses* and *Wildcats* aboard) comes: "Fifty percent of the ship's company are men who

have been in the Navy only a few months and have never before been to sea. Most have never seen a bomb on an aircraft before. Most are receiving initiation as sailors in a typical northeaster fashion."

On *Ranger*, Fighting Squadrons 9 and 41 and Scouting 41 are taking off. One rear seat gunner is offered \$230 for his place in a flight. He turns it down. Later, a report comes through: "He was hit by a shell on that flight and believed killed instantly because he was dead in the cockpit when the plane landed."

One pilot nearly forgets to pull out after strafing an airfield and brings back a big bunch of foliage with him. He says it's eucalyptus, by the smell.

Dauntless over invasion armada.



Lt. C. V. August of VF-41 is engaging a P-36 [designated H-75 by the Vichy French]. "Overshooting on the first burst, shortening lead and raking the P-36 with continuous fire. P-36 turning turtle. Plunging to earth, it bursts into flames."

In another engagement, August reports: "All attempts to out-climb or out-maneuver tailing P-36s are proving futile. Their bullets are heard and felt striking the fuselage and armor plate aft of the cockpit. Resorting to a dive to within 10 feet of the ground. Another *Wildcat* came in and has diverted the attacking planes. Gaining altitude. Making full deflection high side and attacking one of the P-36s. It has burst into flames. French pilot

has bailed out. His chute did not fully open." From another *Wildcat* pilot comes: "Tallyho, Good shot. Good shot." On his way back to the ship, August's engine cuts out completely and he bails out. He is taken prisoner.

Meanwhile, *Santee's* saga continues: "Fighters and dive bombers called upon all day to attack groups of Vichy French troops and guns. All encounter AA fire. Ens. W. E. White, bailing out." Later, information indicates: "Arab leader helping White and his crew to destroy plane. White presented Arabs with parachutes and a few trifles and is now walking toward Safi."

In another episode, five *Wildcat* pi-

lots cannot find *Santee* after their mission, so four of them land out of gas near Safi and are taken prisoner. The fifth crash-splashes into the sea and is picked up in his rubber raft 60 hours later.

Carrier aircraft are not the only ones contributing to the combat. Seven Curtiss SOC-3 *Seagulls* and two Vought OS2U *Kingfishers* launch at dawn from the battleship *Massachusetts* and the cruisers *Wichita* and *Tuscaloosa* in order to spot shellfire and perform antisubmarine patrol. An attacking P-36 forces one of the OS2U pilots, Ens. Tom Daughtery, to land in the water off Casablanca. He taxis to the beach where he and his rear seat gunner are taken prisoner.

That night he meets Lt. August in the cell block and they share a salvaged "cartridge box filled with Philip Morris cigarettes, several chocolate bars, a can of fish and some wet packages of chewing gum." Later, off the southern sector landing beaches, an SOC from the cruiser *Philadelphia* bombs the French sub *Meduse*, forcing it to beach near Cape Blanco.

So went some of the action as the *Torch* was lit off Morocco.

The operation originally began smoldering in mid-1942. The spark that touched it off was Winston Churchill. "During this month of July 1942, when I was politically at my weakest and without a gleam of military success, I had to procure from the United States the decision which, for good or ill, dominated the next two years of the war—the occupa-

tion of French North Africa in the autumn or winter by a large Anglo-American expedition."

In a London conference at the time were General George C. Marshall, Admiral Ernest J. King and Mr. Harry Hopkins, all of whom agreed. Looking at the global map, they saw the Allies in a real bind. The Axis had control over the European continent to Turkey; the north African coastal plain from Tunisia to El Alamein; the Russian Steppes, through German spearheads knifing toward the Ukraine, Moscow and Leningrad; the shipping lanes of the Atlantic, confirmed by submarines sinking 141 vessels grossing 707,000 tons in the peak month of June; and the south Pacific, with Japan on the loose in the Philippines, the East Indies, the Malay Peninsula, New

Guinea and the Solomons.

One historian described *Torch* as "an indication of both the strength and the limitations of the Allies. It was a move with limited forces in a secondary theatre where only minor resistance was to be expected. Valuable as the possession of that theatre might be, it was at best a preliminary move. It meant the occupation of a strategic point from which



other moves might be launched."

Task Force 34 crossed the Atlantic with 102 vessels, some carrying the 35,000 Army invasion troops, spread out over an ocean area of 600 square miles. Prior to the landings, General "Blood and Guts" Patton rendered another of his battle cry orations: "Never in history has the Navy landed an Army at the planned time and place. If you land us anywhere within 50

house he had selected as his command post.)

The morning of the 10th, reports started coming in from the escort carrier *Chenango* with 76 Army Air Force P-40 fighters sardined aboard. They had been transported across with the Task Force and were to be flown off for use by the USAAF at Port Lyautey's airfield. All P-40Fs successfully launched, though one

a message is received in *Ranger's* radio room: URGENT—URGENT—URGENT! CEASE FIRING IN CASABLANCA AREA! A *Ranger* staff officer later said, "The bombers are coming back flying a 'V' near the ships, their bombs still in the racks. The patrols go up as usual, but the fighting seems to be over."

Tallies during the campaign show that of 172 Navy planes participating, 44 were combat and operational losses, but not one was shot down in an aerial dogfight. The enemy lost 26 aircraft in air battles and some 100 were destroyed on the ground, *Ranger's* planes accounting for 16 and 71 of these, respectively. Enemy types destroyed included P-36 and Dewoitine 520 fighters, Loire et Olivier and Martin *Maryland* bombers and a mysterious black-painted German Messerschmitt ME-109, the "phantom raider" which had strafed the landing beaches in the central sector.

Critiques of the operation show that inadequate air training took its toll, particularly in the case of *Santee*. The report that *Sangamon* sent regarding men gaining experience in "typical northeaster fashion" proved to be correct. *Santee* suffered nearly half of the Navy's plane losses. Out of the 31 planes she carried, 21 were lost. Only one of these could possibly be attributed to combat. One pilot, for example, flew an *Avenger*, a type in which he had fewer than three hours' prior flying time. The official critique noted: "Excessive losses of planes on the *Santee* due to faulty navigation and inability to bring these planes in with equipment provided indicate necessity for more adequate training."

Notwithstanding these drawbacks, the air units of Western Task Force 34 gave a creditable account of themselves in this the largest over-ocean amphibious operation in history. Admiral H. Kent Hewitt, Commander of WTF 34, commented: "The struggle continued until November 11, the anniversary of Armistice Day (WW I)." The following Sunday, a message from Gen. Patton to Adm. Hewitt was transmitted to every ship: "I shall be pleased, if, insofar as circumstances and conditions permit, our grateful thanks be expressed today in appropriate religious services."



Wildcats test guns on Ranger, above. Opposite, Army P-40s are sardined aboard Chenango and Seagull, above, scouts for subs. Note enscribed national star insignia.

miles of Fedhala [near Casablanca] and within one week of D-day, I'll go ahead and win."

Undercover arrangements to effect French cooperation had failed. The German-influenced Vichy forces put up a good resistance, particularly the 15-inch guns of *Jean Bart* tied to her berth in Casablanca. By mid-morning of the third day, November 10, the northern attack forces had taken the Port Lyautey airdrome and most of the fighting men and equipment in the southern and central sectors had gotten ashore. (General Patton spent the night of the 8th aboard the cruiser *Augusta* because, as he jokingly put it, the "goddam Navy" had bombarded and demolished the kitchen of the

spun-in while joining up with his formation. The pilot was lost.

Throughout all these operations, Captain J. J. "Jocko" Clark, a Cherokee Indian who later gained fame heading Task Group 58.1 in the Pacific, must have felt at home commanding *Suwannee*, surrounded by *Chenango*, *Sangamon* and *Santee*. Also present was the ocean tug *Cherokee* (AT-66), Clark's tribal namesake.

Back to action on *Ranger*.

On the afternoon of the third day, an order comes through to silence *Jean Bart*. Nine planes take off armed with 1,000-pound bombs. Twenty minutes later, the leader radios: "No more *Jean Bart*."

At last, on the morning of the 11th,



Handy Hawkeyes

On the night of June 4, 1976, USS *Saratoga* was conducting routine cyclic flight operations approximately 75 miles west of the Strait of Bonifacio in the Mediterranean Sea, the second night of flight operations after a 19-day in-port period. The last launch was complete and the next recovery had just begun its approach phase from marshal under carrier controlled approach. Suddenly, the carrier experienced an engineering casualty, which precluded the immediate recovery of aircraft. Airborne fuel was limited and some aircraft would have to be diverted. The weather was IFR, thunderstorms, with a 2,000-foot overcast. The primary divert field was closed and the secondary field was having thunderstorms with a 1,100-foot overcast.

Immediately, two E-2Cs assumed control of all aircraft and tanker assets and reestablished a marshal pattern. They established communications with the field and prepared to divert those aircraft which had reached bingo fuel status.

Only four days earlier, during an in-port training session, the E-2C controllers had been given a simulated backup CCA/divert problem caused by a shipboard casualty. That training session gave each controller the opportunity to review the procedures needed to meet the problem. The scenario was developed by the squadron, using experienced ship's CATCC personnel to assist. The posi-

tive and quick response by the E-2C controllers in taking control of the airborne aircraft and in carrying out the correct procedures during the problem on board *Sara* is credited to that timely training session.

While the two airborne E-2Cs took charge of the marshal stack, *Saratoga* was attempting to restore the ship's capabilities. As an interim measure, an E-2C on deck provided communications between *Sara's* air operations personnel and the airborne controllers. The airborne controllers began vectoring aircraft to the only divert field available as they reached bingo fuel. In all, six of the 15 were diverted.

Those diverted were required to execute non-precision approaches to a 7,000-foot wet runway in driving rain. The remaining nine were able to stay in the holding pattern until they were recovered by *Saratoga*.

The controllers involved in the recovery were from VAW-123, an E-2C *Hawkeye* squadron whose motto is "Early warning is the key to survival and early warning is our job." Teamed with *Phantom IIs* and *Tomcats*, the *Hawkeyes* utilize their airborne tactical data system to provide a distant shield for a task force and to vector attack aircraft to any target, regardless of cloud cover or weather conditions.

This ability extends to providing assistance in recovering aircraft, particularly when a shipboard casualty occurs or wartime exigency precludes

carrier controlled approaches. As a vital backup to CCAs, the E-2C crews are highly trained and qualified in the planning and execution of airborne carrier controlled approaches (ACCAs).

There are two phases in an ACCA: the marshal and approach phases. Marshal procedures are outlined in CV Natops for all carrier aviation. As aircraft check in with the airborne controller for marshal information, they are given a holding altitude, an expected approach time, an approach button and a vector to marshal as necessary. Although marshal information can be prebriefed, an emergency can dictate a change. Regardless, this information is routinely passed to each aircraft as it checks in. Each aircraft acknowledges with fuel status and any aircraft problems, such as its inability to meet the assigned expected approach time. When an aircraft is established in marshal, additional information is passed, such as time check, ship's weather, expected final bearing and divert field bearing, distance and weather.

At its expected approach time, each plane begins the approach from marshal to the carrier, based on vectors given by the E-2C controllers.

As the aircraft starts its approach phase, the controller monitors the initial intervals between aircraft until each is recovered. The interval is maintained by course and speed changes. In the event of a bolter or waveoff, the *Hawkeye* controller can provide vectors to the aircraft for re-entry into the approach pattern. Should any aircraft need tanking or divert information, the E-2C controllers can provide the necessary vectors and the shortest safe route to the divert field.

In the event of a mass divert, the E-2C acts as the principal controlling agency, coordinating with the divert facility, assigning altitudes as required, ensuring all aircraft are on an appropriate common frequency, monitoring fuel status and controlling tanker give-away fuel. As the aircraft depart marshal they normally remain at their assigned altitude until cleared to climb by the E-2C. The controllers then monitor the departure on radar and continue to provide updated bingo information and vectors as necessary to ensure their safe arrival at destination.

Viking

We would like to express our appreciation for your recent article on the Viking Varsity. All of the VS-41 personnel have thoroughly enjoyed reading and re-reading it. However, one statement was made that is quite misleading. Either the pilot or Tacco may be the mission commander, depending on qualifications, not seniority or designator. OpNavInst 3710.7H states, "The mission commander shall be a properly qualified Naval Aviator or Naval Flight Officer . . . who shall direct a coordinated plan of action and shall be responsible for effectiveness of the mission." Since 1971 this program has ensured that the most qualified individual as designated by his commanding officer is charged with responsibility for successful mission accomplishment. The pilot, of course, is still responsible for all safety of flight decisions. Thank you for this opportunity to correct an otherwise fine piece of journalism.

George W. Kelly, LCdr.
Paul B. Holder, Lt.
VS-41

I was particularly happy to see your article in the July issue of *NA News* on VS-41 and the S-3A *Viking*. As I am sure is the case throughout our community, the *Hukkers* of VS-28 enjoy the publicity. We are happy to see the word passed about the capabilities of the *Viking* and its ability to function admirably in a multi-threat environment.

I was disappointed to see a degree of misinformation promulgated by the author. He stated "The pilot is the mission commander and runs the show. The copilot has so many ASW-related functions, especially involving operation of nonacoustic communication and navigation equipment, that he does not get much stick time." In 34 words the author has managed to alienate 50 percent of the crewmen who currently fly *Vikings* and an unpredictable number of people who thought they might be interested. As for the first sentence, for the benefit of all those Taccos who are serving as *Viking* mission commanders, I quote from the ComAirASWing One Readiness and Training Manual, "Both pilots and NFOs are eligible for designation as mission commander. When the mission commander is an NFO, he is responsible for all phases of the assigned

mission in a tactical environment, except those aspects of safety of flight related to physical control of the aircraft which are considered beyond his qualification."

The second sentence dealing with the copilot's primary function is certainly a true enough statement but may be slightly out of context. In order for the copilot to learn those skills necessary to be an effective mission commander when he is so designated, he must spend a portion of his time in preparation. It is a design feature of the *Viking* that the copilot perform these functions, and it is certainly not a new concept as the *Tracker* copilot performed many of the same duties during his apprenticeship. It is very likely that all *Viking* squadrons will eventually place either a Naval Aviator or NFO in the copilot seat or that the seat may become the domain of another NFO entirely. But for the present, these mission-oriented copilot duties are nontransferable. In the interest of attracting the highest caliber of replacement pilot to the community, perhaps it would have been better not to tell him that he can forget about getting any stick time.

Each month I look forward to *Naval Aviation News* and feel your articles are both interesting and pertinent. It is only because I am so personally involved in the future of the *Viking* that I bring these two small misstatements of fact to your attention.

T. E. McKee, Lt.
Viking Tacco

Your July issue was received with open arms, as are all issues of *NA News*. And since the *Claw Clan* of VS-38 is in the midst of S-3A transition at VS-41, Commander Rausa's article on "Viking U" was the focus of interest. There's the rub.

Overall the article painted a true picture, but with one major flaw. To say the pilot is the mission commander and runs the overall show is at best a half-truth and a throwback to the days of the "stoof." Both OpNavInst 3710.7H and NavAir 01-S3AAA-1 (S-3A Flight Manual) specifically state: "The mission commander is a Naval Aviator or a Naval Flight Officer . . . who is responsible for all phases of the assigned mission except those aspects of safety of flight which are beyond the qualification

of the mission commander's designator." Designation as mission commander is not automatic by seat position but rather the finale to an exacting PQS program and demonstrated command and leadership ability. It is a target for both aviators and flight officers.

M. R. Brower, Ltjg.
Ground Safety Officer
VS-38
FPO San Francisco 96601

VE-7s

I was surprised to open your July issue and find a picture I took in high school of a Navy DeHaviland DeH-4B which had landed in the center of the county fairgrounds at Medford, Ore. I had sent a print to Adm. J. R. Tate along with some prints of four VE-7s that landed the same day to refuel.

The VE-7s were the first photos I ever took of an airplane and it was prophetic that someday I would work for the Vought Company that designed them — only 30 years later. The surprise turned out to be that Adm. Tate, then a lieutenant, piloted the VE-7 nearest the camera. He recognized the suitcase that was strapped to the side of the fuselage. The plane had no baggage compartment. Adm. Tate said the four planes were flying back to San Diego after going to Sand Point in Seattle, and belonged to



VF-2. The VE-7s and DeH-4 all landed inside the mile-long racetrack at the fairgrounds, which meant they had to land and take off in about 2,000 feet. Medford is around 1,500 feet above sea level.

Art Schoeni
339 W. Montana Ave.
Dallas, Texas 75224

Old VP-4

On the inside back cover of the May

issue there were pictures of squadron insignia from earlier days in Naval Aviation. One of them was for old VP-4. I was a radioman assigned to VP-4 at Pearl Harbor from 1937 until it was renumbered VP-22 in FY 1939. The insignia is one of a mythical animal called a griffin.

VP-4, later VP-22, existed for just 10 years and during that time had a total of 129 officers assigned. Of those 129, 15 were ultimately promoted to admiral, a pretty good average I would say. The most notable of them was Thomas H. Moorer who became CNO and Chairman of the Joint Chiefs of Staff.

H. W. Masterman, Cdr., USN (Ret.)
7500 Castle Road
Manassas, Va. 22110

HUP-2 Seacopter

On Page 3 of the July issue there is a depressing view of the Navy's first hull-type amphibious helicopter, the HUP-2 *Seacopter*. Be reassured. It



spent most of its career right side up, as pictured in the December 1962 and January 1964 issues of—would you believe—*NANews*.

During the mid-Fifties, BuAer contracted with Edo Corporation to convert a standard helicopter to an amphibious configuration. The contractor and Navy test programs were most successful. All well and good so far. The BuAer and NATC people involved in the program were so pleased and proud that a presentation was arranged which took place in the east seaplane basin at Patuxent River. Following a demonstration by the project pilot, qualified pilots were invited to operate the *Seacopter*. Everything went well until a pilot, who shall remain anonymous, and who had been checked out in the HUP-1 and HUP-2 previously, climbed into the driver's seat, charged off downwind, slammed into a high speed turn, and over he went. That's when the *Seacopter* project crunched to a soggy halt. The HUP-2 was eventually over-

hauled, reconfigured and then vanished. The *Seacopter* program, however, can be considered successful since hull-type amphibious helicopters are now commonplace and have repeatedly proven their value during emergency water landings and rescues. To acknowledge and commemorate what went right with that program, could you rummage through your files and find a photo of the *Seacopter* in a more dignified attitude.

E. H. Handler
Naval Sea Systems Command

Admiral Pride

The article in your August issue on the early endeavors of Adm. Pride makes interesting reading. Caption on page 17 for picture 6 indicates aft-most cockpit positioning I have ever seen. Of course, this is clarified when one gets to caption 9—and after the gaff you got on bow traps, tsk!

R. H. Healy, Cdr., USN
Training Air Wing Six
NAS Pensacola, Fla. 32508

I am sure that Adm. Pride got a big charge out of your caption for the photo of him standing on the tail feathers of the experimental F9C on page 17 of the August issue. If that is where the cockpit was located on that particular flying machine, then I can see why there was a mishap during that flight. My hat was already off to the Admiral for his tremendous contribu-

tion to our profession, but methinks perhaps the Navy doth occasionally ask too much!

Mariner G. Cox, LCdr.
FASOTraGruLant
Norfolk, Va. 23511

Ed's Note: "There's many a slip twixt. . . ." This time we claim foul. Somewhere between layout and printing, the pictures were exchanged.

Disappearing Magazine

I am writing to see if it would be possible to increase the number of copies of *Naval Aviation News* we receive. The students really enjoy the magazine so much that as soon as the copy is put on the shelf it disappears. Maybe with two copies, more people would get a chance to read it.

Librarian
St. Teresa High School
2700 N. Water St.
Decatur, Ill. 62526

Ed's Note: Two copies it is.

Giving Credit

The article "Man Your Bicentennial Machines" was great. The emblem used to mark the GSE gear was made by the metal shop of HMM-162, a Marine helo squadron at New River, N.C. I just want to give credit where credit is due.

Marine Corps PFC

SAY MERRY CHRISTMAS with a subscription to NAVAL AVIATION NEWS

Mail the attached coupon with a check or money order for \$ 12.85
to the Government Printing Office, Washington, D.C. 20402

Superintendent of Documents,

Please enter a subscription for Naval Aviation News and send to:

Name _____

Address _____

City _____ State _____ Zip Code _____

Published monthly by the Chief of Naval Operations and Naval Air Systems Command in accordance with NavExos P-35. Offices: 801 N. Randolph St., Arlington, Va. 22203. Phone: 202-692-4819, autovon: 222-4819. Annual subscription: \$12.85, check or money order (\$3.25 additional for foreign mailing) sent direct to Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Single copy is \$1.25 from the same address.



These new Marine Corps insignia were approved during 1976. Detachment, Marine Aircraft Group 16, is part of the 3rd Marine Aircraft Wing at Camp Pendleton, Calif. Marine Tactical Electronic Warfare Squadron Two and Headquarters and Maintenance Squadron 29 are both part of the 2nd Marine Aircraft Wing. They fly out of MCAS New River, N.C.



NAVAL AVIATION

NEWS