Naval Aviation NEWS

May 1978


DANGER
RESCUE
NO STEP
VA-147
USS CONSTELLATION
NAVY
156803

COVERS – Front, NANews' JOCS Bill Bearden filmed NARF Pensacola employee Matthew Hill repairing T-2C canopy in the components rework branch (see feature on page 8). Back cover photos are explained on page 2. Harry Gann of McDonnell Douglas filmed this VA-127 Skyhawk on the wing of a VA-147 A-7E in 1976.

NAVAL AVIATION NEWS

SIXTIETH YEAR OF PUBLICATION

TOUCH, BUT NO GO !

By Ltjg. T. J. Mearsheimer

Touch and go landings in the Naval Air Training Command are a common, everyday occurrence. The monotony is broken only by an occasional controlled crash 'n' go. Flight instructor Ltjg. Rick Marlette of Training Squadron Six had accumulated an ample share of monotony breakers but on this particular day he would add to his experiences the dreaded variety – touch and no-go.

It was the third hop of the day for Marlette. He was scheduled with an Iranian flight student on his Fam-8. Takeoff and climb to altitude proceeded routinely as did a number of pre-solo maneuvers required of the flight student. A simulated high altitude engine failure was to be demonstrated, so Ltjg. Marlette took electrical and physical control of the aircraft and began to set up for a paved runway. The procedural steps clicked by until the aircraft turned through the 90-degree position. At that point, Marlette's tug on the gear handle was answered by zero movement. The simulated emergency was terminated, the aircraft was flown to altitude and the real emergency began.

VT-6's ready room was, quite suddenly, a very busy place. As T-28s roared overhead and the squadron radio came alive, the instructor aimed his aircraft for home field and began procedures for what was to become a two-hour bout with the gods of frustration and futility.

An hour passed. Onlookers gathered in the ready room. The question/response dialogue had been reduced but options were being reviewed. Squadron flight instructors were shoulder to shoulder listening to each development in the drama. With the Natops book open, suggestions were flowing. They ranged from inverted flight, spins, positive and negative Gs, to applying brute strength on the gear handle. The maintenance personnel huddled with their manuals. As each suggestion was tried without success, NAS Whiting Field was being readied for the inevitable gear-up landing.

The tension mounted. Ltjg. Marlette startled the listeners at the point when he announced that application of brute strength had resulted in the instructor's gear handle breaking off in his hand. Shortly thereafter, the front cockpit handle experienced the same fate. With low fuel and no gear handles left, the time for ideas had run out.

Two and a half hours had passed since the initial distress call. People began shuffling for a view of the rare gear-up landing. Here and there a flyer proclaimed his skills and damned this missed opportunity for heroism. Inwardly, each was probably relieved it wasn't he in the center ring.

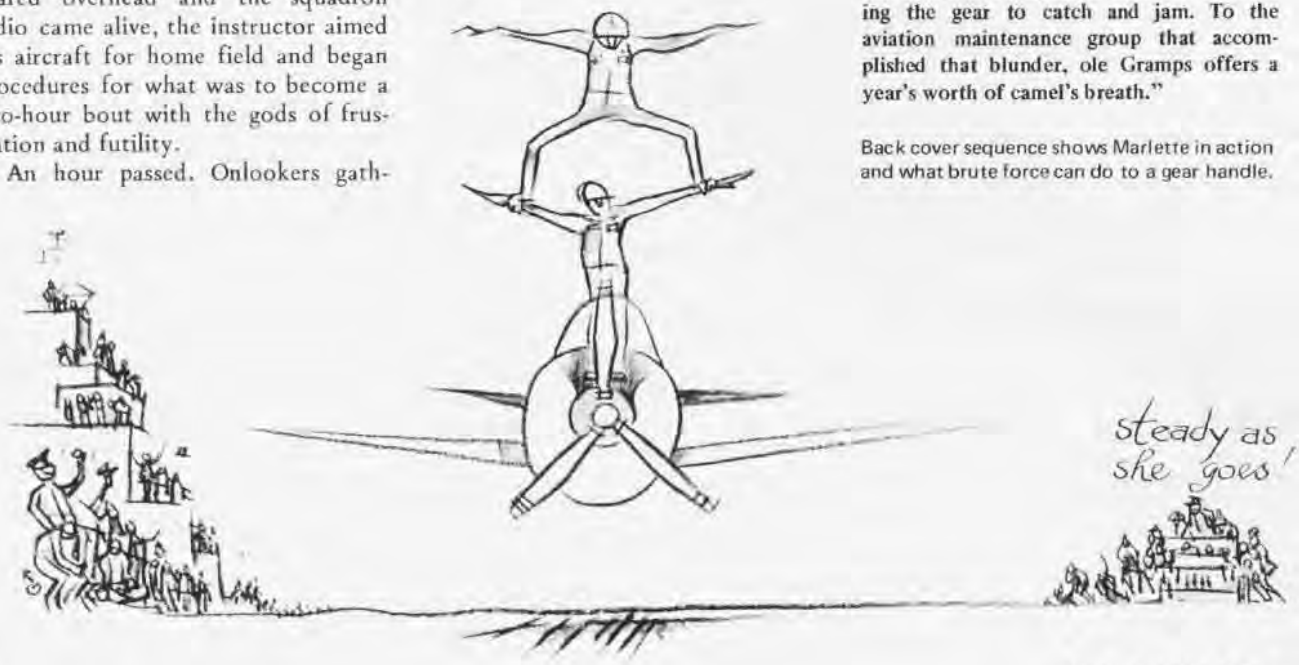
The Natops and safety officers were, of course, in steady radio contact with the aircraft. Procedures were reviewed, the crash crew was poised, responsibilities were discussed and delegated between the cockpits, and a low practice pass was flown.

Then, as the T-28 made its final approach, Marlette secured power and eased the *Trojan* to the pavement. A perfect touchdown! Some 250 feet later, the aircraft stopped, on center line. The pilot and student exited safely.

The successful conclusion of this story resulted from a combination of professionalism, teamwork and regard for safety.

Asked to comment, Grampaw Pettibone said, "Jumpin' Jehosaphat! Corralled by maintenance error! Saved by professional calm and logical problem solving! A tip of the hat and a hearty attaboy to Ltjg. Marlette and VT-6 for handling this situation like real pros. An assembly on the nose wheel had been installed backwards, allowing the gear to catch and jam. To the aviation maintenance group that accomplished that blunder, ole Gramps offers a year's worth of camel's breath."

Back cover sequence shows Marlette in action and what brute force can do to a gear handle.



NAVAL AVIATION NEWS did you know?

YF-17 Flight Evaluation

The YF-17 aircraft, forerunner of the Navy's F/A-18, has been evaluated following a series of December 1977 flights by Navy test pilots based at Point Mugu. At the beginning of the F/A-18 development, the Navy formed a team of fleet aviation and test pilots, called the Aircrew Systems Advisory Panel, to evaluate and advise contractors through OpNav and NavAirSysCom on aspects of cockpit and overall weapon systems design.

During three of these flights the YF-17 was flown alongside the F-14 *Tomcat.* Flying qualities and performance characteristics of Northrop's YF-17 were commented on favorably by the Advisory Panel pilots, who reported that the YF-17 demonstrated superb handling characteristics, particularly at high angles of attack. Engine responsiveness, combined with remarkable performance at intermediate power, was most impressive during a number of successful simulated air combat engagements, according to the pilots. The YF-17 fulfilled expectations as a highly maneuverable and agile fighter.

Navy operational planners and technical managers also were enthusiastic that the YF-17 capabilities, which have been demonstrated to date, provide a basis for confidence that the production F/A-18 aircraft will perform in a similar fashion, thus meeting design goals. The Navy and Marine Corps plan to buy 811 of the McDonnell Douglas/Northrop/General Electric F/A-18s for both fighter and attack missions.

Medal of Honor

The Medal of Honor was awarded posthumously to Captain Michael J. Estocin, USN, for his actions on April 20 and 26, 1967, while he was attached to VA-192 embarked in *Ticonderoga* during the Vietnam Conflict. On April 20, leading a three-plane group in support of a coordinated air strike against two thermal

power plants in Haiphong, North Vietnam, Capt. (then lieutenant commander) Estocin provided continuous warnings to the strike group leaders of the *Sam* threats and personally neutralized three *Sam* sites. Although his aircraft was severely damaged by an exploding missile, he reentered the target area and made a *Shrike* attack in the face of intense antiaircraft fire.

On April 26, in support of an air strike against fuel facilities at Haiphong, he led an attack on a *Sam* site, during which his plane was hit by an exploding *Sam.* Nevertheless, he regained control of his burning aircraft and launched his *Shrike* missiles before leaving the area.

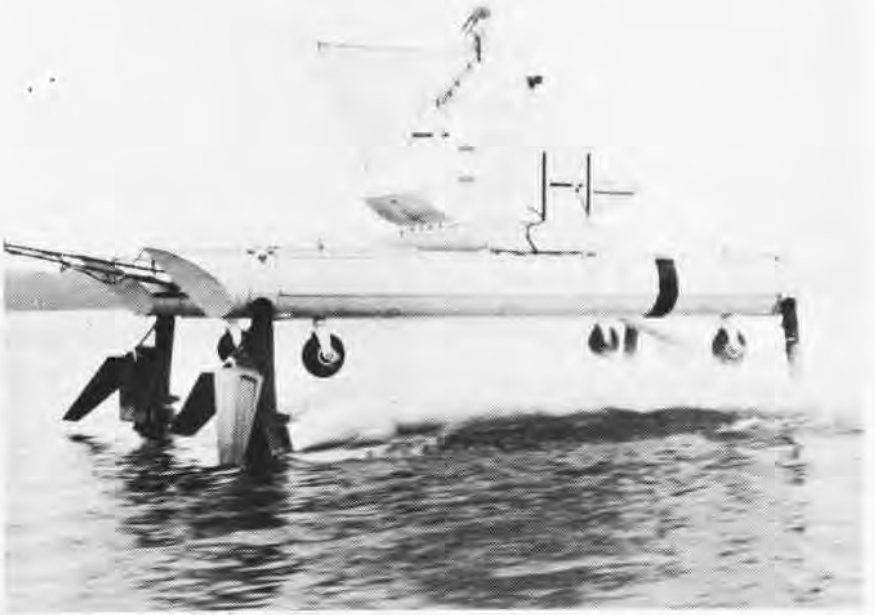
The Medal of Honor was presented to Mrs. Estocin by Secretary of the Navy W. Graham Claytor, Jr. In addition she accepted the Distinguished Flying Cross,

the Air Medal, the Navy Commendation Medal and Purple Heart which were also awarded to her husband.

Capt. Estocin was listed as missing in action on April 26, 1967, after being forced down in enemy territory. His status was changed to presumed killed in action on November 10, 1977.

LMS Navy helicopters have been towing minesweeping equipment in various parts of the world for some years – first in Haiphong Harbor, then the Suez Canal, and later in the Med off the coast of Egypt. Previously, surface vessels were charged with the dangerous and time-consuming task of clearing mines from ports, anchorages, transit routes and other strategic areas.

Today, mine clearing is being accomplished through airborne mine counter-



measures (AMCM) with greater speed, reduced vulnerability and at less cost. The success of the airborne operation does not obviate the need for surface vessels, but it does provide for a dual capability, air and surface, to carry out the clearing operation faster and more safely than was possible before.

A major mission of AMCM is the sweeping of influence (acoustic and magnetic) mines. The most sophisticated influence sweep equipment, the MK-105 helicopter-towed hydrofoil platform, carrying the machinery and controls to generate a magnetic signature, is the Navy's operational airborne magnetic minesweeping system and is expected to remain so for many years.

NavAirSysCom is now sponsoring the development of the next generation magnetic sweep system by the Edo Corporation, developers of the MK-105. The new lightweight magnetic sweep system (LMS) is expected to provide more than

twice the performance of the MK-105 with only a small increase in physical dimensions.

To minimize size and weight and increase power generation and performance, the latest advances in materials, structures, hydrodynamics, hydrofoil technology and miniaturized electronics are being employed.

Because cost and time are considerations, hardware which has already proven itself in the marine environment is a high priority consideration. LMS will use a marinized Avco-Lycoming gas turbine engine and Westinghouse generators for the basic power generating machinery.

It is anticipated that initial LMS hardware will be in production by the end of the decade.

In the photo, an MK-105 is being towed by a helicopter.

ANA

The newest of the uniformed service-oriented organizations, the Association of Naval Aviation (ANA), is growing rapidly. Organized in 1976 under Admiral Thomas H. Moorer, USN(Ret), former Chief of Naval Operations and Chairman of the Joint Chiefs of Staff, it now numbers over 5,000 individual members and 20 industrial associates.

Its objective is to stimulate and extend appreciation of Naval Aviation and support Navy, Marine Corps and Coast Guard requirements through individual and collective action. A principal function is to help the Navy present its requirements to Congress. Members of the military appear before Congress to support the position of the administration and the Secretary of Defense. Cognizant congressional committees are now asking ANA to testify with increasing frequency on aviation matters. They have learned that ANA spokesmen represent many years of command and managerial experience, and are closely attuned to the problems and needs of the active maritime services, particularly in aviation.

Military personnel, active and retired, reserve and regular, and interested civilian men and women are joining ANA in increasing numbers to help ensure that the maritime air superiority of the United States is maintained at a level and strength commensurate with our national security needs. Anyone desiring further information can contact ANA Headquarters, P.O. Box 4124, Pensacola, Fla. 32507.

Space Shuttle Selections

Of the 35 astronaut candidates recently selected by NASA for the space shuttle program, 14 are civilians and 21 are military officers. Six are women and four represent minorities. There are 11 Navy selectees among the military, 8 of whom will be in the pilot training program and 3 in training as mission specialists.

Pilots will operate the space shuttle orbiter, maneuvering it in earth orbit and flying it to earth for a runway landing. Mission specialists will be responsible for coordinating, with the commander and pilot, space shuttle operations, crew activity planning, consumables usage and other space shuttle activities affecting experiments. They may participate in space walks and perform special payload handling or maintenance operations.

Navy officers selected for the pilot program are: Commander Frederick H. Hauck, VA-145; Lieutenant Commanders Jon A. McBride, VX-4, Daniel C. Brandenstein, VA-128, Michael L. Coats, Naval Postgraduate School, John O. Creighton, Naval Air Test Center, David M. Walker, VF-142, and Donald E. Williams, VA-122; and Lt. Robert L. Gibson, Naval Air Test Center. The three selected for mission specialists are Maj. James F. Buchli, Naval Air Test Center, Lt. Dale A. Gardner, VX-4, and Lt. James D. van Hoften, civilian reserve pilot with VF-201.

Those selected will report to the Johnson Space Center, Houston, Texas, on July 1, 1978. After two years of training and evaluation, successful candidates will become astronauts and enter the shuttle training program, from which a space shuttle flight crew will be chosen.

grampaw pettibone

Landing by Committee!

The instructor and his student manned their T-28B for a routine familiarization flight, the instructor in the rear cockpit. The brief, preflight, start, taxi and run-up were uneventful. The flight was routine until a practice precautionary emergency landing – PPEL – was initiated at 1,500 feet.

The duty runway at a nearby outlying field was selected as the intended landing site. The student performed the PPEL in a relatively satisfactory manner until on final with the aircraft dirty. The turn to final approach was accomplished at 150 feet. The student began to flare the aircraft and the instructor, noting the airspeed at 90 knots, added some power.

The student glanced at the airspeed indicator (prompted by the addition of power) and noted 85 knots. Somewhat distracted the student responded by lowering the nose. Quickly, before the instructor could react, he returned to the landing attitude. The aircraft at that moment landed very hard. After touching down, the aircraft was taxied to the side line and shut down for a visual inspection. The fuselage skin was found to be cracked. Estimated cost of repair: $7,475.00.

Grampaw Pettibone says:

Holy piston pumper! Instructor pilots: Remember the neck that's out is your own. If the new feller learnin' to fly is within the realm of reality, let him do his own thing. If he has started goofin' it all up and you're getting nervous in the service, take total control of the aerocraft. Don't nursemaid new kids by sorta takin' action in the short hairs. You're just distractin' 'em more. When you're close to the ground, either take positive control or let the newbee do his thing. Landing an aeroplane is an adventure that requires total concentration by the driver at the controls. Landings made by committee can cause broken butts. Don't critique, instruct!

Crunched Crusaders

Two pilots on alert duty scrambled in their F-8s for a practice intercept mission under GCI control. While they were airborne, a rain shower moved across the field. As it was squadron policy to make Morest landings where the runway was wet, the squadron duty officer advised the tower to expect the two aircraft to make Morest landings.

After being airborne a little over an hour, the two *Crusaders* returned to the field. They were advised by the tower that the runway was wet but braking was fair to good. The flight leader elected to make a normal landing and the wingman took a normal interval after break.

The flight leader landed on the right side of the runway and, during the roll-out, the tower cleared him for a right turn. Since the braking action was good, the lead aircraft was slow enough to turn off at the 6,000-foot

ILLUSTRATED BY Osborn

marker, but when he saw the de-arming crew on the left side of the runway, he announced over the radio that he was turning left.

The wingman touched down on the left side of the runway a little fast and started braking at the 4,000-foot marker. In less than 1,000 feet, the starboard tire blew. Realizing the other aircraft was still on the runway, the pilot applied heavy port brake. As the wingman neared the end of the runway, he suddenly saw his leader turn in front of him. He immediately applied right brake in an effort to pass behind him. Instead the nose and port wing caught the tail assembly of the other F-8 and spun it around 180 degrees. Both aircraft were substantially damaged, but luckily neither pilot was injured.

Grampaw Pettibone says:

Giminentlies! I've heard of a lot of ways to foul up your buddies but this takes the cake. Guess a lot of people have been laborin' under false impressions 'cause I thought everybody knew better than to turn across the path of the aircraft landing behind you.

This flight leader elected not to use the Morest gear even though it was squadron doctrine on a wet runway, failed to follow tower instructions in order to clear the runway safely and then, to really cap things off, turned in front of his wingman rolling out behind him. I'll admit a lot of things have changed in the flyin' business the past few years, but tricks like this have been taboo since the days of the open cockpit and streaming white scarf. (March 1965)

First Aboard

One of the good feelings in carrier aviation comes when a pilot receives his Charlie time, breaks and flies the approach, arriving in the groove just as the flight deck is signaled ready to recover aircraft. Usually the ship is turning into the wind, planes are being towed clear of the landing area, and the arresting gear is checked and set as the first plane to land is flying the pattern. If the ship is not steady on recovery course, it's a demanding chore for the initial aircraft to set up for a good start.

There are nonstandard visual cues and no real indication at the 180-degree position if the ship is turning into or away from you as it subtly seeks the best wind. This story relates some of the problems encountered and is a reminder that the flyer in the first aircraft around the pattern must concentrate extra hard to get a good approach set up. Pilots should not be too proud to wave off an uncomfortable approach.

An experienced Naval Aviator who was consistently a top performer in air wing carrier landings returned to the ship from a routine flight. Weather and visibility were good and a case one, VFR recovery was directed. This pilot was in the first aircraft to land and a routine break entry was initiated. The ship's expected final bearing was broadcast and the downwind leg was correctly flown. Preoccupied with fuel dumping and the landing checklist, the pilot failed to note the ship's steady, slow starboard turn. Overshooting at the 90-degree position and angling through the 45-degree position, the aircraft arrived close and high in the groove. From the platform the air wing LSO noted the ship's motion and the pilot's apparent difficulties with alignment. However, he felt he was within safe limits to continue the approach.

Just after entering the groove, the ship's course altered slowly to port causing the plane to drift slightly right of center line. Smoke from the ship's stacks began drifting over the ramp area degrading visibility. The pilot noted his early glide slope position to be one ball high. Approximately four seconds from the ramp the ball began to rise. The pilot responded by dropping his nose and reducing power.

Crossing the ramp, a final correction for right drift was accomplished by dropping the left wing. Just prior to touchdown the pilot went to "military" power as the LSO suggested "Easy with it!" The aircraft was arrested, catching the last wire. The LSO downed the aircraft for a hard landing inspection which revealed the plane had sustained Charlie damage.

Grampaw Pettibone says:

No grade – OCCIM – NEPDECICAR – CDTL. Egads, lads! Somebody could'a got hurt. This type approach has been flown by many pilots. Takin' your own wave-off when you're not set up beats a "No Grade" any day. Landing grades are nifty trend indicators – that's all. If the pressure to be #1 in the air wing gets so high that pilots are influenced to salvage bad starts – we've lost the big picture. This pilot was influenced to continue this poor approach because he "thought" he would hurt his landing grade average by taking his own wave-off. No penalties for *OWOs*. Don't depend on the LSO to relieve you of your responsibility to fly the airplane. Get a good start and be aware that many times the first plane aboard must work harder at achievin' the standard.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NARF

Story and Photos by
JOCS Bill Bearden

Preservatives make these birds look worse than they really are as they wait at Chevalier Field for their turn in the rework cycle. To the left, but not shown, are NARF's newest additions – a $5 million assembly building and an $8 million cleaning and disassembly facility.

We drive almost anywhere in our automobiles today without thought of breaking down or becoming stranded. It's only a minor inconvenience if we do. A quick-fix auto repair is normally a phone call or short tow away. After a few hours and a flick of plastic clout, we're back cruising the asphalt.

But what about Navy flyers? They can't pull into a big hangar in the sky. Or curb beside a white puffy cloud, fold their wings, hit the emergency blinker and wait for airway patrol to assist. When they have a problem in flight they have to get quickly and safely back to terra firma. They also have to use a different strategy to fly the skyways than we do to drive the highways. They have to foresee and prevent malfunctions before they occur.

For this reason, Navy planes are constantly receiving preventive maintenance – in carriers, squadrons and at air stations. They are also scheduled at certain intervals to check into one of the six Naval Air Rework Facilities for a complete going over. Which NARF they visit depends on who they are.

The largest of the NARFs is at San Diego, followed in size by Norfolk, Alameda, Pensacola, Jacksonville and the Marine Corps facility at Cherry Point.

NARF Pensacola is the oldest of the six, having been born along with Naval Aviation itself. It began with a humble assortment of primitive aircraft and a handful of men working out of tattered canvas hangars. Their only desire was to keep those planes flying. That dedication remains to this day.

From these humble beginnings, NARF Pensacola has grown into the most modern Department of Defense industrial facility in the state of Florida. It is second only to Monsanto in the Florida panhandle and southern Alabama. Throughout the years its title has changed again and again. It was not until April 1, 1967, that it became the Naval Air Rework Facility and a separate command with its own commanding officer.

The facility today, under the command of Captain John S. Mallory, operates at a peacetime level of 3,400 civilians and 40 military personnel. Working in some 70 different trade and skill areas, NARF combines the many years of experience of its personnel with modern equipment and facilities to rework approximately 500 aircraft and 85,000 aeronautical and dynamic components annually. The total annual product at NARF could be divided into approximate percentages: 40 for aircraft rework, 35 for component overhaul, and 25 in other support areas such as engineering and technical assistance, the oil analysis program and in-the-field customer services.

NARF Pensacola is a depot level maintenance activity with the mission of performing a complete range of rework operations on designated aircraft and their associated accessories and equipment. It no longer does engine rework, however. But it is capable of manufacturing aircraft parts and assemblies such as flaps, ailerons, canopies, rotor blades, etc.

"In some cases this capability has actually kept aircraft flying," says Commander R. S. Despard, NARF's

H-3 receives final paint finish consisting of one application of polymide primer and two of pigmented polyurethane of the desired color. After the paint dries overnight, markings are added. Aircraft, here the A-4, and components are stripped of all paint, grease and debris. This "dirty work" is presently being done in the old cleaning and disassembly hangars along the quay. It will soon be done in six cleaning bays in the new facilities at Chevalier Field.

executive officer. "This is true with the H-3, for instance, where we have had to manufacture parts no longer available through procurement."

The facility also provides engineering services in support of assigned aircraft and components, and provides technical services on aircraft maintenance and logistic problems. Other levels of aircraft maintenance are performed upon request or assignment.

NARF is also allowed to bid for contract work that falls within its many areas of expertise. "We operate pretty much like a small company," says Cdr. Despard. "We can actually go out and solicit, primarily within DOD, assignments to keep our work force employed if our aircraft rework is low in a particular quarter. Some of these have included reworking B-52 flaps for the Air Force; reworking foreign aircraft as part of our foreign maintenance service program; converting M-16 rifles from 7.6mm to 22-caliber for Air Force Commandos so they could have target practice cheaper; and building flotation collars for *Apollo* spacecraft." Through this method, NARF has picked up an Army electronics program called Quick Fix and an Air Force search and rescue program called Pavelow III.

NARF occupies approximately 1,330,000 square feet of floor space in numerous buildings at Pensacola. The workload is divided into several main categories of aircraft rework. In addition to standard depot level maintenance, NARF performs modification, conversion, and crash damage and minor repairs. In component rework,

the facility has rework capability for 7,800 different items.

SDLM is rework performed on aircraft at predetermined periods of time. Its scope depends upon the necessary depth of restoration and modification needed. It also includes the planned examination and test that will ensure aircraft integrity, reliability and mission capability for the next operating interval of that aircraft, normally 20 to 30 months.

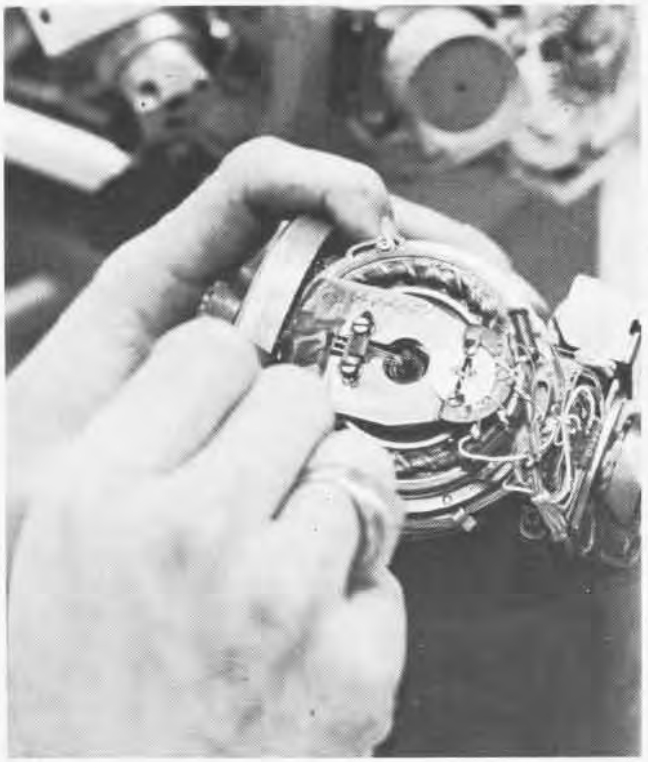
Operations within NARF are many and varied. Bear in mind that some 20,000 or more separate parts go into a single aircraft. In the course of rework, aircraft are examined, disassembled, repaired as necessary and then reassembled using the most rigid inspection standards.

The shops are equipped to do everything from renewing a rivet to turning a part to 10,000th of an inch, or rebuilding a huge wing. Those who man the shops are truly artisans in their trades and are justifiably proud of their work.

"Our biggest asset here," explains Capt. Mallory, "is the level of expertise of our journeymen artisans. Our average employee is in his or her early 50s. We have a large group of World War II employees who came into the apprentice program during the war and at the end of it. They are now master foremen, master mechanics and, in some cases, division heads. They are highly skilled and competent individuals." NARF's employees run the gamut from these old-timers to engineers from private industry, those fresh out of universities and those just entering the apprentice program.

"The basic difference between

Instrument mechanic Ella Stringfellow dons hospital-type cap and gown to work in the clean room of aircraft components rework section. She repairs AAU-21A altimeter used in H-3 and other aircraft. Close-up shows complex components involved in instrumentation rework. Materials engineer Frank Stuart conducts paint adhesion test in materials laboratory while another employee uses halo-lighted magnifying glass to solder circuit panel of avionics equipment.

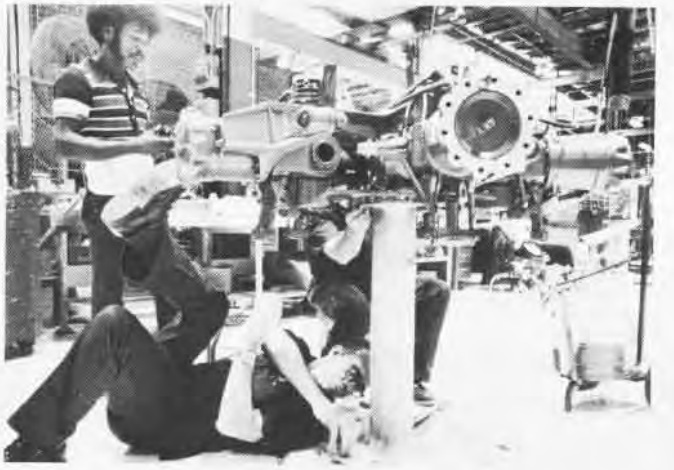


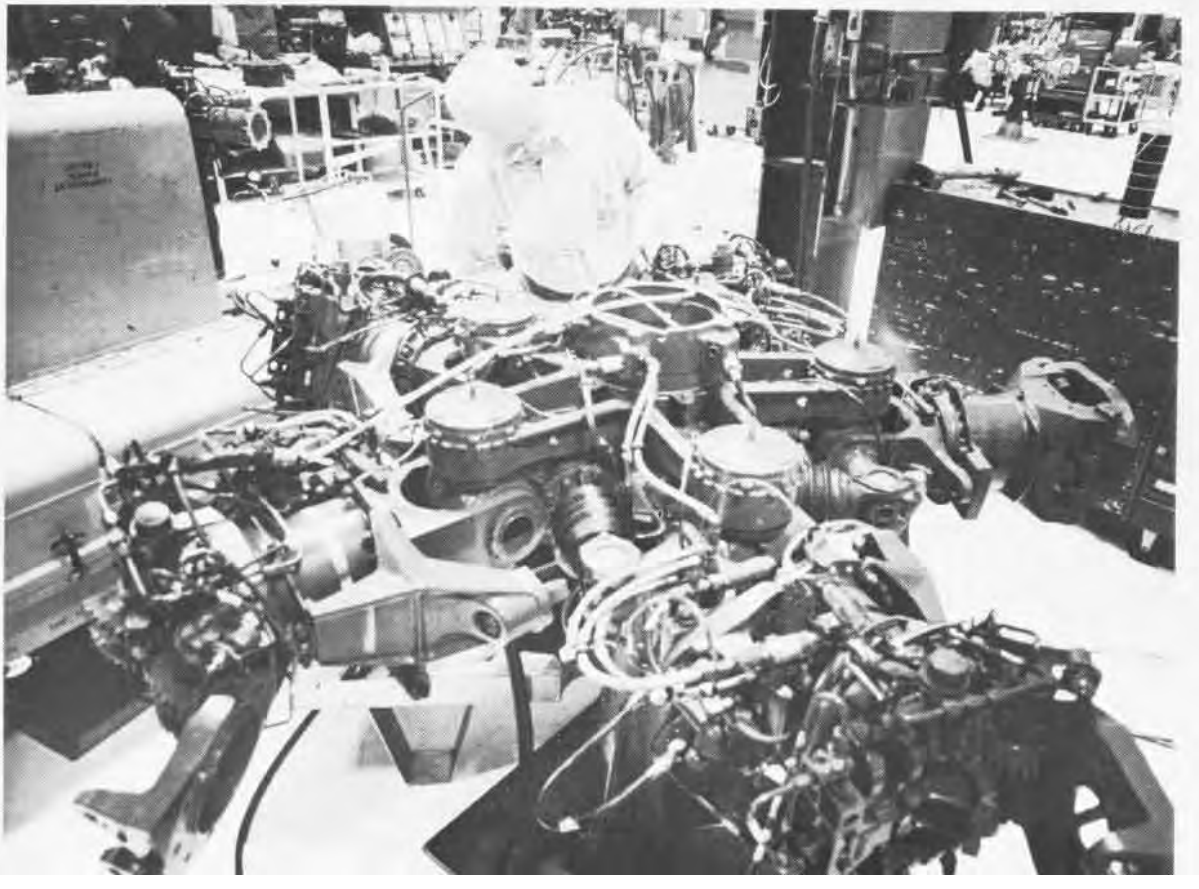
NARF Pensacola and the other NARFs," Capt. Mallory continues, "is that we handle a larger spectrum of different types of aircraft. The others may handle from two to four types where we do 10 different type model series here. These include training command aircraft, executive jets, A-4 light attack and a wide spectrum of helicopters for the Navy, Marine Corps and Air Force. We're unique in that our engineering application is much broader because of this." Cdr. Despard is quick to add, "And we do more aircraft per year than all the other NARFs combined." The facility reworks versions of the H-3, H-53, T-2, T-28, T-39 and A-4/TA-4.

NARF Pensacola is rapidly becoming the helicopter rework center for all services. "Helicopter technology is not something that is easily exportable and once ingrained in a facility it is very hard to transfer that capability elsewhere," says Capt. Mallory. "We've acquired the H-3 and H-53 in recent years because of our past experience with the Army UH-1 *Huey*. Our learning curve to get into the business, particularily the dynamic components — transmissions, gearboxes, rotor blades — took about two years. It took us that long before we really knew what we were doing to the point where we had confidence in our product. Everyone who has made the transition to helicopter dynamic components has had the same problem. We have captured that technology now and I think we've probably got the top expertise. In fact, some of our processes are more sophisticated than the contractors. Our bearing shops, for example."

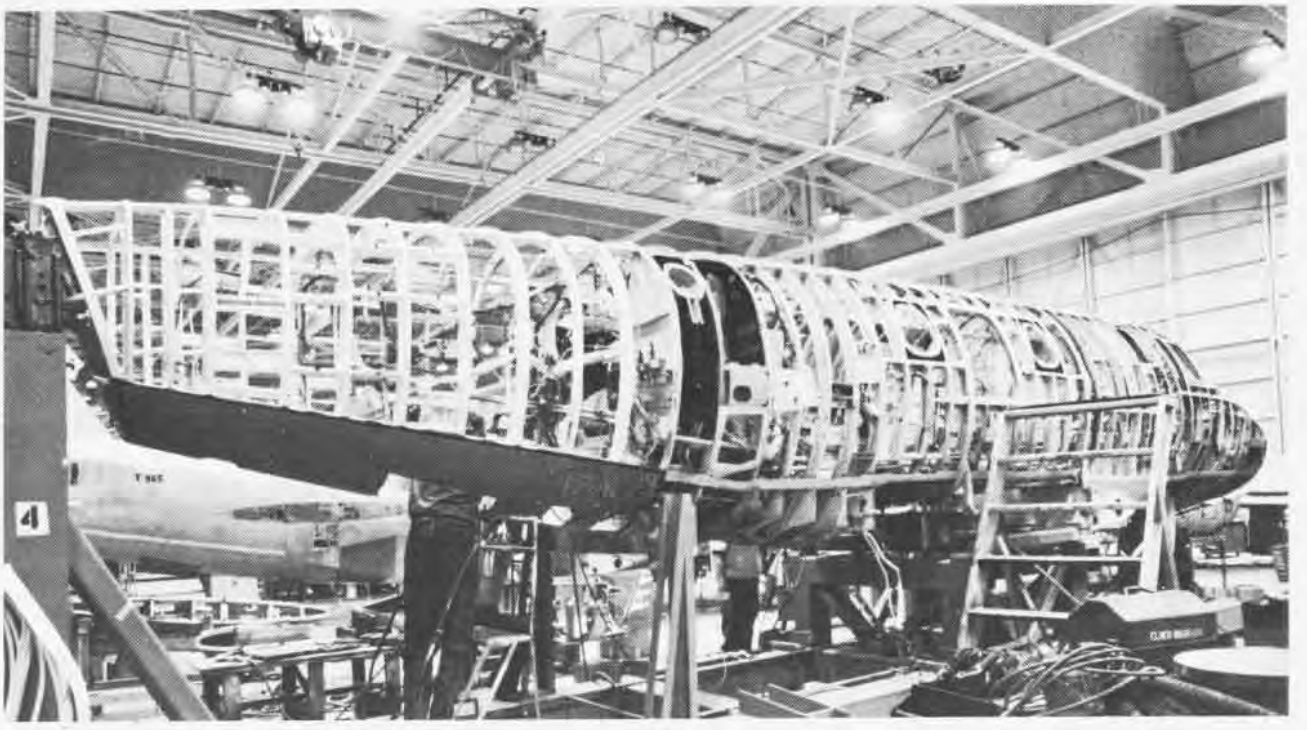
Aircraft arrive at NARF in different ways depending on their condition. If a plane has been crash damaged it may arrive by barge. If it arrives from Europe or the Pacific, it can arrive by

Mechanic lines up shiny H-3 rotor head hinges and spindles after parts are surface-treated by submerging in heated chemical degreaser. Aircraft mechanics Sims Robertson, left, an unidentified team, below, and George Oakes, bottom, perform various stages of rework on H-3 rotor head in dynamic components division. The numerical tape-controlled Milwaukee-Matic, below left, is used to manufacture aircraft parts. Once part specifications are recorded on tape, the milling of blocks of metal is automatic and identical.





Workers reassemble H-53 and T-39 in Rework Two as sheet metal mechanic repairs inside of A-4 tail section. T-39 skeleton, set in a jig to prevent frame warping, shows rework required due to excessive corrosion.



C-5 at nearby Sherman Field, or in a number of other ways.

Rework begins by partially disassembling the aircraft. It then goes through a phase called examination and estimation. Specialists take a microscopic look at the bird, specifically checking for what is required to put it into top fleet-ready condition. They tailor a work package just for that aircraft.

Each work operation on every aircraft is documented on a computer transactor card. "We may start off with a card deck three feet high for each specific aircraft," explains Cdr. Despard, "and end up with a deck a foot high. We also get some birds in here that will take all three feet, and more. It depends on the condition they are in."

From that point, the aircraft is sent to the strip shop where powerful paint removers are applied. This bare state allows the estimators a closer look for corrosion and a better look at the structural integrity of the aircraft. With the evaluation completed, the bird then enters Rework One. It is disassembled and repairs are made to structural portions and components as required. Much of the aircraft is later

Aviation sheet metal mechanic Keith Simon, 69, is one of the long-time NARF employees. He started work aboard NAS in 1934 and became a general helper metalsmith in 1940 when only nine metalsmiths were employed.

The finished product, a like-new Sea King, lifts off from Chevalier Field for flight test before being returned to its owner.

reassembled here. What is not is completed in Rework Two, where a thorough functional check of all systems is conducted as well.

The aircraft now enters the paint area where it is vacuum blasted with glass beads to rid it of any corrosive residue. It receives applications of corrosion preventative and is painted the desired color. After drying overnight, bureau numbers and such are added.

Flight test is next. Here, flight mechanics and test pilots give a thorough functional test to all systems. The plane is flown until all systems are go. The "new" bird is then returned to its owner.

While this evolution has been greatly simplified in this write-up, it should be pointed out that the average A-4 takes approximately 1,500 man hours to complete. A T-39, on the other hand, can take as long as six months or 15,000 man hours, because the aircraft has to be literally re-manufactured due to extensive corrosion.

No matter what the extent of rework, the men and women who make up NARF Pensacola are dedicated to keeping fleet aircraft in operation.

AMDO & CO

The Aeronautical Maintenance Duty Officer, designated 1520, is an expert in maintenance management. He faces one of the most difficult and challenging tasks in the Naval Aviation community today. The dramatic increase in cost and diversity of weapons systems and related support equipment in recent years have made the problem of coordinated maintenance effort a critical one. Though comparatively small in number, these specialists have had a dynamic impact in the maintenance field and are continuing to do so, ashore and afloat. There are 474 AMDO billets today, 460 of which are currently filled.

Captain John S. Mallory is an AMDO and the first selected by the Navy to command a Naval Air Rework Facility. He took command of NARF Pensacola on August 12, 1977.

The Navy recently announced the second 1520 selection for a NARF command. Captain Leo L. Hamilton, currently at NALC Patuxent River, will become C.O. of NARF North Island in San Diego this summer.

"I feel real happy about being the first 1520 to command a NARF," says Capt. Mallory, the son of a rancher from Madera, Calif. "And I'm sure there will be more. Traditionally the C.O. billets have been coded 15xx which means either community – 1510 (Aeronautical Engineering Duty Officer) or 1520 – could be selected to fill the position. It had just never been done before.

"I feel we [1520s] are probably more qualified in the super management job as C.O. than a 1510 with a more limited background."

Capt. Mallory says that he is planning another first within NARF Pensacola. He is going to make a 1520 his production officer.

"The C.O.'s job is more of a management than technical position," Capt. Mallory says. "I don't ever see myself sitting down and worrying about things like thermodynamic stress, for example. I have to worry about people, dollars, work flow." Those dollars amount to a budget of $143 million and a yearly product of 500 aircraft and some 85,000 aeronautical and dynamic components.

Capt. Mallory, who holds a B.S. in agriculture and an M.S. in material management, has what he terms "a folksy approach to command and it seems to be appropriate here." He produces a weekly news sheet called "Mullet Wrapper" and writes a Howgozit column to keep employees informed.

"You can't really get the pulse of an organization from the Ivory Tower," he says. "One goal we're improving is the interdepartmental communications system that feeds information up the chain."

Since taking command, Capt. Mallory has made a major organizational change in management philosophy. "It's a matter of semantics, but we've gone to a product vice a process orientation. We've taken a general foreman and given him total product responsibility for a certain aircraft, say the H-3. From start to finish it's his baby."

The captain explained that before if he were an electrical general foreman, he was just that on all aircraft. No one person was really in charge of the total product.

"We're stressing quality not quantity," he says. "In the long run it will pay off. Those aircraft are not going to come back to us as fast."

CURTISS

NEWS naval aircraft

The February 1978 issue of *NANews* featured an inadvertent quiz on page 31, when it showed an unidentified Navy aircraft that is among those in the Bradley Air Museum, Windsor Locks, Conn. While the expert buffs may readily identify a Curtiss XF15C-1, most readers are probably unaware of this early Navy venture into the jet age. Some may recall seeing it during its long sojourn at NAS Norfolk before it was moved to Connecticut.

Until the mid-Thirties, Curtiss was a major producer of Navy fighters. Subsequently this role was taken over by Grumman, while Curtiss continued as a major source of Army fighters. Design studies of potential Navy fighters did continue, and a prototype long range, high altitude fighter, the XF14C-2, was completed in 1943.

By this time, operational carrier task force and Marine Corps fighter requirements were being met by the *Hellcats* and *Corsairs* just being introduced to combat. The Navy was, therefore, looking toward potential future types that would provide increased combat effectiveness. Among these were several intended to exploit the potential of jet propulsion. The Ryan XFR-1 composite powered fighter and the McDonnell XFD-1 pure jet were the first, with Curtiss' new composite powered fighter design being ordered subsequently to meet a long range, high performance fighter requirement for *Essex*-class carriers.

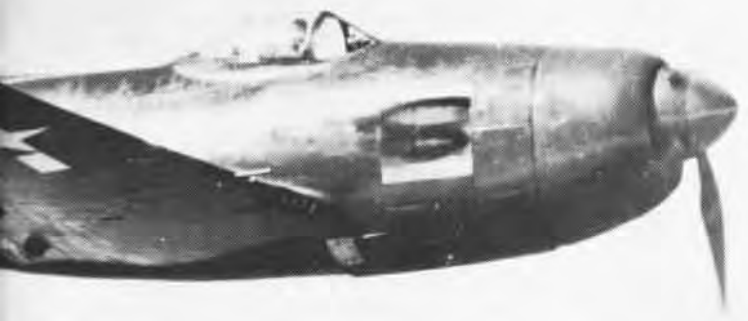
The limited power and high fuel consumption of early jet engines made the combination of a conventional piston engine and a jet unit installed in the rear fuselage attractive. The jet would be used as a booster for increased high speed and combat performance. Ordered in early 1944, the first of three XF15C-1s flew at Buffalo, N.Y., on February 28, 1945. Initial flights used the P&W R-2800 only, with the 3,000-pound thrust British Halford H-1B jet engine being installed later.

In the fall, the second airplane was evaluated at NATC, the first having been destroyed in a landing accident. In contrast to the *Bearcat,* the XF15C-1's large size was noted with some concern.

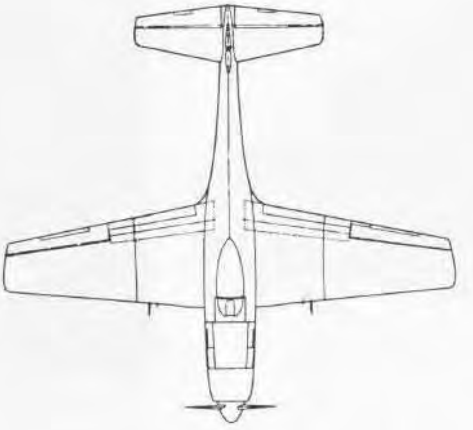
Since the war was over and jet engines and aircraft were showing promise in pure jet carrier fighter designs, interest in the XF15C-1 waned.

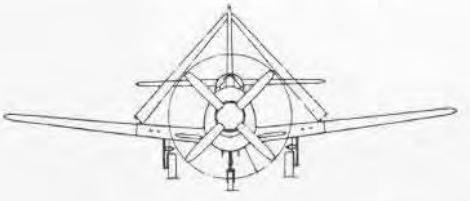
The conventional tails on the second and third airplanes were replaced by T-tails, intended to improve carrier spotting space requirements. Flight testing continued until the fall of 1946 at Curtiss-Wright's Columbus, Ohio, plant when the two airplanes were delivered to NATC. The following spring, #2 went back to Buffalo where it was later scrapped while #3 was barged to Norfolk, escaped scrapping and survived as an example of aircraft design in the piston to turbine transition period.

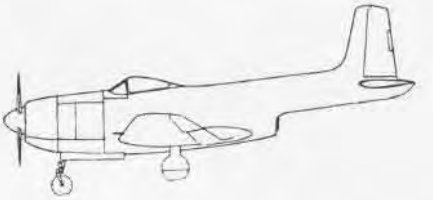
XF15C-1



Span		48'0"
Length		33'9"
Height		15'3"
Engines		
P&W	R-2800-34W	2,400 hp
Halford	H-1B jet	3,000 lbs
Maximum speed		480 mph
Service ceiling		41,800'
Range		1,385 nms
Armament	four	20mm
	two	1,000-lb. bombs







PEOPLE PLANES AND PLACES

The *Blue Blasters* of VA-34 retired the Intruder Bombing Derby Trophy in recent ceremonies at NAS Oceana. They have won the trophy for four consecutive years in competition between all seven East Coast A-6 squadrons, including replacement squadron VA-42.

Cdr. Bob Byng, skipper of VA-34 (left), presents a new trophy to Capt. Jerry Hesse,

ComMAtWing-1, to be used in place of the retired one. The plaque features an MK-76 practice bomb mounted on wood, with inscribed plates showing each year's winner.

Lt. Brian Calhoun received the VF-171 *Aces'* Golden Tailhook Award from C.O. Cdr. J. B. Houston for outstanding performance during recent carquals aboard *Forrestal.*

Forrestal was the setting for another notable event when VF-74 won the CVW-17 Top Hook Award for the highest landing average aboard the carrier during Type Training I and II. The *Be-Devilers* won the same award for the refresher training period in September 1977, and for the recent Med cruise with CVW-8 aboard *Nimitz,* a clean sweep for every at-sea landing period in which they have been involved.

MAG-14's overall systems bombing award was presented to the C.O. of VMA(AW)-533, LCol. John M. Dye, by MAG-14's C.O., Col. J. A. Manzione, in a ceremony at Cherry Point. VMA(AW)-533's Maj. Dennis Harke, X.O., and Capt. Beaman Cummins received individual Top Gun Awards for excellent systems and visual deliveries.

VA-204, under the command of Cdr. James A. Greenwood, has relocated from Memphis to New Orleans. VA-204's departure from Memphis affected about 150 active duty personnel and an undetermined number of reservists. Capt. Gary F. Farris, NARU Memphis C.O., commented that he "regretted seeing so many friends and comrades leaving the Memphis fold."

Another sad note in the relocation came in the phasing out of the A-4L *Skyhawk.* VA-204, one of the last Navy squadrons to fly the *Skyhawk* as its prime operational aircraft, will transition to the A-7 *Corsair II.*

VP-19 has become the newest P-3C Update II squadron on NAF Kadena. Relieving VP-9, the *Big Red* quickly assumed the watch and now spends its days and nights performing surveillance missions of targets in its assigned 1,500,000 square miles of ocean.

At Kadena, the squadron, under the command of Cdr. Andrew Jampoler, will deploy detachments to countries throughout WestPac and the Indian Ocean.

The squadron also marked a "first" for itself when its first enlisted woman, AXAN Candy D. Bowser, was welcomed aboard. Candy spent most of her life on Okinawa as an Air Force dependent. She decided to join the Navy because she wanted to see more of the world.

The first AYK-14, Navy's 16-bit standard airborne general purpose computer, is being evaluated at NATC Patuxent River. "The AN/AYK-14(V) is being developed using the current state-of-the-art technology to reduce the proliferation of digital computer types in airborne weapons systems," explained an official from the computer technology group which will test the new system.

Navy now has 19 different airborne digi-

tal computers in its fleet aircraft. Each has its own software design, which poses difficulties in life-cycle support. Since general purpose computers all do the same things – store data, move data, manage input and output data from other subsystems, add and subtract – they can be standardized. But, historically, every aircraft and airborne system has always had its own computer. In the next 5 or 10 years the Navy expects to have about 5,000 general purpose computers, so the need for standardization is obvious.

The AN/AYK-14(V) can be adapted to many uses and is compatible with the standard 16-bit shipboard general purpose computer, the AN/UYK-20. Initial users of the new system will be the F-18 *Hornet*, EP-3E *Orion*, EA-6B *Intruder* and the LAMPS MK III helicopter.

The AN/AYK-14's applications include navigation, surveillance, display and control, and fire-control processing. The computer technology group also expects to receive for testing a memory expansion unit designed to increase by 16 times the memory and input/output capacities of the AYK-14.

In the Marine Corps, a plane captain is responsible for preparing an aircraft for flight. Until recently, this position was traditionally held by male Marines. Pfc. Linda L. Gustafson of MCAS El Toro has broken that barrier by becoming one of the first female plane captains in the 3d MAW.

Pfc. Gustafson completed jet engine mechanics school at NAS Memphis and then attended Trainee Management Element-31 school at Santa Ana where she received plane captain training prior to being assigned to VMFA-314.

Her immediate plans for the future are to continue her education in aircraft maintenance and, hopefully, to be transferred to Hawaii to be with her husband, Pfc. Pete Orth. "Before getting out of the Marine Corps, I want to receive my FAA license as a jet mechanic and then possibly work for one of the larger airlines," she says.

U.S. Ambassador to Japan, Michael J. Mansfield, visited *Midway* and was treated to static displays in the hangar bay and a demonstration of flight operations.

Mansfield and his party arrived from Tokyo in an SH-3 *Sea King*. They were welcomed aboard by the carrier's C.O., Capt.

Donald L. Felt, and X.O., Capt. James F. Dorsey, Jr.

In the photo (from left), HTFN M. C. Bouchelle and FN Tom Cenate receive the ambassador's thanks after their presentation on fire-fighting and damage control equipment. Also shown are Capt. Marvin L. Duke, U.S. Defense Attache Office, and William C. Sherman, Deputy Chief, Tokyo Mission.

Capt. Paul Stoufferd and his crew from VMGR-252, Cherry Point, recorded the squadron's 210,000th accident-free flight hour recently. Since March 6, 1959, 252 has experienced no major accidents involving its KC-130s or its elderly, but still humming, C-117s. According to squadron aviation safety officer Capt. James Gilmore, "There hasn't been a major accident involving 252 aircraft in 19 years, and that's certainly a credit to the pilots, engineers and navigators who fly the planes. However, it's the unsung heroes working day and night in the maintenance shops who keep the squadron's aircraft in top operating condition. If it weren't for the mechanics, the pilots wouldn't be able to set high flying records."

A Sunday afternoon flight of VP-0919 received a distress call from a private aircraft while returning to Moffett Field. The *Orion's* radioman received the call from Oakland air traffic control, via McClellan overseas radio. The plane commander altered course and proceeded to the distress area.

A Piper *Cherokee*, en route from Oakland

to Honolulu, experienced a severe drop in oil pressure and a rise in temperature. The P-3 maintained radio contact with the Piper and with the Coast Guard rescue unit which launched a C-130. The P-3 escorted the Piper for an hour until the C-130 arrived and then instructed the pilot of the small plane in emergency ditching procedures. When the time came, the Piper pilot ditched in a calm sea. He deployed his life raft and was rescued within 20 minutes by a Coast Guard helicopter. The pilot suffered no severe injuries. He said, "I barely got my feet wet!"

The all-reserve crew of the P-3 included: Lt. Richard Perez, plane commander; co-pilots Lts. Allen H. Craig and Richard Ulrick; Tacco LCdr. Thomas V. Swearingen; navigator LCdr. Lawrence Ankuda; radio operator Chief Walter K. O'Dowd; flight engineer AD1 Reno F. Morella; and radar operator AW2 Mark L. Hutchins.

VR-24, NAF Sigonella, recently added two more RH-53Ds to its fleet of CT-39s, C-2s, C-1s, C-130s and its first RH-53. Its *Sea Stallions* will support Sixth Fleet ships and assist in SAR missions throughout the Med. Led by Cdr. R. E. Weaver, VR-24 is the first logistics support squadron in the Navy to operate this particular helicopter.

The RH-53D has a range of 400 miles with full fuel and payload and can carry up to 13,000 pounds, 34 passengers or 24 litters for medevacs. Its average speed is 120 knots and it has an external lift capability of 25,000 pounds.

Two squadrons celebrated recent milestones. The *Ubangis* of VA-12, commanded by Cdr. Dave Edwards, surpassed two years of accident-free flying. The Cecil Field squadron has flown over 9,100 hours in the single-seat A-7E and logged over 3,500 arrested landings.

VT-6 was cited for concluding its third consecutive year of flying without a major aircraft accident. The squadron was praised by Capt. W. J. Somerville, ComTraWing-5, during ceremonies at Whiting Field. Led by Cdr. Richard Stout, VT-6 has flown more than 95,000 hours in the T-28 *Trojan*.

NATC Patuxent River's 1977 safety record was the best in the command's history and "every individual here deserves some of the credit," said RAdm. James H. Foxgrover, NATC Commander.

The major accident rate of 0.40/10,000 flight hours translates into only one major accident in 25,213 hours of flying – the loss of an F-14A *Tomcat* in February 1977.

NATC's aviation safety officer, LCdr. Robin Springer, said the present figure is about 38 percent better than the all-Navy accident rate of 0.64/10,000 hours for 1977. He added, "Not only is this the best we have ever done, but the reporting period was extended from 12 to 18 months this time."

"Down aircraft? Not here," exclaims ADC Billy J. Swick, VR-124's power plants supervisor at NAF Sigonella. When problems arise, Swick sits back in his "chief's chair" and puts his talent to work.

Chief Swick's latest $80 invention, the propeller sling adapter, has replaced a $50

thousand Hyster forklift – a bargain at twice the price. Lift availability problems caused aircraft down time of up to 100 hours per month. Swick's invention allows a smaller, more available forklift to do the job in a timely fashion.

On the West Coast, LCdr. Jay B. Yakeley of VF-2 passed the 1,000-hour mark in an F-14A.

NAS Oceana-based VF-31 received the Battle E. C.O. Cdr. J. B. Best accepted the award from RAdm. J. C. Barrow, ComTacWingsLant, capping off a successful year for the squadron which recently returned from a Med cruise aboard *Saratoga*. The *Tomcatters* also chalked up another year of accident-free flying in the F-4J *Phantom II*.

The *Screwtops* of VAW-123 received the Atlantic Fleet Battle E for 1977. RAdm. John C. Barrow, ComTacWingsLant, made the presentation to squadron C.O., Cdr. R. A. Allen, marking the fourth time the *Screwtops* have earned the award in their 11-year history. VAW-123, home-based at Norfolk and attached to CVW-3, recently returned from its third deployment with the E-3C *Hawkeye* aboard *Saratoga*.

Navy's first *Tomahawk* cruise missile, flown in wind tunnel tests, has been donated to the Smithsonian Institution's Air and Space Museum, Washington, D.C. The presentation was made to Michael Collins, museum director, by Adm. R.L.J. Long, VCNO. Adm. Long cited the missile development as a joint effort of U.S. government and industry.

The *Tomahawk* is a guided missile developed for the Navy by Convair Division, General Dynamics Corp. Expected to be operational in 1980, it can be launched from aircraft, surface ships, submarines and land platforms.

VP-22's high-powered command retention program has helped gain the squadron the coveted Golden Orion Award for retention excellence in FY 1977. RAdm. Charles O. Prindle, ComPatWingsPac, presented the award to AWCS John L. Brustol, VP-22's command career counselor at Barbers Point.

Cecil Field's VA-86 and Kingsville's VT-22 set safety records recently. The *Sidewinders* commenced their deployment to the Med by logging their 20,000th accident-free flight hour. LCdr. Jim Kidd and Ltjg. Eddie Smith marked the milestone in A-7Es aboard *Nimitz*. C.O. Cdr. Herb Taylor praised the pilots and maintenance personnel on their ability to function safely and effectively under the pressures of light attack aviation in the carrier environment.

Cdr. J. L. Shaw, C.O. of VT-22, congratulated Capt. Cliff Pittman, USMC, upon his return from a mission which pushed the squadron over the 25,000-hour mark for accident-free flying.

Personnel at NAS Bermuda recently exemplified the Navy spirit when they executed a well coordinated medevac involving a heart attack victim aboard *Seatrain Washington*, a Merchant Marine container carrier at sea 100 miles southeast of the resort area.

The Coast Guard in New York received *Washington's* call requesting emergency medical assistance via NAS Bermuda. The base helo was not equipped to navigate the distance and locate the vessel, so a P-3 from VP-26 was tasked to conduct weather reconnaissance for it while en route to *Washington*. The *Orion's* aircrew, with plane commander Lt. T. Bybel and mission commander Ltjg. J. H. Brainerd, located and contacted the ship, relaying the patient's vital statistics to Bermuda.

Having received the en route weather and with corpsman HM1 E. D. Rowley onboard, the UH-1 *Huey* lifted off with Ltjg. T. E. Boggs, plane commander, and Lt. R. R. Ainslie at the controls. The helo took headings from the P-3 crew to effect the rendezvous. The *Orion* crew became the communications link between the ship and helo, monitored the medevac, and gave the helo headings back to Bermuda. The patient, Alfred Sawyer, was admitted to a local hospital in stable condition.

Changes of command:

HelWingRes-10: Cdr. Theodore G. Sholl relieved Cdr. Karl A. Ramsing.

CVW-8: Cdr. Judson H. Springer relieved Cdr. Ronald F. "Moon" Moreau.

H&HS MCAS Yuma: LCol. William A. Cohn relieved LCol. Victor M. Lee.

MABS-31 Det B: Maj. Stanley R. Stewart relieved Maj. G. W. Kralovec.

NARDet Moffett Field: Cdr. Terrence V. Gallagher relieved Cdr. James F. Sherry.

VA-46: Cdr. James T. Matheny relieved Cdr. David A. Page.

VA-87: Cdr. Donald A. Gerrish, Jr., relieved Cdr. William J. Catlett III.

VA-176: Cdr. Manuel Ortega relieved Cdr. Marshal A. Howard.

VF-11: Cdr. K. T. Kilby relieved Cdr. R. R. Stoops.

VF-84: Cdr. Thomas S. Treanor, Jr., relieved Cdr. William J. Townsend.

VF-142: Cdr. Frederick L. Lewis relieved Cdr. Roger L. McFillen.

VRF-31: Cdr. William H. Seigel relieved Cdr. C. F. Williams.

VT-21: Cdr. Billie G. Gunter relieved Cdr. Paul H. Schulz.

VT-22: Cdr. John R. McDaniel relieved Cdr. Joe L. Shaw.

The Fleet Angels Have Taken

By Helen F. Collins

Wing

In a sense, the story of HC-2 is the story of the helicopter, its introduction and evolution through the years along with the development of the HU-HC squadron mission. It was a marriage of men and machines which produced refinements in the helicopter much sooner than might otherwise have taken place.

An experimental squadron, VX-3, was commissioned on July 1, 1946, at Floyd Bennett Field, Long Island, N.Y., to develop and evaluate the helicopter for operational use in the Navy. As the demand for the new rotary aircraft and crews to fly them rapidly grew, it became apparent that Navy's helo organization needed more flexibility. VX-3 was disestablished on April 1, 1948, and Navy's first operational helicopter squadrons were born on the same date. Helicopter Utility Squadron Two at Lakehurst, N.J., was to perform East Coast helicopter duties operating with ships of various designations in the Atlantic Fleet. HU-1 was to work from San Diego, Calif.

No one could guess that the fledg-

1948 photo of HRP-1, HO3S-1 and HTL-1, with blimp in background, at Lakehurst.

ling HU-2, with just a handful of aircraft, would become the largest squadron in the Navy with 60 planes and 600 personnel. Its detachments would deploy around the world aboard ships from oilers and survey ships to nuclear-powered carriers. The squadron sent out its first sea-going detachment in October 1948 and the detachment concept stayed with the squadron throughout its history.

By the time HU-2 was one year old, its helos were flying plane guard, transferring personnel and mail from ship to ship and between ship and shore, making photographic and reconnaissance flights, tracking torpedoes and acting as radar calibration targets. It also trained heavier-than-air pilots to transition to helicopters. Special missions ranged from a mining or amphibious exercise to a *Stratolab* balloon project for the Office of Naval Research.

Detachment pilots and crews were on their own as they performed a variety of duties while deployed for periods from one week to eight months. A Det maintenance crew was so well grounded in its aircraft that it acted as a separate squadron aboard ship, independent of the ships company, handling its own maintenance, safety and personnel problems while following the ship's schedule. The keen will of the crews to work out problems as they arose led to such developments as the triple saddle seat, cable and webbing cutters, crewman's raft and a host of others.

In the early years, innovation was critical as situations were encountered for the first time – as in 1949 during a cruise when, in a personnel transfer, conditions required landing the helo on the No. 1 turret of the cruiser USS *Albany* while she was underway. Detachments often experienced difficulty and delay in transferring mail when deck crews became confused and helos had to hover over the ships in turbulent air for prolonged periods. The squadron soon realized that standardized procedures were needed. It prepared a handbook dealing with shipboard operations and helicopter safety, which was soon adopted throughout the fleet.

The parent organization had to be large in order to support the far-flung detachments and meet their many requirements. It took care of the complex administrative problems created by the squadron's here-today-gone-tomorrow life, and it worked at the never-ending job of operational training and retraining of pilots, crewmen and support personnel. Since the squadron was self-supporting, it carried a heavy maintenance load – reviving fleet-weary copters and maintaining undeployed craft in readiness for training and for deployment.

One mission that always yielded a sense of real accomplishment was the addition of another name to the list of those who had joined the Pelican Club by rescuing a man from the water. HU-2, and later HC-2, Pelican boards were a fixture throughout the years, honoring those individuals who performed a life-saving mission. Presumably the pelican was selected to symbolize the rescue of a person at sea because of its ability to snatch large objects from the surface of the water and carry them long distances.

Throughout the squadron's operations rescue was paramount. The question uppermost in the mind of any pilot whose plane has crashed into the sea is, "What are my chances of being rescued?" Saving lives was the *Fleet Angels'* most vital reason for existence and on this premise they based their safety training program. In an *NANews* article in December 1958, Commander T. R. Wheatley, then C.O., was quoted: "... 19 of 20 survivors will be rescued from the sea and returned safely to their carriers to fly again. But it's that 20th man who keeps us awake nights looking for better ways, better equipment and better rescue techniques for us to do our job."

Soon after an HU-2 detachment reported aboard a carrier, it held a briefing conference, which all flyers had to attend and all flight deck personnel were requested to attend. The pilots displayed the various types of gear they were likely to be wearing so the Det would know what problems might be encountered. The Det OinC demonstrated the rescue equipment and techniques used in different situations, including those where the helo worked with the plane guard destroyer during rescues while air operations were in progress. It was the custom for a plane guard destroyer to receive five gallons of ice cream from a carrier as a

reward for returning a downed pilot. One of the Det helo pilots complained that all they got from the carrier was a hard time for delaying operations.

In the first months of HU-2's operations, its choppers became a familiar sight as they filled the air space performing routine missions and responding to emergencies. While the squadron's commitments at sea grew steadily, helicopter training at Lakehurst also moved along and 83 pilots qualified in 1949. An *All Hands* article in March 1949 expressed the opinion that the helicopter was in the Navy for keeps and that everywhere it had acquitted itself creditably.

The first medevac took place in June 1949 when a squadron HRP-1 took an injured sailor from Leonardo, N.J., to St. Albans Hospital in New York. That October, an HU-2 helo picked up a man who had fallen overboard off USS *Siboney*. The same month, a squadron Det aboard the cruiser USS *Columbus* proved the helicopter's usefulness as a gunfire target in testing projectile fuses. Taking advantage of the rotor plane's versatility in the air, the fleet also began to use it as a radar calibration target.

Since helos were not instrument flight equipped in 1949, they were limited to daytime visual flight conditions. Experiments and flight evaluations were begun, working toward instrument certification. An HO3S-1 was used, completely equipped with the standard flight instruments found in fixed-wing aircraft. A board of three experienced pilots flew simulated instrument flights to determine whether such flight in the HO3S was practicable. The project was completed in 1950 with limited success because of stability and wind problems. The conclusion was that limited instrument flight was possible but that actual instrument flying was not advisable at that stage of development.

The squadron was also tasked with advising BuAer on a number of airframe modifications to improve HO3S performance. These included metal main tail rotors, hydraulic boosters on flight controls, altitude gyro, gyro compass, turn and bank indicators, increased dynamic stability, and a shoulder harness with inertia-reel lock device.

Almost 60 percent of squadron flight time was being logged at sea by the middle of the 1950s, with the remainder of the time taken up mostly with training at Lakehurst. In January 1951 helo flight training was transferred to Helicopter Training Unit One (HTU-1) at NAS Pensacola. By then HU-2 had 31 active operational detachments. Several detachments deployed in late 1950 on 72 hours' notice to operate with the Pacific Fleet during the Korean Conflict. Det One was permanently home-ported at Norfolk, with SAR Dets at Atlantic City, Jacksonville and Key West.

The squadron began the transition, in January 1951, to the HUP-1 which the pilots found more satisfactory than the HO3S particularly in its handling characteristics. With the introduction of the HUP and its improved control features, night flying began in January 1952. By the end of that year, the squadron had grown to 52 detachments and operations had greatly expanded.

The *Fleet Angels* were plying their trade around the world. Their aircrews and whirlybirds created a sensation in far-away places like Beirut and Rio de Janeiro where the HUPs were the first helicopters the people had ever seen.

The squadron's SAR operations began to make the front pages of the home papers, such as an incident in March 1953 in which an injured worker had to be removed from a 153-foot water tower in New Jersey. Other dramatic rescues followed as well as instances in which the helo crews showed their ability to improvise. In one rescue, an HU-2 pilot, flying off USS *Tarawa*, used his rotor downwash to extinguish a fuel fire in a crashed F4U in order to safely extract the injured pilot.

Deployment aboard icebreakers was probably the least favorite assignment for the Dets. The average cruise was six months, with little available in the way of liberty ports. The crews made reconnaissance flights, often in bad weather with rough seas, searching for weak spots in the ice.

Lt. Bob Shields' assignment to the squadron in 1953 was a great personal experience for him. He had been the first Naval Aviator to be rescued by a helicopter. In 1947, while attached to VB-18 aboard *Leyte*, he had to ditch ahead of the ship because of engine failure. He heard a strange noise and saw a rare sight for those days – a helicopter. It was coming to rescue him. The helo was flown by a Sikorsky test pilot off *FDR*. He was demonstrating to the Navy the helo's usefulness in plane guard duty. Needless to say, the incident also demonstrated the helo's usefulness in a rescue.

In 1955 HU-2 helos and crews at Lakehurst participated in a military air

HC-2 helos fly plane guard over Shangri La, far left, and recover torpedo, center. At right, HU-2 helo participates in vertical replenishment aboard Enterprise.

evacuation of 500 civilians from flood areas of Pennsylvania ravaged by a hurricane. From 1955 to 1960, squadron Dets participated in Operations *Deep Freeze I, II, III, IV* and *V* in Antarctica.

HU-2 was the first operational squadron to get the new HUL-1 in 1957. With fuel for five hours, it had a lifesaving rescue hoist, two inside litters for transporting stretcher patients, winterization equipment and floats to facilitate landing at sea. As aircraft carriers grew larger, squadron personnel saw a need to modify the rescue sling to effect multiple rescues. In a short time a new three-prong seat was in use.

Another project about that time was a study to determine problems relative to wind and turbulence aboard aviation ships. The solution was an anemometer windsock which gave the helicopter pilot and the ship's air officer an indication of the wind at the landing spot. This helped the helo pilot get the craft down on deck with greater safety.

The HUK-1 appeared on the scene in 1958. It had a weight capacity of 2,000 pounds, cabin space for five, stretcher facilities and a hoist.

As HU-2 ended its first decade of operations, fleet commitments were at a high point. In June 1958 a squadron helo logged the first blimp rescue by flying a line over and around a derelict blimp, which it then successfully moored at NAS Lakehurst. In December a dramatic rescue took place when three helicopters from Lakehurst snatched crewmen from the tanker *African Queen*, which had split in two off Ocean City, Md. The following month, a *Fleet Angel*, flying as low as 20 feet for 20 miles in heavy snow and near zero visibility, in the Arctic, rescued six New Zealanders stranded on a glacier which was breaking up. Other HU-2 pilots, off the icebreaker *Edisto* on their way home from Antarctica in April, stopped off in Uruguay for ten days to help rescue 277 flood victims.

An additional mission was assigned to HU-2 in 1960, "development of helicopter rescue techniques and equipment." This put the official stamp on the squadron's independent test and evaluation work in survival and rescue procedures.

At-sea commitments increased to the point where another East Coast utility squadron, HU-4, was established in July 1960 with a similar mission. The new unit operated on icebreakers, cruisers and survey ships while the *Fleet Angels* deployed aboard aircraft carriers. The two squadrons combined their resources in March 1962 to evacuate 1,800 residents of the south New Jersey shore when a late winter storm brought snow, sleet, and high winds and tides. The month before, HU-2's Det 36 participated in the *Mercury* space capsule recovery, transferring Lieutenant Colonel John H. Glenn from USS *Noa* to USS *Randolph* after the earth-orbiting space shot. In October and November, Dets 62 and 65 flew for 49 days during the Cuban Quarantine.

New aircraft came into the inventory in 1962 – the HSS-1 for pilot training and evaluation, and the UH-2A *Seasprite*. The H-2 replaced the 12-year-old HUP and added many new features. It gave the *Angels* greater range and endurance, and provided the long-awaited all-weather capability – a major step in rotary wing. In less than 10 years the helicopter had progressed from a VFR-contact, daylight-only aircraft to a highly specialized and complex all-weather rescue machine.

The HUPs were retired during 1964, until all the detachments were flying the *Seasprite*. By the end of the year detachments were aboard all Atlantic Fleet CVs, accounting for about 70 percent of squadron assets. Det 65 was deployed aboard *Enterprise* for her 33,000-mile voyage around the world in the nuclear task force operation *Sea Orbit*. In November of the same year, *Fleet Angels* helped to rescue crewmen from a Norwegian tanker cut in two in a collision with the Israeli liner *Shalom* off the New Jersey coast.

The helicopter utility squadrons became helicopter combat support squadrons in July 1965. Besides its name change, there were modifications to HC-2's aircraft: a loud hailer and a boom hoist arrangement which let the pilot view the rescue operation and expedite helo maneuvers.

The squadron carried out its first combat rescue in Vietnam in August 1965. Several months later, a Det 62 crew aboard *Richmond K. Turner* (DLG-20) lifted five Air Force crewmen from a 4,000-foot mountain top in North Vietnam. On the other side of the world, in the Med, two Det 59 crews from *Forrestal* helped to rescue an Air Force C-47 crew from a snowy ledge after its plane crashed on the slopes of 7,800-foot Mt. Helmos on the island of Peloponnesus. Six HC-2 pilots aboard *Forrestal* were presented air medals for the night evacuation of wounded from the carrier, stricken by

HU-2 helo rescues pilot who ditched on takeoff from Block Island, left, and, right, brings VAW-12 pilot aboard Wasp.

fire in July 1967 as aircraft were being readied for launch over Vietnam.

HC-2 became a multi-engine helicopter squadron in September 1968 when the *Fleet Angels* took delivery of their first UH-2C.

While squadron detachments served aboard *America, Independence, Saratoga, Forrestal, Roosevelt, Shangri La, Lexington* and *Intrepid* during 1969, research and development projects continued. The squadron was working on the Billy Pugh rescue net, both rigid and collapsible models, and the combination V-strap/D-ring rescue equipment. The Billy Pugh net had been used to pick up the three astronauts from the *Apollo 8* space flight in 1968.

Over the years, modifications to the squadron's mission reflected its increased utility functions. Besides supplying Dets to Atlantic Fleet carriers for plane guard and SAR, it assisted in special projects, including photography, gunfire spotting, mine reconnaissance and tracking drills, and the development and evaluation of rescue equipment and techniques.

The first two HH-2Ds were delivered in February 1970. They were modified UH-2A/Bs, featuring dual-wheel main landing gear, four-bladed tail rotors, and an updated transmission that increased gross weight capability by 1,200 pounds. The first rescue in the HH-2D came two months later. Up to that time the *Fleet Angels* had been credited with saving over 1,600 people, but never a horse. The horse, carrying a rider, was frightened by a flight of wild geese near Lakehurst. He fell down a 15-foot embankment and was buried in soft mud. The *Fleet Angels* came to the rescue in their brand new helo. Using a large strap that had been placed under the 1,200-pound animal, they gently lifted the horse free of the mud and set it on solid ground.

The squadron's services did not always come under the heading of official duties, such as an air intercept when a Soviet helo attempted to take pictures of *FDR* in the Med. Det 42 *Angels* scrambled to intercept a *Hormone*, flying off the Russian carrier *Moskva*, and prevented it from approaching *FDR*.

The first SH-3G *Sea King* arrived in February 1971 and the first H-3 Det went to sea in June aboard *Independence*. The *Sea King* offered extended range, longer time on station and a more sophisticated electronics system. It was designed to combine the hunter and killer functions of ASW into a single helicopter, and perform other duties such as cargo transfer and rescue.

The *Fleet Angels* needed every capability they had in June 1972 when with other rescue units from sister services they flew five *Sea Kings* almost continuously for four days as a hurricane pounded Pottstown, Pa. Up and down flooded streets, they lifted people from rooftops, trees and second story windows. They saved people caught in a sudden onslaught of water when a dike broke. They carried medical supplies, sandbags and food. The crewmen overcame problems not usually encountered in their rescue missions such as civilians unfamiliar with rescue techniques and helicopter limitations. According to Commander Mike Marriott, then HC-2 X.O., "There were high power lines and tall trees, all of which had to be sighted in the dark, and I think everybody in Pottstown had a 40-foot TV antenna."

In October 1973 HC-2 Dets from *Roosevelt* and *Kennedy* flew in support of U.S. fleet operations during the Arab-Israeli War.

The year 1973 also saw the *Fleet Angels* leave the home they had occupied for 25 years, and make the trek to their new base in Jacksonville. They were placed under the operational control of Helicopter Antisubmarine Wing One the following year. The first rumors of disestablishment cropped up in 1974 as the number of helicopter antisubmarine squadrons on the East Coast grew and the number of squadron detachments decreased.

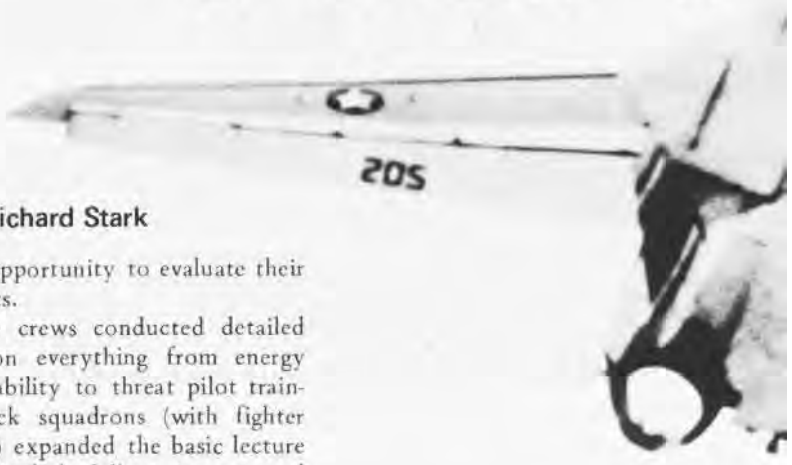
The last HC-2 CV cruise was a Det deployment with Carrier Air Wing 8 aboard *Nimitz* in 1976 on her first operational cruise. As its final project, HC-2 worked with the Naval Underwater Systems Center to develop and refine techniques for the airborne recovery of expended practice torpedoes and drones. The squadron's last rescue was recorded in January 1977 when two Det helos rescued the crew of a burning Marine Corps VMFA-333 *Phantom* down in the waters off the Balearic Islands.

The final total was 2,318. A number that represents as many individual acts of heroism.

On September 30, 1977, Helicopter Combat Support Squadron Two was disestablished. Dets 1 and 2 transferred to Helicopter Antisubmarine Squadron One, Jacksonville. The Dets will deploy as the training squadron's operational sea-going component.

The *Fleet Angels* have taken wing but they are not forgotten.

ACM



By Lt. Richard Stark

Snakes – snap vector 310 for 50nm, multiple confirmed bandits! Cleared to fire."

Shadow, your air controller, has just commanded what you've been waiting to hear. A few sweeps in track-while-scan and you're painting six targets.

Snake lead calls, "Buster, I'm painting six. We'll take the three on my side – contain!"

This is not a hypothetical scenario. It's a typical sortie being flown by the fighter aircrews of Carrier Air Wing One (CVW-1) in the Mediterranean.

Fighter squadrons are always trying to generate viable at-sea air combat maneuvering training programs. However, during the 1977 deployment of USS *John F. Kennedy* and CVW-1, the ship/air wing team, spearheaded by VF-32 and VF-14, constructed a workable air combat maneuvering/defensive combat maneuvering program (ACM/DCM). Other participants were Attack Squadrons 34, 46 and 72, and VFP-63 Det 2. The program was so effective that the highest possible degree of peacetime combat readiness was achieved.

How? Applicable community instructions were used and a syllabus was designed which provided everything from ground training lectures to multi-plane "real world" scenarios. To satisfy staff curiosity and ensure aircrew discipline, other objectives were:

- To provide an air wing environment which stimulates awareness of all threat elements on a constant basis.
- To increase the air wing's capability to strike in that environment.
- To provide a system whereby air wing tactics can be continually analyzed and executed.

Primary areas of emphasis in executing the program were: fighter/attack section tactics, fighter/attack division tactics, F-14A tactics in a multi-plane/ECM environment, and F-14A *Phoenix* employment in a multi-plane environment.

The key ingredient of the ACM/DCM program was that it offered something for all tactical air squadrons. DCM was emphasized as much as ACM. This generated tremendous enthusiasm in the attack squadrons. It provided them with valuable training and the opportunity to evaluate their own tactics.

Fighter crews conducted detailed lectures on everything from energy maneuverability to threat pilot training. Attack squadrons (with fighter assistance) expanded the basic lecture course to include full mission oriented briefs. Within the constraints of community requirements they constructed and flew build-up sorties prior to full blown dissimilar ACM/DCM. The program was scheduled around exercise tasking and within fuel and cycle constraints. Nevertheless, the program gained momentum.

Every scheduled sortie was planned and briefed to allow ample time for the attack squadrons to drop ordnance or strafe while the fighters were tanking and/or running max conserve intercepts. Ship and air wing flexibility allowed for either 1-plus-15 or 1-plus-30 cycles in addition to the normal 1-plus-45 cycles. On 1-plus-45 cycles, with tanking to 2,000 pounds per fighter, max conserve first-move intercepts were flown, with one or two full engagements at the end of the cycle.

To ensure sufficient fuel was available on a daily basis, the two fighter squadrons alternated using the duty KA-6 tanker. The designated squadron was thus ensured fuel for ACM. The other squadron relied on A-7 buddy-store fuel which the two A-7 squadrons tried to alternate on each cycle. This worked well and contributed to the overall success of the program.

With the spirit of "something for everyone," on a typical two-versus-two mission, the first run-in was close GCI to the attack section which was flying in a known threat formation.

All participants were briefed to stay and engage after obtaining a visual (tally ho) and encouraged to use any standard or non-standard maneuver, or tactic, in an attempt to outwit the opposition. The second run-in allowed the attack section to use tactical formations of its own choice (usually defensive combat spread or loose fight-

DCM

er wing). The attack section was briefed to receive GCI information and to maneuver offensively if possible. If the tactical situation looked poor, however, it was to disengage. This approach helped increase attack as much as fighter training. It's fun to have the A-6 or A-7 pilot stay and fight but, in reality, he must know when and how to get out of the arena. If he can't, he should understand that also. After all the tactical squadrons had completed syllabus hops up to and including two-versus-two, special real world exercises began.

In an at-sea first, seven different one-versus-many exercises were flown, exposing every aircrew to at least two or three sorties each. There were only six fighters on the first exercise, but gradually that was built up until the standard composition became six to eight fighter aircraft, six to eight attack aircraft and one photo RF-8. These exercises, and all the special ones that followed, required a two-hour brief, a mandatory debrief and close fighter representative coordination and supervision in CIC. All the engagements were very successful and demonstrated their safety and training value.

Two-versus-many followed, with many defined as three or more adversary aircraft. Multi-plane scenarios were also generated beginning with three-versus-three and four-versus-six. Again, extensive lectures preceded the actual sorties.

All special exercises were briefed, debriefed and CIC monitored by the weapons training officer from each fighter squadron. This helped keep the exercises well structured, supervised and documented. These scenarios represented a new experience for all fighter crews and nearly all attack crews.

More importantly, the multi-plane exercises enabled the squadrons to develop the tactics and confidence necessary for success in a real world environment.

While we were assessing current and newly-developed tactics, members of the attack community were honing their skills. Their loose-deuce proficiency, coupled with outstanding ship GCI, made them formidable adversaries. They were able to evaluate current attack-squadron division tactics and, on several of the large multi-plane exercises, flew strike formations to test their strength and maneuverability. They developed an aggressive early warning program, compounding the fighters' problems, while adding necessary realism.

As part of the fighter weapons training program, realistic missile configurations were flown as much as possible. It's very important for the aircrews to understand the handling characteristics of the aircraft they'll be taking into combat.

We learned:

- Some ACM/DCM programs entirely neglect the multi-plane environment. You don't fight two-versus-six like you do two-versus-two. Aircrews need exposure to the scenarios they will face in combat.
- Weapons systems use in this environment needs more documentation. The aircraft is certainly capable, but aircrew coordination was sometimes difficult.
- F-14A *Phoenix* employment in a multi-plane environment takes considerable prior thought and planning.
- We need to know the best fighter ordnance mix in a multi-plane environment. Different scenarios may dictate other than the conventional weapons load.
- Exposing fighter aircrews to realistic missile loading will definitely "open some eyes" – it's not the same airplane.
- There is a great tendency to fight slow. Don't. You can't stay alive that way in a multi-plane environment.
- Fighter tactics against large raids involved mutual support and a determination to get the quick kill.
- The multi-plane jamming environment posed additional problems in weapons employment, raid formation determination and the tactics necessary to succeed.

By John M. Lindley

In the conclusion of Part Nine, Mr. Lindley reported the death of E. H. Dunning when he was blown over the side of HMS Furious while attempting to land a wheeled plane on her flying-off deck in 1917.

Dunning's death helped convince the Admiralty that *Furious* needed a landing deck aft. *Furious* went back to the yards where she was fitted with a 300-foot landing deck in place of her 18-inch guns. Another hangar for 10 aircraft was provided under this deck. To facilitate the fore and aft movement of aircraft from landing to takeoff platforms, the shipyard installed a trackway around both sides of the ship's funnels and superstructure. This trackway worked satisfactorily but now the pilot who landed aft had a short landing platform. An even more serious drawback was the presence of hot stack gasses, from the funnels over the landing platform, which produced hazardous air currents during recovery operations. Pilots found that these air currents were very difficult to deal with. Thus, when seven Sopwith *Camels* from *Furious* bombed the German airship base at Tondern on July 18, 1918, three of the planes landed in Denmark, three ditched in the sea near *Furious* where they rested on air bags until picked up by destroyers, and one vanished without a trace. Nevertheless the attack on Tondern destroyed two zeppelins in their shed and demonstrated the power of a true air strike from the sea. *Furious* was a big step in the evolution of the aircraft carrier.

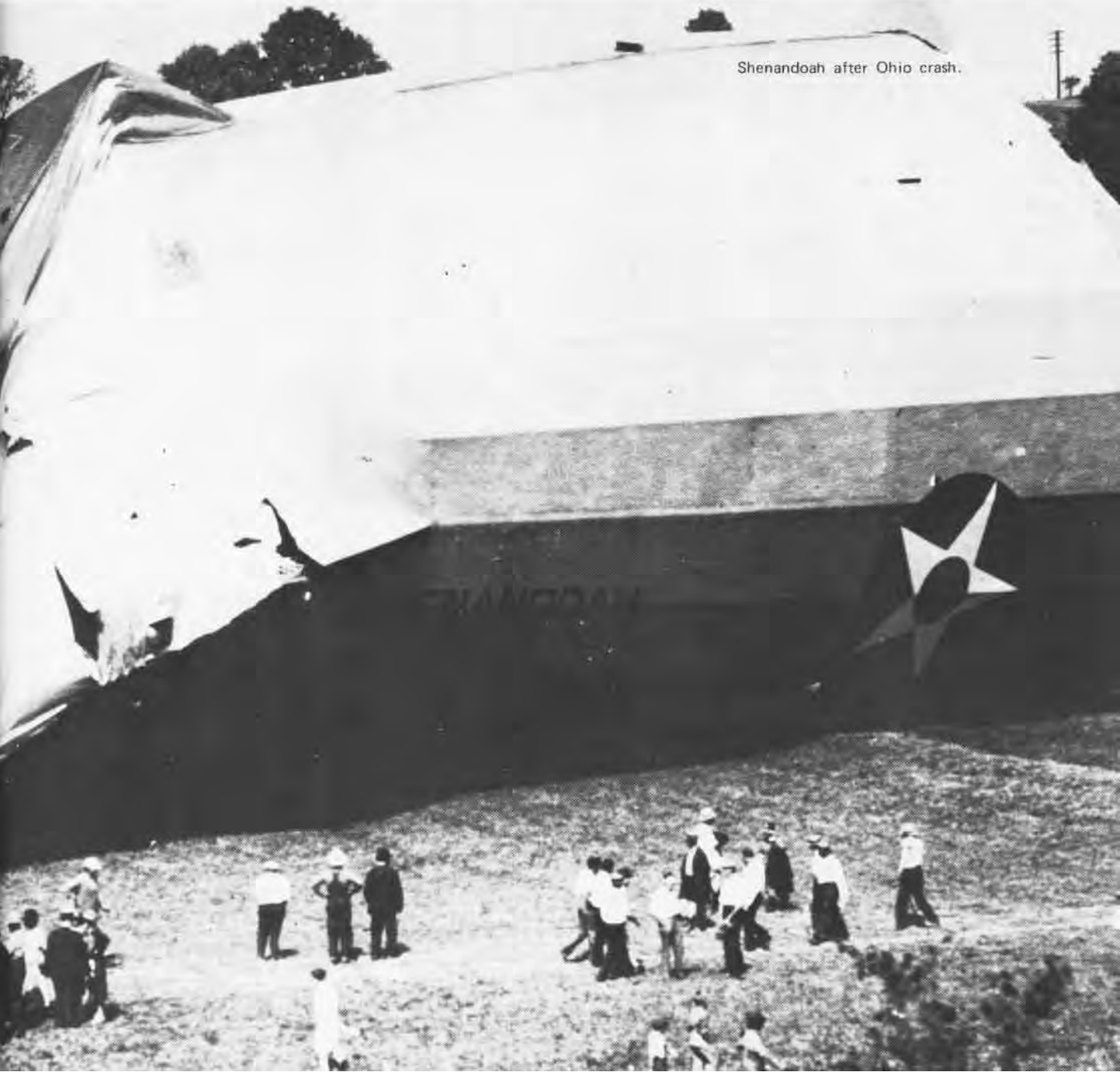
Although an improvement over her predecessors, *Furious* was still a cross between a capital ship and an aircraft carrier. Consequently, in 1916 the Royal Navy converted an Italian liner, which it had purchased, to an aircraft carrier with a full-length flight deck. HMS *Argus*, was commissioned in September 1918. Her flight deck was 550 feet long and she could steam at nearly 21 knots. She carried 20 aircraft. The chart house of *Argus* rested on an elevator so that it could be lowered out of the way during flight operations. Another design feature of *Argus* was the funneling of exhaust gasses astern, so that they did not produce unusual air conditions over the flight deck. The unconventional design of *Argus*, resulted in the nickname, *Flatiron*.

A second flush-deck carrier, *Eagle*, named after the American eagle, was a converted capital ship. She was launched in June 1918 and completed in April 1920, well after the war was over. *Eagle* was bigger than *Argus* and could carry 21 aircraft. Her maximum speed was 24 knots. *Eagle* introduced another design improvement to carriers — her bridge, mast and funnel

were all on the starboard side. This was the first offset-island design. Naval architects tried this solution to the problem of hazardous air currents because the natural torque of the screws of most ships is to the left. Thus a bridge and superstructure to starboard would tend to counter this torque. *Eagle* also introduced the two-level hangar.

The first British ship built as an aircraft carrier from the keel up was a new HMS *Hermes* which was begun in January 1918 and completed in July 1923. Similar to *Eagle*, *Hermes* joined *Argus* and *Eagle* as the first generation of aircraft carriers. Although the French Navy converted several cross-Channel steamers to seaplane carriers, the Japanese Navy laid down a true carrier, *Hosho*, in December 1919, and the U.S. began converting a collier to the carrier *Langley* that same year. No other navy had contributed as much to carrier development by the end of WW I as the Royal Navy. Improving upon the British innovations, the U.S., Japan and the Royal Navy would bring the carrier to maturity in World War II.

The Armistice came too soon for the U.S. Navy to have begun building an aircraft carrier and only the battleship *Texas* had been fitted with a flying-off platform on one of her turrets. More significantly, American Naval Aviation had grown markedly during the war. The U.S. entered the war with 43 qualified Naval Aviators, 239 Enlisted Aviators and 54 aircraft. At the end of the conflict, U.S. Naval Aviation included 6,716 officers, 30,693 enlisted men, 2,107 airplanes and 12 air bases at home and 27 overseas. In addition, the Marine Corps had begun



Shenandoah after Ohio crash.

to build its own aviation branch. Naval Aviators had convincingly shown, with both airplanes and airships, that once they were trained and properly supplied, they could fight the Germans as skillfully and as bravely as any of their Allied counterparts.

WW I had several unexpected results: the building of aircraft carriers, the failure of the rigid airship as a war-winning weapon, and the unprecedented involvement of civilian populations as a consequence of strategic bombing by aircraft and zeppelins. Equally as important as these unprecedented events was the first tentative use of Naval Aviation in the amphibious operations at Gallipoli.

Twenty years of peace in Europe began in 1919. During these two decades the navies of Great Britain, Germany, Japan and the United States would try to work out the problems raised by the unexpected and unprecedented events of WW I. At some times during the inter-war years, the efforts to solve the problems would be carried out thoroughly and systematically; at other times, they would be made haphazardly and incompletely. In either case, the problems of WW I for Naval Aviation would not be solved until the middle of WW II.

Naval Aviation Between the World Wars

When Bellerophon mounted Pegasus for his aerial assault on the Chimaera, he probably had no doubts as to the way he should employ his winged steed in subduing this dreaded monster. Unconsciously Bellerophon must have followed the example of the cavalry horseman in devising an effective tactical plan for destroying the evil beast. Like the mounted warriors of the ancient world, this mythical youth and his fabulous horse could trust cavalry tactics to provide them with the guidance necessary to defeat their awesome adversary.

Naval Aviators in the period between WW I and WW II were not as fortunate. They had no military precedent to draw upon in taking aviation to sea with the fleet. Two problems, one technological and one doctrinal, confronted those naval leaders. Technologically, naval planners had four possible ways to take aircraft to sea. They could operate dirigibles from land bases or from specially equipped auxiliary vessels during fleet operations. They could deploy flying boats from land bases or from seaborne platforms. They could launch seaplanes by catapult from capital ships. They could operate modified wheeled aircraft from the decks of aircraft carriers. Although all of these possibilities had been tried in WW I, none of them was a mature weapons system. Each had its strengths and weaknesses. The German zeppelins had produced an uncertain record as aerial bombers, but Allied blimps had proved their utility in scouting and antisubmarine patrols. Flying boats had also demonstrated their effectiveness for long-range patrols and for antisubmarine warfare, but they were difficult to operate away from land bases. Seaplanes could be catapulted into the air from warships or could take off from the ocean's surface, yet were hard to recover in heavy seas. British carrier aircraft had shown promise of eliminating the problems of takeoff and recovery with the fleet underway at sea, but the aircraft carrier was a wholly new ship type without precedent.

Because the carrier was considered an experiment, naval planners were not at all sure what size, design or capabilities it should have. Some carriers had big guns such as the British *Furious* in WW I or the American *Saratoga* and *Lexington* in the 1920s. Others had these big rifles removed – as the Royal Navy eventually decided to do with *Furious*. No one was sure how many flight decks a carrier should have. Some carriers had only one deck, but others like the Japanese *Akagi* and *Kaga* had as many as three. The location of the carrier island was another serious question. On most carriers it was on the starboard side, but a few had it on the port. The speed needed was an additional problem. Some of these vessels could only make a moderate 15-20 knots, others were among the fastest vessels in the fleet at 30-35. Many other technological questions confronted naval ship designers in the interwar years and, although sometimes they might have been decided by expediency, more often they had to be decided in terms of what naval strategists thought a carrier should do when it was operating with the fleet, essentially a question of doctrine.

Doctrine was supposed to be the "golden bridle" of control for naval aviation, providing the "heading" which naval commanders could take in making strategic or tactical plans. Yet, during the interwar years, uncertainties over doctrine compounded the problems raised by technological questions. At times there was very little doctrine available to provide guidance to fleet commanders.

In WW I, Allied naval leaders worked out the tactical guidelines necessary for the deployment of flying boats for air patrols and antisubmarine operations. Similarly, they mastered the problem of how best to employ seaplanes for scouting and gunnery spotting. Operational doctrine for dirigibles and aircraft carriers was, however, much less clearly defined. Rigid airships could fly patrols ahead of the fleet, but they would have to avoid the mistakes of the German zeppelins, especially if they were attacked by carrier-based fighters. Carrier aircraft could, of course, fly scouting missions and spot for fleet gunnery operations, but they seemed to have limited use as offensive weapons. WW I had not provided much guidance in this matter of aircraft carriers. Some naval officers believed the aircraft carrier should operate as an auxiliary vessel supporting the battleships; others, who saw great potential in the carrier as an offensive weapon, argued that it should operate as a capital ship.

With the technological development of the carrier so uncertain and with the operational utility of the rigid airship still in doubt, naval planners in the interwar period, especially in the U.S., tended to pursue, simultaneously, as many of the four alternatives as possible. They hoped that once these weapons systems were technologically mature, they would provide the necessary doctrine for guidance. Thus the U.S. Navy, for example, continued its work with flying

boats and seaplanes and initiated new programs to build carriers and rigid airships. Other major navies tended to focus their developmental efforts more narrowly. Thus the course of Naval Aviation between 1919 and 1940 was confused and uncertain. Not until the battles of 1942-1943 would technology and doctrine come of age and the fast carrier task force emerge as the major naval weapon.

By the time naval leaders in the U.S., Great Britain and Japan had brought carrier technology and doctrine to maturity in WW II, the rigid airship had passed from Naval Aviation. Yet few observers in 1919 would have predicted such an outcome because immediately after WW I there was great enthusiasm about the future of the rigid airship. All the major aviation nations had used airships of one sort or another during the war for scouting or hunting submarines. Many of these airships, such as the Goodyear C type of the U.S. Navy, were non-rigid or blimp types which had a top speed of 60 miles per hour. The British, French and Italians all had rigid airship programs, often based upon experimental work with German zeppelins that were either prizes of war or war reparations. But one by one the British, French and Italians gave up on the big rigids. Disasters involving the R38 and R101 doomed the British program. The French program died following the loss of the *Dixmunde* (a former zeppelin) in a storm over the Sahara Desert in December 1923. The Italian program never recovered from the crash of the *Italia* following its flight over the North Pole. Only the Germans kept up with the big rigids, building the commercial airships *Graf Zeppelin* and *Hindenburg* in the 1930s. In contrast, the American post-WW I effort concentrated upon military uses.

From its inception, the U.S. Navy's rigid airship program in the interwar years seems to have been pulled in two directions. On the one hand, lighter-than-air flyers decided that since the German zeppelins had been largely ineffective as aerial bombers, they would have to be used as scouts. Consequently, Navy leaders expected to put their rigids through various training exercises that would show how the dirigible could be used to aid the fleet in locating the enemy. They did not explicitly use the term doctrine to describe what they were attempting, but they were, in effect, groping toward a formulation of airship doctrine.

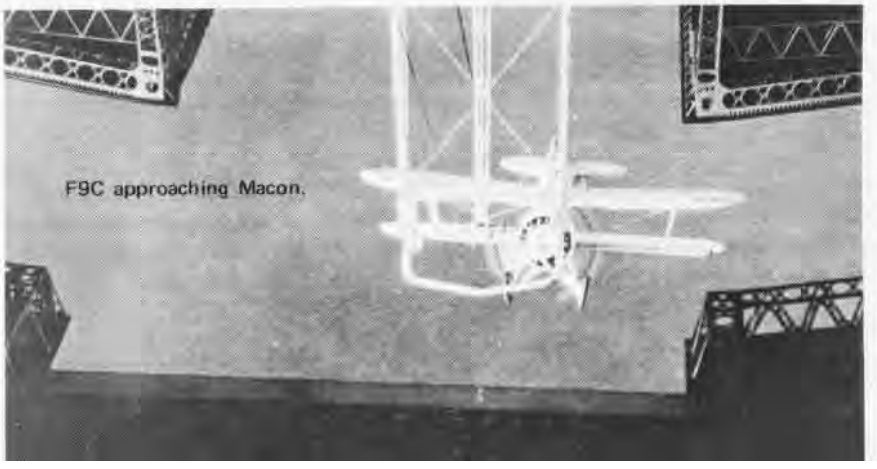
On the other hand, the U.S. Navy had acquired responsibility for the American airship program partly out of rivalry with the Army air program and Brigadier General William (Billy) Mitchell. As Eugene E. Wilson tells the story in his autobiography, *Slipstream*, Rear Admiral William A. Moffett, Chief of the Bureau of Aeronautics from 1921 to 1933, and BGen. Mitchell attended a joint Army-Navy conference in the early 1920s to consider which service would have responsibility for airship development. Since Moffett was senior to Mitchell, the admiral seems to have exercised that prerogative and kept responsibility with Navy, perhaps, in part, simply to keep the airships away from Mitchell.

In addition RAdm. Moffett accurately perceived the publicity benefits the Navy derived from the airship development it had undertaken. He often sent various dirigibles on publicity tours around the United States. These highly visible appearances advertised the program to the country and served to counter the publicity BGen. Mitchell always seemed to produce for the Army or his plan for an independent air force. Once when the Army was about to conduct a new series of tests, bombing some surplus warships, Moffett announced that he would probably have USS *Shenandoah* (ZR1) make a flight over the North Pole. Naturally the national press played up Moffett's announcement and gave scant attention to the Army's latest bombing tests. Publicity for the Navy's airship program also had its negative side, however, because newspapers gave extensive coverage to any airship crash. Since four out of five of the Navy's rigids were destroyed in various crashes between 1925 and 1935, Moffett's publicity strategy was of uncertain value. In addition, critics charged that the publicity tours tended to interfere with serious training exercises for the crews and with regular maintenance.

The United States began its program in rigid airship development in 1923 when *Shendandoah* made its first flight. The Navy had been studying the principles of rigid airship construction and operation since 1913, and it had followed airship developments during the war when some Navy personnel received rigid airship training from the Allies. A clear indication of the Navy's interest in the rigids was its efforts to ensure the construction of helium-producing plants in Texas where sources of the gas had been discovered in 1905.

Since it had no rigid airships in 1919, the U.S. Navy began simultaneously to build and to buy them. That year, Congress authorized the construction of *Shenandoah* and the purchase of an airship from Great Britain. This British rigid was the R38 (to have been designated ZR2), but it crashed during one of its trial flights over England in August 1922, killing 44 persons of whom 16 were U.S. Navy personnel. While making a publicity tour in the midwest, *Shenandoah* subsequently broke up in a severe thunderstorm over Byesville, Ohio, on September 3, 1925. Eight of the 37 crewmen aboard were killed.

After *Shenandoah* crashed, the Navy had only one rigid, USS *Los*



F9C approaching Macon.

Angeles (ZR3), built by Luftschiffbau Zeppelin Co. and delivered in 1924. *Los Angeles* was sturdy and serviceable, but it was too small, in total gas volume, for military purposes. Because of the limitations, the lighter-than-air section of the Bureau of Aeronautics developed requirements for a rigid which could be used militarily: it was to have a 5-6 million cubic feet gas capacity and be about 800 feet long. Congress moved slowly on the Navy's request for two rigids of this great size because of the projected $8 million cost for the pair in a time of budget reductions and public uncertainty about the safety of the airship. Congress finally agreed to fund construction of the two rigids in 1928. Thus the Goodyear-Zeppelin Co. of Akron, Ohio, built *Akron* (ZRS4; Z for lighter-than-air; R for rigid; S for scout) and Macon (ZRS5), which made their first flights on September 25, 1931, and April 21, 1933, respectively.

ZRSs 4 and 5 were different from any previous rigid airships because they carried a detachment of heavier-than-air craft. Initially these aircraft had had two roles: to protect the airship from fighter attack and to scout for the fleet, using the airship to relay information to the surface forces. The U.S. Navy was not the only organization to have flown airplanes from a rigid airship. The British had also done that with the R33 in 1926, but it had been a temporary experimental feat and not a permanent design feature as was the case with *Akron* and *Macon*. With these two airships, takeoffs and hookups were regularly made by F9Cs. There was no danger of the engines of the airplanes exploding the gas in the airships because these rigids were filled with nonflammable helium. The presence of the heavier-than-air detachments aboard gave the two airships the capability of scouting an ocean area up to 250 miles wide. Thus the Navy rigids provided, in the words of R.K. Smith, "a remarkable measure of flexibility in scouting operations."

Just when the U.S. Navy's lighter-than-air program appeared to be making substantial progress in operating these big airships, *Akron* met disaster. While flying from its base at Lakehurst, N.J., to Newport, R.I., *Akron* encountered a dangerous storm front. It headed out to sea trying to avoid the storm, but in the fog, rain and lightning on the night of April 3, 1933, its lower fin hit the sea, perhaps because the lower air pressure of the storm front had thrown the aneroid barometer out of calibration, which meant that it was flying dangerously lower than the watchstanders thought. Of the 76 persons on board, just four were picked up by a nearby German merchant ship. Only three survived.

Following the *Akron* disaster, critics tried to put an end to the Navy's airship program. Congress carefully investigated the circumstances of the crash and decided to continue the airship program with *Macon*. This sister airship received two valuable legacies from its unfortunate predecessor: a knowledge of the technique of flying airplanes from the trapeze on the underside of the dirigible and a hazily defined notion of the mission of the rigids as "lighter-than-air carriers."

During training flights in 1931 and 1932, members of the heavier-than-air detachment on *Akron* tried to clarify exactly what the mission of the F9Cs was. The aviators found, during their training exercises, that their primary job could be serving as the "eye" for the airship which, in turn, would be the "eyes" for the fleet. Consequently they would only incidentally provide fighter protection for the airship since, if maneuvered properly, it should never have to make contact with enemy air or surface forces. By remaining unobserved, the airship would not be vulnerable to attack. In 1934 the personnel attached to *Macon* hesitantly worked out this potential airship doctrine of the rigid as a "lighter-than-air carrier" while *Macon* was undergoing intensive training under C.O. Commander H.V. Wiley. Wiley and other lighter-than-air personnel concluded that *Macon* could not be an aerial scout; instead it would have to be an aerial carrier which took its detachment of airplanes to an area which needed scouting. The job of the airship would be to provide the necessary mobility and endurance which the airplanes of the early 1930s lacked.

Yet *Macon* was ill-fated. On February 12, 1935, while returning to Moffett Field from fleet training exercises off the coast of southern California, *Macon* was hit by a big gust of wind as she was turning to port. Structural weakness in the tail caused one fin to break off and, in doing so, deflated three of its gas cells in the tail area. As the cells deflated, the tail dropped toward the sea. In the control car up forward, the watch let go too much ballast in an effort to regain equilibrium. The airship shot upward because it was too light. This caused precious helium to be valved off automatically. The loss of additional helium made *Macon* aerodynamically heavy. There was not enough helium to sustain it in the air, so it plummeted to the sea about 12 minutes after the initial casualty occurred. Fortunately only 2 of its 83 crew members were lost as nearby Navy ships came immediately to the scene of the disaster off Point Sur, Calif.

The loss of *Macon* accelerated the demise of the rigid airship in the U.S. Navy. By 1940 the Navy had ended all its experimental work with rigids. *Akron* and *Macon* had had a chance to prove their value to the fleet between 1932 and 1934, but had failed. Despite the advantage of a range four to six times greater than the largest airplanes then available and a speed possibly two-thirds as great, the rigids lost out, partly because of the competition among surface ships, airplanes and airships for the budget dollar. Many airplanes could be built for the cost of one rigid airship. The airplane in the 1930s had a great technological future. It was only beginning to come into its own as a monoplane and as a multi-engine aircraft. The rigid airship, in contrast, was a weapons systems which, according to R. K. Smith, was "nearing its technological end point." Many admirals felt the airship was vulnerable to attack and lacked offensive punch; thus they argued that it would fail in combat.

To be continued

NAVAL AVIATION NEWS letters

Salute

On behalf of all of us readers, fuds and nuggets alike, who have logged many enjoyable hours in the reading of the interestingly authoritative contributions of Lee Pearson, a respectful and appreciative tip of the hardhat.

We hope we may assume that his recent change of status, to retirement, merely indicates a re-spot for many more history sorties.

Robert P. Brewer
U.S. Naval Institute
Annapolis, Md. 21402

Broken Record

Every few years, we go through the same routine together. My renewal notice for *Naval Aviation News* arrives (sea mail). I send my check (air mail). My cancellation notice arrives (sea mail). Thinking GPO didn't get my first check, I send another (air mail). In about July, *NANews* stops arriving. Suddenly, one day in early November the mail contains two identical envelopes containing identical October issues of. . .guess what.

Now I wouldn't really mind, but that old *Stoof* driver who works in the bank down the street gets sorta surly if he doesn't get his pass-it-on-copy from me. Or the extra one which starts coming in November. And he gets really difficult when we miss four issues straight. Question. Could we have back issues June through September 1977 and only one subscription from now on?

If you want to make points (and money) with all your loyal fans, issue a soft cover book containing all Naval Aviation squadron, wing and carrier insignia since the beginning. It would sell like hot cakes.

If you happen to see any real hard-rock combat (attack) drivers pass your way, tell them Orange Julius says hello and asks if they still know their assigned SSSC search sectors.

Your publication is fine.

Erik Mezger, Cdr., USNR
Bergstrasse 127
Zurich, Switzerland

P.S. Let Waples fly!

National Monument

I am writing a history of the Channel Islands National Monument for the National Park Service. NPS is particularly interested in the role these islands played during World War II and in the 1950s and 1960s. I find the sources of information scarce and am now looking for military personnel who might be able to shed light upon this history. The Navy has controlled San Miguel Island since 1934 and since the 1950s has used it and the nearby waters for training exercises and at one time used live ammunition on the island. I am hoping that any naval personnel who can remember the activities and installations on these islands will get in touch with me. Below are some of the pertinent facts. I know very little more and will appreciate even the least bit of information.

Santa Barbara Island

1936	Navy received permission from Commerce to place a range finder marker on the island.
1945	Navy transferred buildings and equipment to Coast Guard: landing, hoist, tanks, two Quonset huts, etc.
1942-46	Aircraft early warning outpost, subsequently a photographic tracking station.
1960	Navy permit for observation post renewed.

Anacapa Island

1947	Navy received a renewable permit to use 1.5 acres for range or homing station.
1962	Pacific Missile Range renewed permit.

San Miguel Island

1934	Navy received overall control from Commerce.
1943	B-34 crashed???
WW II	Army look-out post. Road built.
1948	Navy begins use of island as impact target.
1950s	Air strip on map. Taken off in 1965.
1965	Clean up of live ordnance.

The use of San Miguel Island for training exercises after the war and to the present is very important. Perhaps some of your readers flew to the island and participated in exercises there. I would like to know from which bases they came and what kind of aircraft they flew.

Dr. Lois Weinman
604 Las Lomas Avenue
Pacific Palisades, Calif. 90272

First?

VRC-50 notes with pleasure the accomplishment of AMSAN Barnes of VR-24 (*Naval Aviation News,* December 1977). However, she is certainly not the first. Our candidate for that honor is AMH2 Linda L. Knuth, who has been flying in the CT-39 for more than two years and has amassed more than 1,300 CT-39 hours flying throughout WestPac. She received her aircrew wings in the CT-39 on June 13, 1976.

C. N. James
C.O., VRC-50
NAS Cubi Point
FPO San Francisco 96654

Wings Over the Ocean

In the January issue, pages 34-39, the author made a statement that between Capt. Scott's visit in 1912 and RAdm. Dufek's visit in 1956 to Antarctica, there were no visitors to the South Pole. If you are speaking of physical location of the South Pole, this may be. However, you will be correct by adding the visit by RAdm. Byrd to Antarctica in 1946 aboard USS *Philippine Sea* (CV-47) where she pulled into the Ross Sea and launched ski-mounted R4Ds to Little America. The studies performed by this group led to the forming of Operation *Deep Freeze.* Unfortunately, my cruise book was destroyed in a fire or I would send you some pictures of me standing on the flight deck with an R4D, as the 2nd mechanic.

E. E. Chelton, Cdr.
AIMD Officer
USS Constellation (CV-64)
FPO San Francisco, Calif. 96601

DASH

I am doing research for an article about the DASH unmanned helicopter which formerly deployed with the fleet. I would greatly appreciate hearing from Navy personnel who were assigned to and operated the DASH and have some sidelights and experiences to tell.

Jerry Litwak (ex-CETM, USN)
2066 S. Baker Street
Santa Ana, Calif. 92707

Sea Hawk?

With the recent Navy selection of the Sikorsky UH-60A as the LAMPS MK III,

I'd like to propose that consideration be given to officially designating this helicopter the *Sea Hawk*.

The U.S. Army version has been officially named *Black Hawk*.

Donald A. Mohr, LCdr.
VTC-22
NAB Little Creek, Va.

Testing

In reference to Howard Sawa's check of USS *Eisenhower* and USS *Nimitz* (November 1977, Did You Know?), and not withstanding his job enthusiasm, it should be pointed out that it is the ship builder who conducts the type of tests mentioned, not the Pacific Missile Test Center. Also while the Center is chartered to do ship suitability tests, the responsibility for ships' installations is the province of the weapons branch at the Naval Air Engineering Center, Lakehurst. We suggest Howard slow down a little on all those ladders so that the rest of us can catch our breath – 105 compartments and no problems – phew!!

Joseph S. Price
Program Manager
NAEC
Lakehurst, N.J. 08733

Blimps

I am very interested in Naval Aviation and a serious collector of Navy Aviation jacket and shoulder patches. Currently, I have 431 patches from squadrons, wings, groups, air stations, air facilities, aircraft, etc. I am a member of the American Society of Military Insignia Collectors and a firefighter for the City of Boston, Mass.

I hope your readers can help me with my latest project, a display of Navy blimp insignia, patches, shoulder tabs or sketches of the same. I don't know how many blimp squadrons and wings existed after WW II. So far, I have three patches for my display (ZP-2, ZP-3, ZW-1) and an airship rigger's blue rate.

I will gladly purchase any insignia anyone would care to sell and sincerely appreciate any information on blimp unit insignia.

Patrick J. MacAuley
32 Sagamore Street
Dorchester, Mass. 02125

Student Morale

The AZ Course at NTTC Meridian would appreciate receiving patches, decals, posters and pictures of USN/USMC squadrons for its classrooms. We want to be able to show a wide range of aircraft and squadrons to our students so that they may see what type of aircraft they will be associated with and what it's like in the fleet.

We are particularly interested in 8x10 photographs (B&W or color) of aircraft, line operations, carrier operations, etc. We also want squadron patches so that we may match aircraft types to squadrons and give the students some identification before they depart for their new commands.

T. E. Meeker, SSgt., USMC
AZ Course, Class A1
NTTC Meridian, Miss. 20372

800!

I enjoyed reading the article, "North Island . . . The Birthplace," by Helen Collins. However, there is an error in fact on page 35. The number of maintenance personnel VS-41 Framp trains per year is in excess of 800 as opposed to the 400 quoted in the article.

Stephen Wilders, JO1
VS-41
NAS North Island
San Diego, Calif. 92135

A-6A

In your August 1977 issue, I noticed your article on the A-6A "end of a nearly 11-year era."

I understand that this was the last A-6A to fly at Whidbey Island and thought you might be interested in the last A-6A to fly while operationally deployed.

Although a part of the Whidbey Island community, VA-115 was the last squadron to operate with A-6As while on deployment. The squadron is permanently deployed onboard USS *Midway*, home-ported in Yokosuka, Japan.

The last "operationally deployed" A-6As launched off *Midway* on April 24, 1977, completing a 2.5-hour tactics flight and landing at NAS Cubi Point, R.P. The last aircraft to land was 155678 with Lt. Jerry Hill as pilot and Lt. Fred Block as B/N.

VA-115 then transitioned to A-6Es while still overseas, which was no easy task, and is still holding down the front line onboard *Midway*.

I would like to hear more about the squadrons onboard *Midway*. It's a long deployment when you're gone two-and-a-half years. I feel they deserve a little space once and awhile.

I know – I was there.

N. F. Block, Lt.
VA-128, NAS Whidbey Island
Oak Harbor, Wash. 98278

Ouch

In the January 1978 issue you stated, "Six S-3s from VS-21 became the first carrier aircraft to complete a transPac flight without a lead navigational aircraft or in-flight refueling."

This comment did everything but break the backs of hundreds of A-3 *Whale* drivers and navigators. The S-3s used their own inertial navigation system, but way back in 1963 carrier-based A-3s where transPac-ing using only a sextant and a dream. Since that time A-3s have provided tanking and path-finding services for just about all other carrier-based jet aircraft.

In our squadron, VAQ-308, all our pilots have carrier qualified in the A-3. In the past three years we have flown over 600 hours of transPacific flights in direct support of the fleet.

Printing this will definitely instill life back into the *Whale* community.

W. H. Haushalter, LCdr.
OinC, VAQ-308
NAS Alameda, Calif. 94501

Ed's Note: And so shall it be. We were incorrect in crediting the S-3s as "the first."

Name the Bird

I would like to suggest that you have a "Name That Bird" contest for the T-44.

My entry would be *Pegasus*, the winged horse of Greek mythology, or *Spartan*. I don't know of any other naval aircraft that have these names.

I believe the contest would stir a lot of interest.

You are doing a fine job with a fine magazine. Keep it up!

Donald R. Smith, Jr., AMS-2
H-1 Det, Rotary Wing
NAS Patuxent River, Md. 20670

Reunion

The third annual reunion of all squadrons, active and reserve, of the Naval Air Transport Service is being planned for 1979. For more information contact Capt. Alvin May, Jr., USNR(Ret.), 1015 West South Avenue, Independence, Mo. 64050.

Tailhook Reunion

Mark your calendar now for this year's Tailhook Reunion. It will be held at the Las Vegas Hilton, September 22-24.

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HSL-32 was commissioned on August 17, 1973, in response to the increased demand for LAMPS helicopter units. The squadron has eight detachments, each consisting of three pilots and 10 enlisted personnel, including two AWs. Its SH-2F Seasprites provide anti-submarine warfare and anti-ship missile defense capabilities.

HSL-32 received the Captain Arnold Jay Isbell Trophy for ASW excellence for 1974, 1975 and 1976; the ComNavAirLant Battle E for 1974-75 and 1975-76; and the Chief of Naval Operations Aviation Safety Award for 1976.

Led by Cdr. C. W. Oakes, HSL-32 is home-based at NAS Norfolk.

SQUADRON INSIGNIA

What Goes Here? . . .

NAVAL AVIATION
NEWS

. . . see page 2.