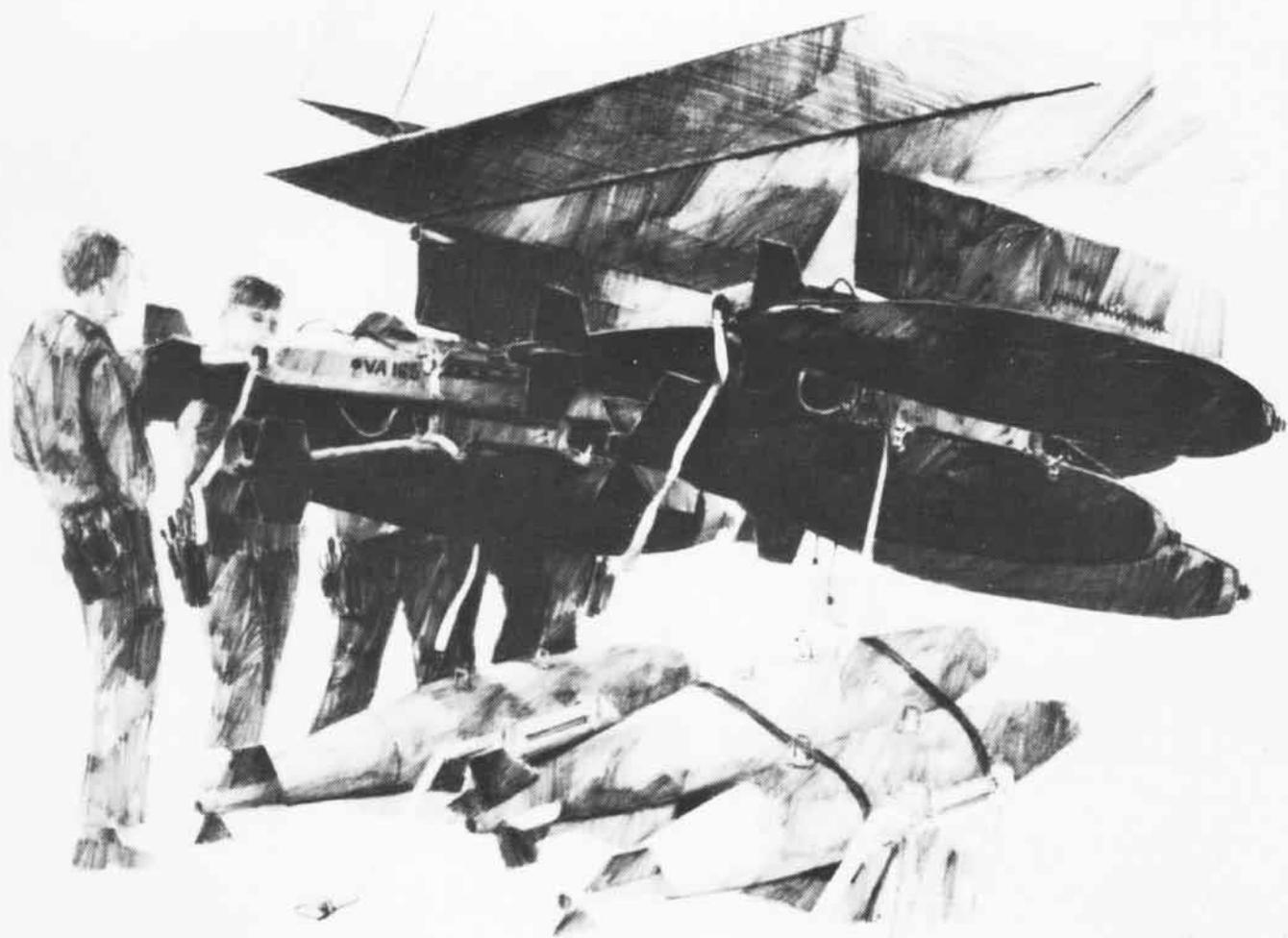


NAVAL AVIATION

NEWS



OCTOBER 1972



NAVAL AVIATION

Vice Admiral William D. Houser

Deputy Chief of Naval Operations (Air Warfare)

Rear Admiral Thomas R. McClellan

Commander, Naval Air Systems Command

Rear Admiral William R. McClendon

Assistant Deputy Chief of Naval Operations (Air Warfare)

Major General Edward S. Fris, USMC

Assistant Deputy Chief of Naval Operations (Marine Aviation)

Published monthly by the Chief of Naval Operations and the Naval Air Systems Command in accordance with NavExos P-35. Offices located at 801 North Randolph St., Arlington, Va. 22203. Phone: 202/692-4819, Autovon 22-24819. Annual subscription: \$5.00 check or money order (\$1.25 additional for foreign mailing) sent direct to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. A single copy of the magazine costs 45 cents from GPO.



NEWS

FIFTY-FOURTH YEAR OF PUBLICATION

THE STAFF

Captain Ted Wilbur	Head, Aviation Periodicals and History
LCdr. Paul Mullane	Editor
Dorothy L. Bennefeld	Managing Editor
Robert L. Hensley	Art Director
JOC Dick Benjamin Michael McDonell	Associate Editors
Helen F. Collins	Editorial Assistant
Cdr. Nicholas Pacalo	Contributing Editor
Harold Andrews	Technical Advisor

Cover combat art by John C. Roach is entitled "Loading Bombs under Wing with Ribbons." For more of his work see page 36. Photo, above, of crewmen preparing aircraft for a sunset launch from Enterprise (CVAN-65) is the work of Ltjg. Chip White.

EDITOR'S CORNER

The Naval Aviator has to stay flexible about the facility from which he operates his aircraft. New varieties of landing/takeoff platforms are constantly appearing to test his adaptability. In addition to the traditional airfield ashore and carrier flight deck at sea, a number of new environments have become regular operating areas for naval aircraft.

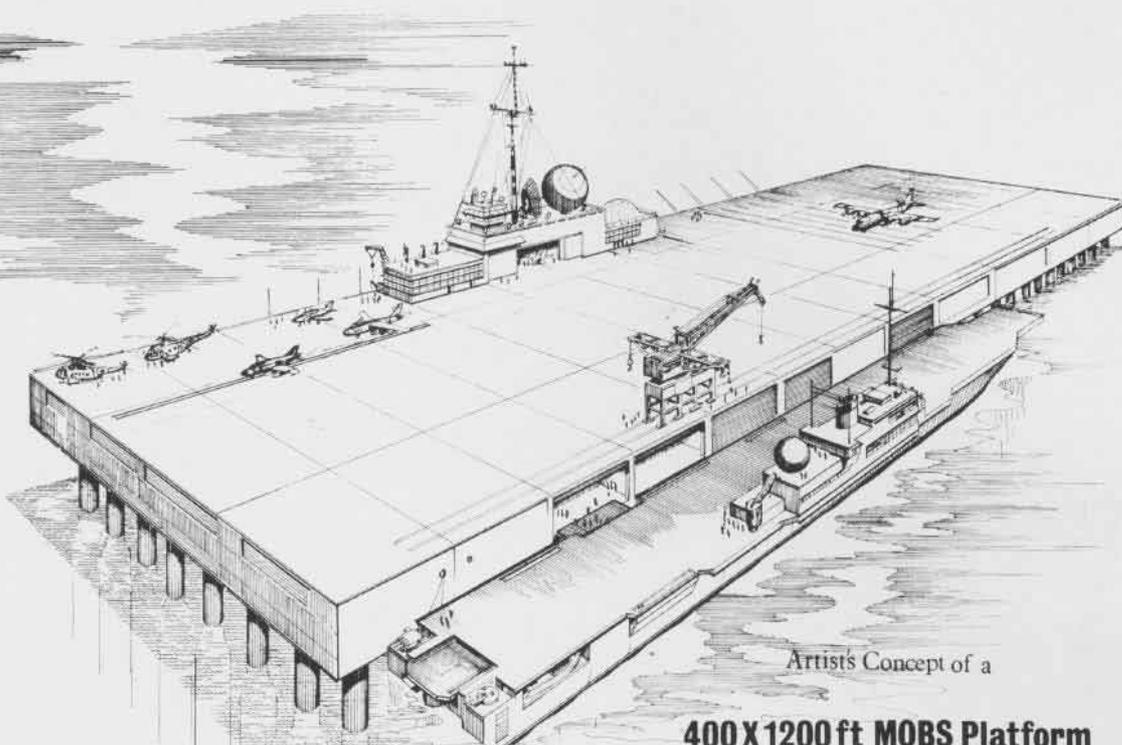
Helicopters now routinely operate from a wide assortment of ship types in performance of an ever increasing variety of missions. Vertical replenishment, using VH-46s to move large amounts of supplies and equipment between ships, sees naval aircraft flying from such diverse decks as ammunition and underway replenishment ships to cruisers, carriers and destroyers. CH-53s in performance of airborne mine-sweeping duties operate not only from shore bases, but from amphibious transport docks.

AV-8As and SH-3s are currently being utilized to evaluate the sea control ship which, though featuring a carrier-like flight deck, will have neither catapult

nor arresting gear; LAMPS-configured Seasprites are now operating from platforms on frigates and escort ships with the multipurpose mission of antisubmarine warfare and missile defense and a secondary role of utility and search and rescue.

Now, the possibility of a new operational deck has appeared on the horizon—MOBS (Mobile Ocean Basing System). While this concept is still in the early stages of evaluation, its potential as a radically new type of Naval Aviation facility should be of interest to our readers. A brief discussion of the MOBS principle and a number of illustrations depicting the modes in which it may be utilized appear on pages 14-16 of this issue.

The MOBS concept is not necessarily restricted to the use of the helicopter or VSTOL aircraft and may open a new operational environment to the VP and VR community. Imagine planning a cross-country navigational training flight and RON to Ocean Station X-ray moored in the Bering Sea.



Artist's Concept of a

400 X 1200 ft MOBS Platform



1911

1972

Three Top Squadron Awards Presented

WASHINGTON, D.C.—The Chief of Naval Operations has named three outstanding squadrons as winners of annual Naval Aviation awards.

Fighter Squadron 96, home-based at NAS Miramar, Calif., earned the Admiral Joseph Clifton Award as the outstanding fighter squadron.

During the period of the award, FY 72, the *Fighting Falcons*, skippered by Commander Dwight D. Timm, flew 7,719 hours—6,662 while embarked in an aircraft carrier. The squadron's aircraft availability rate reached an all time high of 69.2 percent while maintaining a 51.1 percent full systems capability. All this while dropping 1,200 tons of ordnance on enemy targets and logging more than 2,500 combat sorties over enemy territory.

The Clifton Award, first presented in 1969, is given in memory of the late Rear Admiral Clifton who distinguished himself as a fighter pilot during WW II. The trophy is sponsored by Litton Industries.

Attack Squadron 27, stationed at NAS Lemoore, Calif., was named the outstanding attack squadron for FY 72 and winner of the Admiral C. Wade McClusky Award.

The A-7E *Corsair II* squadron, as a unit of CVW-14 embarked in USS *Enterprise*, recently completed an eight-month deployment to WestPac, SEAsia and the Indian Ocean (during the Indo-Pakistani War).

Commander J. L. Johnson's *Royal Maces* developed new combat tactics for all-weather weapons delivery while in SEAsia, and submitted a detailed report to NavAirSysCom on recom-

mended improvements for the *Corsair* and its weapons system.

Sponsored by Vought Aeronautics Company, the McClusky Award honors the WW II air group commander who distinguished himself by leading a bombing attack that destroyed an enemy carrier force.

Helicopter Antisubmarine Squadron Seven was presented the Admiral Jimmy Thach Award as the outstanding carrier antisubmarine squadron for FY 72. The Quonset Point squadron is led by Commander Leslie R. Edwards.

Criteria for selection included achievements in and contributions to weapons systems readiness and development, combat readiness, contributions to tactics development, and general contributions to antisubmarine warfare aviation.

The Grumman-sponsored trophy recognizes the first commander of Task Group Alfa who later became Commander, Antisubmarine Warfare Force, Pacific. He is widely recognized for his flying achievements and developments in tactics during WW II. He also helped develop many of the hunter-killer group methods used by today's ASW squadrons.

Fris Relieves Hill

WASHINGTON, D.C.—In September, Major General Edward S. Fris relieved Major General Homer S. Hill as Deputy Chief of Staff, Air, HQMC, and Assistant Deputy Chief of Operations (Marine Aviation). Gen. Fris reported to his new assignment from his post as Commanding General, MCAS El Toro/Marine Corps Air Bases West.

Gen. Hill assumed new duties as Commanding General, III MAW.



The QF-4B, first of a new generation of aircraft targets, is currently being tested and evaluated by the Threat Simulation Department, Naval Missile Center, Point Mugu, Calif. At the Naval Air Development Center, Warminster, Pa., the F-4B Phantom's weapons systems were replaced by radio and telemetry equipment, allowing it to be remotely controlled. The QF-4B is capable of flying at altitudes in excess of 50,000 feet and at twice the speed of sound.

First VS NFO Class

PENSACOLA, Fla.—On July 21, the first class of VS Naval Flight Officer Tactical Coordinator selectees was graduated from VT-10 at the naval air station.

This was the first of four classes to be trained in basic antisubmarine warfare. Its members are slated for eventual assignment to the S-3A.

Although the *Viking* is not scheduled to be operational until 1974, the ASW orientation course graduates have the distinction of being the first student NFOs to be selected, in their initial phase of training, for assignment to the carrier-based antisubmarine warfare forces.

VT-10, under the command of Commander Dale C. Purdy, is responsible for providing basic navigation, airmanship and technical training to all Navy and Marine Corps NFOs.

VAQ-133 is Back

WHIDBEY ISLAND, Wash.—Tactical Electronic Warfare Squadron 133, the fourth fleet squadron to fly the EA-6B *Prowler*, was reactivated here on August 4, 1972. Commander Frank Burrows, who has commanded the squadron since March 18, 1971, presided over the ceremonies.

VAQ-133 was formerly based at NAS Alameda, flying EKA-3B *Skywarriors*. On August 15, 1971, the squadron temporarily deactivated in order to transition to the EA-6B and move to Whidbey Island. With the transition completed, VAQ-133 will further intensify its training program in preparation for deployment.

The *Prowler* is a four-place, twin turbojet aircraft designed for carrier and advanced base operation. It is a fully integrated electronic warfare weapons system that combines a long-range, all-weather capability with an advanced ECM system.

Cobra Escape Concept

DAHLGREN, Va.—Since 1960, many lives have been lost due to crashes in military helicopters which have gone out of control. It is estimated that a large number of those killed could have been saved, given some means of

escape before ground impact.

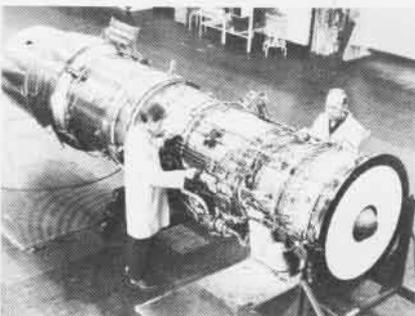
For several years, the Naval Weapons Laboratory has been investigating various techniques for saving the occupants of disabled helicopters. Recent tests by NWL researchers have revealed the feasibility of an escape system for the two-man AH-1 *Cobra*.

It is envisioned that, after either pilot manually actuates the escape system, three things will happen simultaneously: the two main rotor blades will be severed by a controlled explosive device allowing blade momentum to carry them away from the aircraft, power to the tail rotor will be cut off, eliminating destabilizing thrust, and an opening will be made in the canopy.

Each crewman will be extracted from the cockpit by a small rocket attached to his torso harness. It will take about three-quarters of a second after the system is actuated until both pilots are clear of the helicopter. During the pilots' extraction their parachutes will begin opening instantaneously to provide full parachute deployment before their descent. The extraction escape concept has proven reliable in fixed-wing aircraft. Previously known as the Yankee extraction system, it was used in the A-1 and AD.

The *Cobra* was selected as the best candidate for an inflight escape system since it is specifically designed to operate in a hostile environment, and it is also technically and operationally feasible to retrofit it with an escape system.

NWL's research and development efforts have resulted in a joint Army/



Experimental model F401 turboprop engine, power plant for the F-14B, reached over 500 hours of testing without overhaul at Pratt & Whitney's Florida R&D center. The 500 hours included 526 starts, 390 cycles from idle to maximum non-augmented power, 70 hours in afterburner and 200 hours at or near maximum rated turbine inlet temperatures. An inlet extension duct will be added to the later operational models.

Navy/Marine Corps program which will provide operational *Cobra* escape systems in the near future. Successful results of this program will be a first step in operational helicopter escape systems and will represent a breakthrough in providing helicopter crews adequate means of survival in both peacetime and hostile environments.

Flatley Awards Announced

WASHINGTON, D.C.—The Chief of Naval Operations has announced the winners of the Admiral Flatley Memorial Awards for FY 1972.

The four ships, *Saratoga* (CV-60), *Hancock* (CVA-19), *Ticonderoga* (CVS-14) and *Inchon* (LPH-12) received the awards for their superior performance in aviation safety in their respective classes: CVA (Group I), CVA (Group II), CVS and LPH.

CNO stated that "it is a pleasure to congratulate the winners, particularly the repeat performance of *Hancock*, and commend all hands in these ships for their exemplary contribution to the accident prevention program. . . . This year's winners, by their outstanding performance, set an example for all to emulate."

Twenty two ships were considered by the Naval Safety Center for the awards. Runners-up were: *Constellation*, *Midway*, *Intrepid* and *Guam*.

Liberated Leading Chief

CECIL FIELD, Fla.—ACCM Lue L. Haas is the new leading chief of air operations at the naval air station, and she attained her position before Z-Gram 116 expanded the Navy's policy of equal opportunity for women.

Chief Haas has been liberated for several years; she was the first woman graduate from Ground Control Class C School, in 1964. Before she assumed her new duties, the 27-year Navy veteran was leading chief at the radar air traffic control facility. Early in her career, she served as a dispatcher but has worked in control tower operations for the past 17 years.

Asked if women should consider serving in the Navy, Chief Haas replied, "Yes, but a woman should first decide what she wants for herself. She will benefit from the experiences and education advantages."

Armed Forces To The Rescue



With a primeval fury unsurpassed in the history of the Philippines, Typhoon *Rita* descended on that archipelago on July 7, bringing with it rains, flooding, death and destruction. Before it was over, 15 feet of rain had fallen in the mountains of Luzon. An additional six feet fell on the lowland plains, flooding more than 4,000 square miles.

Hardest hit was central Luzon which reported thousands stranded "in dire need."

President Ferdinand Marcos appealed for aid and the U.S. responded. *Tripoli* (LPH-10) with embarked HMM-165 and its CH-46s and CH-53s was dispatched to the disaster area. They were joined by USAF C-130s, Navy CH-46s, USS *Cayuga* (LST-1186), Army Disaster Assistance Relief Teams (DARTS), and countless others.

In 24 days of operations, Marine helos carried over 1,738,255 pounds of relief supplies to more than 900,000 people and ferried 2,096 passengers from flood-threatened barrios—logging over 650 flight hours. Air Force C-130s airlifted 110,000 pounds of supplies from Nichols Field near Manila to Clark AFB for further airlift by helos.

The roads between Clark, Subic and Manila were flooded, hampering disaster efforts and movement of supplies necessary for normal operations of Air Force and Navy installations in the area.

Cayuga's landing platform served as a refueling point, extending the helos' time on station while reducing load and reload time.

As of July 31, Army DARTS reinforced by Navy doctors from NS Subic Bay and NAS Cubi Point, had inoculated 44,551 against typhoid and cholera.

In appreciation, the Republic of the Philippines awarded the Philippine Unit Citation to the 33d Marine Amphibious Unit and the 9th Marine Amphibious Brigade, which includes HMM-165.

*NA*News adds a "well done!"



A Filipino policeman struggles against raging flood waters to get a small boy to safety in a Navy LARC, left; and a Marine CH-46 Sea Knight lifts off from a landing zone in central Luzon after delivering more than 3,000 pounds of disaster relief supplies, above.

GRAMPAW PETTIBONE



ILLUSTRATED BY *Colborn*

Weightology

A fleet replacement pilot was scheduled for day carrier qualification operations in a KA-3B *Skywarrior*. Ready room briefing followed by preflight and start-up was uneventful. The aircraft proceeded to the ship and the RP commenced his qualifications. Following a number of landings, he trapped, taxied to the catapult and Rogered for his aircraft weight. The catapult shot appeared normal; however, the *Skywarrior* settled to within 20 feet of the water before establishing a climb!

Following a number of non-arrested approaches and landings, the KA-3B once again trapped on board. It was refueled, directed toward the catapult and again the pilot Rogered what he believed to be his current aircraft weight. The aircraft was launched off the catapult for a second time and again the *Skywarrior* settled dangerously close to the water before the pilot could recover and establish a climbing attitude.

At this time, shipboard personnel strongly suspected either an aircraft



or pilot problem or both, and the aircraft was diverted to home base.

Investigation revealed that prior to his initial trap, the pilot had activated wing and auxiliary fuel dump. The pilot, knowing that the aircraft had a previous wing fuel indicator gripe, had assumed the wings were empty when

they actually contained 4,600 pounds of fuel. He was, therefore, Rogering his weight at 4,600 pounds less than his actual weight. Consequently, his catapult end speed was minus one knot the first time and plus five on the second shot.



Grampaw Pettibone says:

Great balls of fire! Looks like what some people consider a "minor maintenance discrepancy (fuel gauge)," almost cost a flyin' machine. The pilot didn't help much when he assumed his fuel had been dumped. Looks to me like he should'a got the message after the first shot almost wound up being his last!

You see, gents, so often it ain't the "big things" that do a fella in—it's all those little things that we call "up gripes." So, when it comes to looking over your previous discrepancies on the yellow sheet—be a suspicious cuss!

Night Lumberjack

A lieutenant junior grade instructor and an ensign student were scheduled for a two-plane night formation train-



ing flight in TF-9J *Cougars*. The brief, preflight and turn-up were uneventful. The two *Cougars* departed the airfield and flew their night formation training flight without incident. Following the formation flight, they returned to the airfield and entered the landing pattern for some night landings.

The student broke first for landing, with the lieutenant junior grade taking interval in the pattern on his student. As the instructor approached a deep 90-degree position, he picked up traffic that he believed to be a single aircraft in his 12-o'clock position but in reality what he saw was a section of F-9s on a GCA to the outboard runway. The pilot could not distinguish the type of aircraft. Calling the ball, he continued his approach to the 45-degree position, becoming more concerned about the traffic which remained in the vicinity of his 12-o'clock position.

After passing the 45-degree position and continually checking the 12-o'clock traffic, it appeared to the pilot that a potential for a midair collision was occurring. Because the section of aircraft appeared as one, he believed

he was extremely close to this traffic, so he took evasive action. As the section split, it appeared that the traffic went into a 90-degree bank.

The exact evasive action taken is not certain; however, when the lieutenant returned his attention to his aircraft, it was near a stall attitude and approaching final. He added full power, leveled his wings and continued the approach.

At this point, he was estimated to be below 100 feet and the additional power did not stop his sink rate. He settled into an area of small trees in a landing attitude.

As he felt the impact, he tried to eject but couldn't find the face curtain. He continued approximately 500 feet at high power through the trees until he struck a three-foot diameter metal pipe lying on the ground. It sheared all three landing gears.

The aircraft continued at high power another 330 feet through dense trees until it came to rest, heavily damaged but intact, with the engine still running. The uninjured instructor secured the engine and essential switches and then

attempted to blow the canopy. Since the emergency canopy release was not activated properly, it did not blow back. He opened it manually and exited the aircraft. The aircraft was a total loss.



Grampaw Pettibone says:

My surgin' blood pressure! This pilot could'a got kilt! How many times have we seen "drivers" get pre-occupied with other traffic with the result being landing short, landing without rollers, minus the flaps, or some other forgotten item—you've gotta fly your machine! This lad said this accident could'a been prevented had we waved off—too bad his immediate analysis was not as good as his "hindsight" analysis. It's a darned good idea to keep your head out'a the cockpit—but this lad carried a good thing too far! If you want to play lumberjack, get yourself a chain saw.

'The only material failure which occurred was me.'

CRASH



SURVIVE

Story by
Michael McDonell

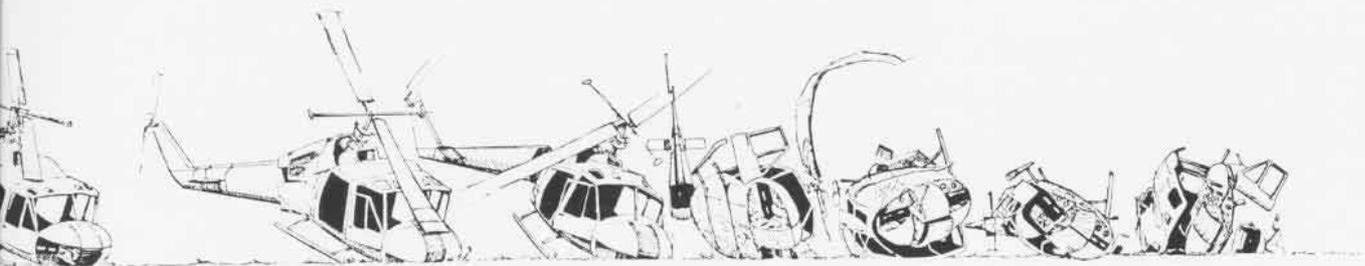
Flying has always been a risky business. But there have always been organizations and individuals within the Naval Aviation establishment that work to make it less so and who seek ways to improve the margin of safety for those who fly the Navy's aircraft. Like the late television series "Naked City" there are a million stories about these organizations, their members and their projects. The following is just one of them.

You are pretty confident about the performance of your aircraft or you wouldn't fly in it. When it's up and flying, you wouldn't want to be anywhere else. But what about those unforeseen "landings," those sudden stops beyond your control that can happen faster than you can punch out or

autorotate? How survivable is that environment? Helmets and harnesses help in many cases but more can be and is being done to improve the "crashworthiness" of Navy and Marine Corps aircraft.

Under the auspices of the Office of Naval Research, studies are currently under way throughout the country aimed at improving the structural design of naval aircraft, particularly the cabin and cockpit.

Dr. Nicholas Perrone, Director of ONR's Structural Mechanics Research Program, is an intense, busy man who thinks and does a great deal about aircraft survivability. Sitting in his sixth floor office in Arlington, Va., with his project monitor, Dr. Kenneth Saczalski, he recalled a leave of absence taken three years ago which was the impetus for the crashworthiness study.



VABILITY

"From February 1969 to October 1970, I was awarded a special National Institutes of Health competitive fellowship for work in bioengineering problems related to vehicle impact," he recalls. "During that time, the emphasis was on automobile impact rather than aircraft, but I did get a good understanding of 'people response' to impact as well as the structural response in a rapid dynamics situation."

It became obvious from his research in passenger response to automobile impact that certain information gained could be applied to naval aircraft/aircrew rapid dynamics situations. He began to look around the Naval Aviation establishment to see what was being done in this area. "I found that, in general, air-crashworthiness was not and is not a primary design objective.

We don't design planes anticipating an impact—it is, at best, a tertiary objective. The essential philosophy of aircraft structural design is confined to the elastic domain—tiny, recoverable deformations that could occur throughout the airplane.

"In the realm of aircraft crashworthiness, we are concerned with significant 'crunching' deformations and impact situations. And in this regime, the philosophy of aircraft analysis (I was originally trained as an aircraft structural analyst and have a degree in aeronautical engineering.) precludes the plastic impact situation with its significant, permanent deformation of the structure."

Examining other services' philosophy in regard to crashworthiness, Dr. Perrone discovered that the Army was taking a hard look at the problem. "I

**An Interview with
Dr. Nicholas Perrone**

The jet pilot
can often eject, the
helicopter pilot must
ride it down.



found that while the Air Force was focusing primarily on ejection problems, the Army, not surprisingly, was studying crashworthiness, because it has a great number of helicopters and it is in this type of aircraft that the greatest possible advances could be made to minimize injury to crew and passengers. To enhance the Navy's efforts on this problem, a Navy accident profile was assembled: How many accidents occurred with what type aircraft, how frequently did they occur and what injuries were sustained by

the people involved in them?

"The profile shows very conspicuously that with respect to major and minor injuries, a very significant number occur with the helicopter," Dr. Perrone continues. "With respect to jets, there are relatively few. There is a reason for this: the jet pilot can often eject—the helicopter pilot must ride it down. (Propeller-driven, fixed-wing aircraft fall somewhere between these two types.)"

Since the Navy operates its aircraft overwater, this environment offers

We are
concerned with
significant crunching
deformations and
impact situations.



Doctors Perrone and Saczalski explain the purpose of an on-going project to the author.

some real problems for the crewmen—and the engineers of the crash-worthiness project.

Helicopter pilots who have ditched in the water have complained that with the weight of the rotor and engine on top, the helicopter is inherently unstable in the water. Acting on this observation, the researchers experimented and found that it took approximately one second from the time of impact for the aircraft to flip over, hardly enough time to react to the impact, let alone egress.

"This being the case," observes Dr. Perrone, "if your design doesn't account for a way of egress or for a way of keeping the helicopter stable for a short period of time, you have the ironic situation of the crew surviving the impact to go down with the aircraft. When you are landing in water, you have a better environment because of the cushioning effect of the water. Survival from that point of view is good."

To improve the stability of the helicopter in the water, a study is presently being conducted to investigate the feasibility of a helicopter flotation stability device. "At Southwest Research, they have put together something to simulate the UH-1," Perrone continues. "It doesn't look like a helicopter but it has a mass distribution that simulates one, a heavy mass on the top of something that looks like a rowboat. They drop it into a tank and its characteristics in the way it flips over should simulate a helicopter very well. Our solution is rapidly deployed air bags. Using a solid propellant material, the bags will, in a fraction of a second, fill up and allow the helicopter to remain stable. Preliminary testing shows that this solution is viable and we will now present this information to the Naval Air Systems Command and jointly follow up."

What about the problems encountered by fixed-wing aircraft, especially those operating overwater?

Perrone considers the question, leans back in his chair and states very calmly, "With respect to ditching in water, the feedback that we get on jets is that there is a very low probability of survival. In many instances, water going into engines, heated to temperatures of several thousand degrees, creates a devastatingly explosive

effect. It has also been claimed by some that the impact the person receives is so tremendous that it knocks him out for several minutes while the plane sinks very quickly. The Naval Aerospace Medical Facility, Michaud, La., has been experimenting with volunteers on rapid deceleration sleds. The volunteer is brought up to speed and then stopped quickly.

"It was found that the neck would go forward, stretching extensively. The reason is simple enough. In a cockpit, the pilot's upper torso is restrained, but his neck and head are free. If you add extra mass such as a helmet under G levels of 2 or 3, it is as if 600 pounds of force were attached to the head. This very well may be responsible for any concussive reaction. One way of overcoming this problem is with a chin air bag system such as the one NADC is investigating for use by helicopter and other aircraft personnel in vertical rapid descent situations. The system would incorporate a collar containing a device which would sense an impact situation and automatically inflate, preventing neck stretching and head rotation.

"In certain aircraft applications, it is especially desirable that we have good impact attenuating helmets. Mathematical model studies of the skull/brain system may prove very use-

**This whole
business of...
airframe response...
warrants further
investigation.**





ful in effecting an optimal helmet design to prevent head injury."

What is being done to improve crashworthiness in a 'hard' landing? "We have two things addressed to an actual hard landing situation," Dr. Perrone states. "The first is an energy absorbing seat which would be supported in such a way that when it reaches a certain force level, it will crunch—that space between the seat and the floor is going to 'give' in a controlled way and, depending on the type of aircraft, this type of seat will

be the bulk of the give between the pilot and the impact. Use of an energy absorbing seat could significantly reduce the number of back injuries incurred during hard landings.

"The second area of investigation is in the airframe itself, in airframe structural response. There is little or no aspect of airframe crunch that is built, in a premeditated way, into the design of the aircraft. In helicopters, especially, this would be a definite plus; an analysis of the design would be made, so that the skids could be made to absorb more energy. When they collapse, the underside of the helo would absorb more energy, etc. This whole business of trying to develop techniques and methods of airframe response into this crunching range is something that warrants further investigation.

"Another aspect of crashworthiness being investigated is an occupant-simulation model. The Department of Transportation has funded a number of efforts within the last several years to come up with a method of predicting the response of people to impact. Using a computer-produced 'stick' math model to simulate the pilot, we cause him to undergo rapid deceleration and will be able to know at what level his harness will come loose, what kind of motions he will make, etc. If the model is three dimensional, the impact response can be studied fore and aft, up and down, in addition to



the side-to-side response given by a two dimensional model.

"Having the information on reaction to impact available would, for instance, allow us to observe how people move about even though restrained in certain ways. We are looking into 'yielding' restraints. Having a 'fixed' restraint system can be a mixed blessing. Conceivably, you may reach a point where, when the force level gets so high, the restraint itself will yield so that it will absorb high energy at predetermined force levels."

One other idea under consideration is the energy-absorbing bag similar to the one that the Department of Transportation is testing in automobiles. It, like the chin air bag, would be automatically inflated in a crash situation, preventing torso and leg injury. "But then," Dr. Perrone adds, "I would imagine that quite a few pilots would be apprehensive about one of these things accidentally inflating; some just might not like the idea of having that 'thing' in the cockpit during an emergency, and some might object to it on the grounds that the cockpit is already crowded enough.

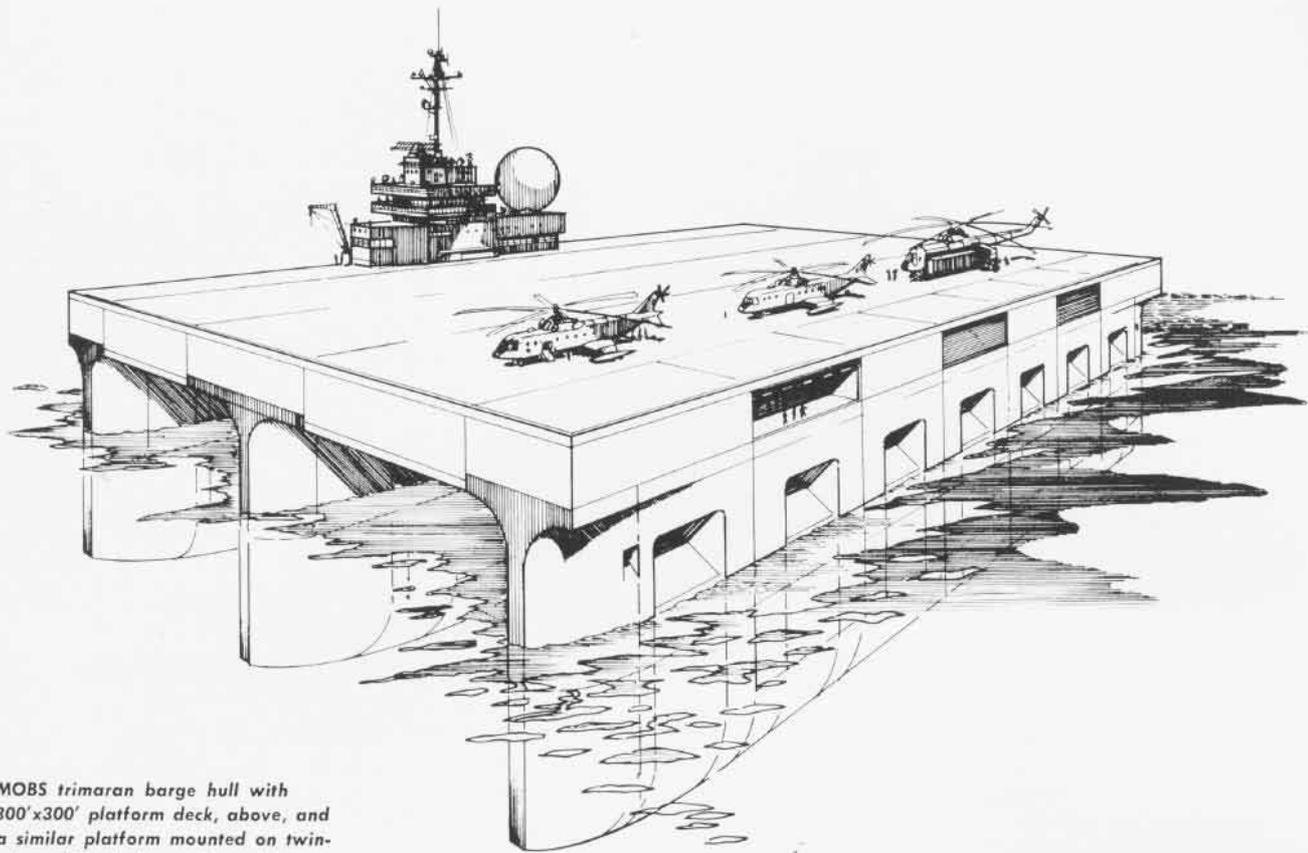
"These are our problems, too. Not only in this office but in other offices like it throughout the Navy. We are concerned with the well-being of that man in the cockpit and we are duty bound to make that environment as survivable as we possibly can."



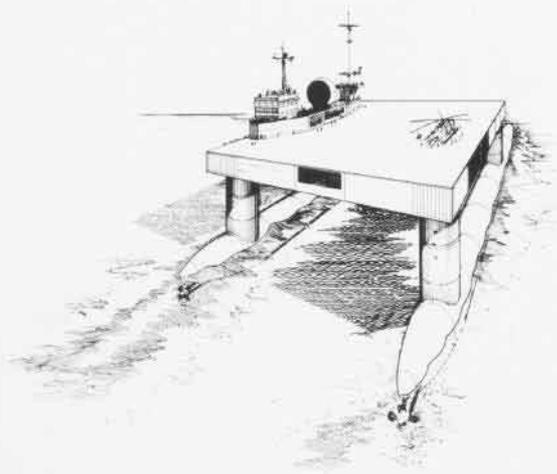
We are concerned with the well-being of that man in the cockpit and we are duty bound to make that environment as completely survivable as we possibly can.



MOBS



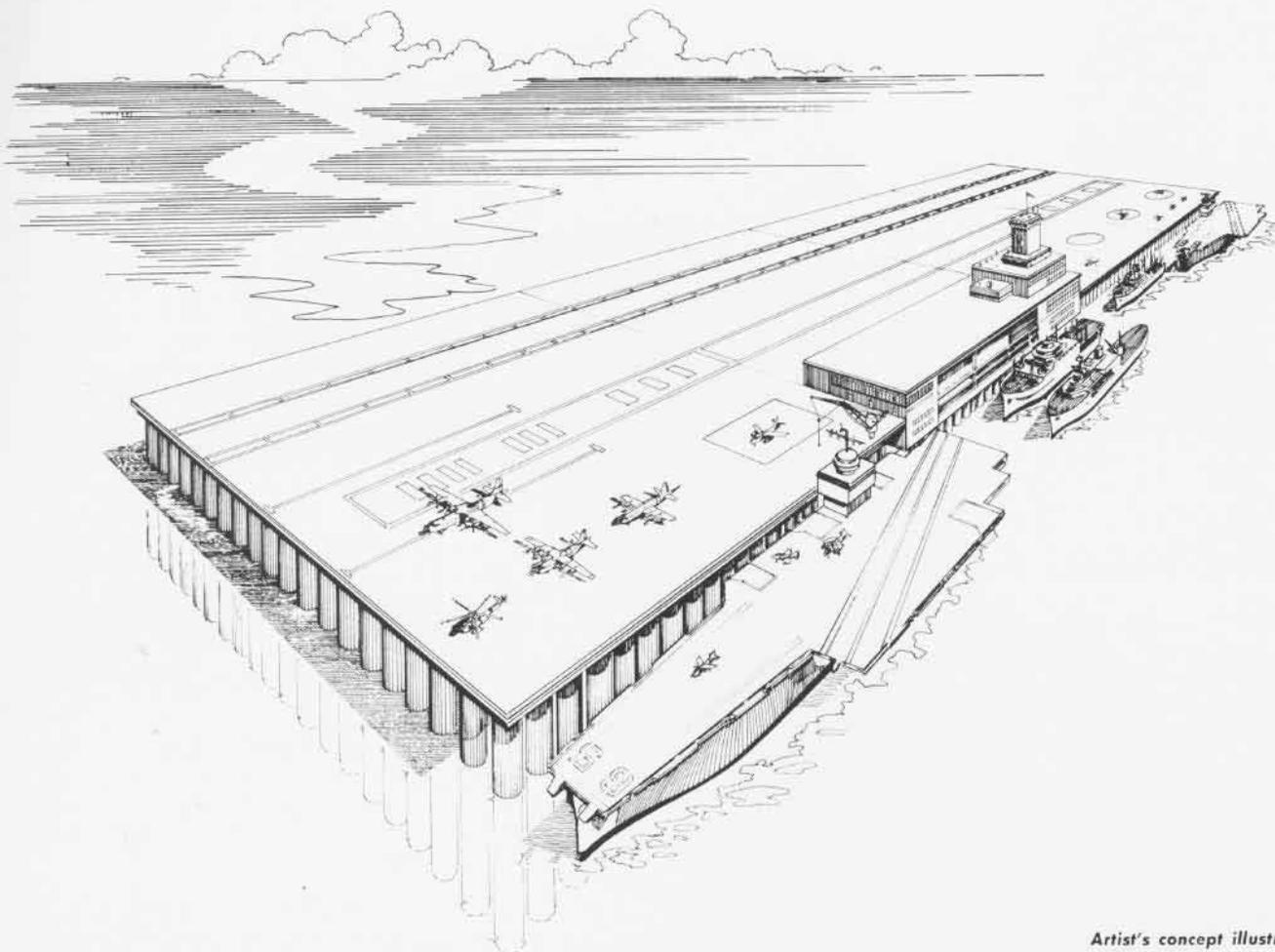
MOBS trimaran barge hull with 300'x300' platform deck, above, and a similar platform mounted on twin-submersible hulls are two alternate possibilities for flight decks.



Fifty tons of concrete are floating in the harbor at Port Hueneme these days—massive precast hulls and columns which form the major components of a unique model for a futuristic mid-ocean platform proposed as an advanced naval base of the 1980s.

Constructed to one-tenth scale, the overall 60-ton model of a semi-submersible platform was launched successfully by the Naval Civil Engineering Laboratory (NCEL), Port Hueneme, Calif.

The launching was a milestone in a multi-year project called MOBS (Mobile Ocean Basing Systems), a program co-sponsored by the Office of Naval Research and the Naval Facilities Engineering Command. The concept consists of structural

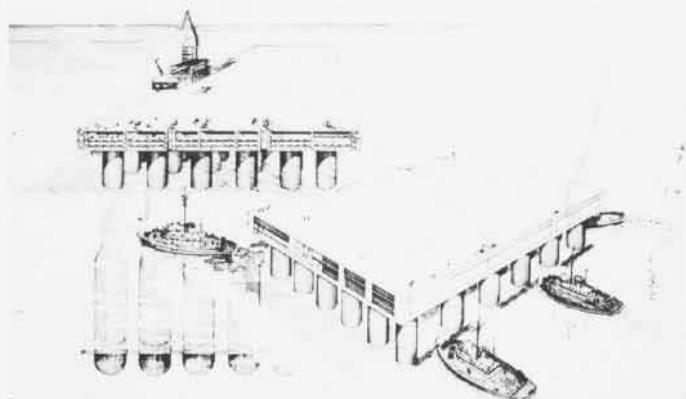


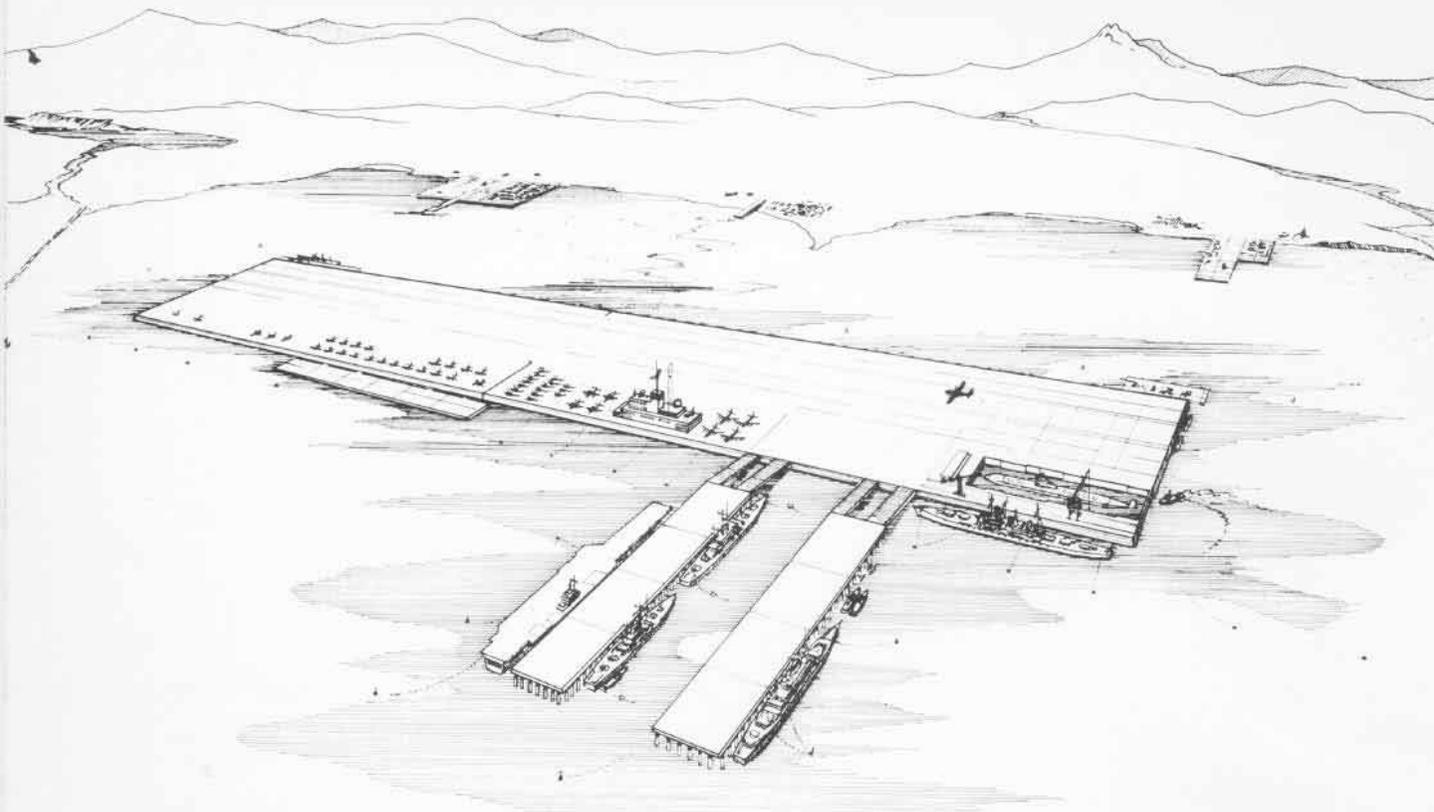
Artist's concept illustrates 1,000'x4,000' MOBS platform on hydro-dynamically stable cylinders servicing both ship and aircraft. Below, 300'x300' units are joined.

components, mass produced and constructed into modules ashore. They are launched into the water, towed to the site and assembled into large self-contained offshore platform bases.

After years of research into all types of construction material, NCEL has concluded that concrete is the most practical and economical material for construction of large ocean platforms.

J. J. Hromadik, director of the amphibious and harbor division responsible for the project development, describes the model as two cylindrical hulls, each 37 feet long, five and one-half feet in diameter with four-inch walls. The hulls support eight vertical concrete columns, each seven feet long, three and one-half feet in diameter with





Combination air station and naval station facilities are offered by an expanded version visualized in artist's conception of an offshore composition of platform modules.

three-inch walls. A steel deck measures 27 feet by 32 feet. Entry into either hull is possible through one of the columns.

The 120,000-pound working model underwent a series of structural and hydrodynamic tests this summer within the protective confines of the harbor. The hulls have been submerged to a level that places the deck four feet above the waterline.

The MOBS model is approximately one-tenth the size of a proposed full-scale 300'x300' module, one of three different configurations being evaluated by project engineers. Based on operational analyses, other platform sizes under consideration are assemblages of modules totaling 400'x1,200' or 1,000'x4,000'.

Three basic types of platforms are being studied: on vertical columns which provide buoyancy, with barge-type hulls for flotation, and with semi-submersible type horizontal hulls. The latter concept is the one being tested in model form.

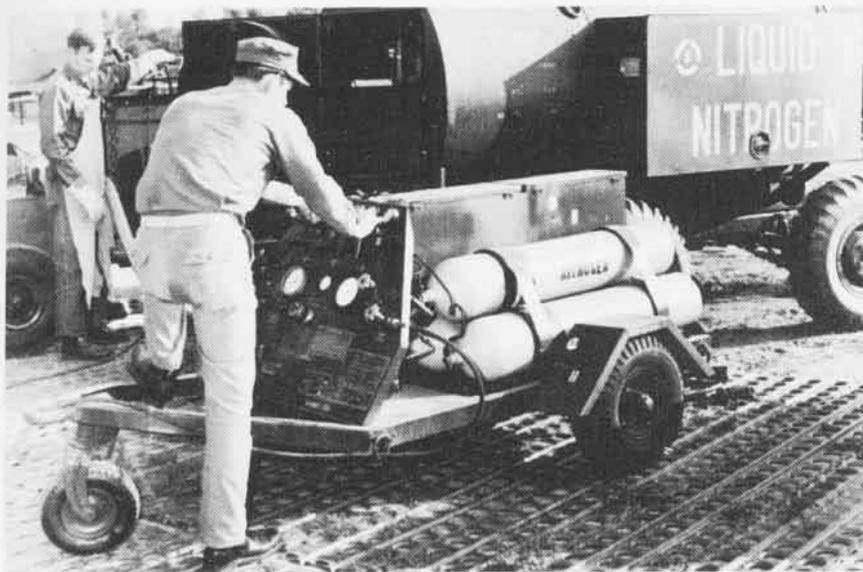
Hromadik points out that, "From the standpoint of engineering technology, we could start con-

struction immediately of a prototype 300'x300' floating module at about \$100 per square foot."

The successful development of MOBS could logistically augment U.S. overseas advanced bases or possibly replace some of those leased or negotiated on foreign territory.

"The capability to support occupancy of a particular ocean region with the MOBS concept does not require major scientific discoveries nor technical breakthroughs," Hromadik says. "It does require systematic development with accompanying research, development, testing and evaluation to update and extend current technology.

"While available construction materials provide a designer's choice, concrete does appear to stand out. It is readily available, economical, can be mass produced, has long life in a marine environment, can be formed into any shape and lends itself to repetitive large-scale constructions. With concrete it is not necessary to bring the project to the industrial plant. The production processes can go to the site."



Cryogenics

How Cold is Cold?

By LCpl. Ron Homer

Have you ever pondered the meaning of "cryogenics" or asked yourself how cold is cold?

According to Marines in the cryogenics section of the El Toro-based Headquarters and Maintenance Squadron 13, the term refers to the production of very low temperatures and their effect on the properties of matter. And cold, they say, can be down to minus 320 degrees Fahrenheit, the boiling point of liquid nitrogen.

The mission of the squadron's cryogenics section is the production and storage of liquid nitrogen and oxygen. Currently, the section serves all 3d Marine aircraft wing and station aviation units aboard MCAS El Toro and MCAF Santa Ana, as well as the auxiliary field at Camp Pendleton. Fire departments and crash crews at these locations are also occasional customers.

The value of cryogenics is easy to see. One cubic foot of liquid oxygen, when converted into its gaseous form, will expand to 862 cubic feet of breathable oxygen. To a pilot, this means that he can carry aboard his aircraft one small container with a converter, rather than several large, compressed gas cylinders. Each small container carries from eight to ten

liters of liquid oxygen that can be converted to breathable oxygen for pilots flying in the upper atmosphere.

Because of the potential fire hazard presented by the highly volatile substances it produces, the cryogenics plant is located in an isolated area some five miles from El Toro's main gate.

The completely mobile plant operates for ten days at a time, then is shut down for maintenance. During its period of operation, it requires the efforts of 12 Marines working in six-hour shifts. It can produce as much as two tons per day of either liquid oxygen or nitrogen, or a combination of the two.

Through a process called fractional distillation, the liquid nitrogen is produced by cooling the air, then heating it at slowly progressing temperatures to boil out the components. The main components are captured in columns and then transferred to tanks as pure liquid oxygen and/or nitrogen.

For storage, the section uses 500-gallon tankers which are connected to a GB-1A generator for filling while the liquid oxygen or nitrogen is being produced.

Because of the technical nature of



Personnel fill nitrogen cylinders, opposite and above. Below, 18-lb. oxygen converter produces same amount of breathable oxygen as two cylinders weighing 300 pounds.



the work, Marines assigned to the section are sent to the Naval School of Compressed Gases, Portsmouth, Va., for 17 weeks, where they are taught the basics of handling, storing and transporting liquified gases and the operation of the GB-1A.



Australia Buys SH-3

YEOVIL, Somerset, England—Westland Helicopters Limited has announced the purchase of ten *Sea Kings* by Australia for 1974 delivery.

The *Sea Kings*, for the Royal Australian Navy, will be used in antisubmarine and vertical replenishment roles. The Australian *Sea Kings* will be equipped with upgraded Rolls-Royce Gnome H1400-1 power plants capable of 1,590 shp each.

Westland has developed the *Sea*

King, based on the Sikorsky SH-3D design, to meet international requirements for an advanced antisubmarine helicopter with long endurance. Easy conversion to secondary operational roles of search and rescue, cargo carrying, tactical troop lift and casualty evacuation, as well as long-range self ferry, is designed into the helo.

The *Sea King* is currently in service with the Royal Navy and the Indian Navy in the ASW role and is being supplied to the Federal German Navy and Royal Norwegian Air Force who are using it as a SAR vehicle.

NATC Det West

POINT MUGU, Calif.—In a brief ceremony in June, Captain Joe Simon, Director of the Weapons Systems Test

Division, NATC Patuxent River, Md., officially commissioned the Naval Air Test Center Detachment West at the Naval Missile Center.

NATC Det West will be responsible for testing and evaluating the F-14A *Tomcat* weapons control and integrated avionics systems. Tests will include two Navy Preliminary Evaluations, a Technical Evaluation and Navy Board of Inspection and Survey Trials, extending over the next 12 months.

The detachment, in conjunction with the Naval Missile Center and Air Test and Evaluation Squadron Four, will function as an integral part of the total Navy initial test and evaluation of the F-14. Support services will be provided by NMC's test operations department and PMR's administrative department.

25th Nats Attract Two Thousand

GLENVIEW, Ill.—Like a huge bird of prey, the *Stuka* divebomber screamed earthward. On the ground, those looking up were spellbound as if in a hypnotic trance. Gathering speed with every second, the plane came closer and closer until, suddenly, it fired

two rockets. With a whoosh, the rockets hurled to the ground. On impact, they exploded with a very audible boom. Meanwhile, the aircraft had reversed its direction and was climbing . . . its whole body protesting as it fought the gravitational pull that

was still trying to coax it back into a dive.

The time was not the summer of '42, nor was the place somewhere in Europe. The time was the summer of '72, and the place was NAS Glenview. The plane was a scale, radio-controlled model, just one of thousands flown during the 25th National Airplane Model Championships held July 24-30.

An annual event cosponsored by the Navy and the Academy of Model Aeronautics, this year's Nats drew more than 2,000 entries from throughout North America and several times as many spectators. About 600 trophies were given to the contestants in the 43-event contest.

Model aviation knows no age limitations and, for one busy, noisy and frantic week, youngsters from six to 60 flew their models in competition with one another or just built and flew their models for fun.

Several first place winners and a few special demonstration teams closed out the week with a model air show. During the air show, Dave Platt transferred ownership of his famous, award winning, scale WW II SBD *Dauntless* dive bomber to the Naval Aviation Museum in Pensacola, Fla. The radio-controlled model will be put on permanent display near the full-scale airplane in the museum.

PH2 Claude Colle



Dave Platt (L), presents scale model of WW II SBD *Dauntless* to Bob Bleikie (C), exhibit expert for the Naval Aviation Museum in Pensacola. Looking on is Captain Paul G. Merchant, C.O. of NAS Glenview. The model's detailing includes the names and the number of kills of the pilot and gunner who flew the original plane on the morning of the Battle of Midway.

Eyebrow Lights Win

ELLYSON FIELD, Fla.—Two members of HT-18 at the naval air station here recently reaped the benefits from a beneficial suggestion.

AEIs Donald A. L. Leatherwood and Richard H. Grosse each received a check for \$504 for their suggestion to place eyebrow lights around the outside of the copilot's altimeter in the TH-1L, as well as around the radio magnetic indicators (RMIs) of both the pilot and copilot.

Prior to the implementation of their suggestion, the three pieces of equipment were illuminated internally, which meant that when the light failed or burned out, the whole system had to be removed from the aircraft and sent to the factory for repair. Placing eyebrow lights around the outside of this equipment eliminates the time consuming and costly task. Now, all that has to be done is to replace the burned out bulb in the eyebrow light.

RMIs had a lighting failure rate of 108 per year at a cost of \$10,800 to the government. The copilot's altimeter had a bulb failure rate of 160 per year at a cost of \$84,000, and the loss in availability of aircraft cost the government \$55,200 annually. These costs, coupled with the expense of supply and delivery, total more than \$155,000 a year that Leathergood and Grosse have saved the government. Today, the cost of replacing a burned out eyebrow light is only 18 cents.

New Skyhawk Takes to the Sky

PALMDALE, Calif.—The A-4N, latest of several A-4 versions marketed overseas with the authorization of the U.S. Government, took to the sky for the first time in July.

Principal improvements in the *Skyhawk II* are a new navigation/ weapons delivery system; two 30mm cannon; and a completely redesigned and simplified cockpit layout. The new model, like the A-4M, is powered by a Pratt & Whitney J52-P-408 engine, rated at 11,200 pounds of takeoff thrust.

Skyhawks have been procured by the Israeli, Royal New Zealand, Singapore and Argentine Air Forces and the Argentine and Australian Navies.

FACSFac

It was a bleak morning aboard the submarine *USS Darter* patrolling off the coast of Southern California. A young petty officer was writhing in pain on a canvas bunk in the sub's hospital bay. Acute appendicitis had struck him during the night.

Radio signals crackled over the 500 miles between *Darter* and her senior command, Submarine Flotilla One in San Diego, and then to the Fleet Air Control and Surveillance Facility (FACSFac) at NAS North Island.

It was 5 a.m., but the wheels at FACSFac began turning immediately. The Coast Guard air station at San Diego was requested to dispatch a rescue helicopter. NAF San Nicholas Island, located between *Darter* and NAS North Island, was asked to provide fuel for the helicopter on its way out to the submarine. Arrangements were made at NAS Moffett Field for a P-3 to establish contact with the surfaced sub and provide communication relay services.

Another unit called was the guided missile cruiser *Providence*. She was diverted from an exercise and requested to steam toward the sub's area. *Providence* did not have to provide the refueling services it was thought the rescue helicopter might need for its return trip—but she was ready.

Thirteen hours after the original call went out from *Darter*, the ailing petty officer was in an ambulance screaming its way to San Diego's Balboa Naval Hospital.

FACSFac has been doing this sort of work since it began operation in 1965. The facility, commanded by Commander C. E. Kingsbury, stands ready to assist the multitude of ships, submarines and aircraft operating along the Southern California coast.

Since its origin, the computer-equipped facility has acted as mission coordinator for nearly 300 medical evacuations and search and rescue missions. The 29 officers and 95 enlisted men maintain around-the-clock availability.

Functioning under the operational and administrative control of Commander, Western Sea Frontier at Treasure Island, FACSFac schedules and monitors more than 8,000 off-

shore training exercises each year. This covers all naval surface, subsurface and air operating areas.

FACSFac has the added responsibility of ensuring maximum safety for units training in the operating areas. The air controller sitting at his console at North Island uses radio and radar inputs to guide pilots around hot areas where live firing is taking place.

To ensure this safety, FACSFac has direct communications with the FAA and Navy, Coast Guard and Air Force units so that safe flight routes through the operating area can be provided for commercial and military aircraft.

"Search and rescue missions are not our only tasks," says Cdr. Kingsbury, a veteran of 28 years in Naval Aviation. "Ensuring the full utilization of the offshore operating areas in the most safe and efficient manner is a big responsibility. I foresee FACSFac playing an ever expanding role in fleet operations as our radar and other equipment are modernized."

A new search and surveillance radar system was built for the facility last November. Located atop Mt. Thirst on San Clemente Island, 65 miles west of San Diego, the new system picks up radar contacts more than 200 miles from the island.

"When the tedious and strenuous day-to-day operations are interrupted by a call for help, we are ready to respond immediately," Kingsbury adds. "The saving of a life or a multi-million dollar aircraft instills in the team and the command a tremendous sense of pride in a job well done."

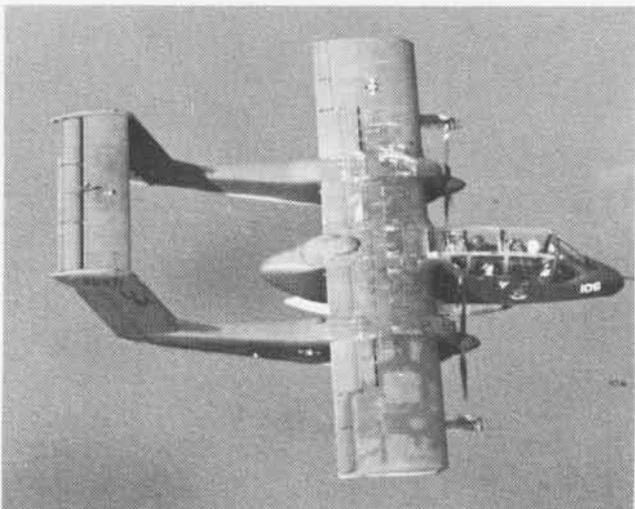


The *Bronco* originated from a Marine Corps requirement for a lightly armed reconnaissance aircraft with substantially higher performance than the O-1 *Bird Dog* then used for observation and forward air control. The requirement specified an additional capability for light attack while calling for the new plane to be considerably less expensive than a conventional attack bomber. As such, the OV-10 was designed specifically to meet the needs of counterinsurgency in Southeast Asia.

After its first flight in July 1965, the Air Force and Marine Corps issued production orders the following year. The first Marine unit to receive the *Bronco* was VMO-5, which began to take delivery in February 1968. Later deliveries went to VMO-3 and three other USMC squadrons. In 1969, a number of these planes were loaned to the Navy and VAL-4 was formed to provide armed reconnaissance, helicopter escort and FAC duties in Vietnam. (VAL-4 was disestablished early this year.) VMOs 1, 2 and 6 continue to operate the *Bronco*, as do Marine reserve squadrons, VMOs 4 and 8.

The Air Force has acquired a large number of OV-10s for FAC and limited-response ground support roles. The Federal German and Thai Air Forces have also adopted versions of the *Bronco*.

The plane features a cantilever shoulder wing and a short pod-type fuselage, manned by a two-man crew positioned in tandem. Short sponsons extending on either side of the fuselage each contain two 7.62mm guns and have two ordnance attachment points. A fifth attachment point is located on the fuselage centerline. The *Bronco* can also carry a *Sidewinder* on each wing.



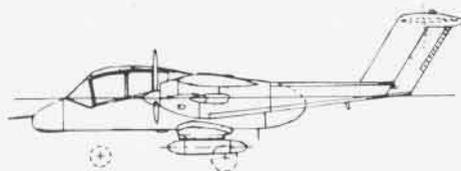
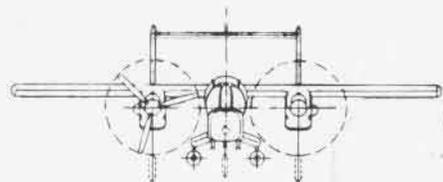
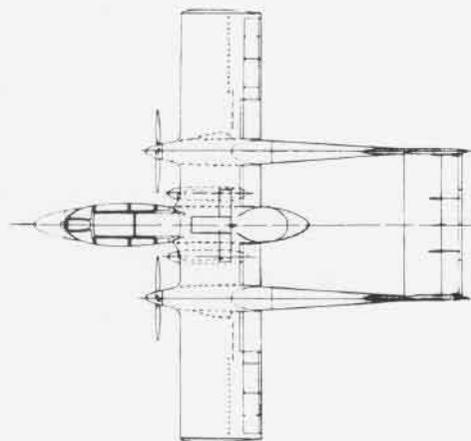
ONCO



OV-10A



Length (overall)	41'7"
Height	15'1"
Wing span	40'0"
Power plant	Two T76-G-10/12
Horsepower	715 shp ea.
Maximum speed	247 kts.
Cruise speed	205 kts.
Ceiling	28,800'
Combat radius (internal fuel)	346 nm
Ferry range (150 gals. external fuel)	1,310 nm
Armament	Four 7.62mm guns, two Sidewinder missiles, center- line station for 20mm gun pod, 4,600 pounds of ordnance on one centerline and four sponson store stations
Crew	Pilot and observer



By Major Edward R. Doane, USMC

Hercules . . . the name conjures up visions of something massive, capable of great feats of strength. To the student of Greek mythology, Hercules, the son of Alcmene and Zeus, was renowned for great strength and endurance. To a Marine, *Hercules* is the "GV" or KC-130F. The Marine Corps' largest aircraft is appropriately named, for it, too, has demonstrated great feats of strength and endurance from Khe Sanh to the Mediterranean.

Marines think of the KC-130F in many ways, depending on how directly it concerns them!

The infantryman sees the KC-130 in many roles, for it is this aircraft which carries him to and from forward staging areas. It provides him with logistic support and it may very well carry him from a field hospital to a general hospital, should he be sick or wounded. Along with its grandfather, the C-117, the *Hercules* lights up the darkness with a multitude of flares.

The artilleryman looks on the KC-130 as a means of transporting his gun more rapidly than before and, once in place, providing him with ammunition no matter what the location.

The communicator can rely on the KC-130 to relay radio and teletype messages whether he is in the deepest valley or on the highest hill.

The recon Marine has in the KC-130 a stable platform from which to jump and a source of resupply regardless of his distance from friendly lines.



Marine Hercules refuels two Skyhawks, above, and makes a jet-assisted takeoff from MCAS El Toro, Calif., bottom. The KC-130 can be converted from tanker to transport in a few hours.

Marine KC-130F squadrons' support is not limited to fellow Marines on the ground. By aerial refueling of jet attack and fighter aircraft, the KC-130 provides the Marine Corps the potential to deploy aircraft anywhere within a short period of time. If required, the *Hercules* can even deliver a SATS airfield to a forward area.

It can provide flare drops for the helicopter community and it can transport a complete fuel farm and fill it with fuel for use in forward areas.

No other aircraft in the Marine Corps inventory directly supports so

many units, with such a variety of services. It is the plane that was praised for bringing hot food and cold ice cream into Khe Sanh, and cursed in the next breath for blowing sand into same. It is also the aircraft which dropped food, medical supplies and ammunition with pinpoint accuracy to many a besieged outpost. The KC-130F can be almost anything that is required: a freight car in the sky, a flying hospital, an airborne service station for the thirsty jet or a command post for a Marine with a job to accomplish.



at Sea with the Carriers



Over half a mile of flight deck is lined up at NAS North Island, Calif., as *Ticonderoga* (right), is pushed into her berth. The other carriers are *Enterprise* (left), and *Constellation*. (Photograph by SCPO V. McColley.)

America (CVA-66)

America's pilots have been busy in the Vietnamese air war. Twenty secondary explosions were reported during one sweep on enemy targets south of the demarcation line. On another sweep near Quang Tri and Hue, 130mm and 75mm artillery pieces, three 82mm mortar positions and five other enemy emplacements were destroyed, and a pilot reported a secondary explosion after he completed his run on an enemy supply storage area 26 miles south of Da Nang.

Another pilot from *America* used a *Walleye* during a strike against the Hon Ach highway bridge 41 miles north northwest of Vinh. As he pulled

out of his run he reported the bridge heavily damaged.

Eighty percent of the Ninh Binh ship repair facility, 49 miles south southeast of Hanoi, was destroyed by another strike. "There was black smoke billowing up out of the shipyard and I saw a couple of secondary explosions as I climbed away," reports a pilot from the attack carrier.

Prior to the heavily concentrated strikes, the Ninh Binh shipyard was a bustling facility working on numerous supply watercraft and petroleum barges around the clock. At least 14 of the watercraft undergoing work at the facility were reported destroyed along with their repair sites.

A very large secondary explosion

that gave off a 3,000-foot fireball was reported by pilots who struck the Vanh Danh army barracks 15 miles north of Haiphong. In the same general area, pilots reported two large secondary explosions at the Noi Thong storage area and many secondary explosions at the Vinh Tuy railroad siding.

The following day, four anti-aircraft artillery sites were destroyed during strikes on Hon Gai Navy Yard 28 miles east northeast of Haiphong. Eight barracks, eight supply buildings and an administration building were damaged and two large supply warehouses were destroyed during the strike.

A large secondary explosion gave

off an orange fireball during a strike against a supply storage area ten miles north northwest of Vinh, while a sustained fire at an AAA site and a secondary explosion at the Xom Trung Hoa petroleum storage area 16 miles to the west were reported.

Midway (CVA-41)

Flying 21 out of 28 days, pilots of this CVA went a long way in slowing down the enemy's war effort. Several SAM sites were destroyed or damaged in addition to 14 artillery emplacements, 32 bridges, 84 trucks, 48 barges and watercraft, 41 buildings and warehouses, 11 petroleum storage areas, 14 supply caches, 46 boxcars, a locomotive and a bulldozer. Sixty-three sustained fires were set and 158 secondary explosions set off.

Another flight of *Midway* pilots described seeing a huge, mushrooming fireball rise from an extremely large secondary explosion at the Co Chau petroleum pumping station 17 miles south southeast of Hanoi. The billowing black petroleum smoke rose to 700 feet and covered the entire target area.

Oriskany (CVA-34)

Big O pilots caused six large secondary explosions during a strike against the Hon Chieu transshipment point 11 miles north northwest of Haiphong.

On another strike in South Vietnam's Military Region Two, an *Oriskany*-based pilot reported ten enemy emplacements destroyed and one sustained fire. Near Quang Tri, other pilots destroyed two 130mm artillery

pieces and reported two large, more than five medium, and five small secondary explosions. A third 130mm artillery piece was reported destroyed and a fourth damaged after a strike 40 miles north northwest of Nha Trang. Ten enemy emplacements were reported destroyed and ten others damaged after another strike in the area.

During strikes the following day, *Oriskany* pilots reported destroying a 120mm artillery piece and an enemy truck five miles west of Dong Ha, while another pilot reported two secondary explosions after an attack on an enemy troop position ten miles south of Quang Tri. Farther south, two medium secondary explosions were reported after a strike on an enemy mortar position ten miles southwest of Hue.

As *Oriskany* was conducting under-

Drama and an air of uneasiness filled the Gulf of Tonkin early one summer morning as men from HC-7, the carriers *Saratoga* and *Midway*, and the frigate *Dewey* (DLG-14) combined efforts to pluck a Navy pilot down more than 20 miles inside North Vietnam.

Lt. James R. Lloyd had launched in his A-7 from *Saratoga* on a routine bombing mission over North Vietnam at 8:15 the previous evening. An hour later, things were not quite as routine.

"It was just after dark and I had

just dropped my ordnance over some trucks moving south near Vinh," relates the VA-105 pilot. "Suddenly I had an indication of a SAM firing. It was a definite lock-on, coming at me at 12 o'clock.

"I maneuvered to avoid the SAM. The next thing I heard was a thud on my left wing and I went into a hard left roll. I looked and saw big metal sheets of my wing coming off. I really wanted to bring the aircraft out over the water. I tried to do it with the rudder but my stick was frozen. Then my plane went into a full nose-down dive, so I ejected."

Lloyd says he does not remember falling. "I just wanted to get to my radio to let them know I was alive. When I came down I started running away from the burning plane. (I could feel the heat all the way down.) I remember hearing chickens and pigs; even the dogs barked funny. It was my state of mind, I guess," he says, smiling.

According to Lloyd, after he safely parachuted, people were running all over the countryside. "I could hear at least 300 people and see over 100. At one time some of them came within six inches of me. The men near me had guns and were firing randomly. I knew it was bad. I hid in a bush but they never did beat the one I was hiding in. My green flight suit blended in well with the vegetation."

Using his hand-held radio, Lloyd

communicated with other Navy jets still overhead. "I told them that there were people in the area, that I was scared and wanted to be picked up."

Lloyd recalls that people were constantly talking and he knew he had to be quiet and furtive, and that he had to work northeast up a small hill. "Everyone I encountered was shouting," he says. "I don't know if it was my imagination or not, but I heard my name mentioned three or four times. It could mean something in Vietnamese."

The most horrifying chapter of the adventure occurred when two men actually found Lloyd as he lay entwined in a bush.

"Something was said and I figured it was all over for me," adds Lloyd. "I didn't know what to do; I just didn't move. They jabbed me in the back with the barrel of a rifle, two times, I guess. Something was said again and I heard footsteps running.

"I figured one guy was standing guard. I knew I had to get away. I slowly rolled over to see who he was. To my amazement, both were running up the hill. I got up! I guess they thought I was either dead or injured. I just ran like hell."

While the North Vietnamese ran north for help, Lloyd ran northeast. When automatic weapons fire began to whiz over his head, he started to crawl. "I crawled because I could see the horizon and I could feel where I



SH-3A Sea King crew members of HC-7 train in plucking downed aviator from the ground. The rescue of Lt. Lloyd from North Vietnamese soil proves that practice does pay off.

way replenishment operations that evening, a 20-year-old Marine slipped and fell overboard. LCpl. Harold D. Morrison, a member of the ship's Marine detachment, was transferring bomb pins from the port elevator into the hangar bay when he slipped and fell into the water. *Oriskany* and the replenishment ship were steaming side-by-side at 11 knots, 140 miles east southeast of Da Nang at the time.

First to realize that Morrison had fallen overboard was Capt. C. J. Schlack, commanding officer of the ship's Marine detachment, who was supervising work on the elevator at the time.

It was not long before a helicopter was overhead and plucked Morrison from the warm choppy sea. After the excitement waned, Capt. Schlack reported that Morrison "apologized for

leaving the ship without permission."

After that it was business as usual, with *Oriskany* pilots causing havoc to enemy targets. Eight multistory buildings were reported destroyed with a large secondary explosion after a strike at the Thai Binh army barracks 36 miles from Haiphong. A-7 *Corsair II*s destroyed two 40-foot barges and damaged two 50-foot barges northwest of Vinh.

In the same area, other A-7s destroyed two sections of a pontoon bridge, accounted for two railroad cuts and four damaged boxcars, and then flew north to destroy two barges ten miles southeast of Hon Me Island.

Enterprise (CVAN-65)

Twenty-four families of Navy, Marine and Air Force POWs and MIAs

in SEAsia were guests of CVAN-65 and CVW-14 for a recent dependents cruise.

The families, from California and Whidbey Island, Wash., were flown in Navy aircraft to NAS Alameda where they were met by ship and air station representatives. After spending the night in the Alameda BOQ, they boarded *Enterprise* early the next morning.

The families toured various departments aboard the ship, including CIC, medical and dental spaces, and aircraft maintenance shops.

Highlight of the day was an air demonstration by the air wing. Included were parade formation flybys, a helicopter rescue demonstration, in-flight refueling, demonstration of aircraft maneuvering capabilities, and supersonic passes by an F-4J and an

was going. But the stench of the rice paddies was unbelievable."

Lloyd then moved two miles further north and, when he heard more voices, dove into a rice paddy. People came within five feet of him this time, but passed by without noticing him. Seeing his chance, he again made contact with the planes above him.

"I told them to bring in the helicopter," Lloyd continues. "They tried to bring it in earlier, but they never would have made it. Calling off that first helo was probably the biggest decision of my life.

"When I was talking to the planes above, I wanted to know who I was talking to. It gets awful lonely down there," sighs Lloyd. "I found some more brush to hide in, and it was then I realized how I ached, how I stunk."

While Lloyd was on the ground, air and surface search and rescue units were far from idle. When the 27-year-old Naval Aviator ejected from his *Corsair II*, his wingman immediately assumed duties as air on-scene SAR commander, and Dewey became surface SAR control ship, coordinating the efforts of the surface units and controlling and advising the aircraft which completed the rescue.

Air intercept controllers aboard Dewey were kept busy during the five-hour rescue mission. RD1 Paul Moss was controlling all aircraft operating inland which provided surveillance, ground suppression and the



Left to right, Lieutenants Zinser, Young and Lloyd, AT3 Ankney and AMAN Szymanski.

pickup of the downed pilot. At the same time, RDC Wilmon Crowe and RD1 Antonio St. James were controlling all jet aircraft operating off the coast, and RD2 James Barnett was handling the reserve helicopter assets.

Chief Crowe directed inflight refueling for 16 aircraft during Lloyd's ordeal, and Hepburn (DE-1055) provided refueling for the rescue helicopters.

At 2:45 a.m., Lloyd was able to see the HC-7 SAR helo.

"I started to vector him in," explains Lloyd. "He had his lights on and I never thought he would do that. It made him a sitting duck. He was taking fire from all over the place. He circled the area and wanted me to show him where I was."

The SH-3A, with Lt. Harry J. Zinser as aircraft commander, made one approach. Lloyd jumped up in an attempt to catch the hook but missed. Helo pilot Lt. William D. Young then

made another pass.

"This time he landed about 100 feet from me and I just ran like hell toward that beautiful single Big Mother," laughs Lloyd. "I just dove in."

Other crew members in the Sea King included crew chief AT3 Douglas G. Ankney and AMAN Matthew Szymanski. Szymanski was the helo's gunner and answered the enemy's ground fire with rounds from his machine gun.

HC-7, home-based at NAS Imperial Beach, Calif., has been involved in many rescue missions, but most of them have been over water. Not since 1968 has a squadron helo gone so deep into enemy territory on a rescue mission.

Most of the rescue helicopter's journey into North Vietnam was done at low altitudes and over rough mountainous terrain. "It would have killed us if we had hit a mountain or a tree," kids Zinser.

When the Sea King returned to the carrier, a jet pilot who had been overhead during the rescue mission told the helo crew that they had been taking antiaircraft fire at point blank range when they touched down to pick up Lloyd.

"It was an outstanding effort by all involved," says the overjoyed Lloyd who suffered minor injuries. "It's just fantastic what so many people will do to save one life. I'm very impressed at Navy's all for one, one for all effort."

RA-5C. Launches and recoveries were viewed from the carrier's island or over closed circuit television.

That evening, the families again stayed at the Alameda BOQ before returning home. As one wife was leaving, she said, "It was the nicest thing anyone has done for us."

F. D. Roosevelt (CVA-42)

Attack Squadrons 15 and 87 competed in the annual NATO Southern Air Forces Tactical Weapons Meet, *Best Hit '72*, held at Larissa, Greece. The meet is conducted each year to improve the overall attack weapons delivery capability of participating NATO countries.

Best Hit '72 pitted the air arms of Greece, Turkey, Italy and the U.S. against each other. Hosted by the Hellenic Air Force, the meet took place in the shadow of Mount Olympus where international competition was born. Flying A-7B's of VA-87 were the squadron skipper, Commander John H. Fetterman, and Lieutenant Commanders Robert F. McAfee and Jere C. Durham. Competing from VA-15 were LCdr. Leslie A. Sanders and Lt. Brian L. Lehman. Elements of the USAF 612th Tactical Fighter Squadron based in Torrejon, Spain, flew F-4Es as part of the American team. The Navy maintenance team, led by LCdr. Jourdan Sullivan, set an envi-



Gathering of the stars is what happened aboard USS F. D. Roosevelt when the 19-piece Sixth Fleet band was aboard the attack carrier in Augusta Bay, Sicily. From left are Rear Admiral D. D. Engen, Commander, Carrier Division Four; Vice Admiral G. E. Miller, Commander, Sixth Fleet; and Admiral W. F. Bringle, Commander in Chief, U.S. Naval Forces, Europe.

able record in keeping aircraft in an up status.

Six pilots from each team flew six separate missions and each participated in five events: strafing, rocket delivery, dive and skip bombing, and navigation. Scoring was conducted by officials from the northern and central NATO countries.

Top team score went to the Greek team with 714 points. The U.S. team was second with 686 points. Both

scores were the highest team scores ever recorded in the event. The U.S. team garnered three of the four individual awards with Lt. Lehman taking top-rocket-shooter honors.

J. F. Kennedy (CVA-67)

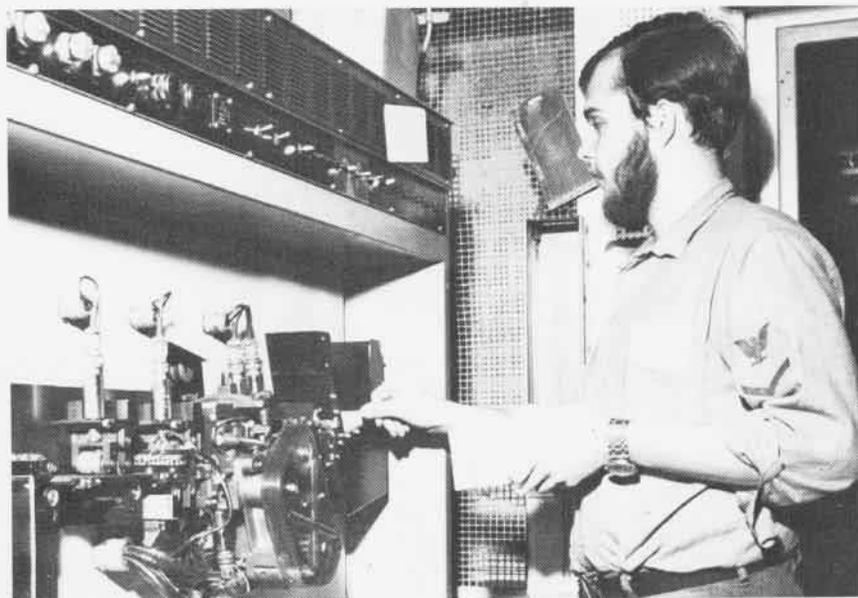
Down, down, down—then a small door. Fortunately a key is not needed to pass through it, and there is no glass table with a bottle labeled "drink me." There is no rabbit hole aboard *JFK*, but there is a small hatch deep in the ship which leads into a modern looking-glass world. Not an absurd wonderland, but the super-logical world of automated data processing (ADP).

Colored flashing lights shine and sounds of whirring, clicking and humming fill the room. An odd creature spills a constant flow of folding paper in quintuplicate, while another seems to be endlessly shuffling cards.

DP2 Ed Rudd explains the curious surroundings.

"These machines work for dozens of divisions on the ship," he explains. "Better than that, they work for every man aboard. All paychecks are processed by these machines. There is a card for each man, with his name, division, rate and social security number punched on it. These cards are sent to disbursing where the amount of the check is entered on them.

"When the cards come back to ADP, we punch those numbers into the cards, then run them and the green cards [paychecks] through the interpreter. The interpreter reads the first card and prints



DP3 Kenneth Bachman feeds punch cards to the CRPI (card read, punch, interpret) unit in Kennedy's automated data processing center. Information is then stored on magnetic tape.

all the necessary information onto the green card. Then they are sorted by division and returned to disbursing to be checked for accuracy.

"Of course, that's not all we do. We make battle bills, personnel records, space assignments, supply inventories and even calendars at Christmas."

Rudd goes into another room where a number of men are working at oversized typewriters: five key-punch machines and three verifiers. The machine shuffling cards is a sorter which can be programmed to arrange cards in many ways to produce the desired information.

Completed punch cards go to another machine which reads the holes and records that information on a magnetic tape. Information stored on these tapes in electrical pulses can be called back by the computer when needed for an answer or a status report. The computer can also call for additional information which is fed to it in a number of ways, including a teletype console.

After traveling through the electric circuitry, results are translated and printed out on a large sheet of accordion-pleated paper in the desired number of copies, up to six.

DPI Ron Davis explains that much of the information fed to the computer is prepared by a central office, such as ComNavAirLant, and sent to *Kennedy* and other ships with similar equipment.

"This provides a standardization of programs not possible before," he says. "AutoPers programs, for example, contain all the information found in a man's service record. Within minutes, we can tell how many men there are in the ship's company who have been to Vietnam, those that have a college degree, or those who were born in Boston."

It sounds almost scary.

"It's really not," says Rudd reassuringly. "It isn't a colossus. It won't take command of the ship. The computer does only what we tell it to do."

Previously, the Navy's use of computers aboard ship has been almost exclusively for supply purposes. Aboard *Kennedy*, the computer facilities have been expanded and put under the jurisdiction of the administration department.

"Punch cards are the key," Ltjg. Mike Holdgraf, ADP officer, says. "The limits of the computer are largely determined by the amount of input we can provide—punch cards. We are running men and key punches 24 hours a day. We're reaching a saturation point."

Saturation point or not, the 23-man staff produces some amazing results. The semiannual pay record processing previously took the disbursing office nearly 1,000 man-hours to complete. With the computers, ADP can do it in less than five hours.

When feeling a bit inferior to the

complex system of whirring computers and flashing lights, one can find consolation in Alice's words: "You're nothing but a pack of cards, a pack of cards, a pack of cards. . . ."

Almost 6,000 visitors enjoyed an afternoon aboard *JFK* when the ship made a one-day visit to Gaeta, Italy, home port of the Sixth Fleet. Local residents and dependents of American servicemen stationed in the area got a firsthand account of a day aboard a carrier. Although the cruiser *Springfield*, Sixth Fleet flagship, is a familiar sight in Gaeta, CVA-67 was the first carrier to visit there in several years.

During her Med deployment, *Kennedy* also became the first carrier in

Sixth Fleet history to visit the resort city of Malaga on the southern coast of Spain. More than 5,000 visitors toured the ship during the six-day port call.

Attack carriers are noted for their hectic flight operations and round-the-clock routine, but on a sunny summer afternoon off the coast of Sardinia, CVA-67 did something different. The ship hosted a "swinging in the sun" day which featured a variety of activities including a mini track meet on the 1,051-foot flight deck, a volleyball tournament in one of the hangar bays, and a cookout at which the hungry 4,400-man crew consumed 3,500 pounds of steak. *Kennedy* returned from her latest Med cruise in July.

Navy Coordination Saves AF Duo

It demanded near perfect coordination between the HC-7 Big Mother and the crews of four Midway aircraft, but the happy result was the rescue of an Air Force pilot and his RIO who were forced to eject from their F-4 just outside the mouth of Haiphong harbor.

The daring rescue took place two miles south of Cat Bi Island, and the Navy jets and helicopters were under continuous fire from four large caliber guns at a coastal defense site located on the island.

Lt. Harry J. Zinser, the helo commander, heard the Air Force pilot call Mayday as Big Mother was being flown to its pre-position point in the Gulf by Lt. Joe Driscoll.

"We heard another Mayday just after the crew jumped and we knew that they were hit," says Zinser. "With the Mayday, we armed the guns, had the swimmer get ready and started for the Haiphong area."

Swimmer AT2 Tom McCann and first crewman AO3 Joe Hillyer readied the hoist and prepared to man the helicopter's guns.

The first aircraft on the scene were Phantom IIs piloted by Lt. Jim Olsen and Lt. Keith Shean of VF-161 from Midway. They took station over the downed Air Force aviators to guide in the helo and ward off enemy attacks.

Joining the F-4s within minutes were two A-7s flown by Commander Neil Harvey and his wingman Ltjg. Gene Goodrow of VA-56. "As soon as we

arrived, we saw that four guns at a coastal defense site on the island had opened fire on the survivors and our aircraft," says Cdr. Harvey. "We had the guns in sight and rolled in on them firing our 20mm cannons. Then we set up a racetrack pattern over the guns to keep the gunners' heads down and give the guys in the helo a chance to make the rescue."

While the CVW-5 planes conducted their close air support, Big Mother swooped in to pick up the first of the downed flyers.

"As we got the airman and our swimmer half way up, we started moving toward the second," describes Zinser. "As we did, a shell exploded exactly where the man had just been, blowing his orange raft 200 feet into the air."

"A shell landed within 50 yards of the second man as we were moving in," says Driscoll, "and we were afraid the effort might be in vain. We could hear the shells exploding and could even feel the concussions of the blasts. As soon as he was clear of the water we moved out. We flew at maximum speed at 40 feet above the water, zigging and zagging, and being followed by the artillery explosions out to about ten miles."

The HC-7 helo took the Air Force aviators to Biddle (DLG-34) and, after a two-hour rest, Lieutenants Zinser and Driscoll took off again for their pre-position point to wait for another call.

SKY HIGH



Amidst a sprawling complex of modernistic buildings in Los Angeles is an odd-shaped, windowless structure which houses a little-known Navy command—the Navy Space Systems Activity (NSSA).

Most of the work done at NSSA is classified by nature, which is probably why few people have heard of it, and why even fewer know what is done there. Still the function of NSSA is as vital as any in the Navy.

Staffed with 15 military and 25 civilian scientists and engineers, the activity is the only Navy command devoted exclusively to the engineering and management of space systems development. In the fields of navigation, meteorology, oceanography, surveillance and communications, NSSA supplements the efforts of other government agencies to exploit the technologies of space in support of naval requirements.

The complex where NSSA is located is the home of the Air Force Space and Missile Systems Organization (SAMSO). SAMSO employs almost 2,000 military and civilian per-

sonnel and is directly supported by 1,600 engineers and scientists of the Aerospace Corporation located just across the street.

When NSSA was established August 10, 1966, the capability and facilities for development and production of space systems were vested almost entirely in private industry with resources provided largely through the National Aeronautics and Space Administration and the Air Force. NASA and the Air Force were directing this vast industrial capability and it was clear that not even a reasonable expansion of existing Navy headquarters or field activities could provide the engineering and management required for an independent Navy activity.

Therefore, the small field activity was established—co-located with SAMSO—to provide for the development and acquisition of space systems required by the Navy, using, rather than duplicating, the assets of SAMSO and the Aerospace Corporation. At present, arrangements which vary from one project to another are practical and effective. Navy's space sys-

tems needs are being met without duplicating DOD resources.

NSSA's commanding officer is Captain Doc G. Faulkner, Jr., an aeronautical engineer who has been in the Navy space business since 1965 when he served in the astronautics division of the Naval Air Systems Command. He was in on the ground floor in the conception and formulation of NSSA as a distinct field activity which replaced the Navy field office for the Manned Orbiting Laboratory Project.

The activity responds directly to the Manager, Navy Space Project (PM-16) on the staff of the Chief of Naval Material. Administrative support is provided by the Naval Air Systems Command.

Efforts of the Space Systems Activity are centered on specific projects. The primary ones in recent years have been space *Projects 749* and *SROE*, both classified. A new one, the Fleet Satellite Communications System, has been added recently, with NSSA personnel merged directly with SAMSO. The project offices for these are individual NSSA departments.



Project 749 occupies four military and five civilian engineers and scientists full time. The department has a yearly budget of over \$4 million, and presently has contracts with six civilian firms. In the past few years, the department has been responsible for greatly improving the state of the art in certain hardware developments.

Project SROE (Shipboard ReadOut Equipment), coordinates and manages the engineering efforts associated with the acquisition of shipboard readout equipment for satellite systems. This means providing technical management and engineering for design, fabrication, test and production.

The department defines operational characteristics, determines valid test criteria, sets up logistic support, provides handbooks, establishes configuration control and starts training programs. Naval Aviator Commander Tom Cole and three military and five civilian assistants provide these efforts at contractor plants, government laboratories, fleet facilities and aboard ship.

The project has made substantial progress in developing a shipboard terminal for a satellite system.

In this system, signals from space must be detected and processed without interference from the many other electronic transmitters on ships. The terminal also has to track the movement of a rapidly moving satellite which may be located anywhere in the sky. By designing two special tracking antennas for port and starboard sides, and by arranging for the appropriate antenna to receive the signal (controlled by a computer) at all times during operating periods, the requirements for the terminal were met. The first development model, installed aboard USS *Constellation* (CVA-64) for tests during 1971 and 1972, passed all the tests with flying colors.

The concept of using line-of-sight repeaters in earth satellites for military communications has been attractive for some time because a satellite communications system has the potential of providing a worldwide communications net for the armed forces. Many communications satellites, both experimental and operational, have been deployed successfully in the past. These earlier systems, however, are rapidly approaching the end of their life span; the Navy will soon need a

new satellite communications system.

Combining technology developed in previous communication satellite systems and a synchronous equatorial orbit (a circular orbit at an altitude of about 19,350 nautical miles, moving east in the equatorial plane), the Navy is presently designing and developing a new system—the Fleet Satellite Communications System (FSCS). This system will make the most complete use to date of the earth synchronous equatorial orbit's potential and provide communications between any two stations located within about 70 degrees of the fixed subsatellite point. It will be the first global tactical, military satellite communications system designed and developed from the start as an operational system.

Overall management of FSCS rests with the Navy, while SAMSO procures the satellites, tests them for project performance and supports the satellite system in orbit. Captain A. R. Phillips is the senior Navy officer assigned to the project, which is integrated into the Communications Satellite System Program Office of SAMSO.

Areas of investigation over the past several years have included almost all facets of space technology, and many of them have involved teams headed by NSSA's technology advisor, Dr. Egon Muehlner. A good example of this was a 1971 comprehensive study of sensor approaches for a particular space mission. The NSSA team, technical support contractors, the Aerospace Corporation and a hardware contractor evaluated and chose a small set of sensors from the many proposed.

The Plans and Advanced Programs Department of NSSA is responsible for the planning function, contract administration and fiscal support of the entire command. An engineering group within the department manages the introduction of new astronautic programs. If a new program shows promise of meeting operational requirements, it ends up as a separate project department; if not, it is cancelled or transferred to another agency for more exploratory development.

One continuously active program NSSA has participated in is the Space Test Program (STP). STP provides for launches of satellites and space experiments for Defense Department components which do not normally fund for their own boosters, a very

cost effective and efficient operation. For example, on a recent launch, nine satellites were given a ride into space and were kicked off into orbits according to the desires of the various experimenters.

The first STP launch on June 29, 1967, was a *Thor* "burner" used to carry the Army's 42-pound *Secor* geodetic and the Navy's 44-pound *Aurora* satellites. The *Aurora* acquired much valuable data on the energy of the down-streaming particles which excite the ionosphere causing both the beautiful northern lights and the not-so-beautiful interference with radio communications. To date, STP has provided the Navy with launches for seven satellites or experiments.

An interesting, 500-page report, *U.S. Space Launch Systems*, evolved from the activity's STP effort. It details the design features and performance characteristics of each booster and upper stage in the U.S. launch vehicle family and features a graphic method of selecting a tentative launch system for any orbit and any payload weight. The method is so simplified that anyone, without previous experience in propulsion and orbital mechanics, can make his own launch vehicle selection in less than five minutes. The volume is rounded out by a background discussion of history, costs, reliability, orbit fundamentals and launch system trends. Copies of this unclassified report will be made available to all interested activities.

NSSA's space test activities include ground sites as well as orbiting experiments. During a trip to Alaska last summer, one group had two objectives: to set up a sub-VLF (very low frequency) ground tracking station at the Naval Communications Station, Kodiak, which was designed to receive the radiations directly from the Navy's ELF/VLF (ELF—extra low frequency) antenna effects satellite experiments launched in August 1971; and to make an aerial survey of the Alaskan peninsula to locate a site for a late summer 1972 sub-VLF conjugate path transmission experiment. In this experiment, an 8,000-foot antenna, suspended above the ground from a balloon or a helicopter, would radiate VLF signals to the University of Otago in New Zealand. Data would be acquired on the transmission of ELF electromagnetic radiation along the earth's magnetic field lines to

assess the feasibility of satellite communications in the ELF band.

Supporting the project offices is the Systems Optimization Department which provides detailed analyses of space systems being developed by the Navy. These analyses are generally conducted in two broad areas.

The first considers the system itself—how it operates, the function of the various subsystems and how alternative arrangements and/or alterations of subsystem characteristics affect the overall system performance. The analysis of a system consists of describing the functions of all the subsystems and components that make up the overall system, with the interactions between them, in mathematical terms and in such a way that a computer can accept and use the descriptions. The aggregate of all these descriptions and interactions is a mathematical model of the system. With it, the computer can actually simulate the operation of the complete system, and the characteristics of various components and subsystems can be altered while observing the changes produced in the overall system function. In this way, the individual components and subsystems, and ultimately the entire system, are optimized.

The second area is the analysis of how the system will operate in the world environment as projected forward to the planned operational dates. This involves expanding the mathematical model to consider both natural and man-made elements beyond the system in question, such as friendly or enemy force dispositions, geographical situations and weather. Also considered is the impact of alternate world environmental situations (actions and probable employment of potential enemy forces) on an operational situation.

Using mathematical modeling techniques, the system's operation is diagrammed in great detail so that changes in design will be reflected in the mathematical model output. The model is then programmed for operation on a large-scale, high-speed digital computer. Multiple runs of the program using a spectrum of input conditions permit the thorough evaluation of the sensitivity of the proposed system to changes in system design and/or the world environment.

Each fleet unit must be as effective

as technology will permit. Space systems can make unique contributions to the effectiveness of the operating forces because of the field of view and the regular or even continuous coverage provided from the geometry of orbital systems.

Spaceborne sensors can acquire a variety of information for the commander at sea and ashore, and spaceborne communication relays can provide him with immediate links to naval units and stations around the

world. Obviously, to win approval for development and acquisition, a space system must be able to do a better or cheaper job than competitive approaches, or a job that simply cannot be accomplished any other way.

The tremendous potential inherent in the orbiting platform ensures that space systems will continue to emerge as the winning candidates in many facets of command support.

As space systems advance, so will NSSA—and challenges will be met.



Satellite tracking antennas installed on Constellation eliminated shipboard interference.



THE SELECTED AIR RESERVE

NARSUs Established

Sixteen Naval Air Reserve Support Units (NARSUs) were established July 1 to function in support of NAS, NAF and NARU commanding officers. The C.O. of the cognizant NAS, NAF or NARU is assigned additional duty as the C.O. of the respective NARSU.

Inactive duty for training orders will be modified for those senior Reserve officers serving in Naval Reserve support components (formerly training and support components), officers drilling in support of the 4th Marine Air Wing, and enlisted men for whom drills are being reported to Commander, Naval Air Reserve. Drills will no longer be reported directly to ComNAR, but will be made via the appropriate NARSU.

Changes of Command

Captain Leo P. Zeola relieved retiring Captain Ralph A. Beverly June 30 as C.O. of NARU Lakehurst and commander of Naval Air Reserve Forces, Lakehurst, N.J. Capt. Zeola

previously served on the staff of DCNO (Air Warfare).

On the same day, Captain Edward P. Hermann relieved retiring Captain Louis J. Muery, Jr., as commanding officer of NAS Dallas, Tex. Capt. Hermann was formerly chief of staff for logistics for Commander, Naval Air Reserve at Glenview, Ill.

Captain Gerald C. Canaan relieved retiring Captain Russell L. Smith July 27 as C.O. of NAS South Weymouth, Mass. Capt. Canaan's previous assignment was as special assistant for prisoner of war matters for the Chief of Naval Personnel.

Joint Training Maneuvers

Marine Air Reservists of HMM-767 and MARTD New Orleans, La., recently completed joint training maneuvers at the Army's Ranger training site at Eglin Air Force Base, Fla.

Five Marine CH-46 *Sea Knights* transported the Rangers during several phases of a military problem at the outset of the maneuvers. The Marines landed the first day of the exercise at a seemingly empty pick-up zone where six Army platoons emerged rapidly from the undergrowth, boarded the helicopters and were transported to other landing areas. The helicopters were also used to fly simulated medical evacuations, resupply missions and sorties as ground troops moved toward their objectives.

The two-day operation, coordinated

by Marine Reserve 21st Staff Group (Aviation), also included paratroop training of a dozen Air Force high altitude jumpers, from the First Special Operations Wing Combat Control Team. Equipped with oxygen tanks and masks, several paratroopers made jumps from altitudes above 10,000 feet onto a 20-foot-diameter target.

21st Staff Group advisors, commanded by Colonel Edward Fitzgerald, observed the maneuvers from helicopters and declared the operation successful.

As in previous joint unit missions held during the year by the participating units, the helicopters lent a realism to the training of these outfits whose combat effectiveness is centered largely around the vertical envelopment and assault principle.

Ready to Go

VP-90, NAS Glenview, Ill., ended FY 72 as the Naval Air Reserve's most "ready" patrol squadron flying the SP-2H. The squadron's crew readiness, aircraft availability and personnel training were evaluated and compared with all other Reserve patrol squadrons flying the *Neptune*. Squadron skipper is Cdr. R. W. Bohn.

Olathe Doubles

Two husband and wife teams are presently affiliated with NARD Olathe, Kan. They are PH2 David and TD2 Vashti Severance, and ADR2 Robert and YN3 Anna Ohlson.



Airborne troops from the Army's Ranger training school board New Orleans-based HMM-767 helicopters during early phases of the joint unit maneuvers held at Eglin Air Force Base. The training site is where the Rangers undergo the last phase of an intensive training program.

Both couples train on the same weekend with NARD-M4. The Ohlsons started drilling at Olathe in April, with the Severances following in May. Both couples met on active duty.

Mission in Puerto Rico

Twelve hundred men from different parts of the country descended on Naval Station, Roosevelt Roads, Puerto Rico, during the first two weeks in August. Their common denominator was that they were all Naval Air Reservists of CVWR-20 who gathered together for two weeks of extensive active duty training as individuals, as squadrons and as an air wing. About 100 aircraft, including *Crusaders*, *Skyhawks*, *Skywarriors* and *Tracers*, made up the eight squadrons of the wing.

Seven pilots from VFP-206, NARU Washington, D.C., logged 140 flight hours in 57 missions, flying RF-8G *Crusaders*; 40 enlisted men worked long hours to keep the birds in the air. The squadron's efforts won praise from the wing commander:

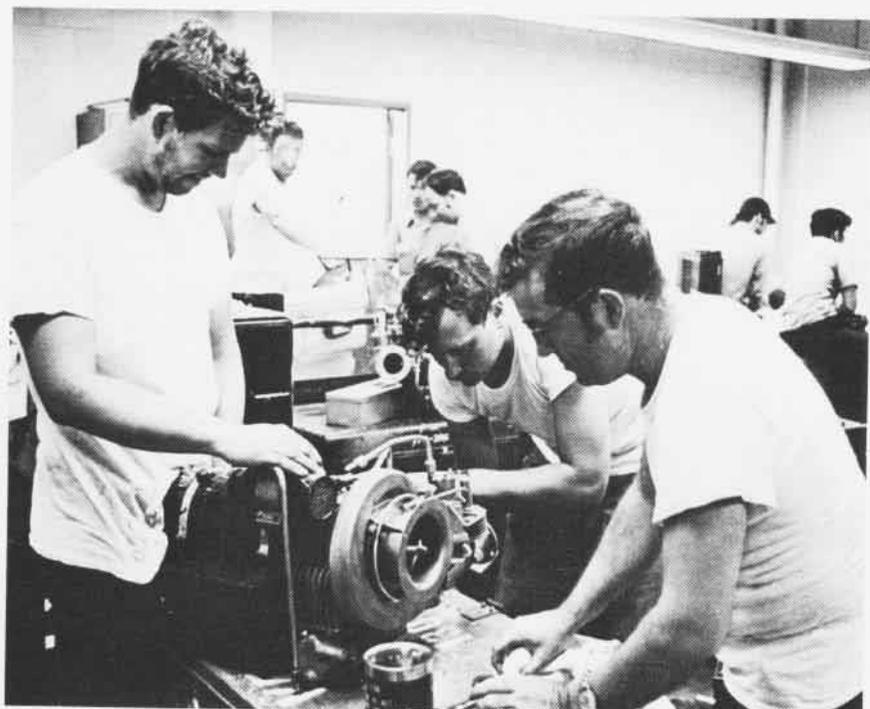
"Congratulations on your annual active duty at Roosevelt Roads. Despite crowded conditions, surface transportation problems and limited support, your squadron performed like the pros they are. Your grade of excellent during the ORE demonstrates your combat readiness. The professionalism of your pilots and the soundness and can-do attitude of your maintenance troops resulted in this comment from ORE observers: 'I'd be glad to go to sea with that outfit any day.' This is truly indicative of how VFP-206 stacks up against its fleet counterparts."

"Thank God for the Navy!"

This was skipper Fred Shropshire's reaction when the catamaran he and two others were on was spotted by an SP-2H *Neptune* crew and volunteers from VP-65 and RTU-65, Point Mugu, Calif., thus ending a 41-day ordeal in the Pacific.

The catamaran crew left Honolulu May 16, expecting to arrive at Marina del Rey, Calif., about June 5.

"Everything was fine until the 6th or 7th day," Shropshire recalls, "then we were becalmed and a storm blew up with almost hurricane force winds that tore the sails. We coasted along



Photos by JO1 Russ Egnor

Above (left to right), AMS2 Leonard Pressley, AE2 Ronald Potempa and ATAN Robert James repair air turbines for an RF-8G ac/dc generator. Lt. Jay Miller is run through check-out by plane captain before being launched on photo mission from Roosevelt Roads, below.

until we ran into another storm and lost the rudder, and then were becalmed again."

The catamaran was finally sighted June 24 by a passing yacht which gave the crew a small amount of dry food and two gallons of water, contacted the Coast Guard, and went on its way.

Three Coast Guard and Air Force aircraft and a Coast Guard cutter mounted a massive search over 60,000 square miles of the Pacific, but were unable to relocate the disabled craft.

After three days, the Coast Guard asked VP-65 to join the search. The *Neptune*, manned by eight volunteers, left Point Mugu at midmorning on June 27. On board were pilot LCdr. Eugene G. Salegui, copilot Commander George M. Mulvaney, and navigator LCdr. Vincent H. Johnson, and crew members AW1 David A. Thomas, AE1 Richard M. Lindsey, AW1 John D. Donovan, ADR2 William L. Beckey and AT3 Donn A. Davis.

The aircraft flew routine search patterns in an area 60 by 100 miles.



It was flying at 400 feet because of the low cloud cover when rear observer Thomas saw a boat several miles to starboard.

"It was five minutes before we were due to head home," says Cdr. Mulvaney. "We thought it was a fishing boat that we had seen earlier, but we decided to check it out anyway. When we got closer we could see it was a red-hulled catamaran with three men in the stern waving at us. By then, we were pretty sure the search was over."

In order to get definite confirma-

tion, the aircraft crew jury-rigged a styrofoam message container asking the boat crew to drop the small, remaining sail on the catamaran if they were the crew in distress.

The *Neptune* was in contact with the Coast Guard and, although at a near minimum fuel state, remained on station until a Coast Guard helicopter arrived three hours later.

"We were getting pretty low on fuel," relates AW1 Donovan. "We finally headed back to Point Mugu with only enough for about an hour's flying time. We ended up spending almost 11 hours in the air."

The Reservists returned to Point Mugu amid congratulations. From the Fleet Air Control and Surveillance Facility, San Diego, came "A hearty well done to the personnel concerned for their rapid response and outstanding professionalism displayed in this SAR incident."

But perhaps the best thanks came from Fred Shropshire, 35 pounds lighter but still alive. "Thank God for the Navy."

Mobile Movies

A Naval Air Reserve Mobile Photographic Unit (NARMPU-W1), has been established at NARD New York to provide the Navy with motion picture services on the eastern seaboard. Commander Carl V. Ragsdale is OinC of the new unit, and Commander Art Ward is the executive officer.

Composed of service veterans who are currently working in the motion picture industry—editors, writers, cameramen, sound and lighting technicians—the unit's first mission was a recruiting film for the NARD in Brooklyn. In August, the unit flew to Rota, Spain, to make a film on Naval Air Reserve activities there.

Straight Shooters

In the world of Naval Aviation, small arms marksmanship does not normally command a great deal of attention. NARD Miramar's AZ1 Jay D. Workman and PNI Don R. Jernigan provide a well-aimed exception.

Pooling their talents, the duo led the NAS Miramar team to a second place finish in the IIND Invitational Rifle and Pistol Championships. The two men were then selected for the ComNavAirPac team in the Pacific

Fleet Championships at Miramar the following week, and from there Jernigan went on to the All Navy Championship match at NATC Patuxent River, Maryland.

Hawaiian Vacation

VP-69, based at NAS Whidbey Island, Wash., recently completed a month of active duty at NAS Barbers Point, Hawaii. The squadron's 400 officers and men deployed to Barbers Point in two increments, each segment working toward the primary objective of increasing squadron readiness to augment fleet squadrons in case of national emergency.

Flying the dependable SP-2H *Neptune*, VP-69 aircrews logged over 800 flight hours, conducting antisubmarine warfare and ship surveillance training.

Taking a Look

The 1972 West Coast Aeronautical Engineering/Aviation Maintenance Duty Symposium was held recently at NAS North Island, Calif.

Attended by over 80 officers assigned to West Coast NASRUs, the symposium provided the platform from which experts in the field took a

close look at the Naval Air Systems Reserve Unit program. Agenda items included briefings on remotely piloted/controlled vehicles, application of aerospace technology to ground transportation systems, NASRU/NARF implementation program, the new role for NASRU, and the F-4/AWG-14 air combat maneuvering test program.

Featured on the second day were special sessions on matters pertaining to the NASRU program. Principal speaker at the main session, which emphasized recruiting, retention and utilization for a better marriage of Reserve and regular Navy talents, was Rear Admiral D. K. Weitzenfeld, Vice Commander, Naval Air Systems Command, Washington, D.C.

He conducted an open forum on ways to better utilize the talent available in the Navy's NASRU community. Citing manpower figures showing Naval Reservists outnumbering active duty personnel by more than 40,000, he stressed the importance of "having a good Reserve community for a strong recall potential."

RA. Weitzenfeld outlined several programs to attract technical specialists to the NASRUs. One major change is 24 additional drill pay periods per year, making a total of 48.



A Coast Guard H-52 helicopter performs a simulated rescue as part of flight demonstrations held for visitors at the 30th Anniversary open house celebration, NAS Los Alamitos, Calif.

Two-Week Augmentation

Several hundred officers and enlisted men of CVWR-30 converged on Southern California June 11-24 to display their effectiveness as an actual part of the Navy.

VFs 301 and 302, based at NAS Miramar, hosted their sister squadrons from around the nation for the wing's annual two-week active duty cruise. Led by Commanders Leonard P. Kaine and William D. Kiper, respectively, the squadrons flew their F-8 *Crusaders* as protection shields for the other squadrons during simulated combat missions.

VFP-306, NAF Washington, D.C., led by Commander Robert R. Smiley, flew RF-8Gs to provide photographic reconnaissance.

Alameda-based VAs 303 and 304 also moved to Miramar for the two weeks, flying A-7 *Corsair II*'s to deliver air-to-ground ordnance. The squadrons are commanded by Commanders Phil Benz and Peter Hammes, respectively. VAQ-308 worked from its home base at Alameda on various missions, including inflight refueling of its sister squadrons and delivering mail from Alameda in its KA-3B *Skywarriors*. The squadron's skipper is Commander G. B. Bambo.

Working from its home base at NAS North Island was VAW-307 under the leadership of Commander Glen A. English. The squadron, flying E-1B *Tracers*, provided in-the-air sentry duty for the wing during flight operations.

What was it all for? It afforded an opportunity for these squadrons, which meet separately each month at their home bases, to come together and work more effectively as a single team; each squadron doing its own thing, but for the same result—a more effective Selected Naval Air Reserve.

New Watch Standers

Almost 35 percent of the staff duty officer watches for Fleet Air Wing Two, NAS Barbers Point, Hawaii, are manned by Reserve personnel of Operational Control Unit 11G3.

Under this system, Reservists actually change hats on weekends, and sometimes during the week, and fill active duty billets to plan, monitor and brief the missions currently under way at the command. The result is



VA-303 ordancemen load weapons on a squadron A-7 *Corsair II* in preparation for a mission.

increased readiness and efficiency of the Naval Air Reservists who participate in the program.

The system was developed six months ago when Captain A. J. Carnegie, ComFAirWing Two, and Commander C. W. Benson, C.O. of OpCon Unit 11G3, met to find a better way to use Reservists who train at Barbers Point. The outcome was a new approach towards the use of Reserve officers and enlisted men which is practical rather than theoretical in application.

According to Cdr. Benson, performing duty under this plan is more "professional" since it keeps personnel current on fleet operations.

Shoot-out at San Clemente Corral

Rock Anderson squeezed the trigger for the sixth time, and there was a vibrating thud as the round hit home. As the dust settled in the San Clemente corral, everyone knew that Rock was the top gun.

Observers were satisfied that it was a fair fight, so they hitched up their chaps and headed for the bar. They also knew there would be new challenges in the future—that other big shoot-outs were yet to come.

These were the impressions of Commander Thomas A. Stanley, commander of CVSGR-80, as he told of the friendly but fiercely competitive

showdown between his group and CVSG-59.

Cdr. Stanley was somewhat justified in his boastful description of the shoot-out, in that a Reserve squadron had outgunned a fleet squadron to earn first possession of the new John Wayne Perpetual Straight Shooter Trophy. The weapons used were rocket-laden S-2 *Trackers*, and LCdr. Rock Anderson, VS-82, won handily with four direct hits in six passes. Runnerup honors were shared by CVSG-59's VS-33 and VS-81.

The three-squadron shoot-out, staged during CVSGR-80's active duty training, set the stage for more.

Capital Detachment

Fleet Tactical Support Squadron Fifty-Two, Detachment Washington, was established August 12 in a ceremony at NARU Washington, D.C., with Commander E. J. P. Duffy assuming duties as officer in charge.

VR-52 Det Washington was formed under a reorganization plan whereby Naval Air Reserve and active duty personnel who had formerly operated cargo and transport aircraft as an independent squadron are now under a parent squadron.

The new detachment was placed under the direct command of its parent squadron, VR-52, which is based at NAS Willow Grove, Pa.



YEAR OF THE CARRIER

NAVY COMBAT ARTIST



By Michael McDonell

Pure brawn. A resupply at sea means muscling and manhandling every pound that comes aboard. And the bodies that move the side of beef and the 500-pound bomb are "pressed" into service—if your division doesn't need you to keep the ship afloat, you join the masses on the hangar deck.

"Hey, you-sailor-scribbling-on-

that-pad. Why aren't you helping with those stores?"

He's got him! Caught a malingerer!

Odds are even that he's fetching the captain's coffee or about to fix the crypto machine—the same tired excuses every day.

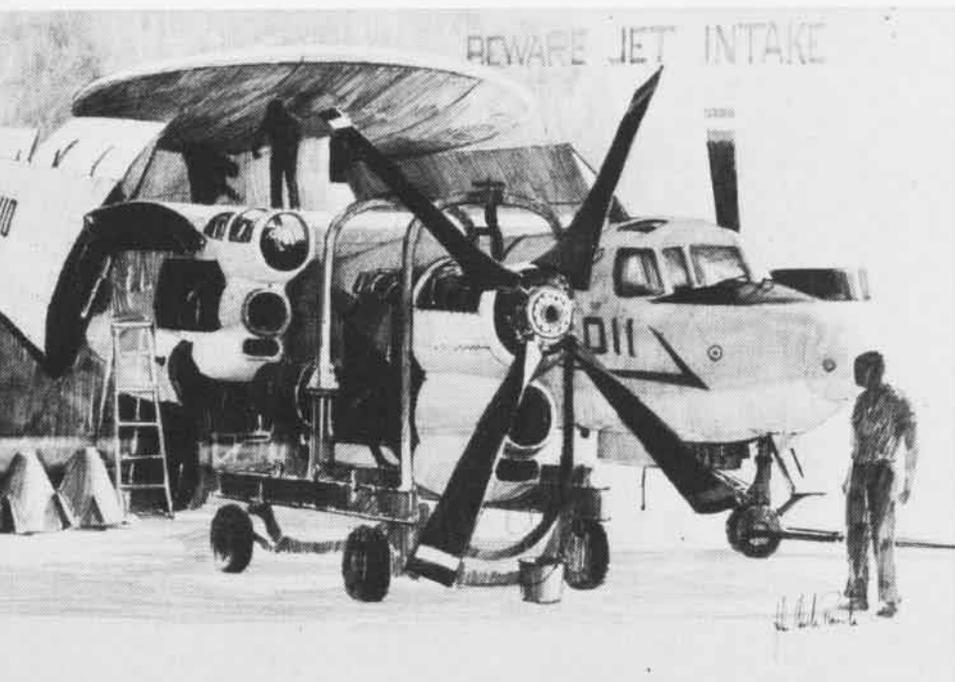
"I'm drawing, Chief; it's what I'm supposed to be doing."

Seaman in tow, a trip to the

man's working spaces and a conversation with his leading chief confirm his story.

Slack-jawed amazement — for the first time in 18 years of naval service, the chief had finally met a full-time "drawing" sailor!

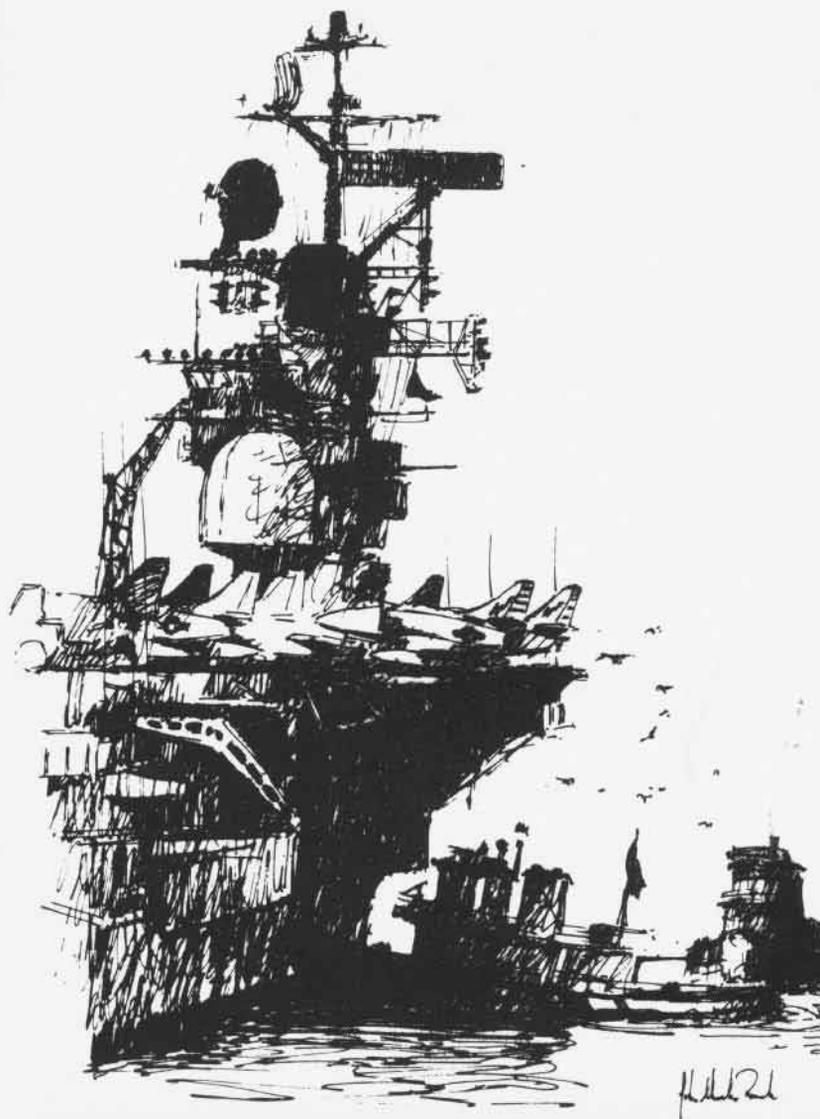
John Charles Roach, former boatswain's mate third class, is an artist. There is no doubting it. Somehow, he looks like one. But,





the physical appearance is, as usual, superficial.

The proof of his ability is on the wall behind him. A pencil drawing made in 1967 of the construction of USS *John F. Kennedy* (CVA-67). Beyond the shadings and simple lines of form, one can sense a special knowledge and affection in the drawing. Questioned about the observation, the 29-year-old

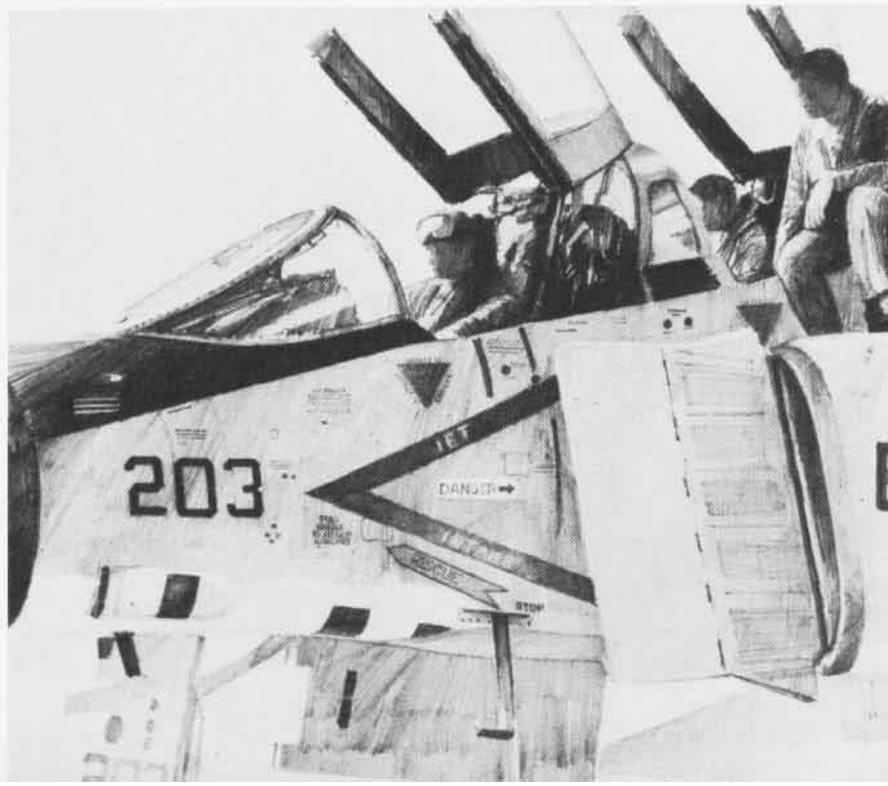




artist speaks with beguiling and ingenuous intensity about ships and the men who serve aboard them in the Navy.

"Ships have always held a great fascination for me—coming from the shipbuilding city of Newport News, Va., I guess it was inevitable. With my interest in art, they were natural subjects."

As a teenager, John Roach went to work at the Mariners Museum in Norfolk and there discovered the seascapes and ships of Charles Evers. "His work acted as an impetus for my own," states the young artist. "Among painters of



the sea, he stands highest in my estimation and has had the greatest effect on my own work."

Following graduation from high school, Roach spent several years abroad, studying art in Frankfurt, attending the Beaux Arts in Paris and working as a staff artist on the *Frankfurter Neue Presse*.

Returning to the United States, John Roach joined the Navy.

"I had hopes of becoming a combat artist," he says, "but someone apparently saw in me the kernel of a budding bos'n, so that's what I became. Luckily, I was assigned to Navy Recruiting in Washington, D.C., where I did some art work." Roach's determination to draw for the Navy persisted. He tells it this way.

"After about a year with recruiting I asked my boss if he would mind if I went over to the Office of the Chief of Information to see if they would be interested in my work. He said to go ahead, and so I did. I walked through the maze of hallways of the Pentagon, found the right door; I told them who I was, showed them what I could do and asked if they needed a combat artist."

They did. Normally, talented civilian artists are invited to do art for and about the Navy under the auspices of the Navy Combat Art Cooperation and Liaison Program. But here was talent in uniform, and John Roach became the Navy's first combat artist since 1958. Soon the young sailor was WestPac bound, assigned to the staff of Commander, Seventh Fleet.

He drew the men and ships of the *Market Time* patrols. He sketched the Seabees building roads and dodging bullets. And he filled the pages of his sketchbook with the men and aircraft of the Yankee Station carriers.

Full-Time Fighter Pilot, Part-Time Artist

By PHCS William M. Powers, CCGPac

Lt. Alex C. Rucker feels he has a definite advantage over the ordinary artist when he paints pictures of aerial combat: he flies the F-8J *Crusader* with VF-194 and is a veteran of 140 combat missions in Vietnam.

Alex began painting while he was in grammar school and the hobby has grown into an avocation consuming a considerable amount of his off-duty time.

During two eight-month deployments to the war zone, he began painting aerial combat scenes aboard ship in his spare time.

"The artist who has not flown combat missions in a jet fighter simply tries to crowd too much into his pictures," is Rucker's claim. He cites one painting which depicts Navy fighters and MiGs in a very small amount of airspace with afterburners flaming and guns blazing.

"To an experienced fighter pilot, the painting isn't realistic. The planes are on a collision path; in actual combat the aircraft wouldn't be nearly so close to one another," he says.

According to the artist, everything seems so vast in the sky, and the experienced combat pilots tend to reject the authenticity of much aerial-oriented combat art.

But the lieutenant has persevered in the face of such a discriminating audience. He has done six combat art paintings and several more of other Naval Aviation subjects.

"Being a fighter pilot, I think I'm more familiar with the feelings of the people doing the job and with where the emphasis in a painting of this sort should be," Rucker says.

"For example, I did a painting of a fighter about to be catapulted from the deck of a carrier at night. The plane appears as it would the instant before



launch, afterburner blazing and casting an eerie illumination onto the adjacent island structure. That painting sends cold chills up and down the spine of pilots who look at it," he continues.

"I know what's going through their minds when they look at it, the feeling of being hurled from a standstill to 180 mph into a pitch-black night, less than a hundred feet from the water."

Besides aviation paintings, Rucker also paints portraits and scenes from around his home in Virginia. He has sold some of his work to other Navy pilots who have flown combat missions in Vietnam but says that he has more requests than he can handle.

He is considering a second career in art, sometime in the distant future, but most of his time now is spent flying or as a training officer with his squadron.

Several of his paintings are on display at NAS Miramar, and LTV, builder of the *Crusader*, has lithographed one of his paintings in color.

Letters

Filing Flight Plans

A friend loaned me his copy of the June '72 *Naval Aviation News* (one of my favorite magazines) so I could read the *Catalina* article since I have an extremely soft spot under my Paper Mate for the old gal (ex VP-45, VP-10, etc.). Not only did I thoroughly enjoy the *Catalina* article but the complete magazine.

I couldn't help but note a few comments in Cdr. J. T. Abercrombie's article "Positive Aircraft Control" that indicate he could have been a little more thorough in doing his homework. Would you please get the word to him that there is no FAR requirement for us civil airplane drivers to file flight plans in VFR weather? In fact, we just might startle him a bit by pointing out there is no FAR requirement for airliners to file flight plans although I understand FAA now has this matter under consideration. (It'll be a requirement before long.)

I was encouraged to catch his comment about "see and be seen" regardless of type of control—because that's exactly what it says in paragraph 91.67(a) of the current FAR, which most of us use as a base line to deviate from. Besides it just might ruin my day if he or one of his buddies blows my sailplane out of the sky whether I'm 100 feet off the deck or riding the Sierra Wave at 35,000 feet.

Lest Cdr. Abercrombie think I'm pick-

ing on him or his purpose in life, let me assure him that I am not. In fact, I wouldn't have his job "for all the tea in China" because positive aircraft control in a democratic sky is completely impossible without making the "price of admission" prohibitive to three-fourths of the civil aircraft population—and that wouldn't be very democratic, would it?

I. H. Skinnie Moore
Glider Guide and Liteplane Driver
21040 Canyon View Drive
Saratoga, Calif. 95070

The article on Positive Air Control by Cdr. J. T. Abercrombie in the June 1972 issue of *Naval Aviation News* is in error on page 16. "Some light aircraft do not have radios and many more do not have transponders, *nor do many of the pilots file flight plans as required by FAA regulations.*" The italic portion is incorrect. FAA regulations do not require a filed VFR flight plan.

N. J. Keller, Maj., USMC
Ops Officer
HMM-161
MCAS Santa Ana, Calif. 92710

Major Keller is indeed correct: light aircraft of the general aviation community are not presently required to file any form of flight plan for VFR flight along federal airways.

Flight plans are defined as specified information relating to the intended flight of an aircraft that is filed orally or in writing with air traffic service units.

Present regulations require flight

plans only for instrument flight rules (IFR) operations. Although there is an FAA proposal that would make VFR or IFR flight plans mandatory for most operations of heavy general aviation aircraft (over 12,500 pounds) and multi-engine jets utilized by charter aircraft services, the author is unaware of any plan by FAA to require similar procedures for light aircraft operations.

FAA does, however, recommend filing a flight plan for flight within the air defense identification zone as a means of avoiding intercept by Air Force jets, and requires prior clearance/authorization from air traffic control for flight within terminal control areas (TCAs).

TCAs are controlled airspaces extending from the surface to specified altitudes, within which all aircraft are subject to operating rules and pilot and equipment requirements. TCAs are now located at Los Angeles, Chicago, Atlanta, New York and Washington, D.C. For operation within a TCA, the pilot must have at least a private pilot's certificate, and the aircraft must be equipped with an operating transponder, two-way radio and VOR receiver.

As stated by a Civil Air Patrol director of search and rescue activities, "Flying cross-country without a flight plan is like flying without life insurance when it is there free for the asking. Some pilots apparently are reluctant to file because they feel they would be liable to action by FAA if they failed to carry it out. That is not the case—you can cancel or alter it at any time."

Even with the advent of the Navy's positive control program, implementation of AIMS and civilian transponder programs, establishment of TCAs and ART-III radar systems, as well as more stringent FAA regulations, the skies will continue to become more crowded with *unknown, uncontrolled* aircraft as the light plane population continues its dramatic growth. Pilots who negotiate the airways with their heads in the cockpit, feeling smug that the air around them is sanitized from other aircraft, are inviting disaster.

J. T. Abercrombie, Cdr.

Identification

The "unknown individual" in the picture on page 2 of the January 1972 issue of *Naval Aviation News* is Captain Hugh Douglas, then C.O. of NAS Anacostia.

VAdm. F. M. Trapnell, USN (Ret.)
1730 Ave. del Mundo 1207
Coronado, Calif. 92118

SAY MERRY CHRISTMAS

with a subscription to

NAVAL AVIATION NEWS

Mail the attached coupon with a check or money order for \$5.00 to the Government Printing Office, Washington, D.C. 20402

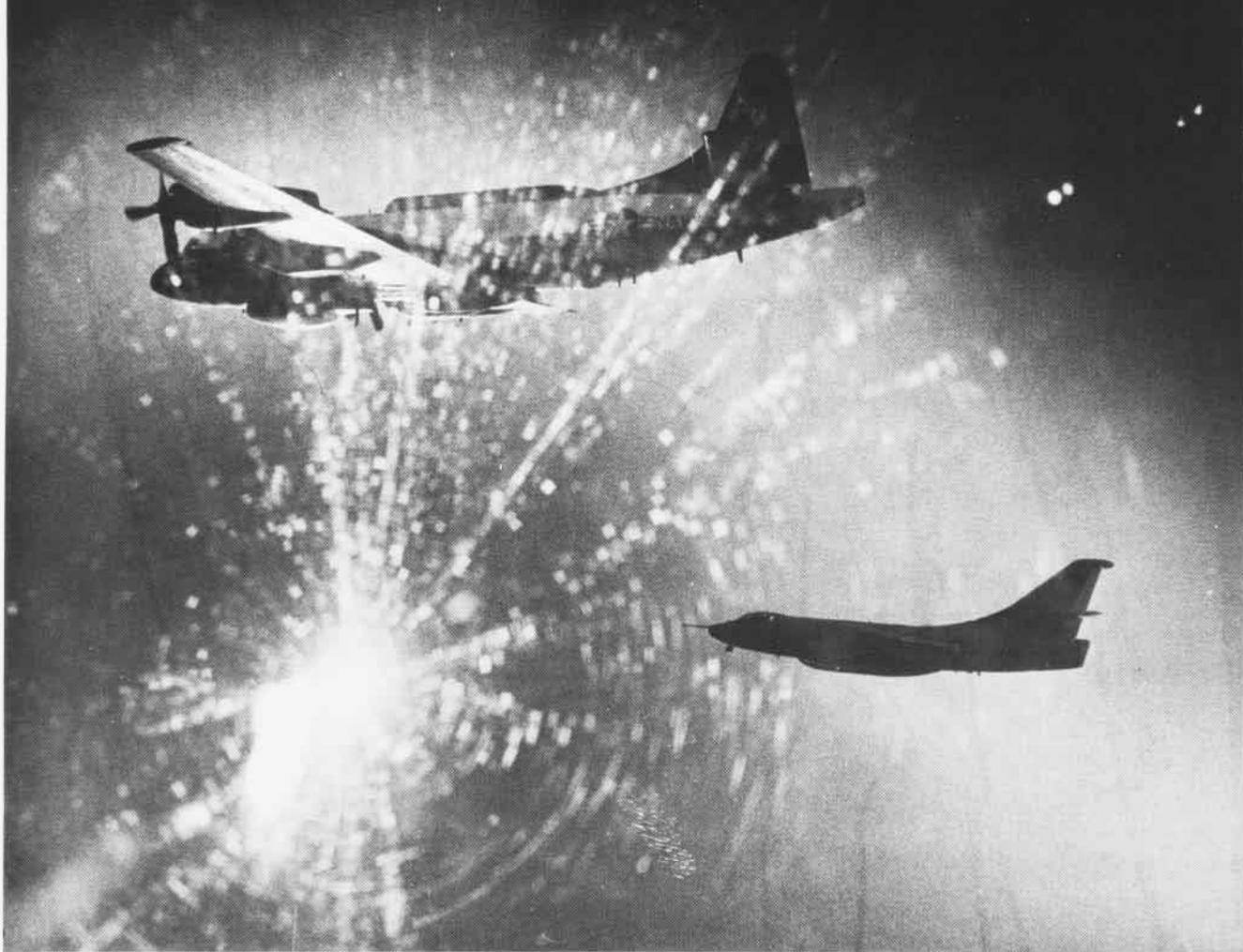
Superintendent of Documents,

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

Name _____

Address _____

City _____ State _____ Zip Code _____



At NAS Agana, VQ-1 uses advanced electronic, photographic and cartographic techniques as it performs its reconnaissance mission. The 'World Watchers,' led by Capt. Joseph Akins, fly EA-3Bs, EP-3Bs, RA-3Bs, and EC-121s.



NAVAL AVIATION

NEWS



Status Symbol.

When you drink your coffee with the
mark of the squadron, you've arrived.
You're a member of the Navy Air Team.
With membership comes that special sense
of pride and service. The challenge of handling
sophisticated aircraft. The sheer thrill of flying.
If you want to fly; if you want to belong;
if you want to serve, there's a future for you
in Navy Air. Join us for a cup of coffee and
a career. We've got one with your name on it.
If you're going to be something,
why not be something special?

Send to: NAVY WINGS
Bldg. 157-4 Washington Navy Yard,
Washington, D. C. 20390

The Navy

I would like more information about Naval Aviation

Name _____ Age _____

Address _____

City & State _____ Zip _____