NAVAL AVIATION NEWS

COMPUTERS ABOUND

NOVEMBER 1982

Grumman's prototype of the Navy's Increased Capability II (ICAP-2) version of the EA-6B Prowler flies over Deception Pass near NAS Whidbey Island during aircraft trials in early 1982. With several sophisticated interfaced computers, the ICAP-2 Prowler will offer an increase in high-speed information processing to respond to a detected environment. The new equipment includes the Navy's new standard AYK-14 computer. The aircraft is expected to become operational in 1984.

naval aviation news

Sixty-Fourth Year of Publication

Vice Admiral Robert F. Schoultz Deputy Chief of Naval Operations (Air Warfare)
Vice Admiral E. R. Seymour Commander, Naval Air Systems Command

Captain R. C. Knott Head, Aviation Periodicals and History

Staff

Cdr. Howard Wheeler	Editor	**Sandy Russell**	Associate Editor
Helen F. Collins	Managing Editor	**JOC Kirby Harrison**	Associate Editor
Charles C. Cooney	Art Director	**Jeanne Gray**	Assistant Editor

Associates

Harold Andrews Technical Advisor
Cdr. Chuck Sammons Contributing Editor
Lt. Cdr. Peter Mersky Book Review Editor

This month's cover, by NANews' Art Director Mr. Charles Cooney, is a rendition of a CRT display of an F/A-18 Hornet making an approach to a carrier. It illustrates the theme of this issue - computers in Naval Aviation.

Features

Departments

Naval Aviation News is published monthly by the Chief of Naval Operations and Naval Air Systems Command in accordance with Navy Publication and Printing Regulations P-35 (revised May 1979). Opinions expressed are not necessarily those of the Department of the Navy. Reference to regulations, orders and directives is for information only and does not by publication herein constitute authority for action. All material not copyrighted may be reprinted. Naval Aviation News offices are located in Bldg. 146, Washington Navy Yard, Washington, D.C. 20374. Phone: (202) 433-4407/8/9, autovon 288-4407/8/9. Annual subscription is available through Superintendent of Documents, Government Printing Office, Washington, D.C. 20402: Phone: (202) 783-3238. Second-class postage paid at Washington, D.C. and additional mailing offices. Send address changes for paid subscriptions to GPO Order Desk, Superintendent of Documents, Washington, D.C. 20402.

STATE OF THE ART

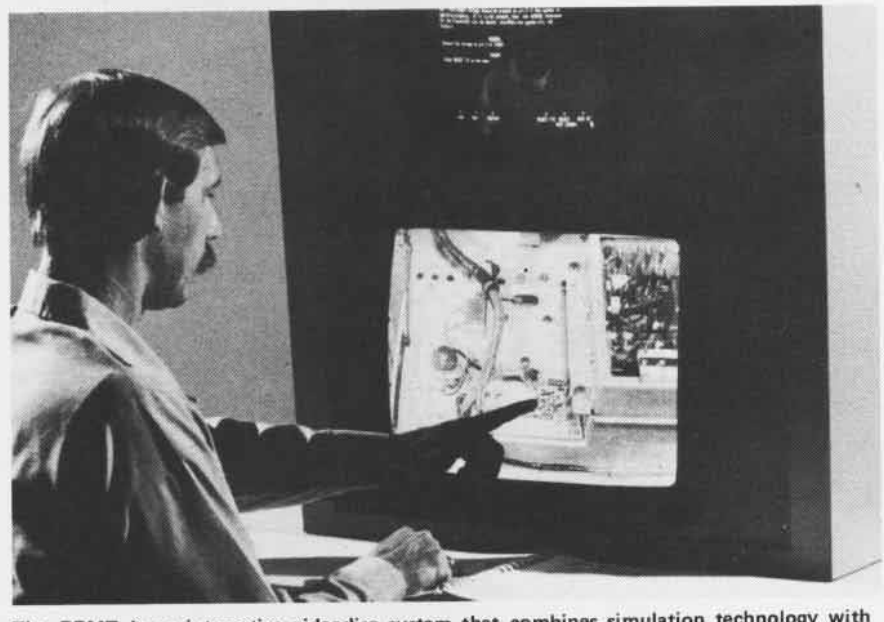
Electronic Equipment Maintenance Trainer

An advanced training device, known as the Electronic Equipment Maintenance Trainer (EEMT), is helping the Navy train 4,000 electronic technicians annually for fleet duties at substantial cost savings over actual hardware. Developed and produced by Cubic Corporation, San Diego, 32 of the devices are currently being used to teach basic radar maintenance and troubleshooting techniques at the Electronic Technicians School, Great Lakes, Ill. The EEMT can be used for training in any field that requires specialized skills.

Problems of varying difficulty can be programmed into the system by the instructor. Visual clues on the CRT (cathode ray tube) lead students through the lesson and redirect them when actions are off course. The trainer records all actions taken by the student and can automatically grade them based on their individual level of proficiency.

Cubic Corporation has also delivered to the Navy a companion system which contains generic test equipment and hardware common to a "family" of electronic equipment that permits students to perform hands-on tasks. When integrated with this new version, the EEMT will offer capabilities for teaching equipment calibration and adjustment, general purpose troubleshooting, equipment repair and, most important, correct use of test equipment.

Cubic Corporation



The EEMT is an interactive videodisc system that combines simulation technology with individual, self-paced instruction and pressure-sensitive CRT displays. The student interacts with the trainer through touch-sensitive panels on the face of a color video display screen and an adaptive black-and-white screen.

Video Maintenance Trainers

Sailors who enjoy playing video games during their off-duty hours should have no trouble adapting to a new maintenance trainer for P-3C *Orions* and S-3A *Vikings* being developed by the Lockheed-California Company.

The trainer consists of a minicomputer featuring a keyboard and video "touch" screen on which illustrations and various problems involving aircraft maintenance are displayed. By touching the screen with a finger, the student can answer questions or correct faults on diagramed parts of a typical system,

such as fuel flow. A second screen may also be used in conjunction with the minicomputer to show additional diagrams or photographs of actual aircraft parts.

The new training device would be particularly effective in teaching abstract concepts, such as the theory of sophisticated electronic systems which is difficult to teach on current equipment trainers. However, it is not designed to replace standard hands-on instruction in mechanical areas like landing gear.

It is estimated that the system could cut training hardware costs when standardized microcomputers are used for training. Unlike aircraft equipment trainers, the video system does not have to compete with operational aircraft for spares.

A-6E Trainer

A new A-6E flight simulator became operational at MCAS Cherry Point, N.C., earlier this year to provide pilots with vital training in night flying, carrier launches and flying diverse ordnance loads. The cockpit of the A-6E trainer is an exact duplicate of the real aircraft with complete pilot and bombardier/navigator stations.

A computer located outside the trainer introduces a variety of flight patterns the pilot must follow, including training problems and system malfunctions. These functions are punched into the computer by an instructor, who monitors the crew throughout their simulated training flight. The pilot must respond quickly and is not pre-warned when a malfunction is created.

The pilot also has three windows inside the cockpit that are controlled by the computer. Depending on what mission is being flown and its location, the windows show 10 selected airfields and their surrounding areas, and add weather and ground motion for realism. The windows can also project aircraft carrier scenes to train pilots for carrier landings.

The A-6E trainer provides valuable experience to the pilots who use it. Being hit with three or four emergencies in less than an hour, landing 10 times in 30 minutes, or flying unfamiliar flight patterns are all part of what the crew can experience flying the training device – without ever leaving the ground.

Space Shuttle Update

Challenger, the third orbiter to emerge from Space Shuttle assembly lines, made an overland trip in July to the Dryden Flight Research Facility, Edwards, Calif., from the Palmdale plant where it was assembled. The 32-mile desert route took the space vehicle longer to travel than it will take to travel the more than 3,000 miles to Kennedy Space Center in Florida on the back of NASA's 747 carrier aircraft. *Challenger* will fly the sixth flight of the Space Transportation System, scheduled to launch in January 1983.

Challenger looks like its sister ship *Columbia* but is the first orbiter to be configured as a basic operational spacecraft. Many of *Challenger's* structural parts have been lightened, cutting the weight by some 2,000 pounds. *Challenger* also carries a thermal protection system considerably advanced over *Columbia's*.

Electronic Tabular Display Subsystem

An engineering model of a computer-based system called Electronic Tabular Display Subsystem (ETABS) was recently delivered to the FAA Technical Center, Atlantic City, N.J., for evaluation. ETABS displays on a screen in front of the air traffic controller the information now provided by paper flight progress strips. The system's special software and touch entry input devices could reduce controller workload and message entry errors.

Much of this would be accomplished through automatic updates of all flight data and amendments that would also eliminate the need to accumulate large volumes of paper strips as records. Information learned from the center's evaluation will be used to develop design specifications for the capability to electronically display flight progress data in the controller's work station or sector suite, as it is called.

According to the plan, greater automation will be the key to increased productivity, higher efficiency and lower operating costs in the future air traffic control system. The sector suite will be redesigned and upgraded for use at both en route centers and terminals, and present-day, time-consuming tasks will be accomplished in a fraction of the time now required.

Grampaw Pettibone

Super Scooter Save

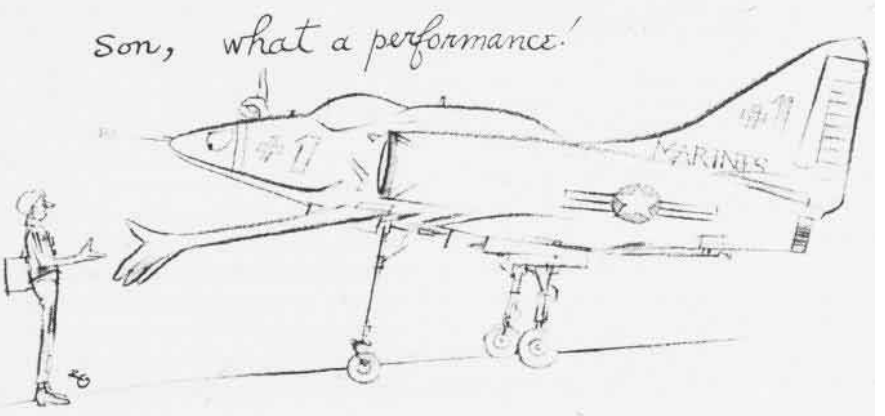
The section of A-4M *Skyhawks* was scheduled for a close air support (CAS) sortie as part of an annual coordinated arms exercise. The brief, preflight, and takeoff from MCAS West Coast were uneventful. After a short flight to the target area, the *Skyhawks* checked in with the forward air controller (FAC) and positioned themselves for a series of attacks.

The spectators viewing the exercise included a group of visiting midshipmen. Radio transmissions were broadcast over loudspeakers placed near the viewing area to enhance the visual portion of the CAS missions. The spectators were able to hear all the radio calls between the FAC and the *Skyhawk* pilots throughout the mission.

When the flight was called in, the leader attacked first. As he pulled off target, the wingman, Marine 1st Lt. Randy Myers, VMA-221, commenced a prebriefed 10-degree napalm run. Calling "wings level," he was cleared in "hot" and dropped the napalm with pinpoint accuracy. As the wingman pulled off target, he heard a loud bang and felt the *Skyhawk* shudder slightly. He pulled the nose up and noted a lack of radio side tone when he tried to transmit. A quick scan of the cockpit revealed a generator failure warning light. Reaching for the generator reset switch, he observed decreasing engine RPM and EGT. The cockpit filled with smoke. Zoom-climbing the faltering *Skyhawk*, the pilot selected the "manual" position on the fuel control and ram air to dump cabin pressure and smoke. He deployed the emergency generator, turned toward home base (30 miles away) and transmitted to the flight leader, "I have a flameout." The flight leader immediately turned to

join on his ailing wingman. The stricken *Skyhawk* reached a peak altitude of 5,000 feet AGL and the pilot attempted a relight. Observing no engine response to the relight attempt, the pilot placed the throttle to "Off" and attempted a second relight. Descending through 3,000 feet AGL, the engine relit and the pilot climbed and headed straight for home base. With his flight leader now on his wing, he switched the flight to home base tower frequency and broadcast a mayday at 20 miles from the field. With reduced visibility due to haze, the pilot navigated along well-defined ground features to a straight-in approach to the longest runway.

Myers set the throttle at an intermediate power setting and gently lowered the nose to hold 300 KIAS. Passing through 3,500 feet AGL at eight miles from the field, the *Skyhawk* again flamed out. The pilot zoom-climbed and cooly radioed, "I've got another flameout." His attempted relight was unsuccessful. The stricken *Skyhawk* rapidly lost altitude as it approached populated areas. The pilot maneuvered the *Skyhawk* away from the populated areas, preparing himself for ejection, and attempted another relight. Passing through 2,500 feet AGL at five miles from the field, the engine responded but would not increase above 75 percent rpm. The pilot had now lost sight of the field because of severe haze. He radioed, "Doc, where is the field?" The flight leader responded with "Check right, 2 o'clock." The pilot turned immediately, sighted the field and rapidly calculated that he had insufficient power to make the field if he lowered the gear or flaps. He executed a straight-in approach



ILLUSTRATED BY Osborn

and lowered the landing gear passing through 500 feet AGL at one-half mile from the end of the runway. On touchdown, the pilot immediately deployed the drag chute and slowed the aircraft for a safe turn off the runway. He brought the *Skyhawk* to a stop on the taxiway with fuel gushing out of the bottom of the aircraft. He secured the engine and egressed as the crash crew arrived to assist.

Grampaw Pettibone says:

Jumpin' Jehoshaphat! What a way to ruin one's day, and with a ringside audience to boot.

This pilot's difficulties were caused by failure of the generator access door latch hooks. The door, located inside the intake, separated and was blown into the engine compartment hellhole, rupturing the main fuel line. At power settings above 75 percent rpm, the fuel supply was inadequate to sustain the engine.

Myers' timely and professional reactions make old Gramps pop a few proud buttons. Far too many in-flight material failure incidents, such as this, have resulted in an expensive loss of the aircraft with a resulting "pilot error" cause. Cool Hand Luke here not only saved the day, and possibly some lives, he saved the aircraft, too. Old Gramps suggests somebody ought to pin a medal on this young lad. Good On You, 1st Lt. Randy Myers!

Feline Airline

"Perform condition four checks," the pilot in command of the P-3A aircraft instructed his crew following an uneventful preflight and takeoff on a routine training mission. While the crew was checking to ensure there were no fumes in the aircraft, a large domestic cat emerged from the galley and dashed forward toward the cockpit. An alert crewman, seated aft of the copilot, spotted the cat and made two valiant attempts to block the cat from entering the cockpit.

The frenzied feline, undaunted by the two frantic forearm swats, made a third and this time successful attempt to claw its way into the cockpit. On this pass, the cat pounced upon the crewman's Nomex-covered right forearm and immediately commenced to rearrange the order of his epidermis.

The pilot became aware of the ensuing struggle when the observer emitted a bloody scream as he pried the clawing cat loose and flung it to the deck. Landing feet first, as always, the tenacious kitty quickly sidestepped the crewman, ducked under the copilot's seat, and then disappeared under the decking forward of the copilot's rudder pedals. The pilot, taking stock of the situation, aborted the mission, returned to home base and obtained medical attention for his clawed crewman.

After an exhaustive internal postflight search, the aircraft was sealed and bait set out to entice the cat out of hiding. After a short wait, the ground crew dismantled several sections of the aircraft flooring. The cat, along with two kittens, 7 to 10 days old, discovered nesting beneath the cockpit deck area, were corralled and placed in precautionary rabies quarantine.

Grampaw Pettibone says:

Holy flying feline ferocities! This aerial Clyde Beatty act sounds more like a "9-Lives EverReady Battery" commercial than a normal aircrew training mission.

Old Sagebrushface here was intrigued and amused with this event, but had some difficulty sorting out all the lessons learned. Some of the more apparent ones seem to be:

1. A thorough preflight doesn't guarantee that all is bliss. One should be prepared for the unexpected, even a meow or a hiss.

2. "Purring" can emanate from sources other than finely-tuned engines.

3. The galley cat's entry into the aircraft is a bit of a mystery. However, the cat's reaction and attack on the crewman is no mystery. It's not wise to fool with Mother Nature or Momma Cats either.

4. Nomex is fire retardant but not feline resistant, and is a poor substitute for armor plating during aerial cat attacks.

5. Last, but not least, I suppose we should add to the age-old saying that the flight is not over 'til the paperwork is complete. . . "and you put the cat out!"

In summary, the crew's reaction to the unexpected in-flight incident was as expected – professional! The decision to abort the flight and put the cat out was indeed wise. This kitty had at least 40 lives at stake: The 13 P-3 crewmen, her 9, and 9 for each of the two kittens. Had any one of the latter 27 lives become entangled in the flight controls, the lives of the other 13 would surely have been in jeopardy.

COMPUTERS ABOUND

By Commander Chuck Sammons

Naval Aviators are certainly among the millions who are entertained and captivated by the variety of computer games such as Atari's "Pac-Man" and "Defender" as they blip through Mazeland gobbling dots, dodging blue ghosts, firing anti-alien rockets and launching laser cannons to rescue kidnapped humanoids.

But in Naval Aviation training, the use of computers transcends the surrealistic world created by mass market video game programmers.

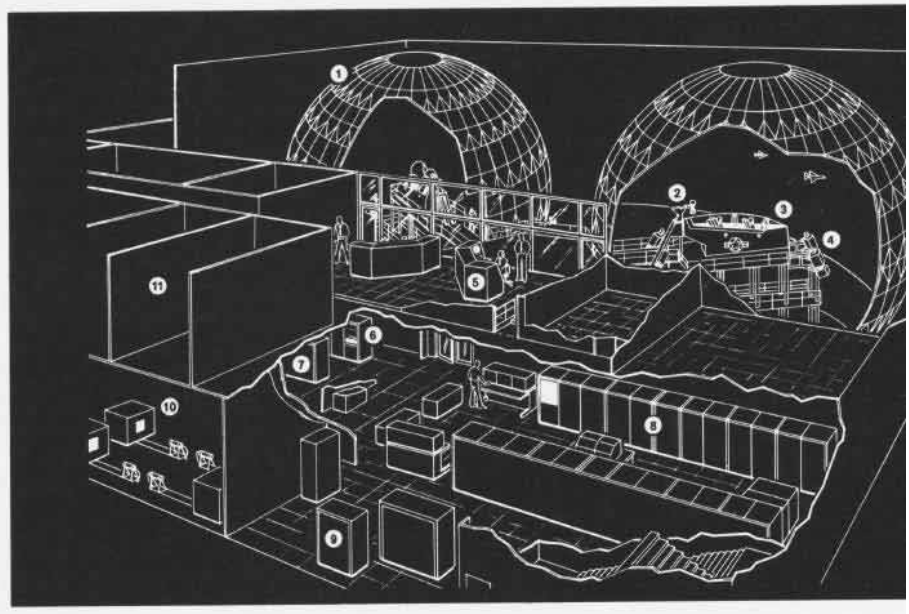
Today's naval aircrewmen's involvement with computers is serious business. In virtually all phases of Naval Aviation, flight crewmen use some kind of state-of-the-art computer. In particular they can be found in the current inventory of modern aircraft, flight simulators, instrumented tactics ranges, part task trainers, and computer-assisted academic instruction programs. The proliferation of computers has served to make training more productive while keeping limited training funds within reason.

Introduction of the F/A-18 *Hornet*, for example, involves significant activity in each of these areas. The aircraft contains several system/microcomputers, microprocessors, data busses, and system interfaces. In the F/A-18, the pilot monitors the status of aircraft systems in alphanumeric form on one of the aircraft's three cockpit cathode ray tube (CRT) displays. Computer software provides system automation and control integration to maximize pilot efficiency and a continuous lookout capability with the use of the heads-up display (HUD). Other aircraft, currently under development, such as the AV-8B *Harrier* and LAMPS MK III SH-60B *Seahawk* helicopter, will have comparable computer-based capabilities.

While aircraft computerized systems may be more automated, and perhaps easier to operate, they will require more specialized training and knowledge by both the operator and maintainer. To meet this requirement, the Navy has incorporated the use of computer technology in several undergraduate and fleet aircrew training programs. In short, the Navy uses computers to augment training its personnel to use the computer systems.

Computer-assisted instruction (CAI), for example, is now incorporated in the VFA-125 F/A-18 *Hornet* and VS-41 S-3A *Viking* fleet readiness squadrons' syllabuses for standardized and efficient individualized instruction in systems operation, "switchology" and procedural training. Twenty percent of the VFA-125 aircrew academic syllabus is now administered via CAI. VS-41 instructs tactical air coordination officers and sensor operators.

While the initial procurement of CAI programs is more costly than conventional lecture type, it has many advantages. It reduces training time, provides flexibility in scheduling, can be easily updated and provides standardized instruction. CAI can be tailored to the individual's need by being programmed for easy, medium and hard levels of performance. It also automatically assigns remedial instruction as needed and plays a vital role in linking academic training with



Combat Maneuvering Simulator

1 40-foot Diameter Projection Screens
2 Earth/Sky Projectors
3 Aircraft Cockpits
4 Target Projectors
5 Instructor Stations
6 Interface Electronics
7 Equipment Monitor Station
8 Computer System
9 Debrief Computer System
10 Target Generators
11 Briefing/Debriefing Rooms

A pilot's view of the F/A-18 Combat Maneuvering Simulator.

hands-on instruction during time in the cockpit.

The computer-controlled air combat maneuvering simulator (ACMS) Device 2E6 provides artificial visual range air combat training for Navy F-4/F-14 pilots and radar intercept officers. It consists of two interchangeable F-4/F-14 cockpits, each mounted in a 40-foot-diameter dome, and two external instructor consoles. Its SEL 32/55 digital computers control aircraft and weapon dynamics. The domes may be operated as two separate independent trainers or in the integrated mode. In the independent mode, the aircrews train against one or two adversary aircraft controlled by the instructor at the console or by the computer. In the integrated mode, the aircrew of one dome may engage the aircraft of the other dome, or the two may coordinate section tactics against either the computer or console-controlled adversary. What the pilot sees are computer-controlled video images of aircraft and horizon projected on the inner surface of the domes that duplicate actual performance and relative motion.

Training objectives of the 2E6 include proficiency in basic offensive and defensive maneuvering, improved employment of F-4/F-14 weapon systems and visual range air combat involving the M61A gun, *Sidewinder*, and *Sparrow* missiles familiarization with threat aircraft performance and weapon systems limitations, and recognition of aircraft stall and departure from controlled flight characteristics.

A software performance measurement system (PMS) has recently been incorporated in the 2E6 which objectively scores aircraft performance in simulated combat engagement. Among many benefits the system provides objective feedback for measuring the pilot's performance, assesses differences in aircraft weapon systems and helps to evaluate air combat tactics. The PMS produces hard copy graphics of the aircraft's offensive and defensive activities that occurred during the entire training engagement. Several numerical indicators, such as time-to-first-missile launch, time-to-first-missile kill or number of gun rounds expended, can be overlayed on the readout to correlate the positions of the bogey and attacking aircraft when the weapons were fired.

Minicomputers and microprocessors are finding their way into aircrew part task trainers. Two excellent devices under development are the computer-assisted mission planner system (CAMPS) and the portable radar homing and warning (PRHW) device. CAMPS, currently under evaluation by Air Test and Evaluation Squadron (VX) Five, China Lake, Calif., is being developed in an effort to provide the pilot with more expeditious and accurate flight planning and defense penetration analysis information.

CAMPS employs a minicomputer which contains aircraft fuel, aerodynamics and weapon data; selectable altitudes, airspeeds, and weapon loads; and order-of-battle threat information. It utilizes a 4'x4' board for digitizing navigation charts for storage in the computer's memory. The mission is planned normally with the computer figuring navigational data and the threat order of battle both superimposed on a CRT displayed route. A kneeboard-size printout is provided so that the pilot has up-to-the-moment information before going on a mission.

Portable Radar Homing and Warning Device is one of many computer-based training aids under development.

The PRHW is designed to provide hands-on training in threat recognition in mission tactics. This device consists of a self-contained microprocessor, which simulates multiple radar warning system operation and radar threat emitter interpretation.

These are brief descriptions of only a few of the many computer systems being used or developed to make naval aircraft more capable and training more productive. Read on, there's more. ■

SH-3H: Sub Killer

By Lieutenant John T. Bader, USN

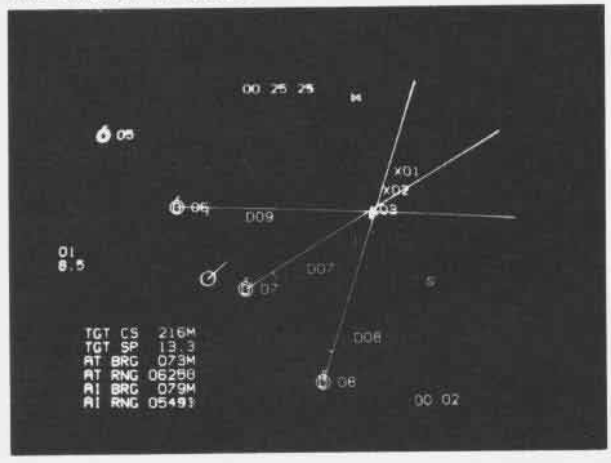
Courtesy of HS-1

An SH-3H from HS-11 maneuvers into position during a coordinated ASW exercise.

It's 0300. Flight operations have just ended. Pilots and aircrewmen have completed 72 hours of around-the-clock operations. The nuclear-powered aircraft carrier and its four escorts are cruising in the Mediterranean, 100 nautical miles southeast of Mallorca, heading for a well-deserved port call in Palma. The standby alert helicopter flight crews have been briefed and have gone to bed. Everything is peaceful and, for once, fairly quiet. But not for long.

The relative tranquility is shaken by a message from one of the escort frigates. An unidentified submarine has been detected penetrating the battle group's inner defense zone and closing the main force. Fourteen minutes later the SH-3H *Sea King* is airborne and in pursuit. The crew arrives at datum (the last known location of the target) 12 minutes later and gains active sonar contact on the second dip. Working the inner zone threat is difficult because of the high noise levels caused by the aircraft carrier and her escorts, but the

PH2 Sheldon E. Adkins



TACNAV cockpit display provides the pilots with moment-to-moment data on the ASW search and attack problems.

SH-3H with its variable-depth dipping sonar is especially configured to hunt and attack in this environment. The sub is outside weapons range, so the helo quickly breaks hover and repositions, using its highly accurate computerized tactical navigation system, and regains contact, this time in close. The sub's skipper is clever and his boat is fast – 18 knots plus – but he now knows he's detected and starts to run. The SH-3H is one of the anti-submarine warfare (ASW) platforms he fears most.

Meanwhile, in the aircraft the attack solution is complete 45 seconds into the third dip and the torpedo is ready to be sent on its way. But the crew holds back, awaiting orders. The submarine continues to run, and a second SH-3H and an S-3A *Viking* join the chase. The sub continues to open the Task Group. The ASW units maintain continuous attack position as the unannounced intruder seeks to extract itself from the airborne hunters.

Today, it was one of our submarines on an unscheduled exercise. Had it been a real attack by an "unfriendly," it could have been sunk. The helicopter crews had been pitted against an American nuclear submarine, the finest in the world, and won. The SH-3H once again proved its worth.

The *Sea King* has been on the job for many years. It is an all-weather, twin-engine, single-rotor Sikorsky helicopter – the first helicopter to be designed with ASW at its primary mission. It has been a mainstay of the carrier-based ASW forces since joining the fleet in the early 1960s.

Like good wine, the venerable SH-3H has gotten better with time. Those operating in the fleet today have earned their position as a respected element of the ASW forces of the Naval Aviation community with tried and proven capabilities and sheer endurance.

Bursting at the seams with sensors, communications and avionics hardware – and dedicated crews – the helicopter has one more relatively new (compared to the age of the airframe) system that makes it even better.

AN/ASN-123 tactical navigation (TacNav) set is the first significant avionics update in the SH-3 since the aircraft entered fleet service. It replaced a device passed down from the P2V, called the electromechanical navigation system, the AYK-2 computer (facetiously called a *navigator*). TacNav consists of compact hardware, state-of-the-art software, and a core memory of over 32,000 sixteen-bit words. All that means is that the new computer gave a middle-aged aircraft new muscle.

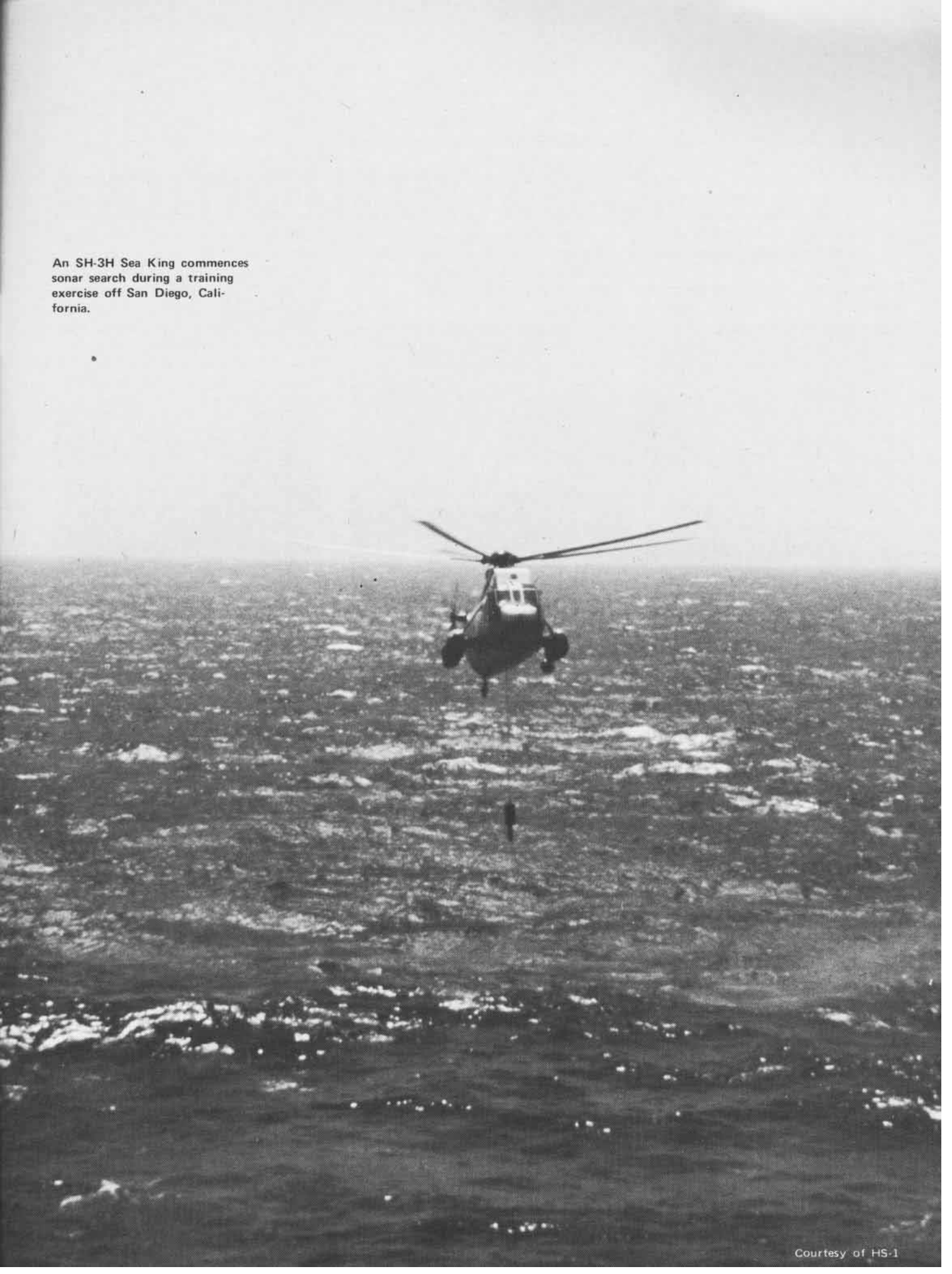
In the early 1970s, the Chief of Naval Operations directed that the Naval Air Development Center, Warminster, Pa., conduct an initial study of ways to improve the SH-3's tactical navigation suite. IBM produced the first advanced development model in 1972, which Sikorsky tested the following year. In 1975, the Navy awarded Teledyne Systems Company a contract to construct a pilot program. TacNav was certified as ready for operational evalution in June 1977, and recertified in December 1977 following manufacturer's modifications. VX-1 completed the technical and operational evaluation in January 1978 and, following the approval of service use several months later, the contract was let. Fleet introduction began with HS-3 on board USS *Forrestal* (CV-59) in January 1979.

TacNav consists of four hardware components weighing a total of 85 pounds: a processor located in the aircraft's electronics compartment; a cathode ray tube (CRT) display unit in the cockpit with seven selectable range scales, a tactical coordinator (TACCO) panel directly underneath the CRT, and the sensor operator's control unit at the sensor station. As a design feature to avoid technical obsolescence, all operational functions are implemented in software, and the operational software and interface electronics are in modular form to accommodate changes easily with minimum impact on the system.

For navigation input, TacNav uses the AN/ARN-182 Doppler radar, the A/A24G-39 compass system and a true airspeed transducer. Its plot is a ground-stabilized 512-nautical-mile-square area centered on a selectable geographic point, which greatly increases the SH-3H's ability to participate in coordinated operations. All positions of interest relative to a fixed geographic point are easily identifiable, using tactically secure grid coordinates or latitude/longitude positions.

In its simplest form, TacNav

An SH-3H Sea King commences sonar search during a training exercise off San Diego, California.



Courtesy of HS-1

provides improved general navigational accuracy. It is extremely precise over land and incorporates a function to determine and subsequently eliminate sea drift, which decreases overwater navigation errors. Drift rates as low as 0.5 nm/hour are routinely obtained in at-sea tests.

The system displays all pertinent tactical data: buoy symbols, vectors, contact points, fixed range and expanding range circles, and a variety of symbols associated with the attack function. With its system memory, TacNav will automatically store data on 12 different types of events as they occur, which may be recalled at any time to aid in mission debrief/reconstruction.

TacNav performs many desirable functions but its main purpose is tactical navigation, and it is in ASW that the full potential and capabilities of the system are realized. TacNav is the single most important improvement in 20 years for the SH-3, providing increased capabilities in all facets of ASW.

"TacNav has given the SH-3H the capability to go one-on-one against any submarine in the world and beat it," states Captain Barry Spofford, Commander of HSWing One, Jacksonville, Fla. Lieutenant Dave Hall of HS-1 expressed a similar view: "It is a tremendous step forward for our community, in terms of today's technology. TacNav has brought us out of the Stone Age."

TacNav is light years ahead of the system it replaced. HS crews now have, for the first time, the ability to construct and maintain a comprehensive tactical plot which assists in keeping the big picture. The consensus among fleet users is that this is the most important improvement of the TacNav over its predecessor. "We don't need a TACCO," says Lieutenant Commander Chris Cole of HS-5. "We've got TacNav to show us how the situation is going and give us the information we need to make the necessary tactical decisions."

Substantial increases in crew efficiency and mission effectiveness are evident since TacNav was installed, with the highest gains achieved during night/IFR operations. Nowhere is this improvement more evident than in the area of weapons delivery.

TacNav has three different modes of the attack function: intercept, snake and circle. The intercept mode is very useful when working with magnetic anomaly detection (MAD) contacts because it will accurately plot the predicted intercept point, as soon as two other points are entered, to determine course and speed. Since the circle search (no runout) mode is designed to use with a fly-in torpedo delivery, TacNav uses target course and speed with aircraft altitude, track and ground speed to compute the proper weapon release point which is visually displayed on the CRT. This information is also relayed to the heading indicator so that the pilot has only to follow the readout to get a perfect drop.

In the snake (bearing runout) mode, TacNav displays the computed minimum and maximum torpedo envelope based on the submarine's speed and aspect relative to the helicopter. The pilots can tell at a glance whether or not the target is within weapons range. If not, TacNav will compute the shortest distance to the next dip point and will display fly-to-point information to the pilot, providing an efficient and extremely safe method to navigate from dip to dip. Proper weapon launch inputs are continuously displayed on the CRT so the pilots need only ensure that their fire control selections match those automatically computed, select an initial search depth and launch the weapon.

"TacNav has brought us out of the Stone Age."

"TacNav provides a substantial saving of time and increase in accuracy when computing an attack solution, especially from a hover," says Lieutenant Commander Rich Strickler of HS-1. "With the old navigator and the MK-6 plotting board, it generally took several minutes instead of seconds to determine course and speed, select gyro angle, check the pubs to determine your lead angle, set everything in the presetter panel and launch the weapon. Now, we can accomplish the same thing in 30 seconds or less with increased accuracy. I think TacNav is great! It works well and is extremely reliable."

TacNav also incorporates a SAR function which computes and displays a sector search or expanding square search based on data entered by the pilots. The computer takes that information and references it to data on track spacing and sweep width (from NWP-19, the *National Search and Rescue Manual*) to compute the proper length from each leg in the pattern. The results yield a 78-percent probability of detection in the first search. Since TacNav will show the pilot where to fly corrected for wind, the aircraft can describe a perfect pattern over the ground with a high probability of success.

TacNav has tremendous growth potential. A proposal for new hardware to increase the memory to 64,000 bits is very high on the funding list, and is needed to incorporate presently outstanding software changes and still leave an acceptable amount of memory for future growth. This system is also under consideration as an integral part of any future electronics suite of a CV ASW helicopter replacing the SH-3H.

The SH-3 is now more than two decades old, but updated avionics have kept this platform capable of dealing with any submarine. Programmed to be in fleet ASW operations for the next several years, the SH-3H continues to prove its worth as it operates in all weather conditions throughout the world, a valued member of the Battle Group. SH-3H is indeed a Sub Killer! ■

Computerized SAR

By SN Norman Whitehurst

SN Norman Whitehurst

Lt. James Decker points to one of three rescue units positioned on the TV screen image of First District waters. In this demonstration, the computer has plotted the location of distressed vessel in relation to the positions of three Coast Guard units dispatched to assist.

For some time now, the First Coast Guard District, Boston, Mass., has sent some of its graduate students to Rensselaer Polytechnic Institute (RPI) in Troy, N.Y., to further their knowledge of mathematics. This practice has resulted in computerized programs developed by the students and their non-Coast Guard classmates. These programs can reduce search planning time and increase the probability of locating mariners in distress.

Lieutenant James Decker, a search and rescue controller for the First District, says three programs were developed by RPI students which assist controllers in their jobs. The district operations center has been evaluating the programs on a trial basis since last April to determine if incorporation throughout the Coast Guard would be practical.

One program, Search and Rescue Planning (SARP), combines wind speed and direction, along with sea currents, to approximate the position to which a distressed vessel may have drifted. The controller punches in reported wind information which, when combined with historic sea direction, should result in the most probable location of the search object.

Aircraft Search and Rescue Planning, a second program, takes the information from SARP and designs specific search patterns in the area of distress.

The third program, Display and Resource Information, displays a map on the computer screen, plotting the position of the distressed vessel along with the positions of Coast Guard units. With this information, the controller can find approximately how long it would take for the SAR units to arrive on scene and which unit it would be better to utilize.

Computers are not new to Coast Guard operations centers. All have computer terminals which are connected to a main computer center on Governors Island, N.Y. These computers can operate the same type programs as the RPI-developed systems and on a more sophisticated basis. Using the national computer, however, is more time-consuming and it can take several hours to yield the results. Thus, a key advantage to the more localized RPI system, according to Lt. Decker, is the time saved.

If RPI's program proves worthwhile in Boston, says Lt. Decker, it won't be long before more districts incorporate the system into their search and rescue planning in the Coast Guard's continuing effort to upgrade protection for mariners. ■

Computers: RVAW-120's Way of Life

By Lieutenant Commander Heber H. Himmelwright, USN

Some Navy computers are used to simulate flight while others do their job airborne. In Carrier Airborne Early Warning Training Squadron (RVAW) 120 they do both. The fact is that without its computers the squadron would be hard pressed to carry out its mission as the East Coast fleet readiness squadron (FRS) for the E-2C *Hawkeye*.

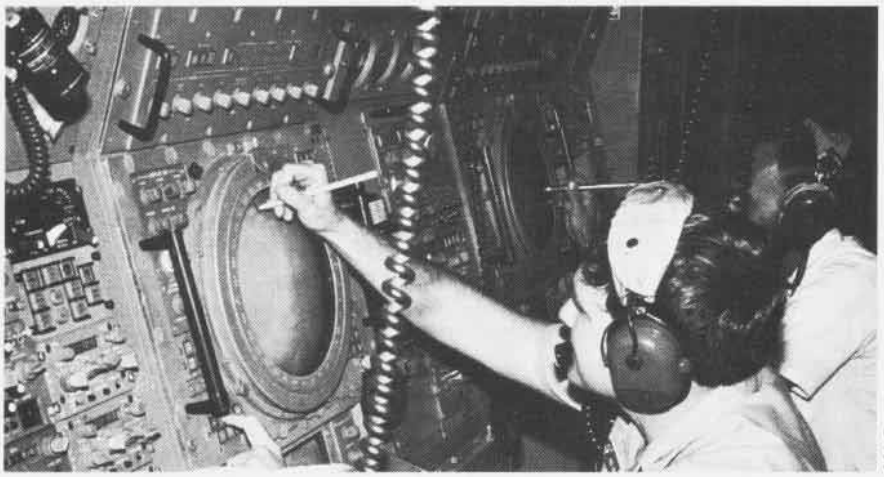
Because of the many systems and sensors required to ensure the successful completion of its role as "eyes of the fleet," the *Hawkeye* is one of the most sophisticated and complex aircraft in the Navy's inventory — truly a carrier AWACS-type system. The sheer volume of the areas that must be observed in today's operational environment is awesome and can no longer be satisfactorily controlled without the assistance of space-age electronics. Without the assistance of on-board computers, just monitoring equipment status could require the full attention of a crew member.

The E-2C's AN/APS-125 radar and IFF systems (the antennae of which are housed in the distinctive rotodome above the aircraft fuselage), along with the passive detection system (PDS), are the basic tools used to collect data in the surveillance area. Operating these systems and sorting out the staggering amount of information available from them are only a couple of the major jobs facing the E-2C crew. When you add to that the responsibility of controlling combat air patrol, strike, reconnaissance, and search and rescue aircraft, while at the same time maintaining a tactical picture and reporting pertinent information to the Force Commander, the mission then becomes overwhelming.

But the flight crews don't have to do it all by themselves. Each of the systems named above has its own integral computer that assists in compiling and using the information gained. The AN/APS-125 with its computer is able to automatically determine the presence and movement of surface and air contacts, thus decreasing the number of crew members needed to search for contacts. The IFF computer aids in the automatic tracking of transponder-equipped aircraft. The PDS also has its own computer which can automatically initiate the various functions used to gather electronic information from sources in the surveillance area.

Although owing to these computers we no longer need as many crewmen, compared to a decade ago, to perform purely mechanical tasks such as detecting targets, we still need a way to compile and coordinate the outputs from the computers and to report them to the aircrew operators. That method is embodied in the *Hawkeye's* Litton L-304 computer, known as the "CP."

Acting almost as a fourth *Tron*-type member of the three-man Combat Information Center (CIC) crew, the CP receives inputs from the aircraft's sensors and visually presents the information to the crew members. Able to track and display several hundred radar and IFF targets simultaneously, it creates the tactical "big" picture of timely information that the force commander can use to make rapid and accurate decisions. Internally, the CP uses the information received to develop courses and speeds on the targets, and to generate intercept calculations which can then be transmitted to airborne or surface tactical units by radio voice communications. Under control of the CP, however, a much quicker means of information transfer is available – digital data link. Through Link 4A or Link 11, a tremendous increase in the speed of data promulgation and utilization is realized. The increase in speed frees the crewman to carry out other tasks and assist in combat decision making.



SN D. Turner

An RVAW-120 Naval Flight Officer (NFO) student learns to use the Light Pen Hooking Marker (LPHM) in the 15F8 Tactics Trainer.

The CP also interacts with other aircraft systems, making multitask missions easier. It is able to choose the most accurate inputs from the aircraft's navigation subsystems, thereby improving its calculation of the headings and speeds of contacts. Data from the PDS is also presented, which enables better determination of the threat from a particular target.

Obviously, the computer is a vital component of the *Hawkeye* aircraft but the need for a computer doesn't end there. In preparing Naval Flight Officers (NFO) for the fleet, RVAW-120 trains toward two main goals. The first is teaching them the internal aircraft systems they will use as weapon systems operators, which include radar; PDS; IFF; navigation; UHF and HF communications (voice, Link 11, Link 4A); in-flight performance monitoring; and the CP and control indicator group. Each of these systems is first covered in the classroom and then reinforced by hands-on training.

The other main goal is teaching NFOs basic operational tactics and procedures, such as surface surveillance control, antisurface unit warfare; strike and antiair warfare, E-2 controlled approaches, electronic warfare and search and rescue.

Most of the training in these areas takes place in the hands-on training during in-flight operational periods. Problems arise in trying to schedule

PHC N. Crowe

An E-2C Hawkeye is about to catch the carrier's arresting gear during a routine landing.

openings in the limited carrier and air wing time to provide the services required to practice airborne intercepts and mission tactics. However, the needed real-time fleet experience is minimized by the E-2C's 15F8 tactics trainer used by RVAW-120.

The tactics trainer is divided into three separate compartments. The first is the training compartment, an operational replica of the E-2C combat information center, along with a CP and several system controls external to the CIC. The next is the problem control complex where up to four instructors initiate, monitor, control and modify simulated training problems. The third compartment of the trainer houses the heart of the 15F8 system, the simulation computer and video simulation system which inputs data to the training compartment by simulating the dynamic tactical environment of the E-2C from launch to recovery. The four instructors in the problem control complex supply voice communications and input commands to the simulation computer, enabling the students to experience virtually any tactical situation likely to be encountered. All that's missing is the aircraft noise and vibration. Without a computer, this simulator would be just another static display. Instead, it provides the most realistic environment possible, short of actual flying.

The Navy's use of simulators as an aid to pilot training is not new. When Ed Link patented his first Link Aviation Trainer in 1929, the Navy was one of the first to buy and from then on Pensacola trainees were subjected to forced-air bellows and whirring electric motors in response to their cockpit trainer control inputs. Since the pilots in those early trainers could not see the results of these inputs except for instrument indications, simulators for years were used primarily as instrument flight trainers. In the mid-1960s, the first visual systems began appearing on the market, mostly rigid systems using television cameras traveling over a miniature landscape, projecting an image in front of the cockpit. With this aid, pilots could practice the transition from in-the-cockpit, on-the-gauges flight to the visual references needed at the end of a successful instrument approach.

After that progression, the speed of simulator sophistication accelerated even more. Good thing, too, for just as the first generation of vastly more flexible computer-generated image (CGI) visual systems hit the market in the early 1970s, the price of fuel began climbing supersonically. As visual simulation began to look more like the real thing, the simulators themselves began to act and move more like the real thing. Advancements in computer technology have been the key in the continuous upgrading of these training devices.

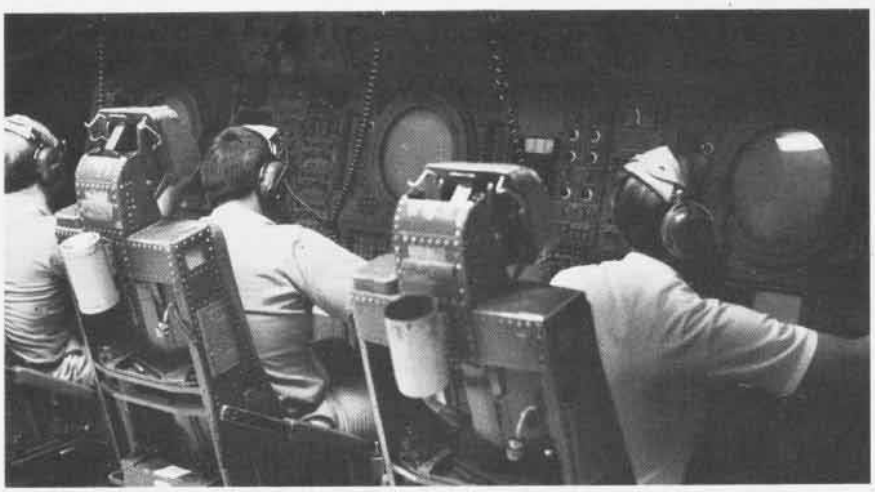
One of the newest advances in the Navy's inventory is the Grumman 2F110 operational flight trainer (OFT) for the E-2C *Hawkeye,* also at RVAW-120 and NAS Miramar's RVAW-110. At RVAW-120, instructor pilots (IP) can sortie a student replacement pilot (RP) to any of 28 continental U.S. landing fields or a CV cruising offshore. Simulation realism is achieved by faithful reproduction of an E-2C aircraft cockpit from both a functional and a configuration standpoint. Additional realism is provided by a six-degree-of-freedom motion system (pitch, roll, yaw, and vertical, lateral and longitudinal translation), and a simulated aircraft sound system. The environment within the cockpit thus simulates that found in actual flight, including sound, motion, instrument presentations, navigation and communication reception and "feel" forces associated with flight controls. All cockpit characteristics, indications and control movements normally observed during aircraft starting, taxiing, takeoffs, flight maneuvers, landing emergency situations and shut-down are much like the real thing.

SN D. Turner

Ltjg. Scott Sanders, a replacement pilot at RVAW-120, goes through a cockpit checklist in the E-2C operational flight trainer.

"The 2F110 is a quantum leap in the evolution of pilot training at the FRS," according to Lieutenant Commander Mike Winslow, an IP at RVAW-120. "Sitting at the instructor station, I can test an RP's basic air work, system and emergency procedures knowledge, judgment and reaction 'under-the-gun,' all at the same time. Before the OFT, training was segmented into aircraft flights that had limited emergency training, oral exams and 'no-motion' procedures trainers. Those are still necessary, but the OFT can tie them all together in one 2.5-hour flight to really test an RP's progress and abilities. You simply can't do all of these in the airplane itself because of financial or safety constraints."

Different visual and environmental parameters can likewise be programmed into a trainer session. Gusty cross-



The 15F8 Tactics Trainer gives the NFO trainees a workout. SN D. Turner

winds, rain (including the "pitter-patter"), icing and reduced visibility conditions are easily typed into a flight scenario to test the RP's skills and reactions. "Icing is a sneak-up-and-bite-you type of emergency," notes Lieutenant Commander J. J. George, pilot training officer. "When a student sees what it'll do to engine performance in the OFT, he'll think twice about flying around in that type of weather for real." The instructor monitors the aircraft's instruments, path over the ground and emergency procedure progress by closely following his three cathrode ray tube (CRT) presentations. "We just type it in and the computer does the rest," says Lt.Cdr. George. "The cockpit instruments change as soon as your CRT display does, so you get a good feel for the reaction time of the RP."

The OFT is normally programmed for 125 hours/month in support of RVAW-120's syllabus training aircraft flights. "Since September 1981, 25

SN D. Turner

AMH2 Clint Slinker performs routine maintenance on the Hawkeye's rotodome.

replacement pilots have completed the OFT syllabus," reports Lieutenant Paul Kovalchik, OFT coordinator for pilot training at RVAW-120. "We've noticed an increase in knowledge of emergency procedures and flying skills, especially in the night CV environment, by all those completing the OFT syllabus."

Mastering the night CV environment is the last and certainly most challenging element of a replacement pilot's training at the FRS. "Night landings at the ship separate the wheat from the chaff," remarks Lieutenant Jim Kriewaldt, the landing signal officer at RVAW-120, who guides RPs through the carrier qualification phase of training. "A guy needs everything working for him out there at night, and the results of utilizing the OFT for pre-carrier quals have been outstanding. We can repeatedly set up an RP at three and one-half miles behind the ship and let him practice automatic carrier landing system (ACLS) to a trap (arrested landing) to a wave-off, or to a bolter, and then critique him immediately on what he did wrong." The presentation in the OFT includes an actual jolting trap, a remarkable CV deck lighting simulation and a subsequent catapult shot off the ship into starkly realistic darkness.

Part of this vast training complex is the aviation training support system (ATSS). Although under the direction of RVAW-120, ATSS serves others in the aviation community at Naval Air Station, Norfolk, including HSL-30 and HM-12. Still a fledgling, ATSS Norfolk actually went on line and began service to NAS Norfolk last June, and is rapidly becoming indispensible in the training environment.

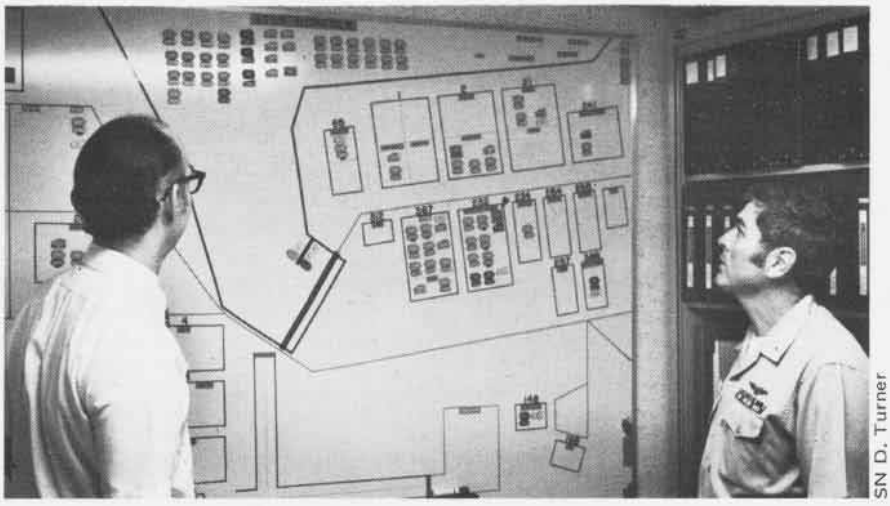
For computer buffs, the ATSS site utilizes the Digital Equipment Corporation (DEC) PDP-11/70 computer. RVAW-120 is currently utilizing 256,000 words of MOS memory with future plans to expand to 512,000 words. The magnetic tape system is the DEC TE16, a nine-track tape storage system that uses industry-compatible recording formats, with densities of 1,600 and 800 bits per inch, selectable under control. The TE16 has a 26-million-byte capacity per nine-track tape. Two high-capacity, high-performance RP06 disc drives, also manufactured by DEC, are utilized by the ATSS. Each RP06 has an average access time of 36 milliseconds with a peak transfer rate of 806,000 bytes per second. The formatted storage capacity per drive is 88 megawords.

Users are able to communicate with the computer by use of the ADM-3 or ADM-3A Lear Siegler, Inc., video display terminals. Seventy-four video display units are placed throughout the NAS Norfolk complex, primarily in fleet readiness aircraft maintenance

The older E-1 Tracker, known by many as the "stoof with a roof," flies wing on the computer-packed E-2C Hawkeye.

personnal (FRAMP) training departments. Report printouts can be obtained by any one of several printers located throughout the base.

Originally developed to assist the FRAMP departments with their extensive training requirements, the ATSS has expanded to cut man-hour requirements in assisting squadron administrative, operations and maintenance



SN D. Turner

LCdr. Heber Himmelwright (r.) looks over the NAS Norfolk Aviation Training Support System (ATSS) equipment location board with technical coordinator Dave Worley.

departments with their many management tasks and reports.

The system benefits the operations department by maintaining up-to-date flight and qualification records. Different output reports are available on demand, including flight time for all aircrew members on a daily, weekly, monthly or annual basis, and qualification lists such as NATOPS, pressure chamber and survival swim.

In conjunction with ATSS, RVAW-120 is currently writing a NATOPS closed-book examination for on-line use. At the ATSS sites, the ability to simultaneously test up to seven individuals with instantaneous results will be available. The system will randomly select a number of questions from a given data bank, thus reducing the likelihood that any two tests will be the same.

Although not a primary user for inputs, RVAW-120's maintenance department nonetheless benefits substantially from the information available in the ATSS. Each division officer has the freedom to review division training files without the delay of drawing records from the personnel support detachment (PSD). Using the multiple sort function, lists of critically qualified individuals and rates are immediately accessible. A large portion of the benefits experienced by maintenance are derived either directly or indirectly from the FRAMP department's use of the ATSS.

The RVAW-120 FRAMP department is the most extensive user of the ATSS. Once an enlisted personnel assignment document (EPAD) is received on an individual who is to report for training, the pertinent data is entered into ATSS, which generates desired and alternate class schedules. These schedules become part of the FRAMP's morning reports, allowing the training coordinator to review the recommended schedules and make changes as appropriate. Among many actions, the ATSS prints a letter that is automatically addressed to the student's ultimate duty station. This letter, which includes a brief history of the student, contains the recommended schedule which will allow the command the opportunity to approve or modify the schedule according to its specific needs.

When the student finally checks into RVAW-120 for FRAMP, he is

Ens. Dale Snyder, RVAW-120 training officer, demonstrates the many uses of the ATSS computer.

given a computer-generated copy of his schedule. The student is immediately tested and his grades, along with other pertinent information, are entered into his student record in the system. All qualifications and tests obtained during the training are likewise entered into his computer-based record. When the student is transferred to his new command, he will take with him a complete training history.

Furthermore, RVAW-120's ATSS and the FRAMP department work very closely in coordinating and administering ComNavAirLant's maintenance training improvement program (MTIP) for the East Coast VAW community. The MTIP was designed to improve the quality of aircraft maintenance, aircraft availability, and squadron readiness and combat capability by testing and follow-up training.

Approximately six months prior to deployment, a squadron is tested by RVAW-120's FRAMP department, utilizing the ATSS and DECAL, a DEC testing package that helps to identify deficient personnel needing refresher training, which is conducted by Grumman instructors. Just prior to deployment, the squadron is re-tested to report to the commanding officer and the wing commander on the effectiveness of the refresher training. Results so far have been excellent. The TacWingsLant units which have been utilizing this management tool for determining training deficiencies have shown remarkable improvements, such as decreasing troubleshooting time needed to identify specific aircraft system problems.

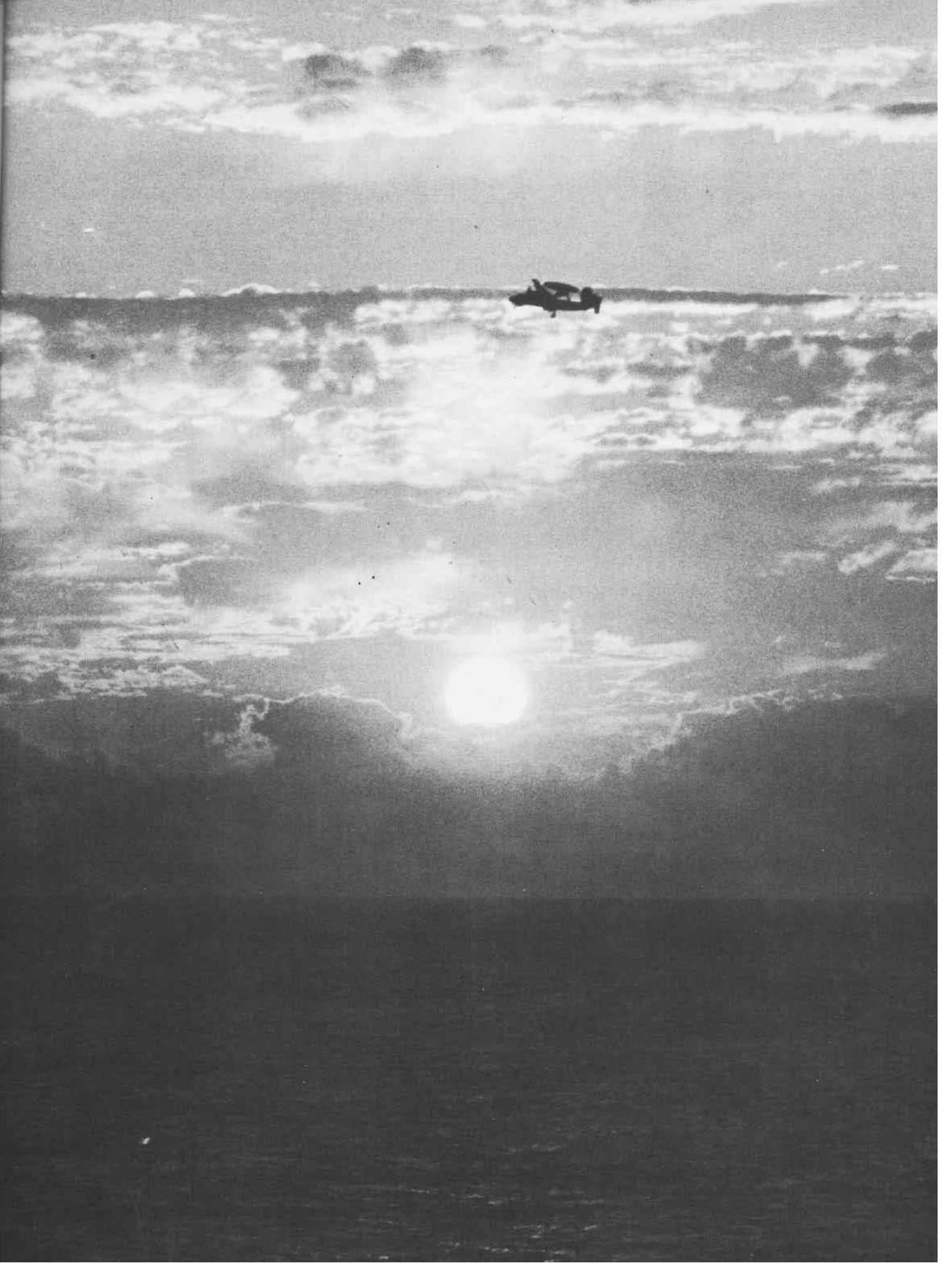
The ATSS also aids in making routine reports to the Navy integrated training resources and administration system (NITRAS) in Pensacola, Fla. Required reports to NITRAS are placed in a designated account in the ATSS computer. Each day ATSS dumps pertinent information into the NITRAS system. This allows for timely reporting and reduction of errors.

In July of this year, a terminal for the ATSS computer was installed in RVAW-120's pilot training building to aid in the management of data concerning personnel files such as replacement pilot class records and flight logs.

Management of each RP's progress through the pilot training curriculum involves a lot of paperwork. Each RP must complete over 100 events ranging from slide presentations and lectures to trainer exercises and actual flights, all of which must be accurately recorded, frequently reviewed and evaluated. To help streamline paperwork procedure and reduce data errors, the pilot training officer and the ATSS staff are working together to refine the programs needed to make this part of the ATSS computer work for RVAW-120. When it's all fired up, the system will be used to monitor the progress of the classes and each RP therein.

General purpose digital computers are not new technology, only their adaptation to current situations is new. Due to the foresight of the late Harry Hammerdinger and others, this use of the computers in Naval Aviation training was implemented in 1971 and continues to grow as ATSS. After 11 years of growth and adaptation to current, day-to-day problem solving, ATSS is being standardized to allow all users to benefit from the system's best features.

The value of computers at RVAW-120 is incalculable. Without them, we might have to return to the era of early WW II when air controllers practiced their craft by controlling men on bicycles in a parking lot. ■



NAVTAG

Adapted from "No Coins Needed! Computerized NAVTAG for Ships," by Lieutenant John H. Tennent V, Surface Warfare, *February 1982*

The situation: surface warning red, weapons free. You are the officer in tactical command of a surface action group hunting an enemy oiler and its escorts. An SH-2 LAMPS MK I is airborne on an over-the-horizon mission investigating an electronic support measures intercept. Your LAMPS "pops up" at a prearranged time and sees four enemy combatants steaming 40 nautical miles north of your position. The SH-2 *Seasprite* "busters" east and you launch a coordinated *Harpoon* attack — then stretch, get up from the wardroom table and refill your coffee cup.

Fiction? Not entirely. You are the Blue force commander playing a wargame, now computerized, known as NAVTAG (naval tactical game), developed for surface warfare officers by OP-03 and the Naval Training Equipment Center, Orlando, Fla.

Opportunities to keep the naval officer's knowledge of tactics current and exercise the material he has learned do not come as often as may be wished. Like the chess master, whose constant play sharpens his mind for innovative changes in the game, the tactician must first be grounded in the fundamentals, and then must constantly exercise his options under a variety of scenarios in order to be prepared to win. NAVTAG does just that.

NAVTAG is an automated training system consisting of three video display terminals, magnetic floppy disks for information storage and a microprocessor. All three player terminals share a single printer which provides printouts of video displays as required. The entire system can be set up in less than 20 minutes.

Playing NAVTAG is as easy as operating an electric typewriter. The computer software generates "prompts" that require players to respond by entering maneuvering, sensor and weapon employment commands. The game's eight selectable information displays (detection reports, system status reports, damage reports, weapons status, etc.) permit a player to assess — directly or by inference — the results of his own or his opponent's actions. The geographic plot is a Navy tactical data system (NTDS) scope representation complete with NTDS symbology and selectable ranges out to 512 nautical miles.

NAVTAG can be played by as few as two officers acting as Red and Blue commanders with or without a third officer acting as game director. Since some of the scenarios involve several platforms, a whole wardroom can be included in the game with officers assigned to different platforms on each side. LAMPS det officers, for example, could be players in the theoretical game at the beginning of this article.

NAVTAG was deliberately designed to be interesting and enjoyable to encourage Surface Warfare officers, whose time is already at a premium, to use the system as the keystone of a locally structured training program and, given the competitive excitement the game generates, even as a recreational device during off-duty hours. In either case, it is learning by doing, and participants gain valuable experience in making combat decisions within the context of an evolving tactical situation.

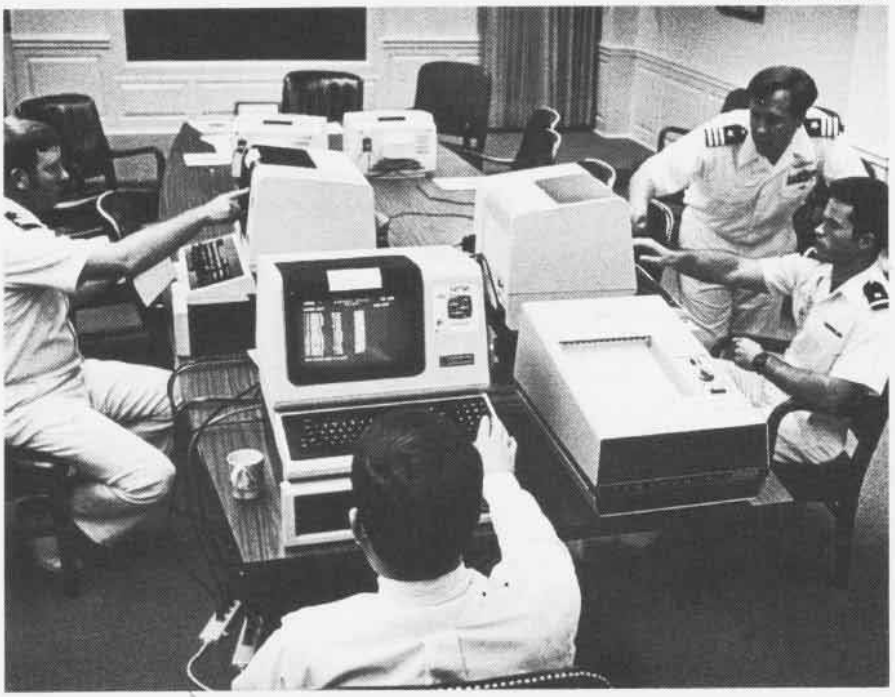
As NAVTAG simulates the evolution of a tactical situation, officers are required to make decisions which affect its outcome. Realism and uncertainty are part of the game play because there is no particular tactical doctrine coded into the computer data base. Doctrine must be in the mind of the player. The computer records the sequence of decisions the player makes and calculates the consequences of those judgments based on sets of probability tables.

NAVTAG is played in a series of game turns, each of which simulates one minute of real time. Red and Blue players start each turn at the same time but the computer does not process their commands until both players have finished their inputs. Thus the turns may take longer than one minute to complete, permitting the game to proceed at a pace set by the player's ability to evaluate the information presented and then implement decisions by orders to sensors, weapons and movement of

the ship. As the player gains experience through repeated play of the same or similar games, he will acquire the knowledge to make tactical decisions more quickly and confidently.

Automated NAVTAG eliminates voluminous and intimidating rules by reducing the size of the game instructions and backup material. Microprocessors speed up game play and leave the game director (who sets up the game scenario) free to watch the game unfold. Additional storage is used to record player commands, detections made and lost, the results of weapon employments and damage assessments. These records are retrievable at the end of the game and can be used to support a critique by the game director.

Howard Wheeler



Clockwise from left, LCdr. Mike Suman prepares to do simulated battle with Ens. Jack Harris, who is being coached by Cdr. Ron Berning. Game director Tom Galloway, SYSCON Corp., oversees war game. Below, typical CRT display shows that an S-3A has just been ordered to lay down a sonobuoy pattern during a NAVTAG simulated ASW tactical operation.

```
GAMETURN:   1        S O N O B U O Y   F U N C T I O N S        TIME: 271301

PLATFORM: SAWBUCK 72                          CLASS: S-3A
                                               SONOBUOY INVENTORY

(1) Drop single sonobuoy                          TYPE      QUANT.
(2) Lay sonobuoy pattern                     (1) SSQ-41        30
                                             (2) SSQ-47         8
(0) Exit                                     (3) SSQ-53        12
                                             (4) SSQ-62        10
Enter menu selection:   2

Select sonobuoy type: 1
Select hydrophone depth (0)shallow, (1)deep: 1     Sonobuoy patterns
Select sonobuoy pattern: 2                         (1) Pattern P1
Enter pattern orientation(deg): 045                (2) Pattern P2
Select buoy spacing(1-15 kiloyards): 2             (3) Pattern P4
Type 1 to confirm, 0 to cancel:                    (4) Pattern A4
                                                   (5) Pattern A5
                                                   (6) Pattern NCP
```

In NAVTAG the contest is not between the player and the computer but between the players. Therein lies the challenge, learning experience and the fun of NAVTAG.

It looks like computers are here to stay, and the Navy is not going to be left behind in the race for progress. Computer games are not simply kids' toys. The Navy has recognized that this state-of-the-art equipment is a valuable source for training its personnel.

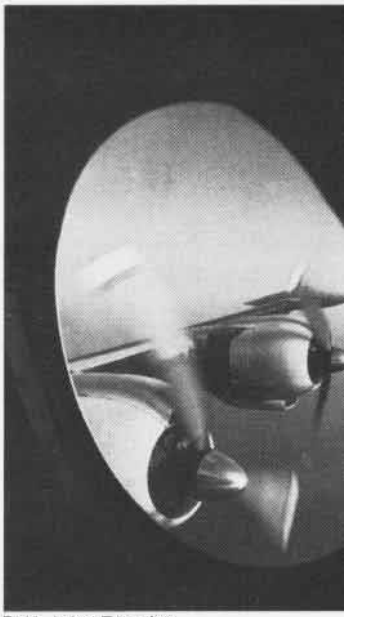
Since NAVTAG was designed for use by Surface Warfare officers, one might ask what it has to do with aviation. The fact is that the Naval Aviation community is investigating the potential value of computer tactical war gaming, too. Preproduction prototype systems are being evaluated for future use by staff teams at Commander Naval Air Force, U.S. Atlantic and Pacific Fleets.

NAVTAG was delivered to ComNavAirLant last summer and is used to train carrier tactical action officers and carrier group staff members. Commander Dan Schermer, who heads the team there, says that he would eventually like to see scenarios involving aircrews incorporated into the system. The ComNavAirPac team received its prototype system in September.

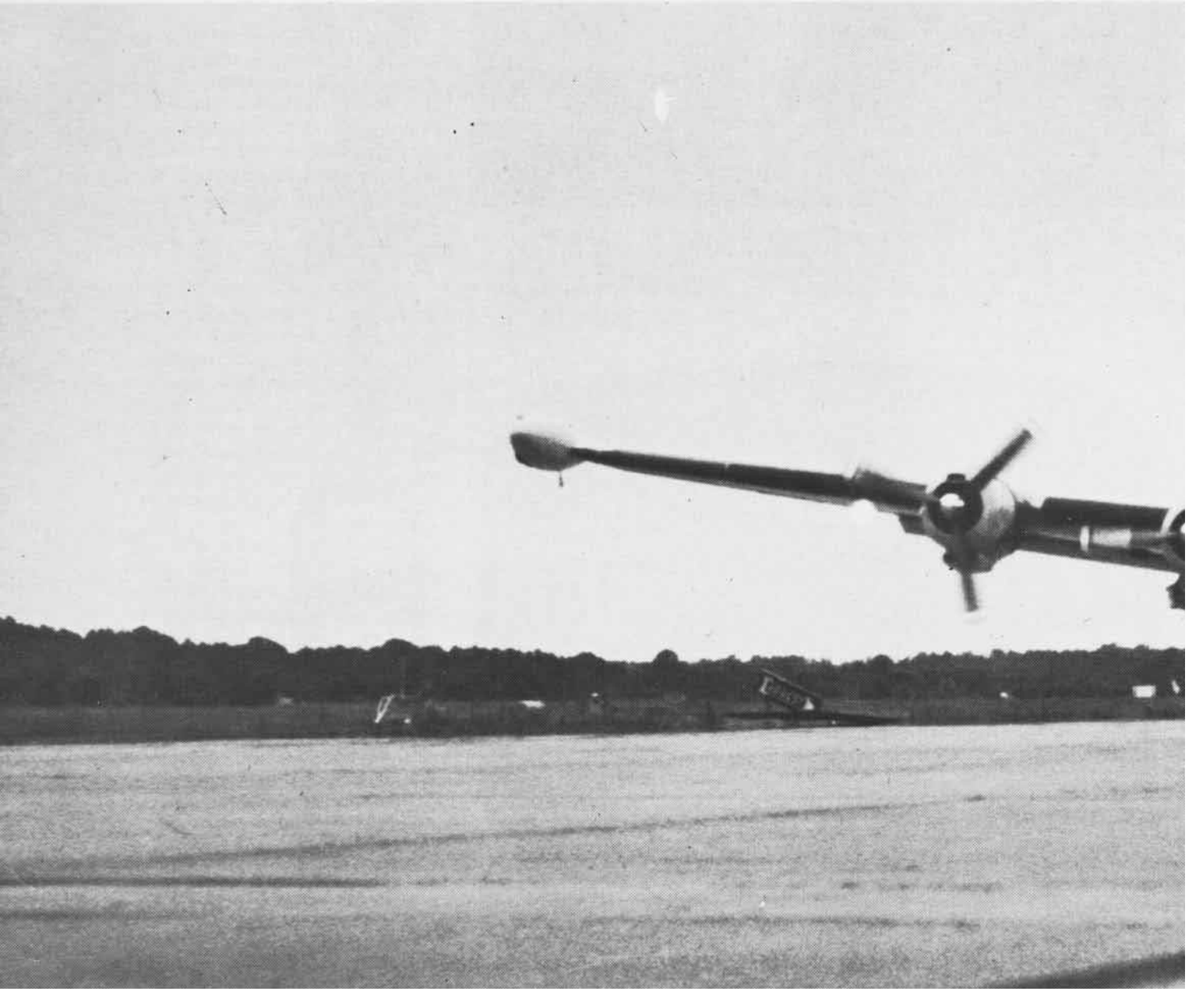
The present computer system is capable of producing limited carrier strike operations. A player can load aircraft with weapons and launch them, but air-to-air operations are performed strictly from an antiair warfare commander's slant. Hopefully, future system software will include more air combat scenarios.

Lieutenant Commander Bob Owen, chairman of the fleet project team at Commander Naval Surface Force, U.S. Atlantic Fleet, says that NAVTAG is definitely not a fad or just part of the present computer craze. He says, "...it's a valuable training system, but not only that, it's fun!" ■

Last Flight of the Constellation



PH1 John Fleming
PH3 Rebecca K. Faram



by Lieutenant Rob Underwood

The sky has lost a constellation, and a 39-year-long chapter in Naval Aviation history has come to a close.

In a ceremony on June 25 at NAS Key West's Tactical Electronic Warfare Squadron 33 (VAQ-33), the last Lockheed *Super Constellation* was retired from active military service. Faces turned upward for a final look as the NC-121K *Super Connie* passed over the crowd gathered at the Florida Keys naval air station to mark the occasion. It was her last flight.

The *Constellation* was conceived in 1939, brainchild of then TWA owner Howard Hughes. He took the idea to Lockheed but, when the U.S. entered WW II, the program was turned over to the Army Air Corps and the first airplane to fly in 1943 was the C-69 military version. The end of the war brought economic problems to businesses across the nation, and Lockheed was no exception. The company closed down for five days and sent most of its 35,000 employees home while top officials sorted out the options.

The decision turned out to be a good one. Those with hindsight contend it was the decision to go with the *Constellation* that saved the company. Lockheed arranged for purchase of government surplus tools, parts, materials and five partially completed military versions of the *Connie,* for conversion to the originally envisioned luxury airliner. "In one hop," said *Time* magazine in reporting the success story, "the *Constellation* had carried Lockheed to the top of the heap."

A string of impressive speed records, coupled with a high-altitude capability and potential for long-range performance, caught the interest of Navy officials. The first *Constellations* acquired by Naval Aviation served with Patrol Bomber Squadron 101. The conversion of the aircraft to a *Super Constellation* model for use in airborne early warning/patrol was investigated in 1949. Starting in 1954, a total of 142 *Warning Stars* were delivered. With the WV-2 designation, they were quickly dubbed "Willie Victors". *(Cont'd on page 26)*

Nose wheel off the ground, the last of the Navy's Super Constellations heads for a spot in history at the Florence Air and Missile Museum in Florence, S.C. Above left, the two portside Wright Turbo Compound engines present a blur of props on the final flight.

Two EC-121K Super Constellations are backlighted in flight.

Constellation

Lockheed's four-engined *Constellation* transport, developed during World War II, entered naval service after the war as the PO-1W.

This radar-equipped type was first investigated in 1949 when two PO-1Ws, later designated WV-1s, were procured. PB-1Ws (converted B-17Gs) had been flown previously to test the feasibility of using landbased aircraft for airborne early warning duties. The successful performance of these aircraft led to placing large orders for the follow-on WV-2 *Super Constellation* which was first delivered in 1954. This lengthened plane accommodated a larger crew and carried improved electronics equipment. A total of 142 of this model was purchased. At one time, nine early warning squadrons equipped with these planes, renamed *Warning Stars,* provided airborne electronic barrier patrols in the Atlantic and Pacific, guarding the American continent and U.S. fleet units against unexpected air attack. The WV-2 known by many as the "Willie Victor" was redesignated EC-121K in 1962.

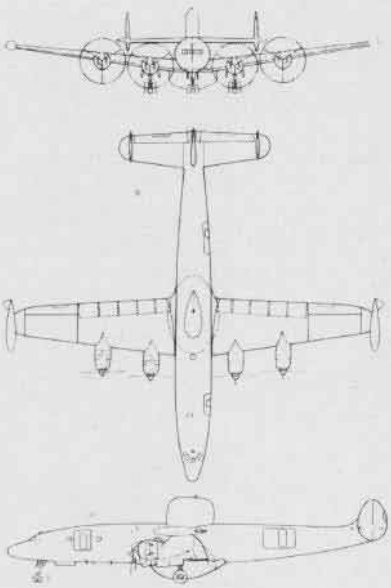
An ECM variant, the WV-2Q was produced at about the same time to conduct electronic reconnaissance missions. Some, redesignated EC-121Ms, stayed in service for years. Weather reconnaissance models procured as WV-3s were assigned to squadrons in the Caribbean and Pacific as WC-121Ns. They located and tracked tropical weather disturbances in their areas of responsibility — actually flying into the eye of a hurricane when necessary. Individualized models, designated NC-121Ks were used by the Air Systems Command in weapons evaluation tests.

For the final chapter in the story of the *Super Constellation,* see "Gone But Not Forgotten," the story of the retirement of the last of the Navy's NC-121s, starting on page 22 of this issue. ■

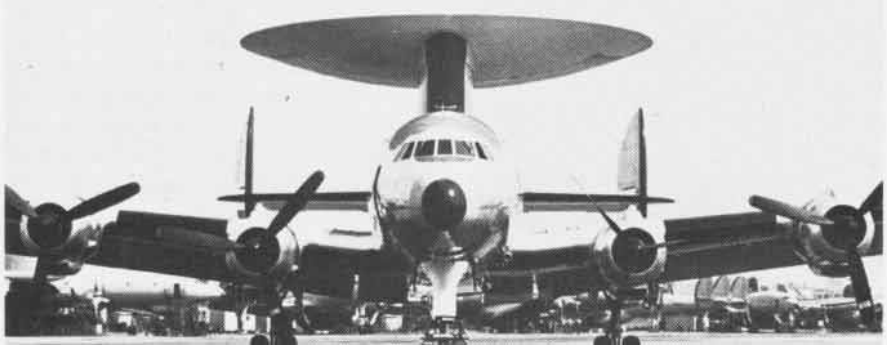
LOCKHEED MODEL 1049A SUPER CONSTELLATION
U. S. NAVY WV-2
Airborne Early Warning Aircraft

NC-121	EC-121	WC-121
	PO-1W	WV
Length		
	EC-121	116'2"
	PO-1W	97'10"
Height		
	EC-121	27'0"
	PO-1W	26'6"
Wing span		
	EC-121	123'5"
	PO-1W	123'0"

Engines		
EC-121	R-3350-42	3,250 hp
PO-1W	R-3350-75	2,500 hp
Maximum speed		
EC-121	285 kts. at 19,300 ft.	
PO-1W	269 kts. at 18,800 ft.	
Cruise speed		
EC-121	210 kts. at 10,000 ft.	
PO-1W	165 kts. at 10,000 ft.	
Maximum takeoff weight		
EC-121	156,000 lbs.	
PO-1W	110,000 lbs.	
Ceiling		
EC-121	21,900 ft.	
PO-1W	22,000 ft.	
Range		
EC-121	3,850 nm.	
PO-1W	2,930 nm.	
Accommodations		
PO-1W/EC-121	28 crew	



A relatively rare photograph shows the Super Constellation on an early flight.



Above, an R7V-1 Constellation bears the markings of the old Military Air Transport Service. Left, a WV-2 airborne early warning version of the Super Constellation sports the "flying saucer" radome in 1956.

Right, Ltjg. Tracy Kugler, navigator, works out a course on the Connie's last flight. Below, Lt. Steve Mackey, one of three pilots on the last flight, takes a break during the flight to South Carolina where the Super Constellation will go on display in the Florence Air and Missile Museum.

Photos by PH1 Carolyn Harris

Some say the graceful lines of the *Constellation* were lost in that conversion. It is a point difficult to argue. Just aft of the wings, atop the fuselage, was a large dish radome. Later discarded, the dish was replaced by yet another radome with a bulbous shape. Other models showed even more bulges for more electronic equipment, and antennae fore and aft on the fuselage had the aesthetic beauty of crabgrass on a putting green. But beauty truly is in the eyes of the beholder, and those who flew her saw past the unsightly bumps and bulges.

"It was a dependable old beast," is the affectionate opinion of Lieutenant Commander David Granger. His first assignment as a young pilot was flying the old "Willie Victors" with VW-4 out of Guam. "They'd always get you home again," he recalls.

The pilots and crews who flew them had great faith in their getting-you-home-again capability — especially those who flew them in the weather air reconnaissance squadrons in the late 1950s and early 1960s. With 20-man crews, they flew into hurricanes as the eyes of the National Hurricane Center in Florida and into the teeth of typhoons in the South Pacific. Bounced and sometimes bruised, the aircraft and crews always came back. VW-1 had an enviable record of 120,000 accident-free hours from 1952 through 1967.

VAQ-33's aircraft was accepted by the Navy in late 1956, bearing Bureau Number 141292. Originally assigned to Airborne Early Warning Squadron 11, she flew the long Distant Early Warning run from Argentia, Newfoundland, to the Azores (or Scotland) and back. From 1964 to 1969, the aircraft flew at the Naval Air Technical Training Center at NAS Glynco, Ga., as an airborne classroom for student Naval Flight Officers. VAQ-33's *Firebirds* received the plane in November 1972 as an NC-121 carrying electronic jammers and receivers to simulate Soviet aircraft and tactics.

In addition to providing training for shipboard and airborne radar operators as part of VAQ-33, the versatile *Super Connies* provided an electronic warfare environment for fighter crews and shipboard operations in missile firings and weapons exercises.

Today, the best estimates are that

less than a dozen of the more than 800 *Constellations* built are still flying in one form or another, most of them as cargo aircraft for small, unscheduled airlines. According to an official in the Navy Field Office at the Military Aircraft Storage and Disposal Center, the last four Navy versions have been ordered stricken from the Navy's inventory and will likely be sold, either as scrap or for use in general aviation. The U.S. Air Force still has approximately a dozen *Super Constellations,* all of them at the storage and disposition center, facing uncertain futures.

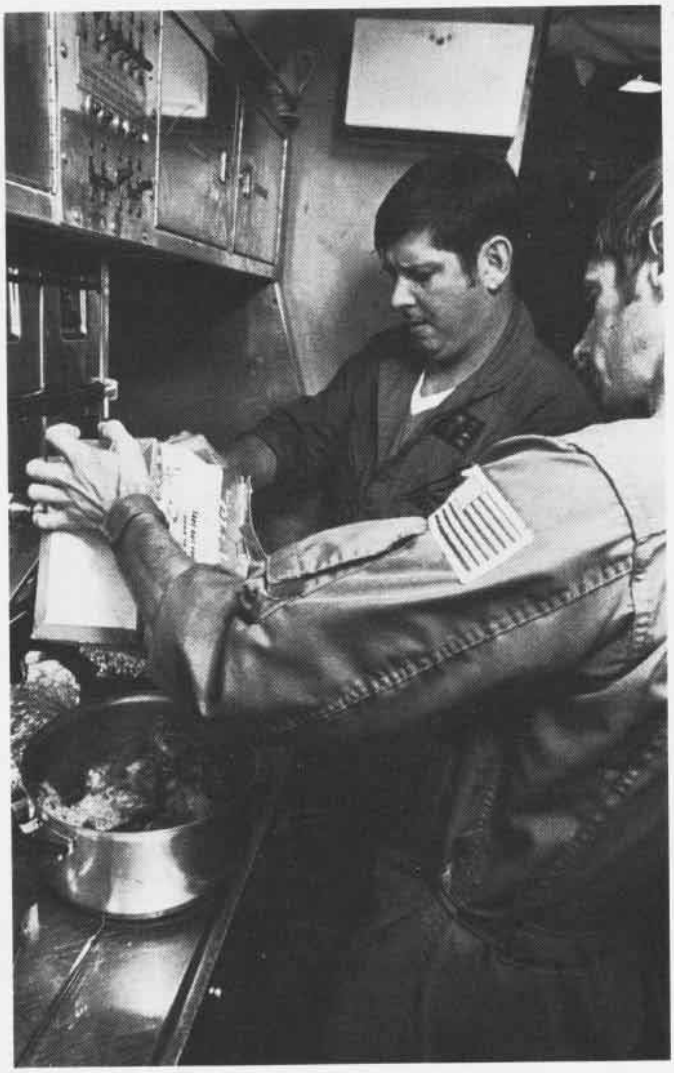
For the last of the Navy's *Super Connies,* the beginning of the end came at 9 a.m., June 25, when Lt.Cdr. Granger and copilot Lieutenant Commander Ted Neal rolled the aircraft past a double row of "sideboys" made up of other squadron aircraft. To the tune of the bos'n pipe, the old *Super Connie* headed for the runway. She began her takeoff roll, and the Wright Turbo Compound reciprocating engines roared as flight engineers ADCS Herman Taylor, ADCS Richard Fairbanks and ADCS John Eason watched the instruments and fine-tuned the big powerplants.

The *Super Constellations'* recip 3,400-horsepower engines, drinking 115/145 octane gas at a prodigious rate, were a major reason for retirement of the old birds. In a Navy dominated by turboprop and jet aircraft, obtaining the high octane avgas was becoming difficult and certainly expensive.

As the assembled squadron members stood to attention, the grand old lady banked and passed into aviation history in style. Just three hours later, she landed in Florence, S.C., where she will be placed on display at the Florence Air and Missile Museum. Some of those who flew in her are already making plans to visit her there.

"I'd rather see her keep on flying," says AE1 Wayne Brown, Jr., who was part of the crew for the final flight. "Still, I'm glad she's not going to the boneyard." He adds, ". . .one day I'll take my children and grandchildren to see her."

The puddles of oil under her parking place at VAQ-33 will fade but, in the memories of those who knew her well, the *Super Connie* will remain. ■



Left, ATCS Paul Kelly (r) and AE1 Wayne Brown, Jr., prepare a meal during the trip to the museum site. Below, the crew for the last flight pose with their NC-121K Super Constellation shortly before takeoff from NAS Key West.

Photos by PH1 Carolyn Harris

Concurrently with this issue of Naval Aviation News, the Navy's new OPNAVINST 5300 on substance abuse is being carefully studied and revised. In the months ahead, the new instruction will result in changes which will update some of the information in this article. For the moment, however, this article will serve as a "heads-up" to the fleet and as a warning to drug users.

Not on my

watch!

By Helen Collins

Last July a U.S. Navy junior officer's career ended in disgrace when he was found guilty in a general court martial of charges in the sale, use, possession and transfer of marijuana. His conviction was the outcome of a Naval Investigative Service probe into drug trafficking earlier this year. He was sentenced to five years of confinement at hard labor, forfeiture of pay and allowances, and dismissal from the service, the equivalent of a dishonorable discharge.

The story is a tragedy that demonstrates the stark reality of the Navy's tough stance on drug use in its ranks.

The Navy *has* a drug problem, one that threatens combat readiness – and in order to deal with it the Navy has had to get tough. But, the problem is not the Navy's alone.

Addiction to drugs, including cocaine and heroin, is on the increase in the United States. Marijuana use has spread to virtually every segment of society, with one common element – youth. A clear relationship exists between the use of illicit drugs and age, the highest percentage of drug users being in the 18 to 25-year-old group. This is also true in the Navy, with the average drug user on his or her first enlistment, between 18 and 23 years of age. Many enter the service with firsthand knowledge of the drug culture and are expert at avoiding detection.

It is difficult to deal with drug abuse since many drugs are easily concealed and therefore difficult to keep out of the workplace. Captain H. A. Taylor, C.O. of the Navy Drug Rehabilitation Center in San Diego, in addressing a seminar on drug abuse, pointed out that a man's shirt pocket could conceivably conceal over $6,000 worth of a dangerous hallucinogenic drug. He showed the group sheets of what looked like ordinary paper, perforated in 3/4-inch squares. When soaked in LSD, each sheet would be worth about $750, and could be cut into 3/8-inch squares and sold for about $9 each. Each square would contain four "hits" or doses. Simple postage stamps, sent through the mail, can be adulterated in exactly the same way. Capt. Taylor pointed out that such means of bringing drugs on board a ship are virtually undetectable in a search.

The drug problem isn't a new one in the military but it is receiving increasing attention. In the Navy, the emphasis is on firm corrective action because drug use affects judgment, leadership, military bearing, discipline, safety and, ultimately, operational readiness.

Admiral James D. Watkins, new Chief of Naval Operations, has stated that continuing the Navy's war on drugs is one of his top priorities. He emphasized that the potential threat posed by drug abuse to Navy manpower readiness is of paramount concern to all hands. The Navy's program combines strengthened initiatives in aggressive detection and

Acid tabs (usually impregnated with LSD).

Drug Enforcement Administration

deterrence, preventive education and training, expanded assessment and evalution, and improved treatment and rehabilitation for those with potential for continued useful service.

Adm. Watkins feels that leadership and peer pressure are the key to success of the program and states, "We'll get to the point where peer pressure is going to be on the other side, saying, 'Hey, buddy, get off those drugs. You're hurting my command and my ship and I don't like it.'"

Rear Admiral Paul J. Mulloy, director of the Navy's Human Resources Management Division, shares CNO's views that drug use is a major concern in the Navy today. He says that since the mission of the Navy is critical to the defense of the country, the Navy must be totally intolerant of any illicit substance. This means that all personnel found to be drug users are immediately subject to disciplinary action or in some cases treatment, or both. Any officer or chief petty officer detected using drugs will be processed for separation, which can result in a discharge under other than honorable circumstances. RAdm. Mulloy emphasizes that drug use is destructive in terms of lost man-hours, talent, and even lives. At the very least, it results in lowered morale and esprit de corps, and promotes undisciplined conduct as well as substandard performance.

Marijuana is one of the most commonly used drugs and in spite of users' claims that it is harmless, its damaging effects have been researched, verified and documented. A series of medical and psychiatric studies completed in the last six years show that marijuana, hashish and THC (the active ingredient in marijuana) impair the brain, reproductive system and personality, and physically degrade the operation of the heart, lungs and the immune system. In 1977, the evidence of possible disturbances in the reproductive functions of adolescents and young adults was sparse, but there is now a growing body of data that points to diminished fertility and danger to the fetus, including fetal deaths, miscarriages and genetic damage.

Although the potentially adverse effects of marijuana are significant, other more powerful drugs pose even greater hazards. Increasing heroin use in the U.S. is a matter of great concern, and the Center for Disease Control recently reported that the number of deaths linked to cocaine quadrupled from 1976 to 1981.

Recognizing that the increased use of illicit drugs is spilling over into the military, the Navy is using a number of tools to combat the drug problem in its ranks. Navy personnel are seeing greater use of health and welfare inspections, new urinalysis kits, drug detection dogs, preventive education, awareness training, and an exchange of information with local law enforcement agencies as part of the identification process. The Navy is working closely with postal authorities, the attorney general and Congress to find legal means of interdicting drugs sent illegally through the U.S. mails. In addition, military postal authorities will soon be able to clamp down on drug traffic through the military postal system when new regulations go into effect. Senior military postal officials at each overseas command or aboard ships are likely to be given authority to screen and inspect mail sent through the military postal system in an effort to curb the flow of drugs.

The Navy judicial system is preparing for increased numbers of prosecutions and for punishment as may be appropriate under the Uniform Code of Military Justice. Furthermore, commanding officers have been instructed not to tolerate *any* drug activity in any shape or form within their commands and to take swift action when discovered.

The Navy has learned that early intervention is essential once a drug user is identified. Counseling, rehabilitation and/or punitive measures, as appropriate, are initiated

	Drugs	Trade or Other Names	Possible Effects	Effects of Overdose
NARCOTICS	Opium	Dover's Powder, Paregoric, Parepectolin	Euphoria, drowsiness, respiratory depression, constricted pupils, nausea	Slow and shallow breathing, clammy skin, convulsions, coma, possible death
	Morphine	Morphine, Pectoral Syrup		
	Codeine	Codeine, Empirin Compound with Codeine, Robitussin A-C		
	Heroin	Diacetylmorphine, Horse, Smack		
	Hydromorphone	Dilaudid		
	Meperidine (Pethidine)	Demerol, Pethadol		
	Methadone	Dolophine, Methadone, Methadose		
	Other Narcotics	LAAM, Leritine, Levo-Dromoran, Percodan, Tussionex, Fentanyl, Darvon , Talwin , Lomotil		
DEPRESSANTS	Chloral Hydrate	Noctec, Somnos	Slurred speech, disorientation, drunken behavior without odor of alcohol	Shallow respiration, cold and clammy skin, dilated pupils, weak and rapid pulse, coma, possible death
	Barbiturates	Amobarbital, Phenobarbital, Butisol, Phenoxbarbital, Secobarbital, Tuinal		
	Glutethimide	Doriden		
	Methaqualone	Optimil, Parest, Quaalude, Somnafac, Sopor		
	Benzodiazepines	Ativan, Azene, Clonopin, Dalmane, Diazepam, Librium, Serax, Tranxene, Valium, Verstran		
	Other Depressants	Equanil, Miltown, Noludar Placidyl, Valmid		
STIMULANTS	Cocaine	Coke, Flake, Snow	Increased alertness, excitation, euphoria, increased pulse rate and blood pressure, insomnia, loss of appetite	Agitation, increase in body temperature, hallucinations, convulsions, possible death
	Amphetamines	Biphetamine, Delcobese, Desoxyn, Dexedrine, Mediatric		
	Phenmetrazine	Preludin		
	Methylphenidate	Ritalin		
	Other Stimulants	Adipex, Bacarate, Cylert, Didrex, Ionamin, Plegine, Pre-Sate, Sanorex, Tenuate, Tepanil, Voranil		
HALLUCINOGENS	LSD	Acid, Microdot	Illusions and hallucinations, poor perception of time and distance	Longer, more intense "trip" episodes, psychosis, possible death
	Mescaline and Peyote	Mesc, Buttons, Cactus		
	Amphetamine Variants	2,5-DMA,PMA,STP,MDA, MMDA,TMA, DOM, DOB		
	Phencyclidine	PCP, Angel Dust, Hog		
	Phencyclidine Analogs	PCE, PCPy, TCP		
	Other Hallucinogens	Bufotenine, Ibogaine, DMT, DET, Psilocybin, Psilocyn		
CANNABIS	Marihuana	Pot, Acapulco Gold, Grass, Reefer, Sinsemilla, Thai Sticks	Euphoria, relaxed inhibitions, increased appetite, disoriented behavior	Fatigue, paranoia, possible psychosis
	Tetrahydrocannabinol	THC		
	Hashish	Hash		
	Hashish Oil	Hash Oil		

quickly so that the member involved may either be returned to duty or discharged promptly.

Depending upon the circumstances of each case, three different levels of intervention are provided to those found to be drug users. First, local command level counseling and attitudinal retraining may be provided, with professional assistance from specially trained personnel assigned to 66 Navy Counseling and Assistance Centers. The second level of rehabilitation consists of extended non-residential care under trained drug abuse counselors. The third is provided by the Navy Drug Rehabilitation Center, NAS Miramar, San Diego, where residential care may be given to those who are diagnosed drug dependent. Enlisted members are sent to Miramar for inpatient treatment *only* if their commanding officer determines that they have the potential for further useful Navy service.

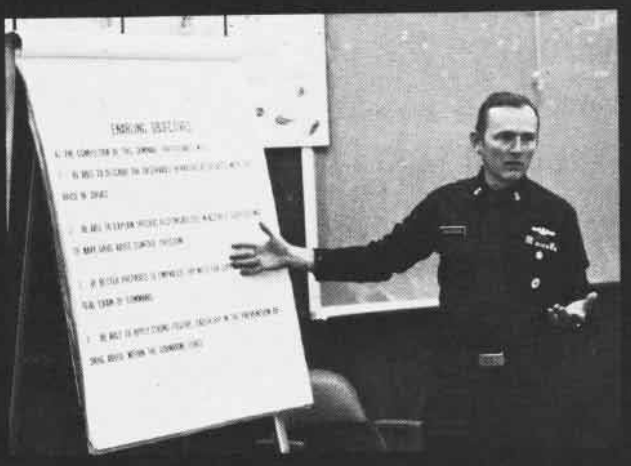
The Rehabilitation Center, with 180 beds, has a program directed by a dedicated staff of military and civilian professionals skilled in all the facets of drug treatment. In addition, the Center functions as the final screening and evaluation point for those who are being separated for drug as well as other misconduct-related problems. The Center also provides on-site training of drug abuse counselors, and quality countrol monitoring and inspection for the 66 counseling and assistance centers.

While an enlisted member may receive counseling and an opportunity for rehabilitation if a urinalysis test proves positive, the margin of tolerance among officers, warrant officers and chief petty officers is zero. The principle of leadership by example has never been more applicable than as related to the drug abuse policy.

Service personnel who are drug offenders and who are sentenced in a civil court may also be subject to a military court-martial, as a former third class petty officer in San Diego learned. He had been arrested by the San Diego police for possessing and dealing in drugs, and was placed on one year's probation with a suspended sentence of six months' confinement by the civil court. Following the civil court proceedings, the command received authority to convene a general court-martial, and as a result he was sentenced to three years' confinement at hard labor, reduced in rank and dishonorably discharged. Although court-martial for an offense previously tried in a state court is unusual, it is not considered "double jeopardy" since military and state judicial processes are conducted by different "sovereigns." The case highlights the Navy's determination not to allow the illegal use of drugs on or off duty.

Although the drug problem is centered in a small percentage of Navy personnel, the solution will, according to CNO, require the resolve and the involvement of the vast majority of non-users to put the heat on, to generate an atmosphere in which drug use will not be tolerated.

In the Marine Corps, the policy is the same. Marine Commandant General Robert H. Barrow says, "A Marine who is an abuser of drugs or alcohol is like a Marine wounded in combat. From now on, I am the drug abuse officer in the Corps. Stand by, because when I make my rounds, I expect to see positive results." Marine Corps administrative action includes withholding access to liberty, flying duties and hazardous assignments.



Drug Enforcement Administration

Navy chief conducts drug seminar.

Rear Admiral Frederick F. Palmer echoes the get-tough policy for the Naval Reserve. "No use of illegal drugs will be tolerated," he says. "This includes all periods of leave and liberty, as well as periods between drills and active duty for training."

The Atlantic Fleet's top drug and alcohol abuse officer, Commander Edward J. Lefebvre, says, "With the kind of mission the Navy has, there is just no place for drug use. For example, a Navy pilot has to depend on about 100 people to get his plane up in the air and back down again. That all hinges on trust. Drugs can break down that trust and put lives in jeopardy, and so the Navy has begun the drug crackdown to clean it out for good."

"It is clear that the aviation community, with its critical mix between people and dangerous, complex machines, is particularly vulnerable to the effects of drug abuse," states George M. Ellis, Jr., director of treatment at the Naval Drug Rehabilitation Center in San Diego. He feels that the Navy's aggressive policy concerning illegal drugs has already had some dramatic and positive impact on drug abuse in the aviation community. Although it is still too soon to determine the long-term impact, some immediate short-term gains are being realized.

Ellis notes that incidents of identified abusers have doubled since implementation of the Navy's get-tough policy. Surprisingly, in many instances drug users have turned themselves in to their squadron leaders to seek help, as opposed to being busted or apprehended.

George Ellis also notes that an excellent and particularly useful tool is the portable urinalysis kit, especially in the operational environment. In addition to identifying users, it acts as an effective deterrent to drug use.

By the end of 1981, the tough, antidrug program had already resulted in convictions for drug use and trafficking for three of *Midway's* crew members, resulting in lengthy confinement at hard labor and dishonorable discharges. *Midway* uses many approaches to combat drug abuse, including on-board counseling, an assistance center and an information campaign. Training programs are broadcast throughout the ship on closed circuit TV, aug-

THE RISKS ARE REAL

Dr. Carlton Turner, senior policy advisor on drug policy for the White House, warns, "The inescapable fact is that unless current pot smoking habits are reversed sharply, marijuana use will have drastic long-term effects on our young people. . . ." This is particularly true since the marijuana smoked today is 5 to 10 times more potent than that used just a few years ago.

Dr. Harold Voth of the Menninger Foundation's School of Psychiatry defines the "pot personality" as including impaired short-term memory, emotional flatness and the inability to deal with problems, resulting in the dropout syndrome — copping out, blowing problems away with pot, dropping out of sports, out of school or even out of the family.

Marijuana researcher Dr. Gabriel Nahas says, "I call the slow cell damage done by regular pot smoking over the years a slow erosion of life." In 1980 marijuana was second only to heroin addiction for admission to federally funded drug treatment facilities, and half had begun smoking pot at 14 or younger.

Speaking on the subject of cocaine before the House Select Committee on Narcotics Abuse and Control, Dr. C. Peterson of the National Institute on Drug Abuse, reported that the illicit use of cocaine produces hazards ranging from adverse psychological response to death, and that heavier and more prolonged use can even produce hallucinations resembling DTs.

The Washington Post, on June 30, noted that according to a study commissioned by New York Governor Hugh L. Carey, drug addiction is now America's number one health hazard, exceeding cancer, respiratory illness and even heart disease in deaths, disabilities and total cost to the nation.

Drug paraphernalia.

mented by instruction at the divisional level. *Midway's* policy is to the point – shape up or ship out.

In the Norfolk area, intensive antidrug efforts have brought about a dramatic drop in the number of drug seizures and narcotics cases, indicating that there are fewer drugs available and fewer dealers operating at Navy facilities in that area. In the San Diego area, efforts by local military commanders and civilian community leaders have resulted in legislation restricting or prohibiting the sale of drug paraphernalia in several surrounding towns and communities. The State of California is also considering measures that would provide statewide control.

The Chief of Naval Operations emphasizes that pride and professionalism are the best and most cost-effective prevention efforts the Navy could devise to combat drug abuse. Promoting military excellence, proper grooming, pride, loyalty and dedication to service with honor has started a trend towards more aggressive leadership. As may be expected, leadership will play an essential role in reversing the acceptance of drug abuse. Those who are involved in implementing the program feel that the majority of drug users are looking for an excuse not to use drugs. This program gives them that opportunity.

Officers, especially commanding officers, and senior enlisted personnel are enthusiastic about the prospects for a drug-free service. The staff at the Navy's Drug Rehabilitation Center feel that if the pressure can be kept on at all levels, the concerted team effort will virtually eliminate drugs and their adverse effects on operational readiness and performance. Ellis speaks about several new tools planned or already in operation, such as placing highly trained, collateral duty personnel aboard each ship with the expertise to provide on-board drug abuse screening; substance abuse education; motivational training; the Navy Alcohol Safety Action Program/Navy Drug Safety Action Program (NASAP/NDSAP); and outpatient counseling.

NDSAP provides 36 hours of off-duty remedial drug abuse education. In FY 81, personnel attended NDSAP at three sites and, during FY 82, 26 sites have become functional. The NDSAP program is aimed at turning around drug abuse by instilling more positive attitudes and goals.

The concept of an outpatient counselor, called a substance abuse coordinator, could save the Navy millions of dollars in drug abuse screening costs alone, without even examining the cost benefits derived from earlier intervention and increased retention. Motivational training is another concept in which trainer/facilitators will be provided to the fleet to pump up marginal performers. Two master-at-arms mobile training teams are planned, one on each coast, to provide technical assistance in implementing effective drug enforcement programs afloat. Drug abuse specialists will be assigned to Human Resource Management Centers and Detachments as a means of combating any apathy toward drug use that may exist among junior personnel.

There are special drug and alcohol awareness education courses for civilian and military personnel and dependents. Substance abuse awareness training is being provided in all officer programs, including flight training. Subjects covered include Navy policy regarding substance abuse; channels through which policy is enforced; reasons for Navy policy and the consequences of noncompliance; and attitudes, values and awareness as leadership assets.

New regulations prohibiting the use, possession, sale or transfer of drug abuse paraphernalia are being given the force of general orders, on which discipline or punitive action may be based. Violation of these regulations may

Pot-sniffing German shepherd and trainer/handler.

now be used as evidence in nonjudicial proceedings or possibly in trials by court-martial.

A new limited duty officer/warrant officer law enforcement specialist program is being established to provide additional expertise to effectively administer all law enforcement aspects of an aggressive drug enforcement program.

Plans are under way to expand the data base for the Navy Alcohol and Drug Information System to include more information on law enforcement aspects and a more detailed statistical profile of the drug-abusing population. This will be an aid not only in analyzing the extent of the problem but also in making any needed adjustments to the drug enforcement program.

Photo by Joseph Matera, courtesy The Times Magazine, Navy Times

Success is difficult to measure, but there are indications that the Navy's program is on the right track. In April, the Navy was honored for its "significant contribution to bettering the understanding of drug problems and inspiring the work of those trying to reclaim victims whose lives might be ruined by untreated abuse." In a letter to the Secretary of the Navy John Lehman, the president of Today, Inc. (a private, nonprofit organization which provides therapeutic services for youths and young adults involved in drug or alcohol abuse), wrote: "Your forthright action in identifying pushers and punishing offenders will eliminate those who risk the lives of their comrades when they are unable to perform critical duties because they are under the influence of drugs."

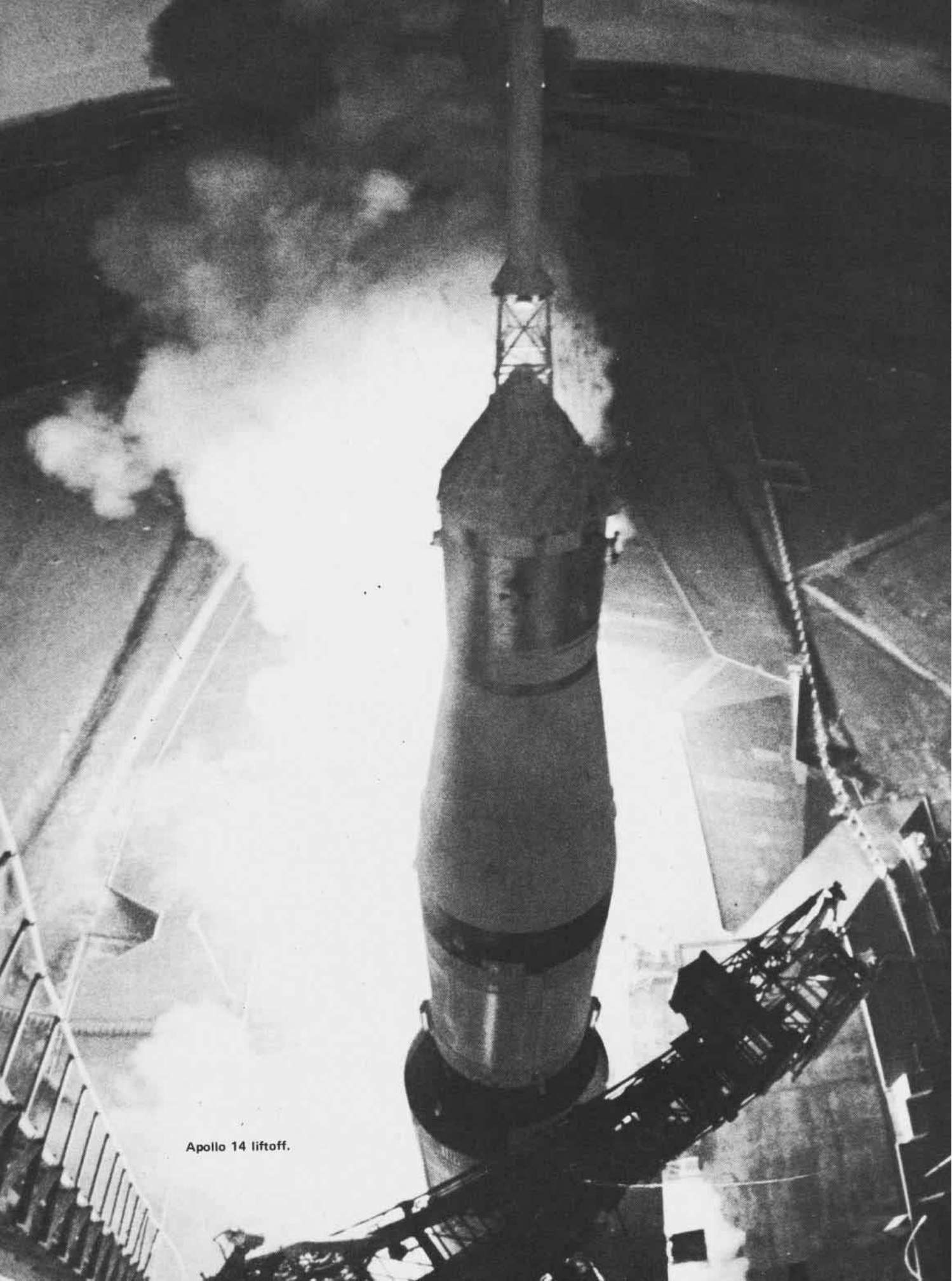
Congressman Joseph Adabbo, Chairman of the House Subcommittee on Defense Appropriations, has characterized the Navy's program as one which not only provides help for those on drugs who want to get off, but also assists unit commanders who want drug users and drug pushers busted as they ought to be. He described the Navy's program as one that "should be used as a role model by all the services."

The bottom line is that a drug-free Navy is essential to combat readiness and the defense of the United States. The Navy cannot permit those who choose to use drugs to jeopardize this commitment or endanger the lives of their shipmates and squadron mates. ■

New Law Expands Military Support in Drug Enforcement

An article in the Department of Justice publication *Drug Enforcement,* Summer 1982, covers a new law which lifts the ban on military participation in antidrug smuggling operations. On December 1, 1981, President Reagan signed into law the Department of Defense Authorization Act of 1982 covering the supplying of military information, equipment and facilities, as well as training and advice, to civilian law enforcement officials for law enforcement purposes.

Section 374 expands military support capabilities in connection with tracking and communicating the movement of air and sea traffic. This is of particular significance in narcotics enforcement. Last year, Navy E-2C *Hawkeyes* were used to locate smugglers in Operation *Thunderbolt,* which resulted in 97 drug-related arrests, 45 seized aircraft and large amounts of confiscated drugs. The E-2Cs were a key element in almost half of the operation's drug interdictions. (See *NANews,* June 1982, p. 42.)



Apollo 14 liftoff.

The Navy's Role in Space

By Roy A. Grossnick, Assistant Historian

The Space Transportation System is planned to become operational this month with the orbiter *Columbia's* fifth flight. The Space Shuttle's fourth trip into space in July was its last test flight and, with this month's first operational trip, the shuttle begins its life as a space workhorse.

Challenger, the newest orbiter, will fly the sixth flight of the Space Transportation System, scheduled to launch in January 1983. Eventually, *Columbia* and *Challenger* will be joined by orbiters *Discovery* and *Atlantis*, forming the first fleet of manned aerospace vehicles.

The future of the Space Shuttle program has a solid foundation built on the accomplishments of its past, to which Naval Aviation contributed many of its best pilots. The following list gives an interesting look at Naval Aviation's participation in the space program. As of March 1982, 50 astronauts out of a total of 129 had been trained in the Navy.

Navy

Bean, Alan L.
Brandenstein, Daniel C.
Bull, John S.
Carpenter, M. Scott
Cernan, Eugene A.
Chaffee, Rodger B.
Coats, Michael L.
Conrad, Charles Jr.
Creighton, John O.
Crippen, Robert L.
Evans, Ronald E.
Gardner, Dale E.
Gibson, Robert L.
Gordon, Richard F.
Griggs, S. David
Hauck, Frederick H.
Kerwin, Joseph P.
Leestma, David C.
Lind, Don L.
Lovell, James A.
Mattingly, Thomas K.
McBridge, Jon A.
McCandless, Bruce, II
Mitchell, Edgar D.
Richards, Richard N.
Schirra, Walter M.
See, Elliott J., Jr.
Shepard, Alan E.
Smith, Michael J.
Truly, Richard H.
van Hoften, James D.
Walker, David M.
Weitz, Paul J.
Williams, Donald E.
Young, John W.

Marine Corps

Bolden, Charles F.
Buchli, James F.
Carr, Gerald P.
Glenn, John H.
Hilmers, David C.
Lousma, Jack R.
O'Connor, Bryan D.
Overmyer, Robert F.
Springer, Robert C.
Thagard, Norman E.
Williams, Clifton C., Jr.

Civilians-Former Navy/Marine Corps

Armstrong, Neil A. (USN)
Brand, Vance D. (USMC)
Cunningham, Walter R. (USMC)
Haise, Fred W., Jr. (USMC)

The importance of the roles Navy and Marine Corps pilots have played as astronauts is evident in the number of missions they have flown in space. A total of 48 American astronauts have been propelled into the vastness of space and, up to the fourth Space Shuttle mission in July of this year, almost 50 percent have been Navy-trained pilots. They have made their contribution to the program and have left Naval Aviation's calling card on the doorstep of space. Of 48 astronauts to fly in space, 23 have been Navy or Marine Corps.

Listed below are those who have made trips into space and the number of flights made by each:

One Flight

Vance D. Brand
M. Scott Carpenter
Gerald P. Carr
Robert L. Crippen
Walter Cunningham
Ronald E. Evans
John H. Glenn
Fred W. Haise, Jr.
Joseph P. Kerwin
Edgar D. Mitchell
Richard H. Truly
Paul J. Weitz

Two Flights

Neil A. Armstrong
Alan L. Bean
Richard F. Gordon, Jr.
Jack R. Lousma
Thomas K. Mattingly II
Alan B. Shepard, Jr.

Three Flights

Eugene A. Cernan
Walter M. Schirra

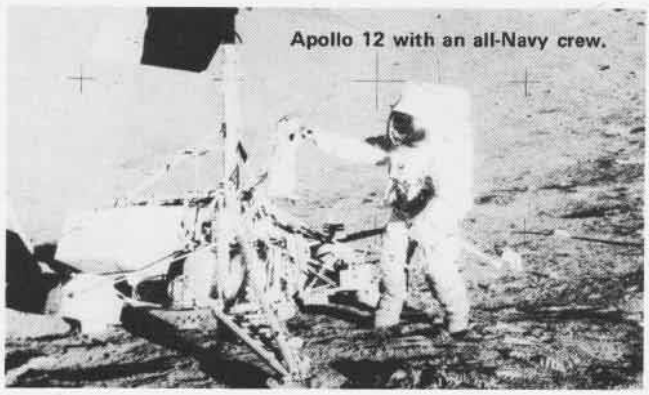
Four Flights

Charles Conrad, Jr.
James A. Lovell, Jr.

Five Flights

John W. Young
(most missions in space)

The November flight of the Space Shuttle *Columbia* is the 36th manned U.S. space mission. Of the 35 previous missions, 30 have had Navy or Marine Corps Aviators aboard, as shown on the following pages. They have figured prominently in the story of U.S. space flight.



Apollo 12 with an all-Navy crew.

U.S. Navy interest and participation in space go way back. One could stretch a point and say that the Navy has always had an interest in space since it has always looked to the sky to guide the passage of its ships on the seas. Over 150 years ago, the Navy established the Depot of Charts and Instruments which later was renamed the U.S. Naval Observatory and Hydrographic Office. Its duties included preparing celestial charts and data on space — the beginning, albeit tenuous, of the Navy's role in space.

In the post-WW II period, Navy's interest in the guided missile program led to the establishment of the Pacific Missile Test Center, Point Mugu, in 1946 and then involvement in the defense missile program.

Perhaps the most important stimulus to an active role by the Navy in space came from the Connolly Committee (CNO's ad hoc committee on astronautics). CNO approval of the committee's report in 1959 recommended that the Navy use space to accomplish its objectives; that it participate fully in space technology; and that astronautics have high priority in overall research and development. Thus was the Navy's dedication to an active role in the Space Age reinforced.

US Space Flights with Navy and

Order of U.S. Manned Space Flights	Date	Designation	Crew	Duration
1	5 May 1961	Freedom 7 (First U.S. flight into space.)	Alan B. Shepard, Jr.	15 min
3	20 Feb 1962	Friendship 7 (First to orbit the earth.)	John H. Glenn, Jr.	4 hrs 55 min
4	24 May 1962	Aurora 7	M. Scott Carpenter	4 hrs 56 min
5	3 Oct 1962	Sigma 7	Walter M. Schirra, Jr.	9 hrs 13 min
7	23 Mar 1965	Gemini III	(Virgil I. Grissom, AF) John W. Young	4 hrs 53 min
9	21-29 Aug 1965	Gemini V	(I. Gordon Cooper, AF) Charles Conrad, Jr.	190 hrs 55 min
10	4-18 Dec 1965	Gemini VII (First flight to the moon.)	(Frank Borman, AF) James A. Lovell, Jr.	330 hrs 35 min
11	15-16 Dec 1965	Gemini VI	Walter M. Schirra, Jr. (Thomas P. Stafford, AF)	25 hrs 51 min
12	16 Mar 1966	Gemini VIII (First walk on the moon.)	Neil A. Armstrong* (David R. Scott, AF)	10 hrs 41 min
13	3-6 Jun 1966	Gemini IX	(Thomas P. Stafford, AF) Eugene A. Cernan	72 hrs 21 min
14	18-21 Jul 1966	Gemini X	John W. Young (Michael Collins, AF)	70 hrs 47 min
15	12-15 Sep 1966	Gemini XI	Charles Conrad, Jr. Richard F. Gordon, Jr.	71 hrs 17 min
16	11-15 Nov 1966	Gemini XII	James A. Lovell, Jr. (Edwin E. Aldrin, Jr., AF)	94 hrs 35 min
17	11-22 Oct 1968	Apollo 7	Walter M. Schirra, Jr. (Donn F. Eisele, AF) Walter Cunningham*	260 hrs 9 min
18	21-27 Dec 1968	Apollo 8	(Frank Borman, AF) James A. Lovell, Jr. (William A. Anders, AF)	147 hrs 0 min
20	18-26 May 1969	Apollo 10	(Thomas P. Stafford, AF) John W. Young Eugene A. Cernan	192 hrs 3 min
21	16-24 Jul 1969	Apollo 11	Neil A. Armstrong* (Michael Collins, AF) (Edwin E. Aldrin, Jr., AF)	195 hrs 18 min

Apollo 14's splashdown and recovery by USS New Orleans (LPH-11) and HS-6.

Marine Corps Pilots/Astronauts Aboard

Order of U.S. Manned Space Flights	Date	Designation	Crew	Duration
22	14-24 Nov 1969	Apollo 12	Charles Conrad, Jr. Richard F. Gordon Alan L. Bean	244 hrs 36 min
23	11-17 Apr 1970	Apollo 13	James A. Lovell, Jr. (John L. Swigert, Jr., civilian) Fred W. Haise, Jr.*	142 hrs 54 min
24	31 Jan - 9 Feb 1971	Apollo 14	Alan B. Shepard, Jr. (Stuart A. Roosa, AF) Edgar D. Mitchell	216 hrs 1 min
26	16-27 Apr 1972	Apollo 16	John W. Young Thomas K. Mattingly II (Charles M. Duke, Jr., AF)	265 hrs 51 min
27	7-19 Dec 1972	Apollo 17	Eugene A. Cernan Ronald E. Evans (Harrison H. Schmitt, civilian)	301 hrs 51 min
28	25 May - 22 Jun 1973	Skylab 2 (First U.S. manned orbiting space station, all-Navy crew.)	Charles Conrad, Jr. Joseph P. Kerwin, MD Paul J. Weitz	672 hrs 49 min (28 days)
29	28 Jul - 25 Sep 1973	Skylab 3	Alan L. Bean (Dr. Owen K. Garriott, civilian) Jack R. Lousma	1,427 hrs 9 min (59 days)
30	16 Nov 1973-8 Feb 1974	Skylab 4	Gerald P. Carr (Edward G. Gibson, civilian doctor) (William R. Pogue, AF)	2,017 hrs 15 min (84 days)
31	15-24 Jul 1975	Apollo-Soyuz Test Project	(Thomas P. Stafford, AF) Vance D. Brand* (Donald K. Slayton, AF)	217 hrs 28 min (9 days)
32	12-14 Apr 1981	Space Shuttle Columbia (STS) (First mission into space, all-Navy crew.)	John W. Young** Robert L. Crippen	2 days
33	12-14 Nov 1981	Space Shuttle Columbia (STS)	Richard H. Truly (Joe H. Engle, AF)	2 days
34	22-30 Mar 1982	Space Shuttle Columbia (STS)	Jack R. Lousma (C. Gordon Fullerton, AF)	8 days
35	27 Jun-4 Jul 1982	Space Shuttle Columbia (STS)	Thomas K. Mattingly, II (Henry W. Hartsfield, civilian)	7 days

*Aviators, retired or separated from Navy/Marine Corps, assigned to the crew as civilians on space flights.
**Young had retired from Navy before space flight #32 and was a civilian. (Flights 2, 6, 8, 19 and 25 were entirely non-Navy/Marine Corps)

The current joint custodians of the famous Crusader sword, passed down from recently disestablished VFP-63, are Cdr. L. E. Johnson, C.O. of VFP-306, (l) and Cdr. L. Beck, C.O. of VFP-206, both located at NAF Washington, D.C., Andrews AFB.

VFP-63 Passes the Sword

By Lieutenant Bob Frantz, USNR, and Lieutenant John DuGene, USN

The disestablishment of Light Photographic Squadron Sixty-Three (VFP-63) at NAS Miramar on June 30 (see NANews, *July 1982) marked the end of the active duty career of the venerable F-8* Crusader. *However, the old fighter continues its service to the fleet in the Naval Air Reserve with VFP-206 and 306 at Naval Air Facility, Washington, D.C.*

In spite of the F-8's recent departure from active fleet service, the *Crusader* tradition — in many more ways than one — endures.

The *Crusader's* introduction to the Navy began literally with a "bang" when it broke the sound barrier on its first test flight more than 27 years ago. It was destined to be the fastest aircraft the Navy would have at the time and one of its hottest fighters. Many Naval Aviators would fly it and love it, particularly those in the photoreconnaissance community.

After providing dedicated tactical aerial reconnaissance for 33 years, VFP-63 passed the community's *Crusader* sword to VFP-206 and VFP-306 based at NAF Washington, D.C.

The sword, a 13th century original, *actually used by a Crusader,* was purchased in March 1967 by then Lieutenant Commander Bruce Moorehouse of VF-124. Moorehouse originated the idea of the sword when he was leaving VF-124, the F-8 training squadron, in 1967. At that time, the squadron had a trophy which some thought "ugly . . . half gorilla and half something else stolen from some bar." Moorehouse didn't think it was appropriate, so he took it upon himself to find something more fitting. He contacted a New York antique dealer with access to swords from England. This particular sword was tied in with the motto "Draw Me Not Without Reason, Sheathe Me Not Without Honor." As soon as he saw the sword and its motto, he knew it would be a fitting symbol for the F-8 community.

The sword was mounted on a plaque which included the names of all commanding officers of VF-124 when it flew F-8s. In 1972, when VF-124 assumed the responsibility of a fleet replacement squadron training F-8 pilots, the sword was passed to VFP-63. Last June during the VFP-63 disestablishment ceremony, it was officially transferred to the joint custody of VFP-206 and 306.

Commander David M. Beam, the last commanding officer of VFP-63, who is a 42-year-old veteran aviator with some 3,800 hours, 2,340 of which were in the RF-8 *Crusader,* calls himself "a dyed-in-the-wool recce pilot." At the ceremony he said, "It seems like I've been here forever. I came as a nugget in 1966 and now I'm here closing the door."

He regarded the disestablishment of VFP-63 as "the end of an era — the era of the dedicated tactical aerial photographic reconnaissance squadron, which more than likely will never be repeated."

In tracing the history of the command, Cdr. Beam explained, "Since its inception in January 1949, the squadron proved its worth in Korea and Vietnam. VFP-63 was the only Navy combat organization with at least one unit deployed in the theater from 1964 through the termination of Vietnam hostilities.

"The command utilized 14 different aircraft as photographic platforms. We changed aircraft often, but the backbone has been the F8U-1P or, as it is known today, the RF-8G *Crusader.* Built by Chance Vought, it came here in September 1957 and served the Navy well. Any pilot who has flown it will attest that it was an exciting and dynamic machine.

"The RF-8, as old as some of the men who fly it, is a modified version of the fighter model. It is armed with four cameras instead of missiles. The airplane has a great tradition. Unbelievable, when you consider that it is still flying operationally, and that its design began in January 1953. The F-8 was the first carrier fighter capable of exceeding 1,000 mph and the first to fly coast-to-coast at faster than the speed of sound.

"It was the photo *Crusader* flown by Navy and Marine pilots in 1962 that did much of the detection of Soviet missiles in Cuba. The fighter version had an outstanding record in Vietnam and became known as the 'MiG Master' early in the war. It was one of the most effective American fighters. The *Crusader* was credited with shooting down 19 MiGs.

"Today, 27 years after its initial flight, the airplane can still hold its own against other fighters in air combat maneuvering (ACM). We have been providing fleet adversary services for the past year to units here at Miramar. Many F-14 and F-4 crews will attest to the F-8's ACM capability.

"Flying the F-8 is like no other modern aircraft. It was designed and flies like an airplane, not a machine. You strap on an F-8!

"The challenging aspect of flying the F-8 is operating aboard ship."

Commander Grover "Skip" Giles, VFP-63's X.O., shares his C.O.'s sentiments. "The F-8 is a challenge to fly. Today's aircraft have more complicated weapon systems, but are easier to handle. The F-8 is less forgiving. If you

don't fly it right in air combat, it's easy to spin."

Giles, a qualified fleet adversary pilot with 1,000 hours in the F-14 and 1,400 in the F-8, including 150 F-8 combat missions, explains, "We've used the RF-8 as a MiG-23 *Flogger* simulator. Many fighter crews are astonished that such an old airplane can sustain as many Gs, and accelerate and turn as well as the *Crusader.*"

Another fighter pilot with more than 1,000 hours in both the F-8 and F-14 is ComFitAEWPac's Commander Paul Ringwood. Ringwood calls the F-8 "a pilot's airplane. The response of the controls is better than many other jet aircraft. The F-8 is to a sports car what the F-14 is to a Cadillac in ease of handling and responsiveness. Even though the F-14 turns tighter and at a slower rate and sustains more Gs, the superior roll rate in the F-8 gives it a better feel."

The last detachment to be deployed, consisting of four pilots, one photo intelligence officer and three aircraft (typical detachment load), returned with CVW-14 aboard USS *Coral Sea* on March 23, 1982.

Included with Det Two was the last *Crusader* nugget, Lieutenant John DuGene. The 25-year-old jet pilot, who will soon transition to the F-14 *Tomcat,* has much respect for the F-8. "I'm part of the history of a great airplane. The RF-8 is a fun plane to fly. It's agile and responsive. The *Crusader* was designed to dogfight, and since it is a single seat aircraft, you're on your own. It doesn't have the avionics that newer fighters have, such as an inertial navigation system that lets you know where you are at all times, so more of mission success depends on your own skill. It creates a sense of responsibility and confidence.

"I suppose I don't fully realize what a unique experience it has been, how exciting and interesting. When I received orders to VFP-63, I didn't know what an F-8 was. Now I realize I have a great opportunity to fly two good airplanes — one old and one new — in the span of one sea tour." During the *Coral Sea* cruise, DuGene flew an airplane older than he is. Side number 115, BuNo 144607, the oldest supersonic aircraft in the Navy on active duty, was introduced early in 1956 several months before DuGene's birthday.

Also with orders to the F-14 is the Det's Lieutenant Tom Tinsley. Tinsley, a *Crusader* double centurion, became an air wing-qualified LSO by the end of the cruise. Tinsley describes the F-8 as "a great plane in nice weather, but it doesn't have the advanced instrumentation of today's aircraft to make all-weather flying easy.

"Landing the *Crusader* is a challenge because its tiny wheel base and long tail make it susceptible to crosswinds. During the landing, you're converting a 160-knot flying machine to a 150-knot, 22,000-pound dragster. You have to remain alert and continue to concentrate throughout the entire rollout and landing.

"Most Naval Aviators probably consider a carrier landing more demanding than a field landing, but I prefer the carrier landing. There is less time for things to go wrong. Two or three seconds from touchdown on the ship and you're stopped. Even launches from the boat are easier. With a cat shot, I know that two seconds after it's fired the plane is going off the ship. Once the cat is fired, there is no time to monitor gauges and make decisions."

Most junior pilots leaving VFP-63 for F-14 duty will form the nucleus of the tactical air reconnaissance pod system (TARPS) program. With the phaseout of RF-8, the tactical aerial reconnaissance mission will be performed by an F-14 carrying a 17-foot-long, 1,600-pound pod with two cameras and an infrared line scanner.

The first pilot to leave VFP-63 for the TARPS program was Lieutenant Mike Cramer, now of VF-211.

Cramer with 800 hours in the RF-8 and 450 in the F-14 says, "I loved the F-8. It was maneuverable, simple and, considering that you're alone, peaceful. It had plenty of power. In day VFR, it couldn't be more fun — like an overpowered A-4. However, at night or in bad weather when things got tough a RIO, two engines and two radios make the F-14 appreciated.

"The human engineering in the *Tomcat* make it a pleasure. It has a bigger cockpit, better environmental control, better visibility, two radios and an auto pilot.

"The layout of the instruments provides a better pilot scan pattern and the vertical display indicator and heads-up display on the wind screen enable you to obtain vital data more quickly.

"The inertial navigation system (INS) gives the aircrew positioning, independent of outside visual or electronic aids. On a photo mission the INS will provide you course and distance information for seven targets at a time.

"Unlike the RF-8, which must be escorted, the F-14 can defend itself. The TARPS' mission is flown while the *Tomcat* is armed with missiles and a 20-mm gun. And, with the RIO, two sets of eyes to track the air-to-air and air-to-surface threat are invaluable.

"The pictures you bring back with the pod are sharper because of the higher resolution on the cameras."

It is interesting to note that in the April 1981 Photo Derby, the first one which included the F-14, Lieutenants Mike Cramer and Gil Michael, RIO, flying a VF-124 aircraft, were recognized as the top individual aircrew. The multiservice, multinational competition included RF-8s, RF-4s and RF-5s.

It is natural that the people who have spent their careers flying reconnaissance airplanes and photo missions are reluctant to see VFP-63 and its RF-8s become another chapter in the Naval Aviation history book.

Skip Giles and Dave Beam flew the last two VFP-63 RF-8s to Arizona for desert storage on May 28, 1982. And the last contingency detachment stood down only a month earlier.

The time of the RF-8 may have come and passed, but it may only be a respite for VFP-63. Rear Admiral George M. Furlong, Jr., ComFitAEWWingPac, in remarks made during VFP-63's disestablishment ceremony, alluded to an "interim period before another dedicated aircraft arrives on the scene late in this decade." Perhaps a dedicated airplane will bring back the memory of men who, because of the demands of their mission, sustained a loss rate in combat three times the fleet average, the men known as unarmed and unafraid — "The Eyes of the Fleet." ■

New Navy Master Chief is from Avionics

New Master Chief of the Navy Billy Sanders

Master Chief Avionics Technician Billy Sanders had hardly settled into his job at the Naval Education and Training Program Development Center at Saufley Field, Pensacola, when he learned of his selection as Master Chief Petty Officer of the Navy. Sanders will report to his new position in Washington, D.C., on October 1, as the Navy's top enlisted man.

Master Chief Sanders sees his first priority in the job as that of consolidating the work of his predecessors, with emphasis on the Master Chief of the Command program.

A veteran of 24 years in the Navy, Sanders sees the good in change but insists it must be part of a plan for the good of the Navy. "I haven't always agreed with the changes we've experienced in the Navy," he says. "Most have been successful while others were ineffective. Regardless of the outcome, they all had one goal — to make us a better Navy."

Master Chief Sanders will relieve Master Chief Thomas Crow, who will retire November 1 after 30 years of service.

PROFESSIONAL READING

By Lieutenant Commander Peter Mersky, USNR

Gunston, Bill. *An Illustrated Guide to the Modern Soviet Air Force.* Salamander Books Ltd., Salamander House, 27 Old Gloucester St., London, UK. 1982. Illustrated. 159 pp. $8.00.

This latest effort in the series of Salamander handbooks begins with a description of the Soviet aviation system, discussing Soviet aircraft designations and various new designs, such as the RAM-L (MiG-29), the F/A-18 look-a-like, and the RAM-P, a new variable geometry-wing bomber. A short useful appendix details various air-to-air and air-to-surface missiles carried by Russian aircraft.

Forty-one planes and their derivations are covered, although there are no helicopters, which is somewhat strange as vertical flight has commanded Soviet attention since the beginning of powered flight and forms a large part of the Soviet flight inventory. Many of the photographs and profiles of each aircraft in this book are in color and well done, naturally, since they come from the very active Pilot Press.

Development of each aircraft is given at least two pages of text and specifications, containing a wealth of detail. The newest airplane covered is the Su-24 *Fencer,* while the oldest is the much-used An-2 *Colt* biplane transport. All in all, a good, fairly inexpensive compilation of Soviet aircraft and their aviation organization.

Sweetman, Bill. *The Hamlyn Concise Guide to Soviet Military Aircraft.* The Hamlyn Publishing Group Ltd., Astronaut House, Hounslow Road, D. Feltham, Middlesex, UK. Illustrated. 207 pp.

This paperback volume covers approximately 50 aircraft including most of the major Soviet helicopters in service. The introduction deals with the organization and development of the Soviet air forces, and also calls attention to new designs such as the RAM-J and L. There is an interesting section as well which briefly describes the various air forces of other countries that use Soviet aircraft, such as India and Peru, and Warsaw Pact countries. A particularly interesting section illustrates the various air force insignia in full color and includes some of the African nations.

Photographic coverage is excellent; the two-page color spread of a Syrian MiG-17 on a low-level bombing run is superb. Color shots of Chinese MiG-19s and an Egyptian MiG-21 midway through a barrel roll are also interesting. The color profiles are from the ubiquitous Pilot Press.

TOUCH and GO

The Ace Remembers

It was a visit to an old friend. Commander Randy Cunningham, the first American ace of the Vietnam War, was at MCAS Yuma and the old friend was the F-4 *Phantom* he had flown when he shot down the first MiG-21 of that conflict. Looking over the aircraft, now flown by VMFA-122, Cunningham recalled those days.

"There was no fear," he says, "not at the time of actual engagement. I never thought about getting hit and I never thought of losing. You were just too busy sorting things out for fear to enter in."

It was on a later mission south of Hanoi that Cdr. Cunningham and his X.O. were engaged in aerial combat with a flight of MiG aircraft. According to the official account, he destroyed one MiG-17 as the enemy plane was closing in on his X.O., and before breaking off the fight was credited with two other Soviet-made fighters. Cunningham's last kill came during a four-minute engagement with North Vietnam's leading ace, Col. Toon, who had 13 American kills to his credit. Returning to the ship, Cunningham's *Phantom* was hit by a missile. Rather than eject and risk being captured, he elected to stretch his flight and succeeded in passing the beach before losing the aircraft. Under fire from the enemy on the mainland, he and his radar intercept officer were picked up by American SAR pilots.

Cdr. Cunningham was serving as operations officer with VF-154 at NAS Miramar during the period of his visit to MCAS Yuma. He has since been transferred to duty in the Philippines. **Sgt. Cathie Combs**

An Artist With Vision Visits Kennedy

"Lord, help me to retain the vision of a child." That is the philosophy of combat artist Frank E. Zuccarelli, who at age 61 recently visited the carrier *John F. Kennedy* to do preliminary sketches for a series of paintings.

"Children are so impressed with life," says Zuccarelli, who claims to have been born with a pencil and paper in hand. "They see the essentials. If a child draws a house, he always makes sure the house has windows and a front door. If it's cold outside, the house has a chimney with smoke bellowing from its stack." Zuccarelli explains that a child's attention to detail depicts much of his own style in selecting subjects and scenarios for his paintings.

An artist with formal schooling, he is no stranger to combat and did his first "combat art" as a Marine on the island of Bougainville during WW II. "It was almost Christmas," he recalls. "We had just been relieved for a while off the front line and there in a foxhole my friend, who was also an artist, and I drew Christmas cards for the men in our squad."

Discussing his work aboard *Kennedy* documenting carrier qualifications by the squadrons, Zuccarelli says, "I'm so impressed with the size and mass. The flight deck operations are breathtaking."

Zuccarelli had previously recorded the 1975 Apollo-Soyuz space mission as part of the recovery team, an opportunity he describes as "thrilling."

"I'm doing something right now that very few individuals ...ever receive an opportunity to see," he adds.

Zuccarelli's finished work will become part of the permanent Navy art collection. **JOSN Sharry Han**

PHAN H. E. Willis

Zuccarelli, sketch pad in hand, gets a close look at an F/A-18 Hornet launch.

PHAN H. E. Willis

Combat artist Frank Zuccarelli at work aboard Kennedy.

Helo Crash Training has Positive Impact

One-thousand, one: main rotors hit the ground and fly off the rotor head at a speed of .85 times the speed of sound, just missing the cockpit.

One-thousand, five: main systems shut down, seat straps disengaged, pilots' communication cord disconnected.

One-thousand, eight: seat moved back, door pushed open and pilots safely jump to the ground.

The seconds counted off represent the passage of time in the crash of a helicopter, and the sequence of steps in getting safely out of the aircraft. For the pilots of Marine Attack Helicopter Squadron 369 at MCAS Futenma, Japan, it was a realistic simulation, testing their ability to locate and operate the helo controls while blindfolded, and to get out of the downed aircraft quickly and safely.

"The most critical time after a crash is escaping from the helicopter without getting hit by the rotor," says Lieutenant Colonel George Ross, HMA-369's commanding officer. *Huey* pilot Captain David Westmeyer agrees, pointing out that the main rotor blade on that aircraft can dip to within five feet of the ground.

Taking into consideration the danger from the blades, quick exit from the helo is stressed because of the possibility of fire or, in the case of a water crash, the chance that the aircraft may sink within seconds.

"It takes about 10 seconds for one of these birds to sink," says Westmeyer about the *Huey*. "During that time, life rafts must be rolled out and the doors opened. However, it's preferable to allow the aircraft to sink before exiting so the rotor will have been stopped by hitting the water, not stopped by someone's head."

So far, no one in HMA-369 has had to use the crash-exit procedure. But it doesn't keep them from going through the drills as though their lives depend upon it. As one pilot put it, "Perfect practice means perfect performance." One day their lives may well depend on the perfection acquired in practice. **Sgt. David Vergun.**

Gy.Sgt. Dub Allen

1st Lt. Gene Jorgenson goes through blindfold training in a Huey.

West Coast Reserve Air Wing Goes East

Carrier Air Wing 30, a Naval Air Reserve unit home-based at NAS Alameda, deployed three of its nine squadrons this summer in support of a major fleet exercise, *Readex 2-82.*

Developed around two carrier task forces, the annual exercise involved 39 ships and over 200 aircraft of the U.S. and British Navies. The three Air Wing 30 squadrons contributed 18 aircraft and more than 400 men to the Caribbean exercise. Included were Fighter Squadron 302 flying the F-4 *Phantom II,* Carrier Airborne Early Warning Squadron 88 with the E-2B *Hawkeye,* and Air Refueling Squadron 308 flying KA-3B *Skywarriors.*

Operating out of Naval Station, Roosevelt Roads, the aircraft flew two and three missions a day in support of the exercise and VAK-308 provided aerial refueling for the reservists filling the role of attacking forces. Specific phases of the schedule included antiair, antisubmarine, antisurface and combined threat warfare.

According to Commander Pete Couey of VF-302, the goals of providing air support to the fleet and increasing squadron readiness were both a challenge and a realistic exercise of the reserve role.

"We've moved some 4,000 miles and set up operations," he observed. "It's an opportunity to take the squadron out and work away from our home base. If we're ever activated, we'd have to do just that."

Estimates at the wing staff are that the reservists involved in *Readex 2-82,* accomplished in two weeks of active duty for training what would usually take six to eight weeks of normal training periods at their home base. **Al Holston, Jr. and Brenda Starkey.**

S. Yost

A Phantom II from VF-302 is prepared for a mission during Readex 2-82.

PEOPLE·PLANES·PLACES

Blue Angels

This year marks the 36th anniversary of the U.S. Navy Flight Demonstration Squadron, the *Blue Angels*. Since the beginning of the 1982 airshow season in March, the *Blues* have flown over 30 airshow demonstrations in 14 cities in the U.S. The demonstration schedule keeps the squadron on the road from mid-March to mid-November, spending about 250 days away from their home base, NAS Pensacola. The *Blues* met their largest audience at McGuire AFB, N.J., where over 500,000 spectators packed the flight line. By the end of the 1982 season the 36-year-old demonstration squadron will have been seen by over 162 million people around the world.

The *Blue Angels* met briefly with President Ronald Reagan last spring before he boarded Air Force One en route to Calif. The pilots presented the President with a framed photo montage and an official *Blue Angel* ball cap.

PH2 Paul O'Mara

PH2 A. McCloskey

Bob Hope signals thumbs-up as the Blue Angels' #7 aircraft prepares for takeoff.

Earlier this year Bob Hope arrived at NAF Washington, D.C., to become an honorary member of the *Blue Angels*. The NBC network was there to film the occasion when the *Blues* presented Mr. Hope a memento of the event, a 4x5-foot montage of photos of the team. Hope then went up for a short flight in the *#7 Blue Angel* aircraft, a TA-4J *Skyhawk*, piloted by Lt. Scott Anderson. After they landed, Hope did a television spot from the aircraft for the Navy's Anti-Drug Abuse Program, urging sailors to get their kicks from the challenge and excitement of Navy life rather than drugs. As he exited the aircraft, Hope commented, "It was the smoothest ride I have taken." He also noted, "It's like owning some shares of heaven when you're up there."

Awards

VA-93 based at NAS Atsugi, Japan, received the Ltjg. Bruce Carrier, Jr., Memorial Award earlier this year for aviation maintenance excellence from Commander Naval Air Force, Pacific. This is the second

consecutive year the *Ravens* have won the award and the third time in four years. The award is given to the AirPac A-7 squadron that demonstrates the highest material readiness while exhibiting the greatest commitment to quality maintenance.

Honing the Edge

VF-33 *Tarsiers* completed a successful training exercise in the Puerto Rican operating area this summer. Flying F-14 *Tomcats,* the squadron fired five AIM-7 *Sparrows,* two AIM-54 *Phoenix* missiles and one AIM-9 *Sidewinder. Tarsiers* only recently transitioned to the *Tomcat* from the F-4 *Phantom,* becoming fully operational in January 1982.

VF-33 Tomcat firing an AIM-7 Sparrow.

Change of Command

ComMAtVAQWingPac: Como. William D. Zirbel relieved RAdm. Charles B. Hunter.

ComFAirMed: RAdm. Benjamin T. Hacker relieved RAdm. Wayne D. Bodensteiner.

ComResPatWingsLant: Capt. Earl R. Riffle relieved Capt. Richard K. Chambers.

ComPatWing-11: Capt. John S. Yow relieved Capt. S. Frank Gallo.

HAMS-36: Lt.Col. William C. Wolfe relieved Lt.Col. Robert F. Wemheuer.

HML-167: Lt.Col. Robert J. Dougal relieved Lt.Col. Marvin F. Pixton III.

HS-84: Cdr. Kenneth Goodsell relieved Cdr. Robert Sarnie.

MABS-12: Lt.Col. R. M. Burns relieved Lt.Col. Leroy B. Evans.

MABS-15: Lt.Col. Robert J. Johnson, Jr., relieved Lt.Col. Floyd A. Best.

MAG-15: Col. William D. Bauer relieved Col. Joseph B. Wuertz.

MAG-36: Col. Robert M. Balch relieved Col. Noel J. Keller.

WTS-17: Col. John J. David relieved Maj. Joseph W. Seabrooke, Jr.

NAMTraGru Memphis: Capt. William C. Purcell relieved Capt. Charles W. Bolinger.

NAS Dallas: Capt. Charles G. Andres relieved Capt. Ren E. Stedman.

NAS Kingsville: Capt. Samuel C. Flynn relieved Capt. David A. Dungan.

NATC: Capt. Dwight D. Timm relieved RAdm. John G. Wissler.

NWEF Albuquerque: Capt. Robert C. Kaup relieved Capt. Denis R. Weichman.

RVAW-120: Cdr. Andrew J. Murphy relieved Capt. John R. Condon.

USS *Midway* (CV-41): Capt. Charles R. McGrail relieved Capt. Robert S. Owens.

VA-12: Cdr. James M. Gill relieved Cdr. A. B. Whitten.

VA-113: Cdr. William W. Pickavance, Jr., relieved Cdr. Wilbur C. Trafton.

VA-192: Cdr. Harry T. Rittenour relieved Cdr. John J. Zerr.

VA-203: Cdr. Jack C. Harris relieved Cdr. David A. Dollarhide.

VF-32: Cdr. John F. Manning, Jr., relieved Cdr. William B. Hayden.

VF-51: Cdr. Stephen J. Barkley relieved Cdr. R. F. Johnson.

VF-202: Cdr. L. T. Stevens relieved Cdr. B. L. Frye.

VFP-206: Cdr. Robert L. Beck relieved Cdr. Jay R. Miller.

VMA-214: Lt.Col. John P. Oppenhuizen relieved Lt.Col. Eric E. Hastings.

VMFA-251: Lt.Col. Gary L. Elsten relieved Lt.Col. Norman G. G. Kerr.

VMFA-314: Lt.Col. Pete B. Field relieved Lt.Col. Robert L. Pappas.

VMFA-333: Lt.Col. Clarence B. Cheatham relieved Col. Frank A. Huey.

VMFA-531: Lt.Col. James L. Lucas relieved Lt.Col. Robert R. Renier.

VP-11: Cdr. John R. Ryan relieved Cdr. Robert S. Noce.

VS-22: Cdr. Timothy P. Winters relieved Cdr. Richard C. Asbell.

VS-31: Cdr. John P. Jones relieved Cdr. Richard L. Harlan.

VT-6: Cdr. R. C. Keenan relieved Cdr. R. A. Perron.

VT-86: Lt.Col. Bob B. Rodgers relieved Cdr. Omer M. Brackx.

VX-1: Capt. John A. Mason relieved Capt. F. Howard Stoodley.

Correction: HML-167 has recorded over 60,000 accident free-flight hours instead of incorrect figure noted in the October issue.

Letters

Vietnam Air Combat

The Tailhook Association is compiling a definitive list of aerial victories by U.S. Navy and Marine Corps pilots during the Vietnam War. Help is requested from anyone who may be able to supply any of the following information: date of engagement, pilot/RIO involved, type of aircraft flown, bureau number, squadron, type of aircraft shot down, and weapons used. Call (714) 479-8896 or write:

Robert L. Lawson, Editor
The Hook
5126 Central Avenue
Bonita, CA 92002

Aviation Buff

I am a French aviation buff collecting metal insignias, patches and stickers from units of the U.S. Navy, Marine Corps and Air Force. I hope to finish my collection by adding Navy unit insignias, especially those from VF-1, VF-2, VF-84 and the *Blue Angels*.

I am searching for a correspondent who is also a collector and who would like to exchange U.S. aviation unit patches and insignias for those from French aviation units.

Antoine Givaudon
34, La Gaillarderie
78590 Noisy le Roi
France

P for Patrol

Your August issue devoted to patrol squadrons is excellent. The flavor of patrol is there. On and off I had too many years of it to forget my old birds, the PV-1, PV-2, PBY-5, PB4Y (later P4Y) and P2V.

I've had a dream to go about the world in a PBY, making films of beautiful ports and islands. Does anyone know where a good *Catalina* could be obtained?

Lt.Cdr. Byron Morgan, USNR(Ret.)
5309 Locust Avenue
Bethesda, MD 20814

P2V Neptune

I am gathering information to write a series of articles and possibly develop a novel around the history of the P2V *Neptune* and the historic flight of the *Truculent Turtle*. I would like to request information, photographs and articles from anyone in the aviation community on the flying history of this great aircraft. All materials will be returned, and postage and processing costs paid.

Keith S. Turner, Cdr., USN (Ret.)
Chairman, Aerospace Technology Dept.
Indiana State University
Terre Haute, IN 47809

Bat Book

As the historical officer for VMA(AW)-242, I am putting together a squadron scrapbook. The book will be passed down from our present C.O. to future skippers and will be added to as new historical squadron events occur.

We need photographs, newspaper clippings and other information from the time of the squadron's beginning on July 1, 1943, until its temporary deactivation on November 23, 1945, and from its reactivation on October 1, 1960, until March 1970.

If any former *Bats* have the abovementioned material and are willing to donate it to VMA(AW)-242's scrapbook, it would be greatly appreciated.

Capt. John Murray, USMC
VMA(AW)-242
MCAS El Toro, CA 92709

Mad Jack Cram

Your story in the May 1982 *Naval Aviation News* about Mad Jack Cram was right on target, but the man pinning the Navy Cross on Cram's shirt was my old friend (since 1922) Colonel Lawson S. M. Sanderson and not Major General R. E. Rowell, whom I also knew. How do I know about all this? I was there.

Also, at the bottom of page 27 in the same issue, you labeled the Curtiss planes as DHs. Sorry about that but the DH was a holdover from WW I. It had a Liberty 12 water-cooled engine. I spent several hours in DHs.

I hope you realize that there are several of us old codgers still around.

James T. Stewart
614 N. 69th Avenue
Pensacola, FL 32506

Ed's note: It is not often enough that Naval Aviation News receives eyewitness historical information. Your firsthand account is certainly more accurate than ours. Thank you.

Reunions, Conferences, etc.

VP/VPB-11 reunion, April 8-10, 1983, Kansas City, Mo. For further information, contact Bill Barker, Rt. 1, Box 86, Henderson, TX 75652, (214) 836-2435.

Pass It Along

Naval Aviation News is designed primarily to disseminate useful information and to expand the professional knowledge of all who serve in the Naval Aviation community. Each copy is intended to reach 10 readers, so please pass this one along.

Light Photographic Squadrons 306 and 206 are the only two remaining U.S. Navy squadrons which still fly the veteran RF-8G *Crusader*. Established in 1970 and based at the Naval Air Facility, Washington, D.C., aboard Andrews AFB, VFP-306 and VFP-206 are Naval Air Reserve squadrons. In addition to their routine reserve training, the two squadrons fly missions in support of various government agencies, wherever and whenever aerial photographic coverage is needed.

The RF-8G is a photoreconnaissance version of the F-8 fighter series and served throughout the Vietnam Conflict with distinction. The squadrons received their first RF-8Gs in 1970 and have operated throughout the U.S. and aboard several carriers. The C.O. of the VFP-306 *Photomasters* is Commander L. E. Johnson and the *Hawkeyes* of VFP-206 are skippered by Commander Robert L. Beck.

naval aviation news