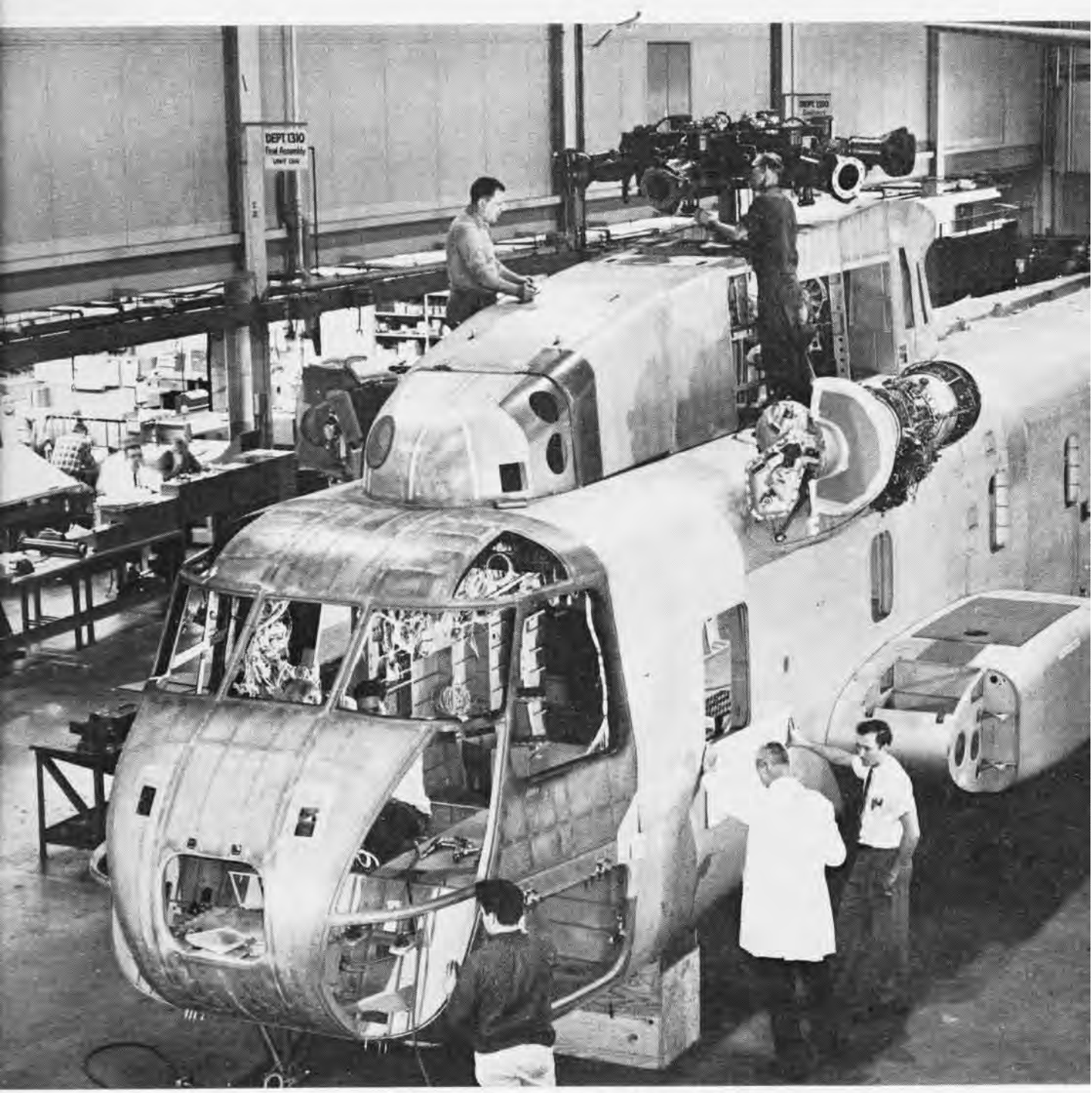
NAVAL AVIATION NEWS

45th Year of Publication

JULY 1964

NavWeps No. 00-75R-3

SHARE THIS COPY



FRONT OF THE LINE

Taking shape in the Sikorsky plant is the first CH-53A heavy transport helicopter for the Marines. Down the production lines will come many more of these heavy assault transports to enhance the striking power of Marine amphibious forces. Late in the 1940's the Marines pioneered the development of transport helicopters for combat tactics. Today such use is standard with Marine forces—and with many other services in other countries. This first CH-53A will lead the way to increased vertical envelopment capability for the U.S. Marine Corps.

■ COVERS

As Attack Squadron 22 pilots flew past Mount Fujiyama in their A-4C Skyhawks, they were photographed by Ltjg. Bill Wilson of VFP-63 Det Alfa who was flying a Photo-Crusader. VA-22, commanded by Cdr. R. S. Smith won ComAirPac's Battle Efficiency E for the 1962-1964 competitive cycle.

NAVAL AVIATION NEWS

Selected BEST INTERNAL PERIODICAL 1963-64 by Federal Editors Assoc.

FORTY-FIFTH YEAR OF PUBLICATION JULY 1964

■ IN THIS ISSUE

■ THE STAFF

Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35

Published monthly by Chief of Naval Operations and Bureau of Naval Weapons to disseminate data on aircraft training and operations, space technology, missile, rocket and other aviation ordnance developments, aeronautical safety, aircraft design, power plants, aircraft recognition, technical maintenance and overhaul procedures. Send mail to Naval Aviation News, OP 05A5, Navy Department, Washington 25, D.C. Office located at 3704 Main Navy Bldg.; telephone Oxford 62252 or 61755. Annual subscription rate is $2.50 check or money order ($1.00 additional for foreign mailing) made payable and sent to Superintendent of Documents, Government Printing Office, Washington 25, D.C. Single copy costs $.25.

NAVAL AVIATION NEWS

BuShips Orders CVA-67

Newport News Co. Gets Contract

Construction of the attack aircraft carrier CVA-67, authorized in the FY 1963 Shipbuilding and Conversion Program, has been inaugurated by a BuShips fixed-price contract in the amount of $188,500,000. The builder is to be the Newport News Shipbuilding and Dry Dock Company, Virginia.

The ship, a *Forrestal*-class attack aircraft carrier, will have a length of 1047 feet, a maximum flight deck width of 252 feet and a full load displacement of 80,700 tons. The new ship will be the first aircraft carrier to be equipped with a mechanized weapons handling system for the rapid transfer of aircraft ordnance and missiles for the ship's air defense system. CVA-67 will also be the first carrier to be equipped with the *Tartar* surface-to-air missile system. Some previously built carriers have been equipped with *Terrier* missile installations.

The CVA-67 will be the ninth post-World War II attack aircraft carrier. Seven *Forrestal*-class aircraft carriers and one nuclear-powered aircraft carrier, USS *Enterprise* (CVAN-65), previously have been authorized. The Newport News firm is currently completing the *America* (CVA-66) and was the builder of *Enterprise*, *Forrestal* (CVA-59) and *Ranger* (CVA-61).

Pacific Squadrons Win E's

Announced by VAdm. P. D. Stroop

Battle E winners in the AirPac's 1962-64 cycle have been announced as follows: VF-143 (F-4), VF-191 (F-8), VA-22, VA-115 (A-1), VAH-2, VP-4, VP-40 (S)-ASW, VS-33 and HS-2.

In making the announcement VAdm. Paul D. Stroop stated that the competition among squadrons was extremely keen. He extended to all winners "congratulations and well done."

'Chuting Stars' Disband

Lack of Funds Grounds Team

The Navy's famed parachute exhibition team, the *Chuting Stars*, has disbanded because of budget problems. VAdm. Fitzhugh Lee, Chief of Naval Air Training, said that he regretted to announce the disestablishment. "This team has exemplified the high degree of professional skill and safety associated with Naval Aviation in demonstrating parachutists' techniques now used by sport parachuting and skydiving clubs throughout the nation."

Since its beginning in 1961, the team, composed of five officers and 16 enlisted men, has made more than 7300 jumps without serious injury. They have thrilled over 15½ million spectators at shows across the country.

What's Ado at Pt. Mugu?

Changes at Pacific Missile Range

Secretary of Defense Robert McNamara has directed a reorientation of the Pacific Missile Range (PMR) with reassignment of certain range responsibilities to the Army and U.S. Air Force. However, the PMR will continue in its essential support role.

The Air Force will assume custody of the real estate at Pt. Arguello this summer and certain downrange stations in 1965. The Army takes control of Kwajalein this year.

SecDef has assigned all range instrumentation ships, including those for NASA and the Atlantic Missile Range (AMR), to the Navy. PMR has been assigned engineering and design system integration for instrumentation systems on range ships. This responsibility includes modifications to existing ships and the system design of instrumentation for the new *Apollo* ships.

Included in the scope of PMR responsibilities are: The large Pt. Mugu complex and offshore islands on the West Coast; the Kaneohe and Barking Sands installations in the Hawaiian area; Johnston Island instrumentation facilities in support of JTF-8; range facilities in support of *Polaris* in the Guam/Midway area; Missile Impact Location Stations on the West Coast and certain units in the Pacific and the world-wide *Tranet* stations.

AS MRS. JOAN M. SMITH *came in for a landing, aircraft from NAS Agana, VAP-61 and VW-1 escorted the around-the-world aviatrix. She was following the Amelia Earhart route. Mrs. Smith called the New Guinea-to-Guam trip "the most exciting leg of her flight." Hundreds of people greeted her upon arrival. On hand with congratulations were RAdm. Thomas A. Christopher, ComNavMarianas; Gov. Manuel F. L. Guerrero, and Capt. J. M. Barlow, NAS Agana C.O.*

TRIPARTITE AND TRI-SERVICE, *an international evaluation squadron will try out the Hawker-Siddeley P-1127 V/STOL. Personnel of the Army, Navy and Air Force are in the United States contingent. With the British and West Germans in the squadron, they will evaluate the operational use of V/STOL craft in tactical combat, using nine P-1127's. Flying chase in the photograph is a Hawker Hunter which fills a variety of roles in many countries in the world.*

For NASA, Air Force and other DOD activities, PMR will continue to provide range support and operate special facilities, such as the *Tiros* weather satellite readout station on San Nicolas Island, etc.

Despite rumors to the contrary, the naval weapons complex at Pt. Mugu is not being taken over by the Air Force. Unaffected by the reorientation of PMR are the Naval Missile Center, Navy Astronautics Group, and the Naval Ships Missile Systems Engineering Stations (NSMSES). Within these commands there will be around 4000 civil service positions and approximately 2400 military billets. The NSMSES at Port Hueneme is expanding rapidly and it is estimated that the organization will eventually employ between 1000 and 4000 personnel, including many from Point Mugu.

Two Ships Help Museum

Enterprise and Ranger Give $1000

The first Navy ships to contribute at least $1000 to the building of the Army-Navy Museum at Independence National Historical Park, Philadelphia, are USS *Enterprise* and USS *Ranger*. The carriers have become Founders of the museum (OpNav Notice 5750).

The first ships of these names served in the American Revolution: *Enterprise* in the Battle of Lake Champlain, the *Ranger* as John Paul Jones' frigate.

Nuclear TG 60.1 Formed:

Enterprise, Long Beach, Bainbridge

The world's first all-nuclear powered Naval Task Group has been formed and is now a part of the U.S. Sixth Fleet. The group, TG 60.1, consists of the aircraft carrier *Enterprise*, the guided missile cruiser *Long Beach*, and the frigate *Bainbridge*.

Enterprise, commanded by Capt. Frederick H. Michaelis, has over 100 aircraft aboard, ranging from the F-4B *Phantom II* to the A-1H *Skyraider*. The aircraft of Carrier Air Wing Six aboard extend the carrier's attack radius to more than 1000 miles. Her fighters can intercept and destroy attacking planes before the attackers are in position to deliver weapons.

The *Long Beach*, commanded by Capt. Frank H. Price, carries the medium range *Terrier* and long range *Talos* missiles.

Primary mission of the *Bainbridge*, commanded by Capt. Raymond E. West, is to provide antisubmarine protection for the group. Her far-reaching sonar and *Asroc* antisubmarine weapon system permit her to detect and destroy any submarine at ranges beyond the effective range of torpedoes. For air defense, she is armed with *Terrier* missiles and three-inch rapid fire conventional guns.

The Task Group, commanded by RAdm. Bernard M. Strean, is completely mobile and self-sustaining. It is able to operate at sea indefinitely, independent of fuel considerations. This unrestricted freedom of movement is an operational advantage never before enjoyed by a Task Group commander.

In coming months, the ships of Task Group 60.1 will work together to develop and implement tactics which will further enhance the capabilities designed into them. Said Adm. Strean: "We look forward to demonstrating the strategic mobility and the endurance of these 20th Century ships."

ENTERPRISE AND LONG BEACH, OPERATING IN THE MED, ARE NOW JOINED BY BAINBRIDGE

GRAMPAW PETTIBONE

Double Trouble

A VFP pilot in an RF-8A was launched from a carrier off the East Coast for what was to be a routine photo recon hop. After approximately one hour of flight time, the pilot noted his utility hydraulic system warning light had come on. The ship was informed of the hydraulic system failure and the pilot was instructed to divert to a naval air station.

The pilot had things all planned for an uneventful arrested landing. In all probability this would have been the case but, after blowing the gear down, he found he could not unlock the wing-incidence lock. After all possible means to get the wing up were exhausted, the pilot discussed the situation with a qualified LSO. The decision was reached to make a wing-down approach into the mid-field arresting gear. While the F-8 orbited the field to burn down, an SAR pilot in a CH-19E was launched to cover the emergency.

The pilot flew a good LSO-monitored approach, touching down approximately 500 feet from the mid-field arresting gear. Touchdown speed was not too excessive for the wing-down configuration of the aircraft but was

beyond the design specification of the arresting gear. When engagement with the arresting cable was made, the cable parted and the aircraft-arresting hook failed. The aircraft vibrated as if a tire had blown and the pilot immediately added power in an effort to become airborne. After several doubtful moments, he got the F-8 back into the air.

Realizing the aircraft was damaged during the attempted arrestment, another F-8 pilot operating in the local area was asked to join on the crippled *Crusader* and inspect the extent of damage. Visual inspection revealed that the arresting gear cable had whiplashed the aircraft landing gear, causing extensive damage. In addition, the tail hook had been torn away.

With the aircraft in this condition, it was determined that another landing attempt would not be made. The pilot was instructed to proceed to a predetermined area for a controlled ejection. The helicopter pilot positioned his aircraft so he could observe the ejection and pick up the pilot as soon as he landed.

At an altitude of 7000 feet over an unpopulated area with the aircraft headed toward the sea, the pilot completed his ejection check list, shut down the engine and pulled the curtain. All ejection equipment operated normally and the SAR helicopter was on the scene almost as soon as the pilot's feet touched the ground. The uninjured *Crusader* pilot boarded the helicopter for what he thought would be an uneventful nine-mile ride to the air station.

The helicopter took off with the rescued pilot and climbed to an altitude of 250 feet for the flight back. Approximately 20 minutes later, the NAS Operations duty officer received a telephone call from the SAR pilot that he had crash-landed in a wooded area approximately three miles from the station due to engine failure. He also stated that he, his crewmen and the F-8 pilot were all in good condition. All four were returned to the air station via land transportation.

Grampaw Pettibone says:

Great horned toadies and sufferin' catfish! To be in two accidents in a matter of minutes when you had absolutely nothin' to do with either of them is carryin' things too far.

This helo pilot probably had a pretty red face but he handled his emergency the best way possible when he was

ILLUSTRATED BY Osborn

confronted with carburetor problems. It's not too difficult to see that material failure was involved in these accidents, and you can bet your boots that the Safety Center boys are on top of them. But I'd sure like to hear the F-8 driver tell the story at Happy Hour. "There I was . . . !"

Bent Bird

An instrument instructor (senior type) with his lieutenant student departed an East Coast air station in a T-33 for what was scheduled as a local instrument training flight.

The initial portion of the flight was, in the words of the pilot, routine in all respects for approximately one hour and 20 minutes. At about this time, while still some 20 minutes north of home station, the pilot asked his dual pilot if he would like to do some aerobatics but he declined, stating that he was not familiar with the airspeeds and aircraft limitations.

The instructor then asked the dual pilot if he objected to his doing a couple of rolls. As there was no objection from the junior pilot in the rear seat, the pilot turned east to clear the airways and picked up about 350 knots at an altitude of 12,000 feet. The pilot pulled the nose above the horizon and entered a roll to the left, but about half way through the roll he became completely disoriented and the nose fell through.

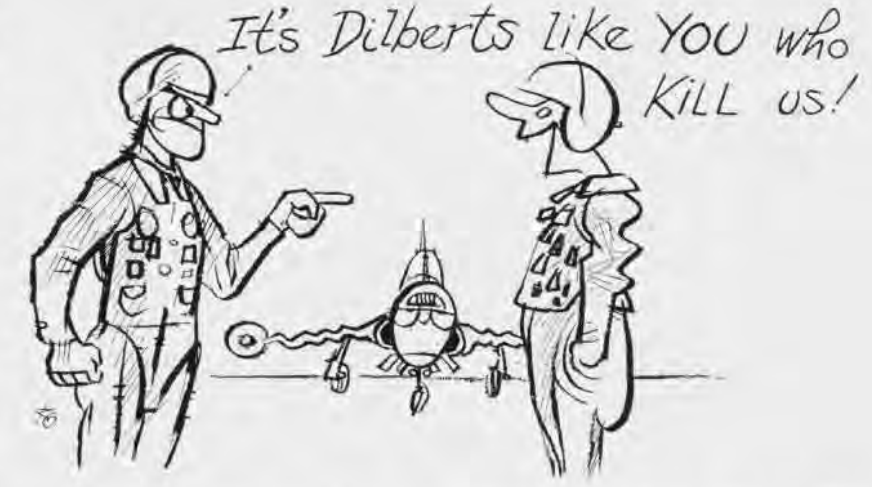
After checking instruments, he became rudely aware that the aircraft was in an extreme nose-down attitude with airspeed building fast. He immediately chopped the power and attempted to pull the nose through, but when excessive "G" force was applied naturally, the aircraft began to shudder. Stick pressure was relaxed and a gentle recovery accomplished at an altitude between 2000 and 3000 feet.

The dual pilot was unable to recall if the attempted roll was to the right or left as he became disoriented when this episode began and blacked out completely during the recovery. After regaining consciouness, he had a good case of vertigo. It took several seconds before he was aware the aircraft was in a climbing turn and several minutes before he was fully aware of what had happened.

The pilot was disoriented during the entire "maneuver" and although he didn't black out himself during recovery, he did find it difficult to hold his head up. After taking a quick inventory, the pilot climbed the tired little aircraft to 6000 feet and headed toward home.

While the dual pilot was looking around trying to get his bearings, he discovered the port aileron to be badly wrinkled and immediately notified the pilot. He also informed him that he had a severe pain in his neck and back and asked how many "G's" they pulled during recovery. The pilot reported that his accelerometer showed 5.5 positive "G's" and, after checking, the dual pilot reported the rear cockpit accelerometer showed 10 "G's".

Aware that the aircraft had been structurally damaged during the flight, the pilot requested a straight-in approach to the runway and the landing was accomplished without further incident. After landing the aircraft was inspected; the airframe was damaged to such an extent that it was classified as a strike.



Grampaw Pettibone says:

Great jumpin' Jehosaphat! This wasn't a close shave, it was a narrow escape. With a "G" or two more, the little bird would most likely have shed a wing and these guys would have been helpless in their semi-conscious state. Even if these T-33's are tired old dogs, that's no reason to whip 'em this way.

There's certainly no mystery as to why the dual pilot blacked out. His G-suit hadn't been refitted since wearin' it over heavy winter gear. It's plain to see that a loose fitting G-suit is of little or no value to anyone.

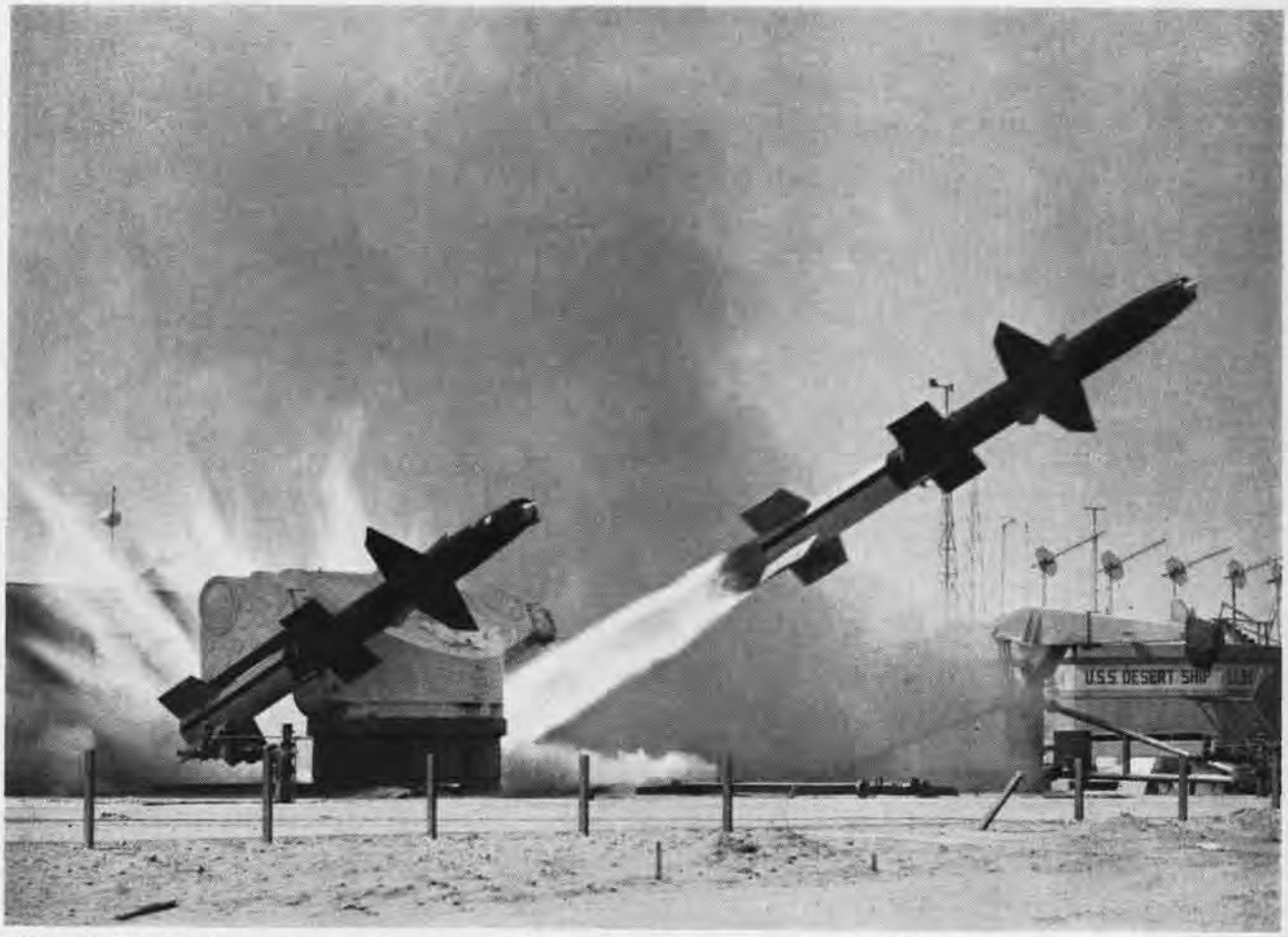
Now there's nothin' wrong with aerobatics, provided the hop is briefed so everyone knows what's going on. This flight was scheduled as instrument training for the lad in the rear cockpit, but he didn't even touch the controls during the flight. What he learned about instruments on this hop could be put in that well known thimble. Although he was exposed to a rather unusual maneuver, he really didn't learn a lot about aerobatics either.

Memo from Gramps

BEWARE OF PROPELLERS—JET BLAST—INTAKE DUCTS. We can find these words in large red letters—in hangars, on ramps, operations buildings and towers, hangar decks and flight decks, on posters, in directives, instructions, and lectures, but we still have people who ignore or just don't observe these warnings. All too often I read of a lad who backed, walked, or was blown into a prop, was sucked into an intake duct or blown across a ramp or flight deck. Words, such as "The mishap was caused by failure of the victim to observe safety precautions" or "It is the opinion of the board that the primary cause of this accident was non-compliance with established maintenance safety precautions," are beginning to cause your ol' Gramps sleepless nights.

Granted, there are certain hazards connected with aircraft operations, but safe, efficient operations can be conducted if basic safety precautions are enforced. Yes, *enforced*—there probably isn't a supervisor in Naval Aviation who hasn't seen someone violate safety rules and done nothing about it. We are all guilty to some extent. I am still convinced—after lo! these scores of years—that proper supervision and training will eliminate many of these costly and needless accidents.

A 'SHIP' THAT NEVER GOES TO SEA



FIRE! AND ONE *of the Navy's gigantic birds of prey, the Talos guided missile, streaks skyward toward its target in one of the tests at Desert Navy's "ship." With its intricate instruments, USS Desert Ship can even simulate the roll of waves on the land-locked launcher.*

R. A. HARGREAVES, *MT3, and W. C. Harlow, MM 2 (R) prepare a Talos missile for a test firing at White Sands Missile Range, New Mexico.*

ON A FINAL CHECK, *C. Ginn, GMCM, makes sure the big Talos missile is correctly seated in its launcher for practice run at Desert Ship.*

By Jim Wright, JO2

Does the U. S. Navy actually have a guided missile ship that never goes to sea? According to the authorities at the Naval Ordnance Test Facility, White Sands Missile Range, N.M., it does. It "sails" in the south central New Mexico desert in the midst of cactus and sand dunes. The vastness and desolation of the Tularosa Basin are an advantage in testing and evaluating missiles and rockets.

The men of the desert Navy have named their sand and tumbleweed base, USS *Desert Ship* (LLS-1), the LLS meaning Land-Locked Ship. Actually it is a concrete building, but the interior of the structure is so furnished as to make a sailor feel right at home. Special equipment installed aboard the *Desert Ship* simulate the roll of waves.

The work that goes on at the *Desert Ship* is as important to the operation and mission of the Navy as that of the seagoing Fleet. The armament used by the newest guided missile cruisers, the *Talos* surface-to-air guided missile, was tested and evaluated at the "ship." With *Talos* in the Fleet, the *Desert Ship* tests new and modernized versions of the missile. It also tests various new radar systems.

Included in the *Desert Ship* facilities are missile assembly and checkout buildings, machine shops and a tall slender, steel tower which is used to launch *Aerobee* upper atmospheric research rockets. The Navy men assemble and fire the research vehicle for probes into space, providing vital atmospheric information for NASA, USAF, the Naval Research Laboratory and other agencies.

The *Desert Ship* employs the knowledge and experience of gunner's mates, radarmen, guided missile technicians, fire control technicians, interior communications electricians, electrician's mates, machinist mates, enginemen, yeomen, fitters, photographer's mates and hospital corpsmen.

Construction of the *Desert Ship*, begun in February 1952, was completed in June 1953. The center was established to test and evaluate the feasibility of employing supersonic guided missiles, accompanying radars and associated equipment aboard ships of the Fleet.

The first tests were concerned with a ramjet engine missile, forerunner of today's *Talos*. Since then, the facility has fired over 600 missiles, rockets and test vehicles.

AN AEROBEE *high altitude research rocket is thrust on its way as it is launched clear of its steel tower to probe the upper atmosphere.*

LTJG. W. R. KNIGHT, *equipped with headphones, checks D. H. Aldrich, FTM2, on the three-dimensional plotter tracking the missile's flight.*

K. R. ZASADILL, *PH2, is giving a final check to the camera that will track the missile's flight over the vast and desolate Tularosa Basin.*

IN 1941, COCO SOLO, STRATEGICALLY LOCATED NEAR PANAMA CANAL, WAS BUILT UP SPEEDILY BY SEABEES AS AIR STATION AND SUB BASE

SHELL OF THE 'LONE COCONUT'

By Edward C. Copeland, JO1

COCO SOLO AIR STATION on the Atlantic side of Panama stands today as a mute, deteriorating, obsolete symbol of the United States determination to protect its vital Panama Canal during two World Wars.

Coco Solo is obsolete only because its facilities and defenses were considered too expensive to keep pace with the sophisticated modern weapons of today. Other, more effective means now stand ready in the Canal Zone to protect the vital U. S. waterway.

A stroll around the shambling, weed-choked base today brings on a kind of sadness to a sailor. The bay, where the mighty drone of huge seaplanes literally "shook the coconuts" as they skimmed the water in search of altitude, is now quiet. Its solitude is occasionally broken by the purr of a motorboat darting beetle-like around the bay.

The barn-like hangars, that once sheltered the busy mechanics from the hot, blinding tropical sun and the sudden, wind-driven tropical downpours, now shelter only an occasional creature that wanders in from the nearby jungle.

The hardstands, where row upon row of Naval air might once set, now appear to be fighting a losing battle against the ever-advancing jungle grass. The ramps where the big seaplanes once splashed into the blue-green bay, like some prehistoric amphibians, now only launch small boats for fishing or water skiing. The 3000-man barracks that was once full of noisy sailors now sits empty, windowless and quiet.

The post office where eager Bluejackets once lined up awaiting that letter from home is gutted and deserted. Signs still proclaim mail-call hours, but no one calls for mail.

Today Coco Solo is in a "caretaker" status. Lt. J. M. Watt, USN, Officer-in-Charge, and 14 sailors from NS RODMAN on the Pacific side have the lonely tasks of security and "housekeeping" on the sprawling base. Panama Canal Company civilians have occupied the more livable quarters on the base, but Coco Solo is just a mere shadow of its former self.

The air station was born out of necessity. It performed its functions well, prospered and grew. As the tides of time passed, its need faded and it has now drifted into near obscurity.

Coco Solo means "lone coconut" in Spanish. On his fourth voyage to the New World, Christopher Columbus sighted it, named it and passed it by without even bothering to stop. He sailed instead to Chiriqui Lagoon and Portobelo, which he also named. When his little fleet of four ships was later caught in the fury of a severe thunderstorm, Columbus must have remembered the quiet shelter of the bay with

the lone coconut tree on the island. He sailed his ships into the bay at Coco Solo to escape the storm.

He spent Christmas 1502 and New Year 1503 on the island awaiting favorable weather. To keep his crews occupied, he beached and careened his second largest ship, the *Gallega,* to pick out the teredo worms and repaint it with pitch. Over 400 years later ships would again be repaired and repainted at the same site, but on a much larger, more elaborate scale. The ships that followed Columbus' example would include fast steel surface warships, smaller deadly underseas boats and huge merchant vessels that were the life blood of the Allies in two world wars.

Columbus apparently forgot Coco Solo after he sailed from its sheltered bay, for he never returned, nor did he ever mention it in his writings. To him it had apparently been a place of refuge from the storm. This is readily understandable since Coco Solo could hardly be considered a paradise by anyone's standards. In fact, with its swamps, alligators, and swarms of insects, it is downright inhospitable.

The island remained pretty much the way Columbus found it for over 400 years. Then Teddy Roosevelt's brawling, rowdy diggers started scooping their Big Ditch across Panama. The billions of tons of earth they removed from the Canal were dumped on either side of the "Ditch," creating artificial mountains and islands. Coco Solo received its share of this fill, changing the island to a peninsula and forming the land on which the U.S. naval installations were later built.

In December 1915, Coco Solo was selected as a possible site for a submarine base to defend the new Canal. The idea was debated, analyzed, redebated and re-analyzed before a decision was made. A threat to the vital waterway probably did more than anything else to spur action.

On April 27, 1917, shortly after the United States entered WW I, a temporary organization called the submarine base was established at Coco Solo. The first vessels to be based there were the USS *Tallahassee* and five G-type submarines.

Additional land was later added for a kite balloon station and several small Navy dirigibles were based there. Local natives got their first awe-struck look at the Navy's lighter-than-airships as the huge cigar-shaped silver "gas bags" glided serenely and noiselessly over the jungles.

In July 1928, Coco Solo, still growing, was taking on a more permanent look. Fifty-four acres of swamp were filled in, two runways started and plans were laid for 24 apartments. The Chief of Naval Operations also organized Submarine Squadron Three in 1930. Later, two seaplane ramps were built and a few bi-wing seaplanes began operating out of the bay.

With war clouds gathering over Europe in 1939, anxious eyes again looked to the defenses of the Panama Canal. The Naval shore establishment on the Atlantic side then consisted of an air station for seaplanes and a submarine base at Coco Solo, a radio station at Gatun, and a small section base at Cristobal.

The Navy was entirely dependent on the industrial plant owned and operated by the Panama Canal Company for fueling and ship repairs. These centered around a battleship graving dock at Balboa, on the Pacific side, and a smaller dock, 390 feet long, at Cristobal, on the Atlantic side.

Using these facilities as a nucleus, the Navy began to strengthen and enlarge its installations during the summer of 1940. When war was declared, several entirely new activities were well underway, with work concentrated mainly in the Coco Solo area.

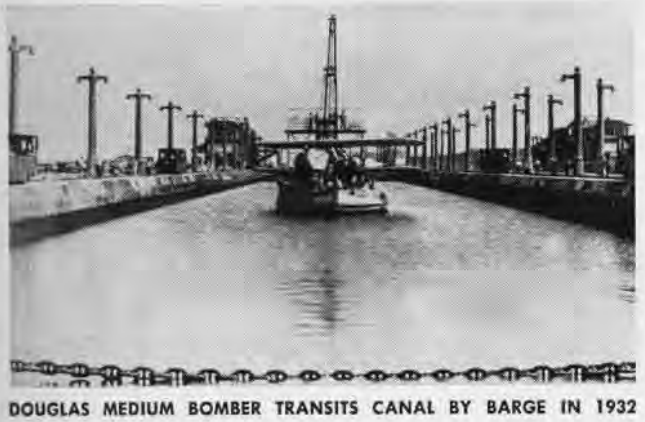
The war years of 1942-44 saw an enormous increase in the tempo of construction activity. The major effort was aimed at fuel storage, ship repair facilities, and the development of several advance bases to support distant air patrols. The ammunition depots already at Coco Solo were enlarged, as were the facilities at the submarine base and air station.

The plan of development in the summer of 1940 provided for its expansion to serve seven patrol squadrons of seaplanes. The original site, though limited, was considered to be the best that could be found in the Canal Zone.

The greatest single deficiency at the station was the lack of sheltered water for a full-load takeoff immediately adjacent to the base. Not only did the huge seaplanes have to fight for altitude with their added bomb weight, but they also had to contend with heavy ocean swells that crashed unhampered through a wide gap of open water between the eastern breakwater and Margarita Point. In addition, the station lacked enough hangars, ramps, parking aprons, housing, storage, and repair facilities.

Navy Seabees quickly solved the hazardous landing problem with a little "Seabee Razzle-Dazzle" and a lot of construction wizardry when they built a seawall to check the waves surging through the 3800-foot gap.

Aboard the air station there was a



DOUGLAS MEDIUM BOMBER TRANSITS CANAL BY BARGE IN 1932

IN 1937, MEN WORK ON RAMP WITH SEAPLANES IN BACKGROUND

FOUR OF VP-45'S P5M'S FLY OVER COCO SOLO BACK IN 1955

A NAVY TRANSPORT FOLLOWS A JEEP DOWN CRACKED TAXIWAY

buzz of activity as workers built three large hangars, four seaplane ramps, 700,000 square feet of concrete parking area, engine test stands, and a large aircraft assembly and repair shop. To make room for these new installations, 30 acres of beach had to be reclaimed by dredge.

On another part of the station, a barracks and mess hall for 1000 men was built and a new wing added to an existing barracks. Also rising out of the coral fill were a bombproof command center, an operations building, an administration building for the offices of both the air station and the adjoining submarine base, and several large storage warehouses.

Dredging operations at the station were also extended to furnish coral fill for the building of new runways at the Army's nearby France Field. With the completion of that job, 1700 feet of concrete taxiway, 66 feet wide, connected the stations. The Navy depended on the Army for the operation of its landplanes at Coco Solo.

The war years were busy years for the tropical air station. A receiving station was set up in 1943 and thousands of sailors streamed through on their way to join the bloody battles raging in the Pacific and Atlantic. As one old-timer recalled: "Those boys barely stayed at Coco Solo long enough for a cold beer."

In the early days of the war, the Engineering and Repair Department did a peak business, repairing about a dozen submarines a month in 1943. This number steadily dropped until the facilities were moved to the Pacific side in 1945.

But other type ships also received the attention of the expert repair crews. From 1943 to 1945, work was completed on 19 British warships and 299 Allied merchant vessels. Landing craft, such as LST's and LSM's, were also serviced and repaired before transiting the Canal to land Marines on the shell-torn beaches of such places as Iwo Jima and Okinawa.

Ships of up to 27-foot draft could be serviced. A destroyer, requiring 15 tons of stores, three tons of general supplies and 2000 barrels of fuel and fresh water, could be stocked and on its way in four hours.

The aircraft Overhaul and Repair Shop worked long hours keeping the vital patrol planes in the air. "Somehow," said an old timer, "with the help of God and overtime, we kept the planes flying."

Coco Solo was also a major ammunition depot for the Navy. Tons of munitions were loaded aboard warships as they gulped fuel and devoured stores. During four months in 1944, Coco Solo pumped over 240,000 barrels of fuel oil into thirsty ships as 1020 tons of ammunition were packed into the magazines.

While this flurry of activity progressed on the ground, the sky above Coco Solo was abuzz with PBY's, OS2U's and PBM's, scanning the ocean for enemy submarines that preyed on Allied shipping using the Canal. The influx of men during the war required new housing and the Coco Solito Housing Project was built. Old-timers still talk of the bulldozer that completely sank into the jungle muck and ooze while clearing the housing site areas. Many of the houses almost suffered the same fate as the concrete columns they rested on sagged and sank in the coral fill.

After the war, the pace slowed and the population of Coco Solo decreased as men were transferred home for discharge. In 1947 the naval operating base was formed, combining the naval air station, naval station, naval hospital and Coco Solito. The air station and operating base, disestablished in 1950, reopened at the outbreak of the Korean conflict. In 1953, Coco Solo had a working population of nearly 1500 personnel, which included civilians, sailors of the naval station, harbor defense unit, Marine detachment, the harbor craft crews, Fleet Aircraft Service Squadron 105 and Patrol Squadron 45.

This number remained constant for the next two years until VP-34 moved in from Trinidad, bringing the population up sharply.

Early in 1956 the squadrons began rotating back to the States and with the aircraft went the need for maintenance and ground personnel. Coco Solo was placed in a partial maintenance status when the last patrol plane flew out late in 1956, the beginning of the end for the once-proud station. It remained in the same status for the next five years until the Secretary of the Navy officially deactivated it in the fall of 1961.

Most of the usable buildings were turned over to the Panama Canal Co., for schools, housing, commissaries and community centers. Today, school children romp over the base where men twice stood ready to defend the vital Canal their forefathers built.

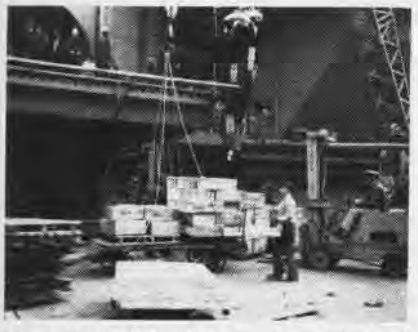
Coco Solo is just a shell of its old self. The jungle is reclaiming the part of the station not in use. But old-time residents of the Canal Zone like to remember Coco Solo as it once was—a place where proud men created a strong bastion for freedom in the tropical jungles. ★★★

MEMORABLE MOMENT: INSTANT RECALL

By Ens. Robert E. Woodman, USN

THE WORD filtered through the ship by the most amazing communication system yet devised—the grapevine—that *Forrestal* would get underway unexpectedly. I had the deck, and there was a sense of urgency in the air. By mid-morning the C.O., Capt. Michael J. Hanley, returned from Second Fleet headquarters. He spoke to the crew, confirming the rumor:

"It is possible that *Forrestal* will get underway sometime today," he said. "I have been advised that we should make preparations for being away from the Norfolk area for 60 days."



FOOD IS PLACED PIERSIDE FOR HOISTING

Immediately, I saw the machine start. At the end, the entire recall evolution would involve transporting personnel more than a quarter million man-miles, returning them to the ship.

Men and planes were dispersed around the country and the Caribbean. Messages went out to squadrons to bring their planes, officers and men back to the *Forrestal*.

Two VA-83 pilots and their plane were in China Lake, Calif., when the recall went out. Thanks to in-flight refueling, they were back in Norfolk in four hours.

Fighter Squadron 103, scheduled for a ten-day deployment to Guantanamo, already had two officers, 25 enlisted, and 11,000 pounds of equipment in Cuba when word went out to come home *now*. Thirteen aircraft had planned to RON at Cecil Field, 500 miles from the carrier.

The *Bedevilers* of VF-74 and their F-4B's were midway in a deployment to Boca Chica, Key West, when the word went out. The 28 officers, 138 men and 10 *Phantoms* returned.

CRUSADER IS CRANED TO CARRIER'S DECK

One squadron was not even a part of *Forrestal's* air wing. Attack Squadron 35, based at NAS JACKSONVILLE, had an officer and ten men on leave. By 2000, the entire squadron had been airlifted from Jax to the carrier.

Deep in the wilds of North Carolina, on an escape and evasion problem, was one pilot of VA-81 when he somehow got the word to return to his squadron. He was aboard the *Forrestal* when we left Norfolk.

Provisioning problems were solved rapidly. The Supply Department loaded 150 tons in less than five hours. The Naval Supply Center at Norfolk began delivering ordered items to pierside within two hours of receipt of the orders. The Commissary Division served hot meals to the crew all night.

The Disbursing Officer, fully aware of the amount of money he needed to pay the *Forrestal* crew for two months, immediately obtained $280,000 from the *Independence* and another $169,000 from a commercial bank.

The retail store stock was low because of quarterly inventory. Men shuttled back and forth to telephones on the pier to place orders for merchandise with vendors in the Norfolk area. The vendors responded within an hour and within eight hours 25 tons of toothpaste, razor blades, soap and similar items were delivered.

At 2100, 12 hours after the orders went out, Capt. Hanley pulled the ship from the pier, against a flooding tide. We rode at anchor until 0530 next morning, maneuvered out of Thimble Shoals Channel under reduced visibility, at maximum ebb tide and high winds, and were on our way.

The emergency movement turned out to be a drill, part of the joint Army-Navy-Air Force *Quick Kick V*. But for all we knew at the time, it could have been the real thing. In the words of one veteran chief petty officer, "It's worth serving for 18 years just to see a crew turn to the way these men have today in *Forrestal*."

A PLANE SPOTTER'S BUSY DAY IS REFLECTED HERE AS FORRESTAL READIES TO GET UNDERWAY

Reflections on Human Factors

BUILDING SAFETY INTO AIRCRAFT

Third Article in a Series

AT THE AVIATION Contractors and Safety Representatives Conference, sponsored by the U. S. Naval Aviation Safety Center early this year, Mr. Jerome Lederer, Managing Director of the Flight Safety Foundation, Inc., explored some of the problems in safety which the aviation industry faces.

Famed as a safety specialist, Mr. Lederer has served as an aeronautical engineer in the U. S. Air Mail Service, 1926; Chief Engineer for the Aero Insurance Underwriters, 1929; member of the Safety Board, Civil Aeronautics Board, 1940; Director of Training for the Airlines War Training Institute, 1942; Operations Analyst, USAF, and Research Analyst, U.S. Strategic Bombing Survey, World War II. He has been the Managing Director of the Cornell-Guggenheim Aviation Safety Center since it was established in 1950. He has been honored for his work by many organizations, in 1961 receiving the Daniel Guggenheim Medal of Award.

'An expert can become complacent.'

By Jerome Lederer, Director
Flight Safety Foundation, Inc.

Illustrated by
Lt. Neil F. O'Connor, USN

'Make a weight limit—see what happens.'

MY TITLE is "Reflections on Human Factors," and the word "reflections" gives me a great deal of leeway to wander. I'm going to try to look at this problem from the point of view of the design safety teams that the manufacturers are beginning to use. And the theme of my talk will derive from a talk that RAdm. Edward C. Outlaw of the Naval Aviation Safety Center gave at our 1963 seminar in Athens in which he referred to "Accountability" as being the key policy in connection with producing a good safety record.

Except for acts of God, sabotage, metal fatigue, and state of the art, every accident can be traced to human error or human failure. Some of these errors may be intentional. They result from compromise or tradeoffs to achieve some optimum objective. But most of the errors or failures are inadvertent and, insofar as design is concerned, the design safety people in the various organizations are "accountable" for them. From their point of view being held accountable means that they have to define in fairly strict terms, the limits of design for which they are accountable and to indicate those which are beyond their control. Many occurrences in aviation, many accidents, are beyond the control of the designers. Design safety specialists must operate within these limits and also find ways to eliminate their own oversights in monitoring designs for safety. In this connection I did a little soul searching, so later I'm going to report on the goofs that I have made in the past in connection with the design of aircraft.

Monitors of design, the safety specialists, may also be subject to complacency, forgetfulness, anxieties, and other human frailties. How are these people going to be kept on their toes? How are they going to maintain satisfactory relations with the engineers that they are supposed to monitor? Their methods can create tremendous resentment, resentment creates resistance. There'll never be enough design safety people. Therefore they have to do their work by a process of spot checking, and the maintenance of safety alerts among the designers. How can they maintain a cooperative attitude with the people who are actually about to design a malfunction into the airplane, perhaps under economic pressures? I don't know the answers to all these questions.

Murphy's Law applies to the safety experts, too. That is, if an expert can become complacent, he will become complacent. This complacency may appear in the form of missing obvious oversights in design or, after uncovering the oversights in design, conceding to pressure to keep it in without a fight. For example, the purchasing agent who insists on buying the material from the lowest bidder, and thereby sometimes compromises design safety.

Several of the topics that I am about

to discuss have already been mentioned; for example, the problem of the size of an operational or maintenance manual. I propose that in the contract specifications, the weight of a manual be limited to 1/1000th of 1 per cent of the gross weight of the airplane, and see what happens! I've maintained that if the designers were illiterate, couldn't read, they'd design a real simple airplane.

I intend to cover briefly some aspects of human factors, but in the broad underlying sense of its neglect, its need, and its application to the way design safety specialists do their job. I should like to emphasize that air safety is much more than ideology, which often is vaguely defined by clichés, such as "Fly Safely," or "Safety First," or "Be Careful, the Life You Save may Be your Own."

There are several practical reasons for safety. In addition to satisfying moral demands, safety offers the practical advantages of encouraging public acceptance of air transportation; that is, increasing the air travel market. It also reduces the congressional investigations which occur after accidents. It reduces the economic losses caused by accidents. Incidentally, the value of the average airline passenger, the economic loss, is estimated to be $400,000 per passenger. This includes his value to society, to his community, to his employer, to his family. These are the values that an economist would measure rather than an accountant. Of course, the economic factor also applies to military aviation.

A corollary to this economic aspect is the fact that safe, rapid communications achieved through aviation accelerate the creation of wealth. The sooner people meet face to face, the quicker blueprints are exchanged, the faster factories are built, more production appears in less time, and so aviation helps accelerate the creation of wealth. Another reason for the practical significance of safety is mission accomplishment. That is, the passenger arrives to accomplish his mission, which may be important to the nation, such as getting the head of the state or the head of the United Nations or a great scientist or artist to his destination safely. Furthermore, the image and the prestige of a nation are reflected by the technical competence, the organizational ability and

'Passenger's estimated worth— $400,000.'

the self-discipline displayed by the safety of its air transport services. You've heard the opposite where some nations have acquired an uncertain reputation for air safety. This reflects against the nation as a whole. In respect to military aviation, the conservation of manpower and resources and combat readiness are part of mission accomplishment. Accident prevention therefore is a very practical matter.

There is one other very great reason for promoting air safety; it represents the greatest challenge to engineers in the history of transportation safety. It is safer for me to dwell on the concept of responsibility or accountability for safety achieved through human factors in the sense that human error has always been with us, rather than on details of human factors *per se*, the design of the cockpit in detail, for example. Accountability has always been a requirement whereas a modern concept of human factors, that is, designing the machine to fit the psychophysiological needs of man did not arise as a separate discipline until WW II when Adm. Luis de Florez became its apostle.

Of the goofs I have made in the past in human factors, I'd like to mention one. I do this to show how a person, myself, can be blind mentally. I was with the U. S. Air Mail Service in the '20's. We operated WW I converted de Havilland bombers, the single Liberty engine was, of course, in front of the cockpit. We had many fatal accidents, often caused by fires following crash. Experiments were conducted at Wright Field to try to reduce the crash fire potential. Several de Havilland bombers were run down an incline and crashed against a concrete wall. The reason for the fires was found to be the long hot exhaust manifolds that were required on these power plants, similar to the long exhaust manifolds on cars. Very short exhaust manifolds, made of aluminum instead of steel and finned for cooling, were installed. These operated very coolly. When the de Havilland bombers were crashed against the concrete wall with these new exhaust stacks there was no fire.

A set was ordered to try on one of our ships. Our test pilot flew it one morning and said the stacks worked very well. I ordered quite a few of these short, finned aluminum exhaust stacks. How many people can guess where I made my mistake in the human factor? I told you it was a single engine ship with the engine in front. The mistake was that these ships were flown at night and the glare of the exhaust out of the short stacks blinded the pilots. We junked them.

Another area where I goofed was in connection with crash survival. One of our test pilots was worried about the possibility of hitting his head against the cockpit in a crash. We designed a net made of rubber for him to hit his head against, very primitive, of course. Then he couldn't see some of the instruments, so we took that off. Therefore, I was alerted to the problem of crash survival about 1926. Also in 1926 I had advised the air mail pilots that when they had to crash in bad terrain, try to crash between two trees, so that the wings could absorb the energy of the impact, afford them better protection. Then in 1927 I was engaged to get the certificate of airworthiness for a small airplane. This was done. Following this, a lady pilot and her husband came to see me. They said they wanted to buy this airplane for stunt purposes. What did I think of it? I told them I thought it was structurally sound enough to make a good stunt airplane. They bought one and won quite a few medals.

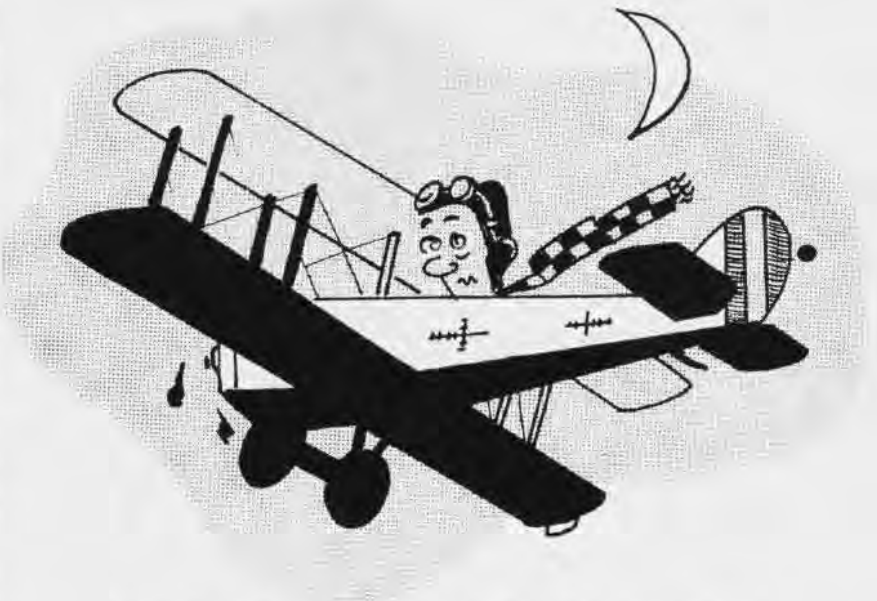
But one day, in a sharp maneuver, the cable slipped off an aileron pulley and the lady pilot crashed. She was badly injured. Her head struck the instrument panel, creating a permanent crease in her brow. I learned that lesson. Of course, guards are now re-

quired. Pulley guards were installed. But it never occurred to me that I should have redesigned the instrument panel for crash survival. Why, I don't know. A matter of thoughtlessness on my part. And this is the way such oversights occur, just plain ordinary lack of brightness or imagination.

In 1929, at an ASME meeting, I heard Jimmy Doolittle say this: "A feature to which insufficient attention is given, is designing and constructing an airplane so that it crashes well. This sounds odd, but many lives have been saved because the cockpit was strong and there was sufficient material between the pilot and the ground to absorb the shock of crashing. This permits gradual, uniform deceleration between the instant of impact and the pilot's eventual coming to rest."

Twelve years passed. I was Director of the Safety Bureau of the Civil Aeronautics Board when Hugh de Haven came to see me on the idea of crash survival. He had analyzed the falls of a large number of people from very high buildings; buildings 13 and 14 stories high where people had fallen and landed on top of automobile roofs, or on tin gutters and had survived. In one case, the man got up and walked back into the building to commit the suicide attempt again. It took Hugh de Haven three or four days to sell me on the concept of crash survival. Finally, he did and we asked our CAB investigators to cooperate with him. A lapse of about 12 years had occurred since the earlier instances back in '26, '27, and '29. It had never occurred to me that crash survival was important as a separate discipline. Why? I feel guilty for not having realized my responsibility here between 1929 and 1941. The reason probably was that I was concentrating on preventing the accident, crash survival was not considered. This completes my discussion on goofs that can be made by some one interested in safety.

THE SECOND topic I wish to deal with is attitudes. I have reconciled my conscience in regard to my personal errors by rationalizing that a large part of my efforts in the late '20's up to the war were devoted to trying to influence attitudes toward safety in design, in operations and maintenance, to show that skill alone will not prevent accidents; that judgment, alertness, apprehension or foresight are also necessary, especially a sense of responsibility to one's fellow man. This is dealing in human factors in the broader sense. In 1951 I prepared a talk called, "The Infusion of Safety into Aeronautical Engineering Curricula." With the help of Dr. Seitz, now with Grumman (who was then with the Office of Naval Research) and Bill Stieglitz of Republic, I tried to sell the universities on giving courses in human engineering to their engineering students. A significant number agreed to do this. That talk contained seven precepts of design for safety. The Flight Safety Foundation used to put these in our "Design Notes." We had to take them out because engineers were inclined to say, "Who are you to tell us about precepts of safety?" That is, we hurt their pride by indicating that we were sitting in an ivory tower telling them about safety; so we removed the precepts. I notice one of them could have been applied in an accident mentioned here in respect to failure of throttle linkage; that is, when the throttle linkage broke, power was lost and an accident occurred. One of the precepts was this: "Failure of a component should not create additional or cumulative hazards."



'The mistake was that these ships were flown at night.'

'Airmen are punished for making a mistake.'

In Adm. Outlaw's talk at Athens, the first point he made was that great advances in air safety must come from the drawing board in the original concept of design and the follow-through on details. And, secondly, a pilot must be held accountable for his actions. Quoting the Admiral: "This accountability is not for the intention but for the deed. The captain of a ship is given honor and privilege and trust beyond other men, but let him set the wrong course, let him touch ground, let him bring disaster to his ship or to his men, and he must answer for what he has done. No matter what, he cannot escape. It is cruel, this accountability of good and well intentioned men, but the choice is that or an end to responsibility and finally, as the cruel sea has taught, an end to the confidence and

trust in the men who lead, for men will not long trust leaders who feel themselves beyond accountability for what they do." We are the leaders in the field of aviation safety; and it is our duty to insist that the best efforts of the men and women in the industry be devoted to the goal of 100% safety in flight. Something of the tradition of the sea becomes part of the tradition of worldwide aviation.

Adm. Outlaw's thought on accountability should be extended to include the producers of aircraft, the designers, the production experts as well as the producers of the environment in which the aircraft operates, the airport, the weather services, communications, air traffic control. This is important because airmen should not be held accountable for conditions imposed upon them, which are beyond the limits of their normal psychological, mental and physiological powers to handle. The files are replete with such instances. The producers, the manufacturers are the ones who should be held accountable for those areas.

Pilot error has been a point of issue for as long as I can remember. Perhaps there should be two types of pilot error. One is the obvious error made through outright carelessness; the other is the "induced" pilot error, the error made by the pilot because of circumstances beyond his control. A study made of a modern air transport by the Royal Aircraft Establishment at Farnborough says, "The cockpit situation is one which would not be tolerated by an industrial organization." This is the environment in which the airline pilot has to operate. The man-made environment could lead to pilot error induced by people on the design board. Should the pilot be held responsible for some other person's mistake? The producers of aircraft are not held accountable for factors beyond their control which modify aircraft design. These include the air traffic control system, for instance, which creates problems in the design of cockpits, causing compromises with safety and with desirable human factors criteria.

It is, therefore, important to consider with considerable care the design safety features for which you, the designer, or the design safety departments are accountable, including the reasons or philosophy by which you will be required to trade safety for expediency, for economics, for politics, for union or management pressures, as well as for mission effectiveness, such as armament or range. In short, design deficiencies may not be due to error but to the force of circumstances. In this context, accountability means explanation rather than punishment. Airmen are often punished for making a mistake; rarely is a producer or engineer or designer punished for making a mistake. To put our thinking on a common basis, omit punishment; the objective, after all, is to avoid repetition of errors, not to punish.

Carl Christenson, Assistant Vice President of United Airlines, formerly Director of Safety for UAL, says in a 1962 AIAA paper that "the real problem before us is that similar defects tend to reappear in subsequent designs." He started his paper by saying that the vast difference between man and machine is that man, not God, is responsible for the machine's origin. This led me to question whether there may be sources of problem areas other than man and the Deity, and on reflection one finds that there are three distinct origins of problem areas—Man, God and the Devil.

- The machine and its systems are developed by man, errors in them originate with him.

- Then the man makes errors; he's developed by God, but with the taint of the devil in him.

- Man acting collectively can be a development of the devil.

The problem area created by man consists of the aircraft and its systems, all its component parts, control of manufacture, its maintenance, performance, noise and all the ground support equipment. Incidentally, I saw a very good definition of "system." System means any entity of interacting, interdependent parts. Then man becomes part of the system he creates. Automation is an attempt by man to replace himself, as "man-made man" is more reliable than the one which God has made.

The second problem area, man developed by God, consists of man's superiorities and inferiorities from the standpoint of his mental, psychological, physiological frailties. Hundreds of studies are available on this and additional studies appear almost every day. The taint of the devil appears in the individual man in respect to laziness, anxieties, envy, vanity, obstructionism, megalomania. It becomes apparent, for example, in the so-called NIH factor, "not invented here," therefore not worth considering.

'The second problem area—man.'

The third problem area is the one created by men collectively for political, economic or personal aims. I credit this to the Devil. It has a powerful effect on the other two and enormously complicates improvements in the man-machine system (you are faced with it in the threats to your privileged communications on accidents); external and internal politics; economics; frictions between associations; social status; punitive measures; nationalism; and all the other areas where men act collectively for personal gain or emotional satisfaction. A good example which illustrates all three is a mid-air collision threat. The problem is created in part by the man-made machine, in part by the visual limitations of God-made man, the pilot and controller; in part by the inadequacy of the air traffic control system, financially controlled by men acting collectively, the Bureau of the Budget, the Congress and, in the former days, by the Department of Commerce. In the mid-50's while air traffic was doubled, the funds required to control it were cut in half. This was due to men acting collectively.

BUT YOU are not here to listen to theories or generalities. What does all this mean to you in a practical way? This returns me to *accountability*. I mentioned before that it seems necessary to consider carefully the design features for which the design safety teams can be held accountable. Now, should a man be held accountable for that over which he has no control, or should he be held accountable if he doesn't know something? I'm sure that design oversights, the Murphys, the confusion of controls, the lack of crash-worthiness are not designed with the intention of causing trouble or fatalities. Either the designer has not been informed or he has made some trade off, or he has succumbed to pressure to deviate from safety. The designer may not be informed because he lacks the great value of direct contact with the user. Nor does he see the severed torsos, the burned breasts, the cracked skulls of the victims of accidents. Nor does he become financially involved in unnecessary costs of maintenance of operations, of design modifications, of damage claims created by his oversights. Because of this lack of intimacy with the results in operation

'There are 13,000 pages of regulations.'

of what he designs, he continues often to make oversights. He does not have time to learn everything he should know about design for safety. Nevertheless, he should feel himself morally accountable for this.

Engineers are supposed to subscribe to a canon of ethics which requires them to give safety prime consideration. He has two ways to satisfy his accountability. He should, of his own volition, try to learn everything he can about the safety aspects of his specialty; and, secondly, he should invite criticisms of his designs by those who have the experience, knowledge and imagination to help him. This brings us back again to the accountability of the design safety teams. Scores of meetings are held every year in which safety and accidents are discussed. This meeting is one. They are attended by a very small fraction of the engineers and designers who do the actual design work, else their time for work would be seriously reduced. It becomes incumbent upon those who do attend to pass the lessons learned down the line and add them to whatever is in the way of a formalized check-list on design safety. I am sure many organizations must be working this out as efficiently as possible.

The design safety teams are especially needed at the interface level, such as the relations of flight operations to ground support systems. For example, three miles from touchdown, the crew of a modern jet transport is required to make 25 functional checks of the equipment in the last 90 seconds. In Christenson's paper, referred to before, he says that the traffic controllers in order to do their job must understand and apply 13,000 pages of regulations, interpretations and information. The airline pilot must likewise know as much, plus the civil air regulations, airplane manuals, navigational data, company rules, and the voluminous interpretations needed to place them in understandable language and context. It is difficult to avoid such complexity in favor of simplicity. These are general terms, complexity and simplicity; I've never seen them really defined. This would be a good subject for a seminar, for these terms require clarification.

IN THE AREA of complexity, I have accused designers of being largely responsible for the introduction of so much paperwork into aircraft operations. One reason for this is that a designer or engineer is taught to learn by reading reports and books and to provide information in the same way. He feels that everybody else is equally able to read and write and will take the time to study. He is accustomed to doing his job by reference to literature, and he tends to transfer this way of life to the cockpit and to maintenance. One difference between an airman and a designer in using literature is that the designers are not so limited in time or in working environment to use them. Opportunities for error are in direct proportion to the number of pages in the operation and maintenance manuals. The need to perform in a minimum time in an adverse environment is one of the most important human factors in cockpit design and the one most often neglected. Perhaps there should be a contract specification, as I said before, that says that the manuals required to safely operate and maintain an aircraft shall not be more than 1/1000 of one per cent of the weight of the aircraft. In any case, the safety design team cannot ignore accountability for the paper work required to operate the aircraft. Has this ever been considered? Design safety teams should look at design details, but do you ever check the manuals to see how they can be reduced in size or scope or improved in readability? This pressure would put the onus on the designers to provide for simplicity in the design of the aircraft.

THE CONCORD SQUADRON IS LED BY THE DESTROYER FRANK KNOX, FLANKED BY SHELTON AND BLUE. HASSAYAMPA AND CVA-31 FOLLOW

NAVY AMBASSADORS, THE CONCORD SQUADRON

A FIVE-SHIP TASK FORCE, consisting of the *Bon Homme Richard*, the destroyers *Sheldon*, *Frank Knox* and *Blue*, and the fleet oiler *Hassayampa*, recently completed a six-week goodwill cruise in the Indian Ocean. Commanded by RAdm. Robert B. Moore, whose flagship was the *Bonnie Dick*, the ships visited such ports as Diego Suarez, Madagascar; Mombasa, Kenya, and Aden.

In every port the Americans visited, the sailors were welcomed enthusiastically. They entertained their hosts with band concerts, Marine drill exhibitions, athletic events and open house celebrations. The Yanks voluntarily renovated playground equipment in one city, visited and painted a nursery school in another, extending the People to People program, often through Project *Handclasp*, in each city.

KENYA LEADER GREETS RADM. MOORE

BAND TAKES INTERMISSION IN MOMBASA

At the end of the cruise, VAdm. Thomas H. Moorer, Commander Seventh Fleet, was delighted with the success of the Indian Ocean voyage. He messaged RAdm. Moore:

"I am most impressed by the exceedingly fine reports from many sources on the splendid performance of the 'Concord Squadron.' I wish to add my own personal expression of appreciation and admiration for the superb performance and discipline afloat and ashore of all hands during this period. Your performance was exactly as expected, but it is always a source of great pride and confidence to observe a forward echelon of the Seventh Fleet to be both a ready fighting force and an effective representative of the United States. Well done."

At the conclusion of the cruise, the ships returned to routine duties with the Seventh Fleet. But in their wake was a warm memory of friendly Americans in an area of the world not frequently visited by U.S. Navy ships.

IN MADAGASCAR, THE TWIST IS POPULAR

Navy in 'Desert Strike'

Airlifts Army Men for Maneuver

In a two-week preparation for Exercise *Desert Strike*, MATS aircraft lifted the 101st Airborne Division from Fort Campbell, Ky., to several staging bases at the edge of the assault area. The exercise was a mammoth maneuver designed to give some 100,000 Army fighting men the opportunity to engage in "battle" over a 13-million acre region of California, Nevada and Arizona Mojave Desert area. Three thousand of these troops were flown to NAS POINT MUGU.

Sixteen flight crews of the Naval Air Transport Wing, Pacific, based at Moffett Field, joined Air Force MATS crews in a continuous shuttle across the U.S. for the ten-day deployment phase of *Desert Strike*. They carried the Army troops and their 1400 tons of equipment to Point Mugu.

Navy's C-130E *Hercules* were part of an armada of 86 MATS transports flying a total of 700 missions during the exercise. The first of 147 scheduled flights into Point Mugu arrived with 11 tons of cargo, followed shortly by an aircraft with the first 60 troops. A steady round-the-clock average of 15 arrivals and 15 departures were logged each day at Point Mugu.

In addition to the flight crews, about 175 officers and men of the Wing were assigned to Point Mugu as the MATS Airlift Control Force for the exercise. This team was responsible for the operational and maintenance control of all aircraft missions scheduled in and out of the base during the airlift.

Following the deployment phase of the exercise, the airlift team and flight crews returned to Moffett Field and units of the Air Force Tactical Air Command moved in to re-deploy the troops to the "battle area."

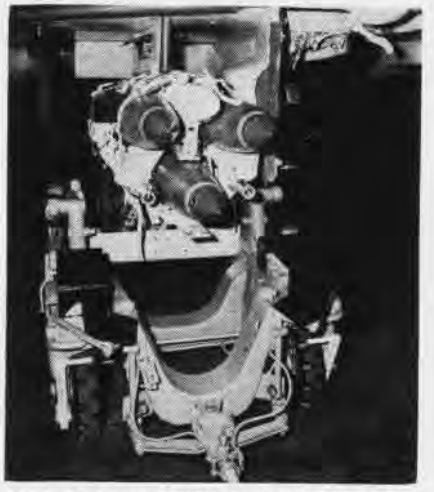
Bomb Rack Film Produced

Shows Improved Loading Methods

A BUWEPS unit, Shipboard Weapons Installation (RSWI), effectively has produced a motion picture showing developments and improved procedures in bomb loading techniques. The film emphasizes multiple bomb racks and various modifications incorporated in them which ease the physical strain on ordnance handling crews both ashore and afloat. Most deployed carriers use the equipment depicted in the film.

Entitled "Multiple Bomb Rack Re-arming" (MN-9740a), the movie is 17-minutes long and shows loading sequences with crews using the Aero 62 and 63 adapters, the Aero 33 bomb truck and the 12B and 21A skid vehicles. In the shipboard sequence, weapon movements are traced from an aircraft carrier's magazine, through elevators to the mess deck and finally up to the flight deck and the airplanes.

Today's emphasis on the carrier's role in conventional warfare has necessitated research and development in loading vehicles designed to get more weapons to the aircraft expeditiously and safely. RSWI is making a steady effort to streamline loading methods.



AERO 33 BOMB TRUCK AND MULTIPLE RACK

VAP-61 CREWMEN, *based at NAS Agana, Guam, load 2700 pounds of food donated by the squadron for 8000 Fiji Islanders left homeless by torrential rains. Other Guam units contributed 2300 pounds of supplies which were carried in two VAP-61 RA-3B's 3000 miles to Nandy Airbase and distributed by the United Kingdom Colonial Government. Squadron C.O., Cdr. Hal B. Stewart, and his executive officer, Cdr. D. A. Woodard, made the Skywarrior flight in nine hours.*

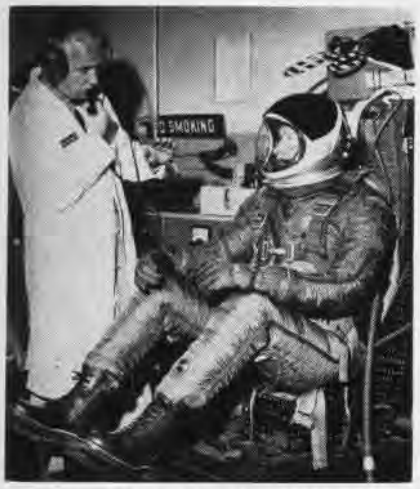
Carpenter in Sea Lab I

Astronaut Joins Team Underwater

The Department of Defense and NASA have announced that Astronaut Scott Carpenter will participate in the Navy's Project *Sea Lab I* off the coast of Bermuda this July. LCdr. Carpenter will join a four-man group for the last week of a three-week experiment in a 40-foot undersea laboratory submerged 192 feet.

The Navy had indicated its desire to have technical assistance from NASA in the *Sea Lab* program. A personal interest in exploring man's capabilities in an underwater environment led Carpenter to volunteer his services. Capt. George F. Bond, MC, is in charge of all physiological and psychological aspects of the project and plans to utilize Carpenter's abilities as an observer in a hostile environment.

Dr. Bond pointed out that by participating in the project, Carpenter will be one of the early pioneers to experience the two most hostile environments known to man, space and underwater.



CHECKING RADM. ARNOLD'S PRESSURE SUIT

Admiral Under Pressure

Is 2000th Trainee at North Island

In an explosive 350 milliseconds, the simulated altitude of the pressure chamber soared from 30,000 to 60,000 feet, filling the room with clouds of water vapor. The instructor's voice crackled through the intercom to the man seated in the chamber. "Admiral," he said, "without the pressure suit you're wearing, you'd be dead."

The man in the chamber was RAdm. Jackson D. Arnold, Material Officer on the staff of ComNavAirPac. The veteran Naval Aviator was completing full pressure suit training at the Aviation Physiology Training Unit at NAS North Island, San Diego. He was the 2000th trainee since the unit was established in 1956.

Such dramatic lessons as explosive decompression are standard procedure for nearly 300 pilots per year who are fitted with and indoctrinated in the use of the full pressure suit (FPS).

Adm. Arnold's many responsibilities as Material Officer include the maintenance, repair, modification and readiness of Pacific Fleet Naval Air Force aircraft and related materials. He signed up for the concentrated two-day course at the Aviation Physiology Training Unit to experience first hand the environment in high-performance aircraft.

The evironment he experienced was an external pressure of 3.4 pounds per square inch (as against the normal 14.7 at sea level) and an atmosphere of 100% oxygen. This is the controlled condition the Mark 4 FPS automatically maintains at those altitudes of 35,000 feet and above.

In the suit Adm. Arnold was wearing, he would have been comfortable on the moon. Lacking only the heat-reflecting silver coating, the FPS is the same as the space suit astronauts use.

NAO's Win High Marks

Best Averages in School History

Ensigns David J. Coker and Dale V. Clark achieved the highest grades recorded at the Basic Naval Aviation Officers School in Pensacola when they graduated in April. The best previous academic average was made by Ens. W. C. Ellis in 1961 when he scored 65.93. Ens. Coker's final grade was 68.20 while Ens. Clark recorded a 65.95 average.

Ens. Coker is a product of the Navy Enlisted Scientific Program. He is a graduate of the Massachusetts Institute of Technology with an M.A. degree in Aeronautics and Astronautics. He has been assigned to NAS Glynco for radar intercept officer training. Ens. Clark has been ordered to NAS Corpus Christi for aircrew ASW instruction.

Parachute Inventor is Dead

Gave his Patent to War Department

Allen C. Scott, noted manufacturer and inventor of the modern parachute, died in Omaha in May at the age of 81. Until recently, Mr. Scott was president of the Scott Tent and Awning Company, the largest of its particular kind in the country.

During WW's I and II, the Scott firm was a major supplier of tentage and other canvas products to the Armed Forces. It was in 1918 that Mr. Scott arrived in Washington with a new idea for the improvement of the crude parachute then in use. His invention consisted of the now familiar small pilot chute which, opening first, hauls out the main parachute, and a harness which strapped the chute pack to the airman's back.

Over the years, modifications were made, but the basic design remained the same. Mr. Scott made a gift of his patent to the War Department, for which he was cited by the government, but his main satisfaction was that his invention saved many lives.

VT-7 Records High Mark

Aircraft Availability Best Yet

Training Squadron Seven at NAAS Meridian recorded a 90.17 per cent aircraft availability rate in 1963. Believed to be a record for a T-2A squadron in a single year, the figure marks an increase over the 87.04 per cent rate in 1962. The new high is especially impressive since availability dropped to 78 per cent in November when the *Buckeyes* were grounded while work was done on the aircraft fuel system.

This high degree of maintenance helped the jet pilot training squadron fly 27,712 hours and train 238 students during the year. Assigned an average of 53 T-2A's, VT-7 is a part of Naval Air Basic Training Command.

VT-7 PERSONNEL STUDY GRAPH SHOWING 90.17 PER CENT AIRCRAFT AVAILABILITY

HIS FAVORITE VIEW *was taken in the Arctic during Operation Micro-X 50. Here, three men aboard the SS Perch reach for the guardrail as the submarine saws through a field of pancake ice. At the time, Kazukaitis was aboard the icebreaker USS Burton Island in Alaskan waters.*

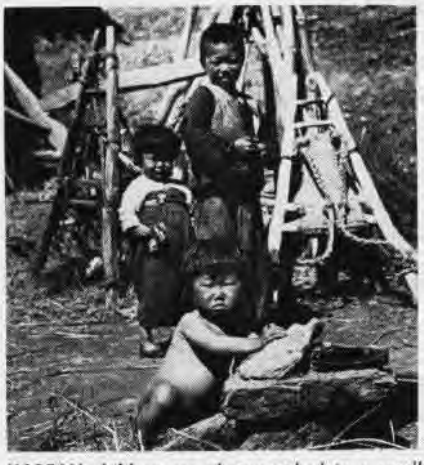
Official U.S. Navy

PHOTOS BY F. KAZUKAITIS, PHC

By Scot MacDonald

NAVY PHOTOGRAPHERS are a sturdy breed. In the pictorial recording of Naval Aviation, they often endure hardships, confront dangers, and put in many long, wearisome hours. In addition to "nuts and bolts" photography, they deal with the civilian press and prove themselves professionals bucking a highly competitive field. Until a few years ago, their contributions were anonymous, cloaked by the rubber stamp, "Official U.S. Navy Photograph." Today individual credit lines are permitted.

In recognition of the extraordinary work they have done and continue to do, NANEWS presents here a few highlights in the career of one naval photographer, Frank Kazukaitis, PHC, a frequent contributor to this magazine, as well as the nation's press.



KOREAN *children are photographed in a small village outside Munsan Ni in conflict lull.*

During the normal course of his career since entering the Navy in 1945, he has operated in the Arctic, in Thailand, in Korea, and in the Antarctic, in addition to "routine" assignments. He has served in such diverse squadrons as VJ-61 and VX-6, and is as much at home in the AJ-2P *Savage* launching from the deck of an aircraft carrier as he is in a C-130 *Hercules* lifting from a snow runway in Antarctica.

In 1951, while awaiting transportation for a return trip to Korea, he learned that three of his official U.S. Navy photos were then on exhibit in New York's Museum of Modern Art. He endured tent life for 26 months in

alternately cold and muddy Korea, at United Nations Command Headquarters, documenting the negotiations from their beginning in Kaesong down through the final truce talk. The UN civilian press corps chose him to represent them at the historic signing of the POW repatriation agreement.

When the government of Thailand requested aerial photos of their country for mapping purposes, Kazukaitis was assigned to Detachment Bravo of VAP-61 in 1956 and '57. At the end of the flights, he toured Bangkok and the nearby countryside, taking color slides. Some of the most vivid views are of local temples, called wats.

Restless after the photomapping assignment, he volunteered for Operation *Deep Freeze* and joined the VX-6 squadron for the 1958-59 season, wintering over at McMurdo Station. He stayed with this squadron for two more years, then joined the staff of Commander, U.S. Navy Support Force, Antarctica, now RAdm. James Reedy.

He is a furious worker in the field, unfazed by fatigue and unimpressed by long working hours. The first time he encountered Capt. William H. Munson, then commanding VX-6, the captain was stunned. "Who is he?" he was heard to mutter. "Is he crazy?" Kazukaitis was waist deep in the icy waters off Cape Crozier, 4x5 camera in hand, getting a better view of penguins entering the water. He wore no special clothing. When he emerged from the water, a helo crewman approached him. "What's the matter, Kaz," he asked, "you got cold feet?" Kaz trudged to the 'copter. "Not *just*," he answered, "it goes a little higher."

ROK INTERPRETER *and Colonel, RAdm. C. C. Hartman and his Chief of Staff aboard USS Helena in 1950, a Kaz picture shown in N.Y. museum.*

BOMBED-OUT *church in Wonsan, Catholic Tukone Monastery, was burned by fleeing North Koreans. This picture was also on exhibition.*

GEN. MARK W. CLARK *is photographed while signing the armistice agreement in Korea.*

WOMEN HARVEST *barley in a small field directly behind the conference building used by delegates of the truce talks at Panmunjom.*

CHEERING MARINES *are caught by Kaz in the excitement of a football game after returning from the front lines in Korea to a reserve unit.*

INSIDE BACK *cover of June 1961, a page normally assigned to squadron insignia, pointed up communications problems caused by sun spots.*

INSIDE FRONT *cover of September 1963 showed vapor trails from VX-6 helicopter as it flew over the bay ice extension of the Ross Ice Shelf.*

FRONT COVER *of March 1963 issue showed an unusual view of helicopters on field trips.*

Cover Photographer

NAVAL AVIATION NEWS

IN VIEWING photographs for this spread—gathered from our own files and from the Navy's Photographic Center—the editors of NANEWS saw many familiar pictures credited to "F. Kazukaitis, PHC."

Shortly after the project got underway, cover photographs were recognized in the large collection. A suspicion grew and, after brief research, was confirmed: through the years, Kaz had succeeded in garnering each of the four covers of *Naval Aviation News:* the front cover, the inside front, the inside back, and twice, the back cover. No other photographer, military or civilian, had succeeded in doing this throughout the entire history of the publication.

Each of the pictures was of high technical quality, imaginatively composed, and meticulously printed to bring out full tonal ranges. There was visible proof of a professional's "eye for the eye," a photographer's ability to "see" a picture that, when printed, would be pleasing to the eye of a reader, tell a story, and immediately capture interest.

To an Art Director who views thousands of pictures submitted each month for possible publication, the photographic competition is keen. Thus Kazukaitis' success is no small feat.

BACK COVER *of January 1960 recorded a proud moment at the completion of a successful record-breaking flight during a research program.*

BACK COVER *for the July 1960 issue was taken while photographer Kazukaitis waded waist-deep in icy waters off Cape Crozier, Antarctica.*

The Picture Story is a Challenge . . .

AT NEW ZEALAND, *a C-130 prepares to break Antarctic isolation to airevac an ill man.*

JATO BOTTLES *are wired to Hercules at McMurdo for flight to isolated Byrd Station.*

SNOW *accumulation is swept off horizontal stabilizer by crewman before launching.*

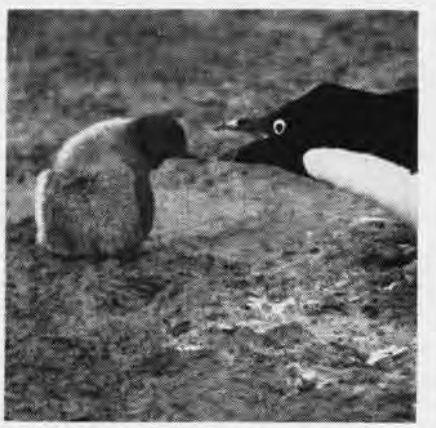
HAZY WINTER MOON *at McMurdo helps illuminate "ground" area as Soviet scientist Leonid P. Kouperov is readied to board the Hercules.*

EN ROUTE *to civilization and medical attention, Kouperov enjoys a news poster from New Zealand heralding the precedent-making Navy flight.*

. . . To a Photographer and a Penguin

IN A SERIES *of 21 photos, Kaz recorded a hazardous day in the life of a penguin.*

ABANDONED *by its parents, this chick forlornly surveys its nest of cold pebbles.*



FOSTER PARENTS *are hard to find. Eventually true parents returned for happy ending.*

MARINE BIOLOGIST *John H. Dearborn is photographed in silhouette by Kaz as he sets a wire fish trap during scientific studies at McMurdo.*

THREE MEN *on Observation Hill at McMurdo Station stand by wooden cross erected in memory of Capt. Robert Scott and his companions.*

A MEMBER *of the VX-6 Para-Rescue Team climbs out of an ice cave during training exercise. The climb took nearly a minute each foot.*

SHARP SHOOTING *captures this subject unawares during a relaxing off-moment. He sinks into a solution to Antarctica's shower problem.*

A FROSTY *welcome is caught by Kaz at South Pole Station when C-130 broke isolation.*

MEMORABLE *closeup of a dangerous skua and chick was taken after a three-hour effort.*

★ ★ ★ ★ ★

WANTED: professional photographs of Naval Aviation and related activities. Must be of quality of this and preceding four pages. Submit b&w glossy prints to Naval Aviation News, Navy Department, Washington, D. C., 20360.

KAZUKAITIS *poses for fellow photographer during winter night at McMurdo Station.*

THE MAKING OF AIRBORNE NAVIGATORS

AT NAS CORPUS CHRISTI, Training Squadron 29 provides airborne navigation instruction for Naval Aviators and Naval Air Observers. Some 50 officers and 225 enlisted men accomplish the mission. The faculty-officer instructors are aviators and NAO's with a wealth of navigation experience gained from varied assignments with operating squadrons.

VT-29, commissioned May 1, 1960, is one of 11 squadrons in the Naval Air Advanced Training Command. It has flown 63,694 accident-free hours through March 31, 1964 and received the Chief of Naval Operations Safety Award for fiscal year 1963. The squadron's sixth and present commanding officer is Cdr. L. M. Rayburn. His unit, like others, comes under command of RAdm. F. A. Brandley, CNAVanTra.

STUDENT (RIGHT) TAKES A SEXTANT READING

INSTRUCTOR IS ON HAND READY TO HELP STUDENTS DURING A TRAINING FLIGHT LESSON

On each training flight—there are approximately six such flights a day—three instructors are needed. They assist the novice Magellans of the air in procedures and computations as needed.

Training Squadron 29 has eight C-47 *Skytrains* and ten T-29 *Convair* aircraft, sometimes referred to as "flying classrooms." These aircraft have been modified, so that what originally were cargo-passenger airplanes are now airborne navigation trainers. Individual desks, extra sextant mounts, extra driftmeters, and individual flight instrument repeaters have been installed so that each student has ready access to them. There are usually six students per aircraft.

The small class in flight enables the instructor to give individual attention to each student. Furthermore, the in-flight training hours give the new navigators the necessary experience and confidence they should have in the skill they are acquiring.

VT-29's enlisted men serve as crewmen on these flights, maintain the aircraft and support the administrative needs of the squadron. Aircraft maintenance is outstanding. A night check crew meets incoming night flights and fixes minor discrepancies that have occurred.

Of the nine different types of Naval Air Observers, the most common are NAO(N) — navigation, NAO(S) — antisubmarine warfare tactical coordinator, and NAO(C)—airborne combat information center. An NAO who satisfactorily completes the VT-29 syllabus, is designed NAO(N) and has earned the right to wear the Naval Air Observer wings of gold.

Upon graduation, NAO's go to operational squadrons. NAO(N)'s are in demand by all operational long-range aviation Fleet activities—patrol, heavy attack, transport and early warning squadrons. VT-29's mission has increased tremendously with the introduction of the NAO program.

Each student undergoing training in VT-29 flies at least nine flights if he is an aviator, or 13, if he is an NAO. In the flight phase, he also receives 19 hours of flight support lectures which cover aircraft weight and balance, in-flight emergency procedures, howgosit or fuel control, and practice problems. Some of the flights are day flights which stress daytime navigational procedures; others are flown at night stressing night navigational procedures.

After each flight, the students are individually debriefed by the instructor. The instructor reviews the navigation log and chart for procedures used and possible errors. Each entry is checked for accuracy and correctness. Errors are pointed out and correct methods are explained. Suggestions in improving technique are also offered. This comprehensive debrief is an excellent instructional aid in the navigation learning process. It will normally take an instructor at least an hour per student for debriefing; therefore, each instructor usually works from 10 to 12 hours per day.

SELECTED AIR RESERVE

REGULARS HELPED THE RESERVES *when one plane crew of VP-45, NAS Jacksonville (kneeling front) gave familiarization flights in P-3A Orion to VP-815 crews at NAS Twin Cities.*

WHEN B. F. WHITLEY, *AKC (left) retired, his twin brother John attended the ceremony.*

Replacement Transports Assigned

C-118 transports are in prospect for Reserve units. The ones being flown by MATS are being replaced, and as the replacements arrive, 27 C-118's will be turned over to Weekend Warrior squadrons.

Of the 27, all but eight are ex-Navy craft; the rest were originally USAF aircraft.

The first 12 C-118's have been distributed as follows: three each to NAS GLENVIEW and NARTU ALAMEDA; and two each to NAS NEW YORK, NAS WILLOW GROVE and NARTU JACKSONVILLE.

The remaining 15 C-118's will be assigned as they become available. It is estimated that by July 1, 1965, all 27 will be in use by Reserve units. They replace C-54 aircraft which have been in service over 20 years.

Heavy demands are placed on the Reserves' transport aircraft. First in priority is the training of flight crews assigned to the 57 transport squadrons. Two-thirds of the available aircraft flight hours are absorbed in this way. Other responsibilities include:

- Airlifting 12% of the Naval Air Reserve's 28,000 personnel to weekend drills from outlying areas.
- Airlifting approximately 90% of the Reserve's 227 operating squadrons to and from their 14 days annual training duty sites, usually Fleet locations.
- Transporting approximately 6500 Reservists annually to special technical training schools.
- Meeting other transportation needs such as Naval Academy and NROTC Midshipmen summer cruises accommodated annually.

In order to fulfill all these requirements, the veteran aircraft of the Naval Air Reserve are each being currently flown 104 hours per month. Such utilization compares favorably with tactical support aircraft assigned to the Regular Fleet.

A Welcome for Regulars

It was "Welcome aboard, partner" when Air Antisubmarine Patrol Squadron 45, based as NAS JACKSONVILLE, Fla., landed at NAS TWIN CITIES, Minneapolis, to introduce the *Orion*. LCdr. Morton Eckhouse headed the visiting crew.

The VP-45 men arrived with the newest, hottest aircraft in the antisubmarine program, the four-engine P-3A *Orion*. They were welcomed by Capt. W. S. Griffin, NAS Executive Officer, LCdr. Gerald R. Nelson, C.O. of VP-815, and LCdr. R. C. Fenner, VP Flight Training Officer at the air station.

The Regular Navy men had given up their weekend off to make the flight and work with the Minnesota squadron. The Minnesota Reservists had the opportunity to meet the representatives of the Regular Navy squadron they would join or augment in the event of a national emergency and to inspect the *Orion* which their squadron would fly were it reactivated.

VP-815 was briefed on the P-3A and during a brief flight witnessed a demonstration of its capabilities.

The REAL Chief Retires

The loudspeaker at LOS ALAMITOS played Auld Lang Syne. The Chief Petty Officers stood at attention. The Captain called out: "Chief Whitley, front and center." From the ranks stepped two chiefs exactly alike.

The Captain said, "Will the REAL Chief Whitley step forward?" They both did. It was all in fun, and for Benjamin F. Whitley, Chief Aviation Storekeeper, retirement had come.

Twenty years ago Ben and John W. Whitley left Texas to join the Navy. They were trained together as storekeepers and served together at NAS NORTH ISLAND from 1944 to 1946.

In 1946 Ben went on duty while John returned briefly to civilian life. John is now assigned to a training squadron in Kingsville, Texas, and has two more years to serve before retirement.

The plan to have John come to Los Alamitos for Ben's retirement was a well kept secret, and the surprise was complete.

Fast Boat Ride

RAdm. George P. Koch, Chief of Naval Air Reserve Training and a veteran Naval Aviator, sped across Seattle's Lake Washington at 140 miles-per-hour-plus aboard the unlimited hydroplane *Miss Bardahl*, piloted by Ron Musson. The accelerated water cruise took place after the admiral reviewed more than 1600 Naval Air Reservists during NAS SEATTLE's annual Military Inspection. RAdm. Koch's ride on the *Miss Bardahl* qualified him for membership in hydro racing's elite "100 MPH Club."

RADM. G. P. KOCH *(R) thanks Ron Musson for ride on a hydroplane on Lake Washington.*

Gifts for Morocco

When Reserve Squadron 734 from NAS GROSSE ILE arrived at Kenitra, Morocco, they brought with them $2500 worth of medicine, books and magazines for the Moroccan people.

The squadron's two-week training duty was spent with Fleet Tactical Support Squadron 24 at NS ROTA, Spain.

The gifts were delivered to Capt. Bernard McLaughlin, Chief Staff Officer to the Commander, U.S. Naval Activities, Morocco, by Reserve Cdr. J. D. Stanlake, the squadron's Standardization and Training Officer.

CAPT. DURIO, *C.O., NAS Atlanta, pins Wings of Gold on Kit Wheeler, Auburn Univ. co-ed.*

'Miss Navy Wings of Gold'

Kit Wheeler, a petite Auburn University co-ed, was named "Miss Navy Wings of Gold" at NAS ATLANTA. She was pinned with the official Navy wings and given a bouquet of red roses.

Capt. J. N. Durio, station commanding officer, did the honors. The Naval Air Training Choir from Pensacola took part in the ceremony sponsored by the Naval ROTC at Auburn and NAS ATLANTA.

Bouquets and miniature copies of Navy wings were presented to finalists Chris Aken, Milla McCord, Dinah Armstrong and Randa Vinson, all students at Auburn.

Navy Building Dedicated

The wife of Capt. J. J. Hinman, III, Commanding Officer of NAS NEW YORK, dedicated the new Fire and Aircraft Rescue Center at ceremonies recently held at the station.

The honor guest at the dedication was Fire Commissioner for the City of New York, Edward Thompson, who praised the alert and ready assistance the men at the air station's Fire and Rescue Center had always given local civilian fire departments. Also participating in the dedication were Cdr. Louis S. Berry, Operations Officer, and Fire Chief F. X. Martino.

Training in Maine

Cdr. R. W. Roehrig, Commanding Officer of VP-836, reported his squadron aboard for orders to the Commander Fleet Air Wing Three, NAS BRUNSWICK, Maine. Capt. Jack C. Young welcomed Reservists arriving from New York for two weeks duty. VP-836 flew regular patrols and carried on various antisubmarine exercises with VP-23, the acting host and evaluation squadron. Classroom instruction and simulator training in the current ASW systems were provided by Fleet Airborne Electronics Training Unit, Det. 1. After 203 hours of flight time, VP-836 returned to NAS NEW YORK, its home base.

Awards for Heroic Airmen

Navy decorations have been approved for six Naval Air Reservists for their part in rescue operations December 29 at the Hotel Roosevelt, Jacksonville, Fla., during the post-Gator Bowl fire disaster *(Naval Aviation News*, February 1964, p. 12).

CAPT. JACK YOUNG, *NAS Brunswick C.O., greets Cdr. R. W. Roehrig and VP-836.*

LCdr. James P. Spillis and Lt. Ural W. King will receive the Navy's Air Medal. Cdr. W. W. Loy, D. W. Clark, Airman, and H. E. Gulden and R. A. Meyers, both AD1's, will receive the Navy Commendation Medal.

Eight persons were airlifted from the roof of the burning hotel by NARTU JAX helicopters.

Three Chiefs in One Family

Some families are known for politics, others for a succession of actors, still others for financial skill. But the Shields of Kansas have another distinction: three Chief Petty Officers in the family.

Jim Shields, a Personnelman First Class at NAS LOS ALAMITOS, was promoted to Chief in April, thereby joining his two brothers in that rank: Robert Shields, ATC, at the same station, and William Shields, YNC, at the U.S. Naval Air Station, Olathe, Kan.

AT SEA WITH THE CARRIERS

PRIDE *in winning an AirPac Battle Efficiency E is manifested by the men on CVA-63 deck.*

USS TICONDEROGA *with Carrier Air Wing Five aboard, departs Southern Californian waters on first leg of her voyage across Pacific for WestPac assignment with the 7th Fleet.*

PACIFIC FLEET

BENNINGTON (CVS-20)

"This will always be one of my more memorable carrier landings," said Ltjg. Lawrence H. Price, one of the "Restless Tigers of the Pacific," VS-38, in the *Bennington*. This landing was the carrier's 78,000th and his 116th. Ltjg. Price was piloting an S-2E *Tracker* at the time. The squadron is homeported at NAS NORTH ISLAND.

CONSTELLATION (CVA-64)

While *Constellation* was on maneuvers off the coast of Southern California, Cdr. Eugene V. Crangle, commanding VA-146, logged the carrier's 23,000th arrested landing in an A-4C *Skyhawk* during night ops.

CORAL SEA (CVA-43)

Change of command ceremonies were conducted aboard *Coral Sea* when RAdm. David J. Welsh, retiring, turned responsibilities of ComFAir Alameda to his former Chief of Staff, Capt. Keith E. Taylor. At the same time, Capt. John B. Honan assumed duties as ComFAirWings, Pacific. Capt. Pierre N. Charbonnet, Jr., commanding the carrier, hosted.

Ltjg. George W. Schweitzer of VS-41 recorded the carrier's 128,000th arrested landing aboard, in an S-2E.

BEFORE CARRIER *left drydock, a Ranger photographer caught this arresting view.*

KITTY HAWK (CVA-63)

Paint brush in hand, a *Kitty Hawk* crewman put the final touches on an E on the carrier's superstructure and shortly thereafter over 500 of his buddies posed on the forward flight deck, forming another E for an aerial photograph. This marked the carrier's battle efficiency award, in addition to separate E awards given her Air and Communications departments.

RAdm. William F. Bringle, first Commanding Officer of the *Kitty Hawk*, has returned to the carrier for duty, this time as ComCarDiv Seven. He relieved RAdm. Thomas W. South, II. The air reverberated with the cracks of 13-gun salutes during ceremonies aboard.

Completing an 11-month tour aboard, Capt. Horace H. Epes, Jr., turned over command of the carrier to Capt. John L. Butts, Jr. Before departing in a C-1A *Trader*, he marked the 15,000th arrested landing aboard since taking command. The landing was made by Cdr. Joseph J. Rezzarday, OinC of VAW-11's Detachment

Charlie, in a Grumman E-1B *Tracer*.

While *Kitty Hawk* anchored in Hong Kong Harbor, an engraved steel plaque was laid in the flight deck to commemorate last year's visit to the carrier by the late President Kennedy. The plaque is inscribed: "In this spot President John Fitzgerald Kennedy addressed the officers and men of the United States First Fleet on June 6, 1963."

Recently, a claim was confirmed by RAdm. Russell Kefauver, CTF-73, when he wrote the ship, acknowledging as a record a new Unrep (underway replenishment) time for the Seventh Fleet. The record was made when a total of 11,015 barrels of JP-5 were transferred to *Kitty Hawk* from *Kawishiwi* (AO-146) at a rate of 8673 barrels per hour. This is 209 barrels more than the previous high and is a new record of AO-JP-5 (double hose) in the Seventh Fleet. Later, in answering a request from *Preston* (DD-795), 4000 gallons of fresh water were transferred. Eleven fire hoses had to be rigged for this transfer to the destroyer.

MIDWAY (CVA-41)

Airmen Gerald Hanley and Lyle G. LePage of *Midway* are modest men. When they rescued a little girl from drowning at the Yokosuka waterfront, they kept quiet about it. It was not until the carrier was far at sea that their own Division Officer found out about it. In fact, the city of Yokosuka had by this time learned of it and when the carrier returned, the still modest airmen were feted to a heroes' welcome.

The Yokosuka police chief commended them and requested a special citation from the Kanagawa Prefecture Government for the men. The story was carried by the wire services and appeared in numerous publications.

In the arrested landing department, *Midway* reports the logging of her 119,000th and 120,000th. The first was made by Lt. Don V. Hanna of VF-21 in an F-4B *Phantom II*. The last was made by Ltjg. William Newman of VA-22, in an A-4C *Skyhawk*.

After a week in Sasebo, the carrier headed south for Subic Bay, her last Far Eastern port before heading for home port, NAS ALAMEDA.

TICONDEROGA (CVA-14)

The first Pacific Fleet *Crusader* squadron to be equipped with rocket and bomb air-to-ground capability is VF-51 aboard the *Ticonderoga*. The squadron now carries *Zuni* rockets in addition to its standard 20mm cannon mounted in the forward fuselage.

VF-51 began testing the rockets in February at their home base, NAS MIRAMAR. During a recent fleet exercise, squadron aircraft, using the rockets, launched highly effective strikes against simulated enemy-held positions in the California desert.

Before receiving the *Zunis*, the *Crusaders* were used primarily as air-to-air interceptor fighters. Their primary weapon was—and still is—the *Sidewinder* heat-seeking air-to-air missile.

Ticonderoga is now on an eight-month deployment with the Seventh Fleet in the Far East. En route, she underwent her annual Operational Readiness Inspection at Hawaii.

Before leaving San Diego, the carrier took aboard 2000 cubic feet of school books to be distributed in the Philippines under Project *Handclasp*. She picked up an additional 10,000 books at Hawaii.

RANGER (CVA-61)

Readers of *The Shield*, *Ranger*'s newspaper, did a double-take when they got to the last page. It showed a large picture of the carrier underway and sported the headline, "Ship's Secret Speed Gear Revealed." The caption read: "In what may be the first photograph taken of the carrier that reveals the new gear she has received for high-speed maneuvering, *Ranger* is shown on a secret speed run as the latest in navigational equipment gets a tryout."

Close scrutiny of the picture showed the artfulness of the photo lab technicians. Two unfurled "canvases" clung to the carrier's mast and a lonely sailor manned a giant "rudder" at the ship's stern.

LCdr. Dale E. Evans of VF-92 landed an F-4B *Phantom II* aboard, the carrier's 58,000th landing.

PRINCETON (LPH-5)

Capt. Paul J. Knapp relieved Capt. John H. Boyun as commanding officer of the *Princeton* when the amphibious assault ship was in Subic Bay, P.I.

SOMEWHERE IN THIS *celebrating crowd, Capt. H. H. Epes, C.O. of CVA-63, congratulates Cdr. Rezzarday for making 15,000th landing.*

THE SUBMARINE SEAFOX *was alongside CVS-20 so that RAdm. Turner F. Caldwell could present dolphins to four of the submarine's crew.*

ORISKANY (CVA-34)

Two departments in the *Oriskany* won the ComNavAirPac E awards as a result of Fleet-wide competition. The E's were given to Operations and Supply departments.

ATLANTIC FLEET

ENTERPRISE (CVAN-65)

Enterprise men are hustlers—as the *Rigel* men are rigorous. During a recent replenishment at sea, the *Big E* men took on more than 330 tons of provisions from AF-58 in less than two hours, establishing a record. The carrier crew received cargo by hi-line at a rate of 194 tons an hour. According to Capt. F. H. Michaelis, commanding, this rate of replenishment bettered the current Sixth Fleet mark for carriers by more than 17 tons an hour. *Independence* claimed the old record of 176.4 tons an hour.

The *Enterprise* Weapons Department cited expert winch handling, cargo movement, seamanship and "outstanding cooperation and readiness of the replenishment ship" as contributing factors to establishing the record. The record became official when Capt. J. M. Hingson, ComServFor Sixth Fleet, messaged the *Big E*: "Congratulations on setting new transfer rate record of 194 tons per hour." Capt. Michaelis said, "It is a challenge to keep up with the *Big E*. This crew doesn't like to be second to anyone."

THE LEGION *of Merit is presented RAdm. William I. Martin by VAdm. William E. Gentner.*

In one way of celebrating, three dozen men from the carrier gave up their liberty time to plaster and paint the San Antonio Ardia Orphanage in Naples when the ship pulled into port later. The work took four days.

RAdm. Bernard M. Strean relieved RAdm. William I. Martin as ComCarDiv Two in ceremonies aboard the carrier. RAdm. Martin received the Legion of Merit (for outstanding performance of duty as Chief of Naval Air Reserve Training while he held that command) before proceeding to Washington where he assumed duties as Assistant Chief of Naval Operations for Air, in the Pentagon.

ESSEX (CVS-9)

Essex returned to home port, NAS QUONSET POINT, after a three-month yard period at the New York Naval Shipyard, the repair of heavy storm damage sustained in December completed.

The 30,000th accident-free starboard catapult shot was made aboard when Ltjg. Richard W. Cooper, with Lt. Richard R. Lecropane as copilot, launched in a VAW-12 E-1B *Tracer*.

The Navy and Marine Corps Medal for heroism was presented Shipfitter Second Class Donald J. Valois by Capt. William R. Meyer, commanding. Valois received the medal for heroic conduct while rescuing survivors of a fire aboard the *Constellation* at the New York Naval Shipyard in December 1960. The citation accompanying the award to Shipfitter Valois read:

"Valois unhesitatingly descended to the second deck . . . of the burning ship and carried an injured man to safety. After this rescue, he removed a second injured man . . . in the face of intense heat and smoke. He then assisted in removing several more casualties from this area. Finally, though partially overcome by smoke and suffering from heat and exhaustion, he carried an unconscious teammate off the ship to safety. Through his courageous and prompt actions in the face of great personal risk, Valois rendered invaluable service in rescuing survivors of this disaster. . . ."

Valois was then attached to the destroyer *Remey* and was a member of the rescue and assistance detail sent by that ship to combat the fire.

INTREPID (CVS-11)

In ceremonies aboard the *Intrepid*, 204 cartons of gift materials were delivered to the people of Jamaica as part of Project *Handclasp*. Included in the delivery were medicines, educational books, household goods, toys and other items. Receiving the gifts on behalf of the Jamaican people was Mr. Allen J. Hunter of the Union Theological Seminary. This organization will effect further distribution to appropriate organizations and institutions.

Capt. Joseph G. Smith relieved Capt. John C. Lawrence as commanding officer of the *Intrepid* during ceremonies conducted aboard the carrier.

A HOT DOG *is handed an orphan in Naples by CVAN-65 sailor, James C. Killingsworth, SF1.*

CLIMBING OUT *of an F-4B are Flt. Lts. Sawyer and Hamilton, RAF pilots in Forrestal.*

THE MISSION *of the assault landing ship Boxer is suggested by the flying Marine Sea Horse in the foreground during an LPH-4 cruise.*

USS WASP EMBARKED *Carrier Antisubmarine Group 52 in a record 36 minutes while berthed at Quonset. Wasp had just completed overhaul.*

FRANKLIN D. ROOSEVELT (CVA-42)

Joining the Sixth Fleet for an eight-month tour in the Med, *FDR* relieved the *Shangri La*. Embarked in CVA-42 is RAdm Luther C. Heinz, ComCruDesFlot 12 and 76 aircraft of CAW-1.

The 126,000th landing aboard was made by Lt. Larry E. Blose of VF-11 in an F-8E *Crusader*. The 30,000th starboard steam catapult launch was made by Ltjg. Raymond E. Otten of VA-172 in an A-4C *Skyhawk*.

FORRESTAL (CVA-59)

When the *Forrestal* visited New York, the *New York Times* was impressed. Staff writer Martin Arnold wrote: "Everybody who wasn't at the World's Fair or the ball game seemed to be at Pier 90 visiting the aircraft carrier *Forrestal*. By Navy count, about 40,000 persons climbed aboard the 25-story ship, poking into corners, asking questions, being photographed and oohing and ahhing.

"The double-header at Yankee Stadium drew only 21,357 persons. Most of the *Forrestal*'s visitors were youngsters. But the adults, though outnumbered, seemed to have the most fun."

Last month, in an unusual display of flexibility and mobility of Naval Aviation, Heavy Attack Squadron Six of NAS WHIDBEY ISLAND deployed to the USS *Forrestal* for that carrier's current tour in the Med.

The 91,000th arrested landing aboard was made by Ltjg. Karl Nuechterlein of Fighter Photo Squadron 62, in an RF-8A *Crusader*. *Forrestal* was operating off the East Coast at the time, having made a practice emergency movement from her home port at Norfolk. She was operating as part of the joint Army-Navy-Air Force *Quick Kick V*.

Flight Lts. Jimmy N. Sawyer and Ian B. Hamilton became the first RAF pilot team to qualify in a *Phantom* aboard a U.S. carrier. The RAF *Phantom* team came aboard the *Forrestal* as part of Marine Fighter Squadron 531. England sent this team to the U.S. to study the F-4, soon to enter the Royal Navy arsenal.

RANDOLPH (CVS-15)

Although lifeguard duty for a destroyer is boring and monotonous work, officers and men of USS *Holder* (DD-819) reacted magnificently when five men were spilled into the ocean after the starboard elevator of the *Randolph* separated from the ship. Within 15 minutes, the destroyer closed the one-mile gap from the carrier's stern and had three of the men aboard — Airmen Robert LaMantia, Robert A. Valley and Donald R. Matthews. In effecting the rescue of LaMantia, Ltjg. W. J. Brennan leaped from the deck of the destroyer into the water.

At the Destroyer-Submarine Piers at Norfolk, where the *Holder* was tied up some months later, Capt. R. J. Davis, commanding the *Randolph*, gratefully presented the destroyer a plaque and color photograph of the carrier. Cdr. C. A. Rankowski, commanding the *Holder*, accepted the awards on behalf of his ship.

On hand during the ceremony were Ltjg. Brennan and Airmen LaMantia and Valley.

WASP (CVS-18)

Wasp and her air group, CVSG-52, set what is believed to be a new record at NAS QUONSET POINT—although setting a record was incidental to the operation—when the group was completely loaded aboard in 36 minutes. Embarked were 510 officers and men and some 50 tons of equipment and baggage, in addition to aircraft.

Cdr. Samuel M. Cooley, Jr., commanding the air group, was "extremely pleased" that his men beat their own schedule. CVSG-52's loading officer was Lt. Elmer A. Chipparoni.

LEXINGTON (CVS-16)

Ens. David J. Jeane, a student in VT-5, made the 104,000th landing in the *Lexington*, in a T-2A *Buckeye*. Earlier, Lt. T. W. Poore of VT-25 made both the 100,000th landing aboard and the 36,000th catapult shot.

SARATOGA (CVA-60)

The first and only Fleet squadron flying the A-6A *Intruder*, VA-75, qualified for at-sea operations aboard the *Saratoga*. The *Sunday Punchers* nearly set a record doing it; they made 57 landings and takeoffs in 60 minutes. Home based at NAS OCEANA, the squadron was aboard for carquals.

To LCdr. Dean D. Aldern, replacement pilot in VF-174, went the cake. He recorded the carrier's 84,000th landing when he flew aboard an F-8.

ONCE THIS TYPE *of radome damage would have been regarded as irreparable, but now O&R North Island has come up with a sound method.*

THE REPAIRED RADOME *which Quality Assurance personnel have approved as ready-for-issue, and C. E. Reynolds, architect of the method.*

F-4 NOSE RADOME REPAIR DEVELOPED

By Elretta Sudsbury
O&R, NAS North Island

ANYTHING that can be built can be repaired" is a valid conviction of skilled craftsmen. Civilian mechanics at the Overhaul and Repair Department, NAS NORTH ISLAND, have proved it by devising a method of repairing severely damaged F-4 nose radomes formerly considered non-repairable.

By expending approximately 32 man-hours and $20.00 worth of material, O&R craftsmen can save a nose cone which would cost $8700 to replace, according to B. C. Thompson, Avionics Division Superintendent.

The F-4 radome is designed to withstand the tremendous heat surrounding the nose of the jet fighter at supersonic speeds. Over six feet long, it is three feet, eight inches, in diameter at the point where it is attached to the aircraft.

The manufacturer fabricates the radomes by winding five layers of fiber glass "roving," a twine-like material, around a mold. Inside, outside, and middle layers, called "circs," are wound around the longitudinal axis of the radome; the other two, called "longos," are parallel to the axis. The manufacturer laminates the layers by impregnating the glass roving with polyester resin, then applying heat and pressure. Sanded and finished with neoprene, the radome surface is as smooth as if it had been cast from liquid glass.

The F-4 radomes are often damaged, particularly during the ground handling of aircraft in crowded areas. When not more than the outer layer is affected, the repairs are simple. But occasionally all five layers are torn by impact. Until recently, repairs were not attempted in such cases for fear of endangering safety of flight and thickening the radome where the patch was applied, thereby distorting the radar beam which travels through the glass cone.

But cost-conscious personnel in the paint and radome shop were reluctant to survey the severely damaged radomes. One employee, C. E. Reynolds, asked permission to attempt to repair two radomes which normally would be scrapped, and Bill Adkins, the leadingman, agreed. The damaged cones had ragged holes clear through the fiber glass. One had a tear about four inches long, the other, a seven-inch tear. Both tears were near the metal cap of the apex of the cones.

Engineering personnel approved the experiment and repair materials—VIBRIN 135, TAC polyester resin; LUPERCO ATC, a catalyst; and fiber glass roving—were ordered. Necessary equipment was built or obtained. The repair method was much the same in both cases.

Reynolds first bolted a mold into the cone radome to serve as a base on which to build. It also insured that the contour of the cone would not be changed. The radome was cleaned and the old finish sanded off.

Reynolds devised a kind of loom by mounting the cone in a standard turret-type F-4 radome rack equipped with a foot-controlled air motor which turned the cone slowly. To counterbalance the seeker head on the radome, he rigged a 40-pound lead weight on the trailing edge of the radome.

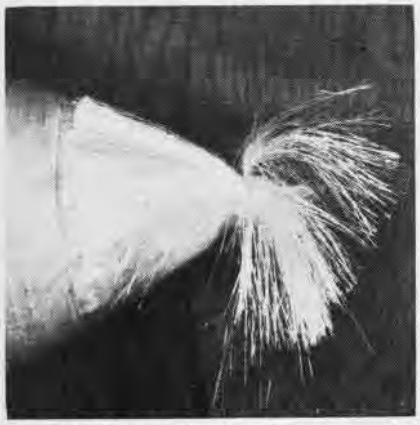
Now he was ready for "inweaving" the patch. Actually the five layers of glass thread are not interwoven, but crisscrossed and laminated. He prepared the radome by pulling off the outside layer from the nose to the last damaged row of circs. Loose material was cut away from the punctured area. The hole in the inside layer was bridged by applying small pieces of roving by hand. The fibers were impregnated with resin.

Polyvinyl alcohol sheet was stretched over the nose cone and the patch area covered with 1" rubber bands for added pressure. The unit was then baked at 175° for twenty-four hours.

FIBER GLASS *roving was twisted with hand drill to form twine of some 30 strands.*

THIS MOLD *was installed in the nose cone before repair to insure proper contour.*

BEFORE THE WORK *gets underway, Rudolph Jones washes down the damaged radome cone.*



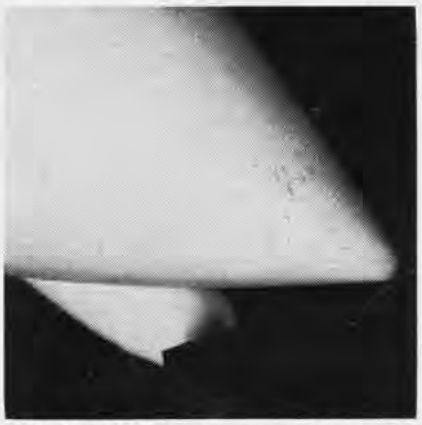
'LONGOS' WERE *replaced in the patch area by tying a layer of fiber glass to the plug.*

REYNOLDS REPLACES *fiber glass twine as foot-operated air motor turns the cone slowly.*

ALCOHOL FILM *is drawn over repaired area, pressure is exerted, later heat is applied.*

THIS SHOWS *the way in which pressure is applied by the use of one-inch rubber bands.*

REYNOLDS APPLIES *final touch of neoprene as G. S. Roberts and Bill Adkins look on.*



HERE IS CLOSE-UP *of the repaired area. Can you see just where the patch was put on?*

Additional layers, except for the outside one, were built up by laying strips of fiber glass roving to form circs and longos. As each layer was added, fresh resin was applied, the fibers were imbedded and brushed down, heat and pressure applied.

Reynolds attached the final, outside layer by turning the radome slowly while he wrapped the fiber glass "twine" around and around, beginning at the apex and working aft. Following this application, he wrapped the cone with polyvinyl alcohol sheet, pressured the repair area with wide rubber bands, and cured it at room temperature for eight hours. Thereupon he oven-cured it at 175° for 16 hours in order to laminate the material.

The rest was routine. The cone was sanded, the mold removed and the metal cap cemented to the nose. The cone was finished with white neoprene, a highly resilient, erosion-resistant coating used on laminated glass fiber aircraft parts installed on the leading edges of high speed aircraft.

HELICOPTER TESTING AT PATUXENT RIVER

By Lt. D. F. Mayers, USN

THE MARINE TACTIC OF VERTICAL ENVELOPMENT WILL BE SERVED WELL BY THE CH-53A.

THE ROTARY Wing Branch of the Naval Air Test Center's Flight Test Division was formed at Patuxent River, Md., in June 1949 to meet the growing requirement for a specialized group to test and evaluate helicopter-type aircraft. Increased emphasis on both military and civilian applications of rotary wing aircraft during the past 15 years has made the branch a vital part of the Flight Test Division. Today, the branch is one of the world's leading authorities on rotary wing flight testing.

Its function is to carry out projects assigned by the Commander, Naval Air Test Center. These projects include determination of stability and control characteristics, performance, structural integrity, carrier suitability characteristics and related facets of rotary wing aircraft. Antisubmarine Warfare Branches of the Service Test Division evaluate service suitability and electronics/weapons systems.

Six pilots and nine engineers, organized into pilot/engineer teams, are assigned to the Rotary Wing Branch. In addition, pilots from other services and other countries work with the branch occasionally to monitor projects of special interest to them or to participate in joint projects approved by CNO.

The projects assigned the branch fall into two categories: Navy Preliminary Evaluation/Board of Inspection Survey programs and follow-on or special projects. The work load is about evenly divided between these two groups.

CNO establishes the Fleet requirements for a new helicopter and directs BUWEPS to provide such an aircraft. After negotiation with various contractors, BUWEPS selects one to build the helicopter. Next NATC evaluates the aircraft, reports progress on its development and assigns various phases of the evaluation to the three test divisions at the Patuxent River center.

Project work on a helicopter may begin before the first flight with a monitor phase. The project's pilot/engineer team compiles all available information on the aircraft and checks its progress. As the program continues, the project pilot observes the structural and flight demonstrations conducted by the contractor.

A Navy Preliminary Evaluation (NPE) usually begins about 90 days after the first flight. Prior to Navy flight test, the contractor performs extensive flying qualities tests in order to discover and correct design deficiencies and establish a safe flight envelope. The purpose of the NPE is to have a quick look at the helicopter to determine any possible discrepancies prior to Board of Inspection and Survey (BIS) trials. NPE normally is conducted in three phases and usually covers eight to 12 months. Each phase consists of a one-to-six-weeks visit at the contractor's facility to conduct the tests. By the time the NPE is complete, the production configuration of the helicopter has been reasonably well defined and the helicopter is ready for BIS trials.

BIS trials, designed to test and evaluate the production helicopter, are conducted in two phases. The contractor might delay further delivery until after the 60-day initial trials phase of BIS to eliminate the possibility of having to make costly alterations to delivered assembled aircraft. The final

SEA KING IS BEING TESTED BY THE BRANCH

trials phase involves a more detailed evaluation so that when the helicopter reaches the end of BIS trials, its critical areas are specifically known.

The helicopters which have gone through both NPE and BIS trials during the past few years include the UH-2A *Seasprite*, the SH-3A *Sea King* and the UH-1E *Iroquois*. The CH-46A *Sea Knight* has completed NPE and is currently undergoing BIS trials.

Almost 50 per cent of the work done by the branch involves follow-on or miscellaneous projects. Last year a complete flying qualities and performance evaluation was conducted for the Army on the UH-1B *Iroquois*. When the Marines purchased the UH-1E, a special project was conducted to determine the effects of a sand and salt spray environment on the *Iroquois*

MARINE VERSION OF IROQUOIS, FIRST USED BY ARMY, IS UH-1E.

ARMY, NAVY CONDUCTED RIGID ROTOR TESTS ON XH-51A AEROGYRO

performance. Another special project on the UH-1 series is the evaluation of a mass fuel flowmeter designed to give a more precise, lighter and cheaper indication of the power developed in the free turbine.

Follow-on projects on the SH-3A have included the evaluation of a stability augmentation system (SAS) and, currently, the evaluation of a new pitot-static system designed to reduce airspeed and altimeter errors.

Of special interest to the Fleet is a recently completed investigation of blade stall in the UH-2A. Because vibration in the UH-2 is exceptionally well damped during high speed flight, there is very little indication to the pilot of approaching blade stall. During this investigation, an envelope was developed showing the onset of blade stall as a function of airspeed, density altitude, gross weight and normal load factor.

Some projects involve helicopters that have been in the Fleet for years. For example, in 1962 an unsuccessful attempt by a Fleet SH-34 pilot to enter autorotation from near maximum airspeed resulted in a project to investigate all aspects of high speed entry into autorotation in the H-34.

A joint Army/Navy program on the Lockheed XH-51A was conducted in 1963 to evaluate the rigid rotor concept and its military applications. The branch is scheduled to work with the Army again at Edwards AFB when the light observation helicopter (LOH) entries are tested. The LOH may be used as a Navy primary training helicopter.

There are several other projects slated for the immediate future. First flight of the CH-53A heavy assault/transport helicopter is scheduled for September 1964. The CH-53A is designed to provide the Marine Corps with more rapid ship-to-shore transportation.

AN EVALUATION of Bell Helicopters Model 540 "door hinge" rotor system on the UH-1E is expected in the near future. This new two-bladed semi-rigid rotor system has already been flight tested by Bell. Bell indicated that vibration levels were reduced considerably and that significantly higher maximum airspeeds were possible in the UH-1E with the new rotor because of lower vibration levels.

The future for helicopters has never been brighter. Rigid and/or semi-rigid rotor systems appear to offer one solution to current airspeed restrictions resulting from rotor vibration problems. The compounded helicopter with its short wings to alleviate the load on the rotor in high speed flight seems particularly promising and speeds up to 250 knots can be expected in the next few years.

The Marines have a great need for fast assault helicopters to increase their vertical envelopment capabilities with emphasis on wide dispersal of units, mobility and flexibility.

The helicopter is the most efficient machine for hovering. As speed, range and weight carrying ability increase, the helicopter will serve an even greater role in ASW, transport and utility missions. The Rotary Wing Branch will play a major part in testing these machines for Fleet use.

THE CH-46A SEA KNIGHT ASSAULT/TRANSPORT HELO IS NOW UNDERGOING BIS TRIALS

THE NEW MEN IN ANTARCTICA

By Lee Quinn, JO1, of VX-6

THE NAVY'S Bureau of Personnel releases its own "help wanted" ads each year. The message, boiled down, is that old familiar military standby—volunteers are needed!

Perhaps the most intriguing volunteer solicitation offered and the one that receives the most results, is BUPERS Notice 1300 dated in July of each year. The request is direct. The Navy needs men to carry on its significant work in Antarctica. A concise cross-section of enlisted ratings—including yeomen, hospital corpsmen, aviation machinist's mates, electricians, electronics technicians, storekeepers, commissarymen, and photographers—get the call.

Disqualification comes easily. Rigid mental and physical tests must be met. No rewards or extra monetary allowances are offered. Those men who complete a *Deep Freeze* tour are authorized to wear the Antarctic Service Medal and usually the medal is the only tangible item an Antarctic veteran can show for his rigorous tour.

Why, then, the large response to Notice 1300?

"That's simple," answers Master Chief Floyd Farragut, leading CPO for Air Development Squadron Six (VX-6) and a veteran of five seasons in Antarctica. "Navy men the world over love a challenge and I can think of no better place for these aspirations to be fulfilled than in man's concentrated peaceful assault on the white continent."

Here, then, is the qualified response of an Antarctic veteran. But what of the man just beginning his first Antarctic tour 11,000 miles from home? What made him request this unusual duty?

Answers to these questions come easily. In the *Deep Freeze 64* summer support season just concluded, there were 145 first-tour VX-6 enlisted men on the ice. Their efforts during the sub-freezing temperatures on the ice played a large role in the squadron's capability to fulfill its mission.

VX-6 has supported *Deep Freeze* operations continuously since 1955. Cdr. George R. Kelly, a veteran Naval Aviator with previous Antarctic experience, commanded the squadron. Last October, he piloted the lead plane in RAdm. James R. Reedy's historic flight from Capetown, South Africa, to Williams Field at McMurdo Station in the Antarctic, some 4700 miles nonstop. Adm. Reedy, himself a Naval Aviator, commands the Navy's Antarctic Support Forces.

Operating out of McMurdo and Byrd Stations from September through February each year, the squadron provides aerial logistics and the resupplying of the inland scientific stations operated by the U.S. on the continent. It conducts aerial photomapping flights. It maintains search and rescue capabilities, including the Navy's only Para-Rescue Team. And finally, VX-6 provides aerial reconnaissance and trail support for scientific land parties.

Spearheading this gigantic effort are VX-6's ski-equipped C-130 *Hercules* transports which, unfailingly, have been "opening" the continent earlier and earlier each year since they joined the squadron in 1960.

Other aircraft flown by the squadron are renowned for their Antarctic work. They include the U-1B *Otter*, LH-34D *Sea Horses*, C-121J *Super Constellation*, C-47 *Skytrains*, and a C-54Q *Skymaster*. Each plane is designed for a specific task, from close field support to long-range hauling of personnel and high altitude photomapping.

The workload is mammoth, creating a plan of the day that would make any "liberty hound" think twice about joining. All hands pitch in, side by side, 10 to 12 hours a day, seven days a week. But despite its isolation, McMurdo Station (as most of the inland stations) provides the necessities of life; not posh, but adequate and reasonably comfortable. There is a barber shop, a ship's store, chapel, library, and much to the delight of any gourmet, a good-feeding galley which would make any Stateside emporium envious. Even the butter boy on the serving line has been known to smile now and then.

"I like it here," said Olin Wilkinson, PR3, and a member of the VX-6 Para-Rescue Team. "This must be the best type of sea duty anywhere. I didn't really know what to expect, except that it would be cold."

Wilkinson, a veteran of over 50 civilian parachute jumps, made his first military descent from a VX-6 helicopter over an Antarctic mountain range last October. "It was quite a thrill," he commented. "You know, those scientists are doing an important job here and I know they are counting on me to be ready for any emergency. I'll be ready."

VX-6's home station is NAS QUONSET POINT. In early September, the mass exodus begins. Men, planes and equipment get the Navy shipping treatment and are hauled to Christchurch, New Zealand, jump-off spot to the ice. In "Chee-Chee" (the Navy men's phonetic nickname for Christchurch), VX-6 sailors have about seven days to prepare for the pending trip to McMurdo. This clean, cheerful, and beautiful city was selected by the U.S. Navy because of its logistic location—about a ten-hour flight to McMurdo, via the *Super Connie*.

Once on the ice, VX-6 personnel are scattered to distant locations. They are usually greeted at the strip by bearded wintering-over veterans who, upon being relieved by the incoming group, begin the long trek home.

Once on station, the new man begins his check-in procedure and becomes acquainted with his "town." McMurdo is a group of assorted buildings of military shapes, sizes, and coloring that would be completely out of place in the town back home. There was no grand, modern architectural design planned for the erection of living quarters and working spaces in Antarctica. "The Seabees built this last frontier town with what they had," said Walt Long, PH1, who was a VX-6 photographer in the early years of the operation and who returned for this year's *Deep Freeze*. "A very good job, too."

Navy humor isn't lacking, either, despite the isolation of the place. "No parking" signs and "Keep off the grass" posters greet the newcomer as he trudges to work through ice, snow water or volcanic ash in temperatures that sometimes are well below zero—in the summer months. And, should the Hotel Association of America won-

Cdr. George R. Kelly, C.O.

Lt. James F. Brandau

Gerald W. Cordy, AMS2

Michael Schulte, YN3

William F. Watson, AKAN

John R. Pinamonti, AN

Hugh F. Cooper, ADR3

Gary A. Sanders, ADR2

Michael Brendel, ADR3

James R. Looper, RMCA

Dennis R. Kissel, AA

Lt. Bruce McClasson

der, there's even a "Hilton" there.

Though most of the newcomers to Antarctica cite "sense of duty" and "a feeling of accomplishment" as their main reasons for volunteering, some, like Mike Brendel, AD3, inject a more personal note. "I just wasn't getting anywhere in my rate. I was becoming stagnant. Somehow, I think I'll make it here."

Ex-Iowa farmboy, Stan Berthusen, AE3, is still dazed by the immensity of it all. "The cornfields back home were never like this," he said. "But this is the best duty in the Navy."

There is a keen sense of adventure felt by many first-timers, brought sharply into focus shortly after they arrive on the ice. At Hut Point, near McMurdo camp, is a sturdy wooden hut built by Capt. Robert Falcon Scott, in as fine a condition now as it was when erected at the beginning of the century. Cresting Observation Hill, site of a nuclear power plant, is a cross of Australian jarrah wood, dedicated to Scott and his men who died, returning from an oversnow journey to the South Pole long years ago.

Because much of the continent is still unexplored and current operations are planned to methodically investigate uncharted areas, the age-old impulse of exploration is a motivating factor.

But no matter what their motives, when the 145 enlisted Antarctic first-timers of VX-6 returned to Quonset last March, they all had tall tales and fancy scuttlebutt to pass around to this year's volunteers. And, as incredible as it may seem, most of what they are telling is the hard and cold truth.

More Names on World Map

Antarctic Features Honor VX-6

Sixteen recently discovered features in Antarctica now honor members of Air Development Squadron Six, according to the latest list of approved names released by the U.S. Board on Geographic Names. The complete listing appears in an issue of "Bulletin of the U.S. Antarctic Projects Office."

The features are located in two widely separated areas on the continent. One group appears in and near the Jones Mountains at Eights Coast. The second group is located south of Ross Island's McMurdo Station.

In the Jones Mountain area are features honoring Jerry W. Austin, ADR3, SSgt. Roy Eubanks, USMC, Lt. Robert Farrington, and Larry D. Sayen, PH3.

In the McMurdo area are features honoring LCdr. John K. Allison, Michael Baronick, AOC, Joseph Bratina, ADC, LCdr. Robert Dale, Maj. James Foster, USMC, LCdr. Lewis Helms, Lt. Benjamin F. Hooper, Capt. Joseph F. Lisicky, USMC, Ltjg. Donald F. Moxley, LCdr. Edgar A. Potter, Lt. Garland F. Renegar, and Squadron Leader K. A. C. "Dickie" Wirdnam, an RAF observer, assigned to VX-6 for a full summer support season.

The features and coordinates are:

Allison Glacier	78°	16'S,	161°	57'E
Austin Valley	72	30 S,	93	19 W
Baronick Glacier	78	36 S,	161	50 E
Bratina Island	78	00 S,	165	32 E
Dale Glacier	78	17 S,	162	00 E
Eubanks Point	73	27 S,	93	38 W
Farrington Ridge	73	36 S,	94	18 W
Foster Glacier	78	25 S,	162	55 E
Helms Bluff	78	29 S,	164	22 E
Hooper Crags	78	25 S,	162	43 E
Lisicky, Mount	78	27 S,	162	04 E
Moxley, Mount	78	25 S,	162	20 E
Potter Glacier	78	23 S,	162	05 E
Renegar Glacier	78	22 S,	163	06 E
Sayen Rocks	73	41 S,	94	37 W
Wirdnam Glacier	78	25 S,	162	00 E

This brings to 67 the total number of features in Antarctica named after officers and men serving in VX-6. Previous listings were published in the September 1961, June 1962, and March 1963 issues of NANEWS.

New Planes for Washington

S-2A's Scheduled for Air Facility

The 38 flight-worn, time-extended *Beechcrafts* parked on the proficiency aircraft line at NAF WASHINGTON, D. C., were silent witnesses as the first of their replacements, four Fleet-configured S-2A's, landed and taxied to the line at the "Navy's Crossroads."

In the NAF configuration of the S-2, the major modification includes removal of the radome, MAD gear, ECM dome and all ASW and ordnance systems, consoles, control heads, etc. Added to the S-2A's are Tacan, OMNI, ILS, ARN-6, UHF and VHF transceivers, IFF and SIF.

Trackers will, it is hoped, in the near future completely replace all the *Beechcrafts* at the facility which serves 1075 desk-assigned Naval Aviators in the capital. A NATOPS ground school and flight syllabus is being taught at Navy Operations by Lt. Virgil J. Lamaur, a former VS-28 sub-hunter, now one of the Combat Readiness Training Officers at NAF. Pilots who are current or who have prior time in the S-2A are now flying their monthly requirements in these aircraft. Pilots without prior S-2A experience will be checked out when positions are available.

Capt. W. R. Pittman, C.O. of NAF WASHINGTON, says that the *Trackers* will give proficiency pilots the opportunity to be current in equipment.

Editor's Corner

SUSPICIONS CONFIRMED. When 167 bats were discovered in an air conditioner in the NAAS Kingsville Service Information Office, the station newspaper, *Flying K*, duly reported the event. Poking fun at its own troubles, the reporter noted that personnel in the office met the invasion with typical courage. "One man left the office to get a haircut, one headed for the coffee mess and another crouched in the corner." All bats were subdued after a skirmish with insecticides, broom and rolled newspapers. Said the report, "The comment most heard when told of the bats in SIO: 'Well?'"

Intriguing Headlines. Under the headline, "Are you due for a 4320-Hour Check?" the USS *Shangri La's New Horizon* urged all ship's personnel to have a six-month dental checkup, "preventive maintenance by the dental officer."

WHAT'S A FLIGHT SURGEON? In the May issue of *Naval Aviation News*, Lt. Joseph Pursch, USN, tried to describe the typical day of a flight surgeon aboard an American carrier. The U. S. Navy Medical Newsletter (17 April 1964) quoted an RCAF flight surgeon's description of his job as follows:

"Essentially the work is a very specialized general practice, with the large share of routine general, medical, surgical, psychosomatic and common human problems found in all general practices, but with the unique difference that all the 'patients' are highly trained aviators performing an essential job in a particular service. . . . It is due to this that the specialty training arises, because aircrew are indeed a very select group of individuals living in a particular environment; the two interacting with normal pathological processes to produce a definite field of medical practice. This latter is at perhaps its most rewarding and demanding and certainly most interesting level in an operational flying unit." Which is exactly what Lt. Pursch's article showed.

Fore on the Forecastle. When a survey showed that the USS *Essex* had a lot of devoted golfers aboard, the ship set up a golf driving range on the forecastle (Where else?). A raised mat

provides the platform for swingers and a net catches the balls (see photo).

MAIL WITH NO ZIP. Sicilian fishermen found a bottle containing letters and several packages of cigarettes floating in the Straits of Messina. Inside was a note: "We forgot to mail these letters during our stay in Messina. Please mail them for us. In exchange we can only give you a few packs of cigarettes. We are sailors of the U. S. aircraft carrier Shangri La." At last report, the mail was on its way to U. S. ports.

What's in a Name? Trouble! Firemen at NAS NORTH ISLAND rushed to Barracks F early one April evening (reports the station newspaper) and asked the duty watch stander, "Where's the fire?" There was no fire. The duty stander had merely telephoned the MAA at his appointed time and reported that he was at his appointed place. Seems his name is R. W. Farr, Seaman Apprentice. "This is Farr in Barracks F," was all he said, before firemen, trucks and ambulances descended upon him.

HIGH-PRICED EDUCATION. After describing a flying situation involving that famed flight flubber, F. F. Dilbert, in the wing's *Hot Dope Sheet*, the Second Marine Aircraft Wing Aviation Safety Officer wrote: "This has been a hypothetical situation but it has happened, and will happen again if we don't heed the professional word. This incident again proves that experience is the best teacher; however, we have progressed to the place where we can no longer afford the teacher."

Gillette's Cut It Out, Pal! In the MAW Two *Hot Dope Sheet* it was noted that MAG-26 had published another "sharp" publication known as the "Safety Raiser." And since one pun led to another, the Wing Safety Officer added, "The purpose of the Safety Raiser is to increase combat readiness by 'shaving' the accident rate."

COMPETITIVE PUSH. When VT-3 at NAAS Whiting Field instituted competition between divisions to spur greater physical activity during the station's physical fitness program, the results were startling. Offered a prize of $25 for the picnic fund and a quarterly trophy to the winning division, individuals attained far better scores on the tests. Pushups increased an average of 3.3 per man, the time for running 300 yards was five seconds faster per man. VT-3's performance increased 67 per cent, it was estimated. The trophy was named the John F. Kennedy Trophy, since there is almost Navywide acceptance of the term 'JFK's' as the name of the physical training program started by the late president.

Humor Amid the Ruins. After a tidal wave swept over the ramp at the Naval Station, Kodiak, as the result of the Alaskan earthquake, station personnel posted a picture of the tower giving takeoff clearance to a VP-1 patrol airplane with only its tail visible above the water. The caption read, "VP-1, the Fleet's finest on the land and under the water."

APPROPRIATE NAMES DEPARTMENT. The USS *Franklin D. Roosevelt* (CVA-42) has a seaman named Jerry Jacobs who works on the Jacob's ladder when it is rigged over the side.

Malfunction? Under a photo showing a destroyer wedged into a quay wall, the NAAS NEW IBERIA *Tracker* had the following comment: "The crash was caused by a malfunction in the communications between the bridge and the engine room."

LETTERS

Top this Record?

SIR: The airborne eyes of the Seventh Fleet are the A-3B *Skywarriors* of Heavy Photographic Squadron 61, flown by highly experienced jet carrier pilots. As of April 1, 1964, the eleven VAP-61 pilots averaged over 3400 hours total flight time, of which an average of 1000 hours was logged in the *Skywarrior*. The eleven have a combined total of 2980 carrier landings.

The old Pro's of VAP-61 would like to know if any other jet carrier squadron can top this record of flying experience.

J. O. MERRITT, LTJG.
PIO for VAP-61

Navy #943
FPO, San Francisco, California

AV-12 Awarded Another 'E'

Wins Fourth Straight Competition

The seaplane tender USS *Pine Island* (AV-12) added a third stripe beneath her large E, representing her fourth consecutive award of the AirPac Battle Efficiency honor. She also won departmental awards for Operations (third award), Communications, and Weapons. Capt. D. W. Cooper is C.O.

Weather Radar Installed

New Set Helps Whiting Aviators

A new set of radar equipment, designed to locate weather phenomena, has been installed at NAAS WHITING FIELD. The gear can be operated by one man from the meteorology unit of the operations department and "paints" atmospheric activity on three screens. The console is powered to visually record weather conditions within a 200-mile radius.

One screen depicts the distance and direction of a storm or weather activity from the station. Another indicates the height of the approaching storm and the third records its intensity. Cloud tops up to 80,000 feet can be picked up.

Because a single man can operate the equipment, the workload on other personnel is alleviated. Repair and servicing is done by electronics technicians.

RADM. ALLEN M. SHINN *became Chief of BuWeps in May, relieving RAdm. K. S. Masterson who now commands Second Fleet. RAdm. Shinn has been Asst. Chief of Plans and Programs in BuWeps, and ComCarDiv-6.*

Shepard Receives Medal

Langley Award Made in D. C.

Astronaut Alan B. Shepard, Jr., was awarded the Langley Medal of the Smithsonian Institution in ceremonies May 5th in Washington, D. C. Cdr. Shepard was cited for "pioneering contributions to scientific research as the first American to fly in space and the first to control the attitude of a spacecraft in flight and during a condition of weightlessness."

Chief Justice Earl Warren, Chancellor of the Smithsonian, made the presentation on the third anniversary of Shepard's historic *Freedom 7* flight.

Named after Samuel Pierpont Langley, aviation pioneer, the medal has been awarded only ten times since it was established in 1908. Recipients include the Wright Brothers, Charles A. Lindbergh and RAdm. R. E. Byrd.

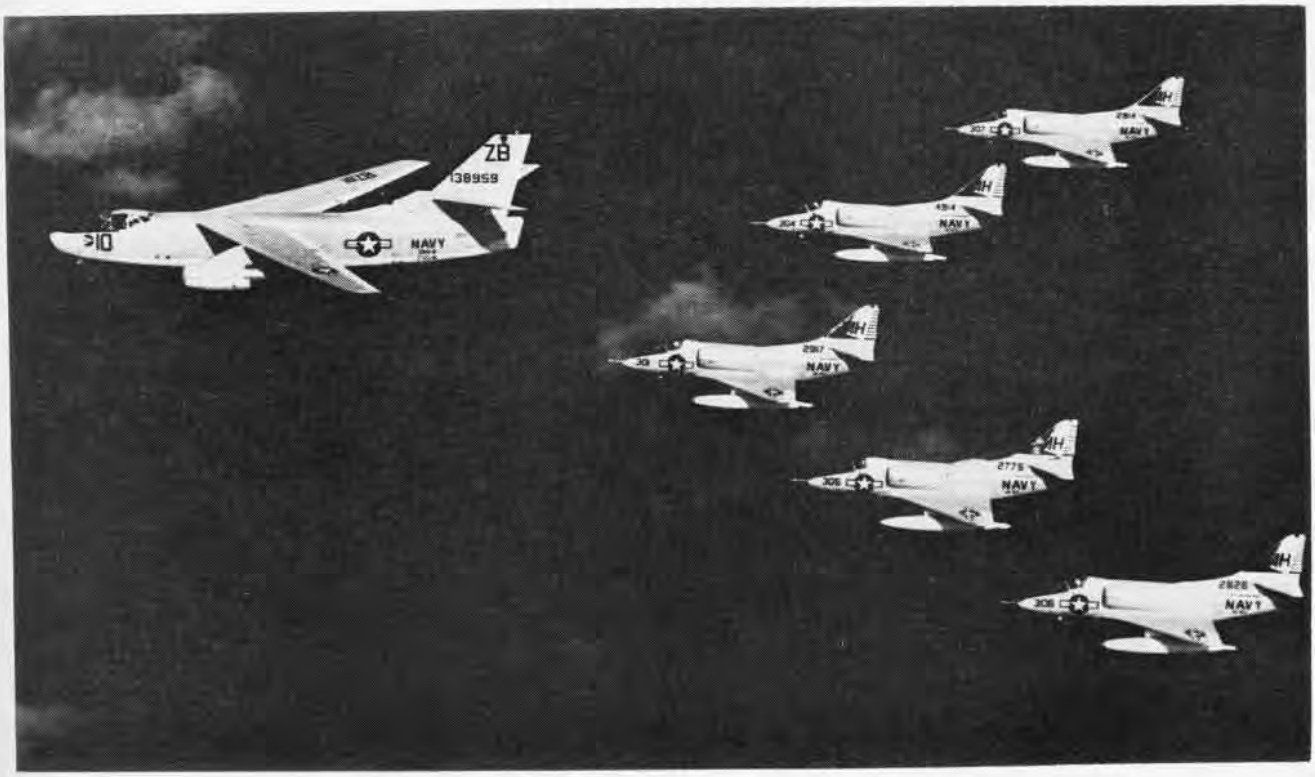
5000th ASR Approach Made

Whidbey Island Squadron Logs It

Crew Nine of VP-47 based at NAS WHIDBEY ISLAND logged in that station's 5000th Air Surveillance Radar (ASR) landing, during one day's simulated emergency approaches. Piloting the SP-5B "Blue Whale" were Lt. R. M. Reeves and Ltjg. J. F. Speck. In the crew were R. M. Traynor, AD1, A. L. Girod, AD1, E. E. Goodman, AX2, C. Poquette, AX2, C. P. Fuller, AE2, and J. E. Sistrunk, AM3. ASR supervisor, E. G. Fromong, ACC, brought in the record ASR landing.

SKIPPER OF VA-45, *Cdr. Richard Renaldi, dresses in green derby and boxing gloves depicted in his squadron's insignia, after arrival at unit's new home base, NAS Cecil Field. Capt. J. A. Smith, C.O. of Cecil Field, greets him with "welcome aboard" plaque. VA-45, formerly based at NAS Jacksonville, is assigned to instruct pilots in instrument flying.*

LT. E. D. HOWELL, *instructor at NAAS Kingsville's VT-21, is congratulated by squadron C.O., Cdr. M. E. Call, in front of Cougar jet flown by the unit. Lt. Howell flew the remarkable total of 2000 jet accident-free hours in his training command tour. He amassed 805.4 flight hours in 1962, helping VT-21 win the CNO Safety Award that year.*



SQUADRON INSIGNIA

The insignia of Attack Squadron 163 vividly depicts the unit's determination to perform its mission over land and sea, day or night, in fair weather or foul. The symbol at the core of the emblem denotes the 'Saints' nuclear strike capability. When not aboard USS Oriskany, VA-163 is based at NAS Lemoore, Calif. Skipper of the Skyhawk squadron is Commander J. J. Diffendorfer.

NAVAL AVIATION
NEWS