naval aviation news

June 1980

naval aviation news

SIXTY-SECOND YEAR OF PUBLICATION

Vice Admiral W. L. McDonald
Deputy Chief of Naval Operations (Air Warfare)
Vice Admiral E. R. Seymour
Commander, Naval Air Systems Command

STAFF

Captain Ted Wilbur	Head, Aviation Periodicals and History
Cdr. Rosario Rausa	Editor
Helen F. Collins	Managing Editor
Charles C. Cooney	Art Director
JOCS Bill Bearden	Associate Editor
Sandy Nye	Assistant Editor
Cdr. Chuck Sammons	Contributing Editor
Harold Andrews	Technical Advisor

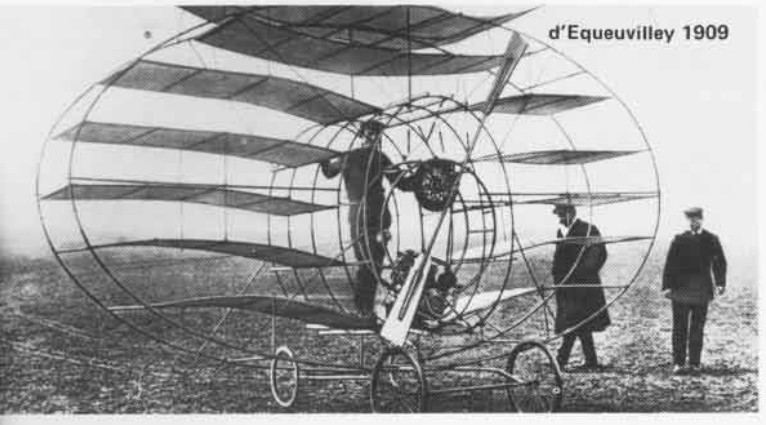
Covers — Front, NANews' art director Charles Cooney arranged composite of a LAMPS MK III helo in flight, Seahawk control panel and parent ship USS McInerney (FFG-8) underway (see feature beginning on page 8). Back, artist John Amendola painted 1935 scene of two Grumman F2F-1s over USS Lexington. Here, F4U Corsair rendezvouses with A-7 Corsair II of VA-147, the first A-7 tactical squadron and also first to fly it in combat over Vietnam.

EDITOR'S CORNER

Navy Captain Al Raithel, now on duty in Washington, D.C., was on the NATO staff in Brussels, Belgium, several years ago when an Italian Air Force friend gave him a calendar featuring the photos shown here. A true aviation buff, Capt. Raithel offered the pictures to *Naval Aviation News* and we are happy to share them with our readers. They reflect the bizarre but fascinating nature of the flying machines from a by-gone era.

Givaudan 1908

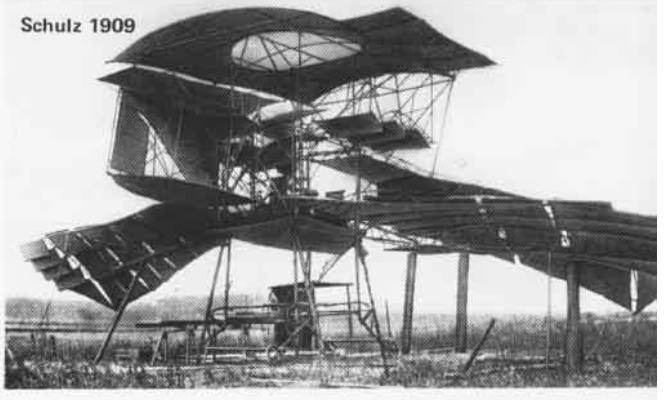
d'Equeuvilley 1909



Stoekel 1909

Witzig-Liore Dutilleul 1909

Schulz 1909



Esnault Pelterie 1912

Fohn Moiant 1912

DID YOU KNOW

New Warship

Carl Vinson (CVN-70), the U.S. Navy's fourth nuclear-powered aircraft carrier, was launched March 15 in Newport News, Va. The ship is named for the Hon. Carl Vinson, former House Armed Services Committee chairman, who was present for the ceremony. He first took his seat in Congress in 1914 and served 25 terms. The 96-year-old Congressman was an early supporter of powering Navy ships with atomic energy. He once stated, "The day is coming when every ship in the Navy will be atomic-powered."

CVN-70, when completed in 1982, will displace 93,000 tons. Her flight deck — 1,092 feet long and 252 feet wide — will cover four and one-half acres, and allow operation of approximately 95 aircraft. The carrier will be powered by two atomic reactors capable of driving the giant ship at speeds in excess of 30 knots. She will carry a crew of 6,000, including the embarked air wing.

The nuclear power plant's initial fuel load will enable the ship to steam for 13 years before refueling. During that time an oil-burning carrier of comparable size would consume 11 million barrels of fuel oil. The storage space gained by not having fuel oil will enable *Carl Vinson* to carry twice as much aviation fuel and 50 percent more ammunition than a conventional carrier.

New Navy Study

The Navy is conducting an anthropometric study of Naval Aviators (science of measuring the human body and its parts or functional capacities). One of the preliminary studies is under way at Patuxent River.

"We are measuring the physical parameters of male and female aircrew members to update the Navy's data base," explained Dr. Carol Bohn, of NATC's Aircrew Systems Branch in the Systems Engineering Test Directorate. "These measurements will be used as criteria for determining size distributions for aircrew survival clothing and safety gear. The data will also be used in designing crew work stations or work spaces. Right now, the Navy is using body size data that is 15 or more years old.

"There are three basic reasons for the study at this time. There has been a change in the measurements of the general civilian population; the Navy's standards have changed for entrance into the aircrew fields since larger, taller people are now being accepted; and women's sizes have never been considered before."

Royal Navy Harpoon Trials

The British Royal Navy submarine HMS *Churchill* completed sea trials in U.S. waters in January with the McDonnell Douglas *Harpoon* antiship missile. The nuclear attack submarine launched six live missiles without warheads, resulting in six direct hits. Included in the tests were more than 100 torpedo tube launches of *Harpoon* capsules which did not contain live missiles. HMS *Churchill* returned to her base in Scotland in February following the trials.

The *Harpoon* is being produced for the U.S. Navy and 12 allied nations, including the United Kingdom, Denmark, Germany, the Netherlands and Turkey. The missile, which can be launched from aircraft and surface ships as well as submarines, has been designed for firing by shipboard launchers, submarine torpedo tubes and aircraft pylons already in the NATO arms inventory.

DID YOU KNOW?

New Bronco

As the military gains new technology, the hardware of yesterday's science fiction often becomes the weapons of today. Although the OV-10A *Bronco* has been in use by the Marine Corps, Navy and Air Force for years, the D version has features reminiscent of the rebel fighter craft of *Star Wars* fame.

Marine Observation Squadron One, MCAS(H) New River, Jacksonville, N.C., is now flying the new OV-10D, with the forward looking infrared (FLIR) and laser rangefinder designator systems. These systems enable the pilot to locate his

target even at night or in bad weather and then pinpoint the exact range and location with a laser beam.

The new *Bronco* is also equipped with the automatic video tracker system, a computer which locks on to a moving target with information provided by FLIR. The TV-like display gives the pilot and observer a computer-assisted sighting capability.

Some of the more conventional improvements include the uprated T 76 turboprop engine, larger fiberglass propellers and increased fuel capacity.

Shown here are VMO-1 maintenance personnel receiving instruction from representatives of Rockwell International, the manufacturer.

Computers for the Future

The amount and quality of weapons systems available to operational commanders have fallen victim to the high cost of procuring and maintaining them. Therefore, a primary goal of all military services is a reduction in costs without decreasing readiness.

One innovative NavAir-sponsored hardware program called the Engine Monitoring System (EMS) has realized this cost-saving while increasing unit readiness. Further expansion and improvement of the program promises fleetwide savings in both maintenance and material dollars.

A 1978 CNO directive instituted Reliability Centered Maintenance, to be

implemented by the Engine Analytical Maintenance Program. This program called for installation of an engine data acquisition and monitoring system on jet engines used fleetwide. The A-7E *Corsair II* was selected as the test bed for the prototype installation.

The job of the monitoring system is to collect data while the engine is operating and alert the pilot to malfunctions. The system records data so that maintenance personnel can review it after the flight and quickly pinpoint malfunctions. This reduces both troubleshooting and cannibalization man-hours.

Two A-7E squadrons, VAs 46 and 72, from NAS Cecil Field, Fla., were equipped with TF41 engines and EMS. Besides a decrease in maintenance man-hours, the squadrons reported increased safety of flight, improved quality and efficiency of engine maintenance, lower engine rejection rate and early detection of serious engine problems. Besides the requirement for an on-board data system, the directive calls for central computer facilities ashore to collect and analyze information on all Navy jet engines. Weak components that show a failure trend and engine accessories which fail frequently can be re-engineered. On-condition maintenance will be implemented by tracking actual operational use of life-limited parts and by monitoring actual engine performance degradation to determine repair requirements. By Ltjg. D. R. Louwsma

A Nozzle and a Pipe

Cpl. Richard K. Ellison, aircraft refueler in Wing Transportation Squadron, Marine Wing Support Group 17, Camp S. D. Butler, Okinawa, has developed a nozzle for defueler tanks used to service aircraft at MCAS Futenma. The nozzle, which is attached to the hose on the defueler, works like a vacuum cleaner. It prevents the seals and gaskets in the 5,000-gallon capacity tankers from being blown by fuel back pressure from the hoses. The new nozzle replaces the one-and-one-half and two-and-one-half-inch hoses, which blew the seals and gaskets on the tanks. Because of the scarcity of repair parts, tanks had to be deadlined, or removed from operation, until the parts were available.

Ellison molded parts from discarded hoses together with some pipe to form the three-part nozzle. His device has been used since early March and has been successful in eliminating the problem.

Aircraft X-ray

An instrument has been developed by Applied Sciences, Inc., of California, which may reduce the amount of time required to check an aircraft by x-ray. The device is a television hookup that picks up and transmits an image created on a phosphorous-coated surface. The x-ray radiation is beamed through an object and a faint picture appears on the phosphorous screen inside the receiver which is positioned either directly beneath or above the object. The picture is then light-amplified 23,000 times and picked up by a closed-circuit TV camera, to be displayed on a receiver set like any normal black and white television picture.

With the device, x-rays can be radiated in a continuous stream instead of in a burst as required for an x-ray plate. This allows real-time examination of all materials, which could save days in a protracted investigation. According to CPO Lloyd N. Evans, a Naval Aviation Engineering Support Unit (NAESU) representative, "A normal x-ray doesn't operate in real-time because, after the shot is taken, the film must be developed before the plate can be viewed. With the new system, you take the shot and look at the results at almost the same time."

The system, which is being tested by NAESU, may be in service in the Navy and Marine Corps in two to three years. The equipment is being evaluated in various locations to see how dependable it is, and if it tests out well NAESU will recommend that it be adopted.

Grampaw Pettibone

The Hurtin' Hercules

Cockpit instrument reconfiguration for a special KC-130 *Hercules* night training mission was completed and a post-maintenance check flight was scheduled. Shortly after takeoff, the check pilot felt a peculiar airframe vibration. A quick check of the cockpit instruments showed nothing amiss but as flight controls were moved, the vibrations increased in frequency and intensity. The pilot yelled to his crewman, "Check the hydraulic pressure!"

Flight control inputs had erratic effects and the vibrations were now violent. The crewman yelled to the pilot, "Get out, get out! This thing is coming apart!" Needing no further encouragement, the pilot made a hasty exit through the back hatch with great vigor. He leaped and landed safely on a platform about six feet from the crashed cockpit section of the *Hercules*. No fire ensued.

Grampaw Pettibone says:

Holy loco motion!

After all my years in this aviatin' business I thought I had seen it all, but this one knocks my socks off!

This mishap occurred when the number one motion leg of the KC-130 simulator (2F-107) malfunctioned during normal operation of the six-degree motion base platform. For reasons still unknown, the hydraulic ram shaft disconnected from the piston actuator and came out of the cylinder assembly. This caused the vibrations when the motion system was activated and forced the cockpit to an extreme canted position where the remaining cylinders could not support the 22,000-pound device. The left rear portion of the simulator collapsed with a resounding thud; its steel platform penetrated four inches into the concrete deck, illustrating a most vivid example of an age-old aviation adage, "When the pistons start poppin', that's when the flight's stoppin'" – simulated or otherwise!

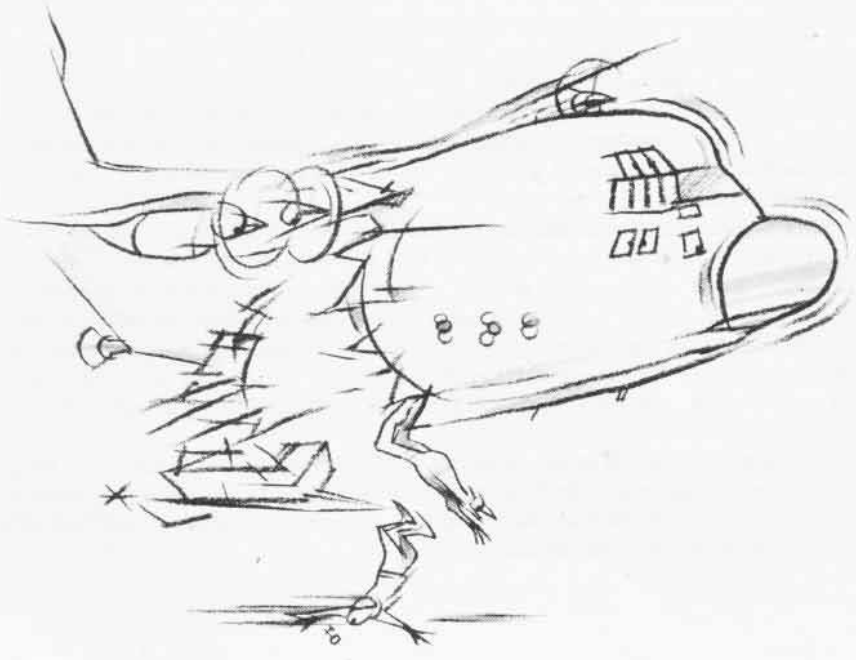
The complete motion base assembly was extensively damaged. Surprisingly, the simulator hardware and visual system functioned normally, once righted, and has since been returned to service sans motion system.

It may appear that we have finally arrived in this simulatin' business, gang. Seems we are able to provide that "stimulated" fear-of-death realism that was so noticeably missing in ye old blue box rides of yesteryear.

This pilot received only minor bruises because the hatch from which he jumped was about six feet from the simulator access platform.

Flight simulators are vitally necessary and are highly effective when properly used. This one was, except for the fact that it was being operated with a known discrepancy in the motion arm, the part that ultimately failed. Lack of spare parts was cited.

We buy aircraft to fly 'em. Mean-



ILLUSTRATED BY Osborn

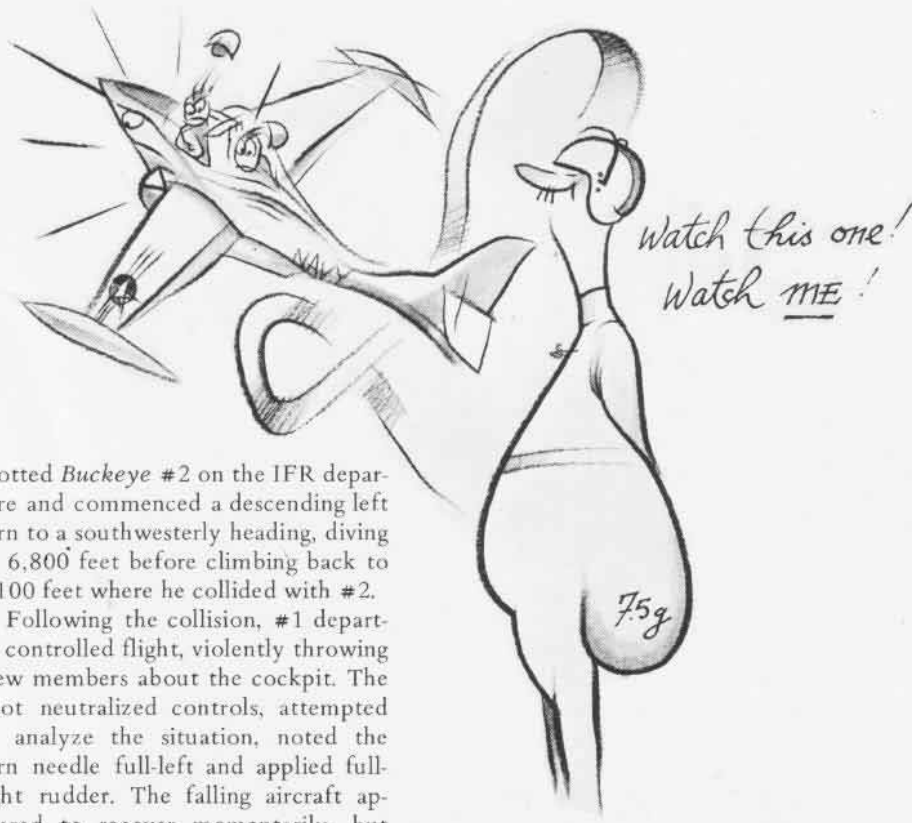
while, we're much better off figuring how to simulate accidents than havin' them for real.

Thump — Bump — Jump

"I'll see you first this time!" . . . "No way, you still owe me a coke for the last time," exchanged the pilots as they manned their assigned T-2C *Buckeyes*. One was flown by an instructor and a student on a training flight, *Buckeye* #2. The other pilot was on a post-maintenance check flight (PMCF) in *Buckeye* #1 with another aviator on board.

Buckeye #1 took off on a VFR clearance. *Buckeye* #2 was holding short for clearance and the pilot said to his student, "Watch out for those guys, they're going to try to mess with us in the air." At 1105, #2 departed IFR and proceeded to the working area. At 1107, IFR control was terminated and the aircraft continued on a southerly heading, wings level, climbing. After it traveled about two miles and reaching 8,100 feet, an explosive impact suddenly threw the aircraft into a nose-high, left-wing down attitude. The startled instructor took control. Noting both engines unwinding, he attempted dual air starts while turning back toward home field. The starboard engine relight attempt was unsuccessful but the port engine regained partial power (70 percent). *Buckeye* #2 continued an emergency approach to home field as the student dumped fuel and transmitted Mayday calls. They executed a safe midfield arrested landing.

After takeoff, *Buckeye* #1 had climbed to 3,000 feet, leveled off, accelerated, and at 11 miles south, executed a rapid climbing left turn to the north to an altitude of 10,700 feet. He spotted *Buckeye* #2 on the IFR departure and commenced a descending left turn to a southwesterly heading, diving to 6,800 feet before climbing back to 8,100 feet where he collided with #2.



Following the collision, #1 departed controlled flight, violently throwing crew members about the cockpit. The pilot neutralized controls, attempted to analyze the situation, noted the turn needle full-left and applied full-right rudder. The falling aircraft appeared to recover momentarily, but then departed controlled flight again.

The pilot decided to eject and pulled the lower handle but got no response. He reached for the upper handle, pulled it, but got no response. The back seat passenger, noting the pilot's attempt to eject, pulled his lower seat handle as the pilot pulled the face curtain the second time. Both crewmen were ejected and parachuted to a safe landing.

Grampaw Pettibone says:

Holy colossal collision! This has got to be one of the poorest displays of airmanship in Old Gramps' log.

The pilot of *Buckeye* #1 said that his intention was to join up (unbriefed) with the other aircraft. However, the excessive closure rate and other evidence strongly suggests he intended to thump or fly under at high speed and pull up immediately in front of the other aircraft, forcing it to fly through his jet wash. The objective was to startle the thumped aircrew.

This pilot had a reputation of being exceptionally aggressive, self-assured and even a braggart. He was also considered a fully capable aviator. He had overstressed his aircraft (7.5 Gs), executing a carrier-break at home field on a previous flight.

The price for stupidity was one T-2C and significant damage to the other. Miraculously, there were only minor injuries to two of the four aircrewmen involved. Old Gramps experienced a severe rash!

1985. The Mediterranean.

Beneath brooding, low clouds, the sea is whipped by gusty winds. It is not a good day for flying but a lone *Seahawk*, oblivious to the weather, powers its way cautiously over the whitecaps, searching for unseen prey beneath the surface. Inside the helicopter, the sensor operator gazes at a cathode ray tube surrounded by tiers of switches, indicators and buttons. Like electrocardiogram readings in parallel, several lines run across the television-like screen. These represent acoustic signals from a battery of five sonobuoys which were launched a few minutes before. By selecting a different mode of operation, data obtained by the helo's magnetic anomaly detection gear is presented. The hunt, which began with a preliminary detection by the helicopter's parent ship, a U.S. Navy frigate, is approaching the critical point.

In the cockpit, forward of the sensor operator, the airborne tactical officer who also functions as copilot is similarly caught up in the grim and complex business of locating the threat which lurks below. He studies a display before him much like the sensor operator's. Next to him in the right seat, the pilot in command is highly attentive at the flight controls, keeping the *Seahawk* as stable as possible in the rough skies.

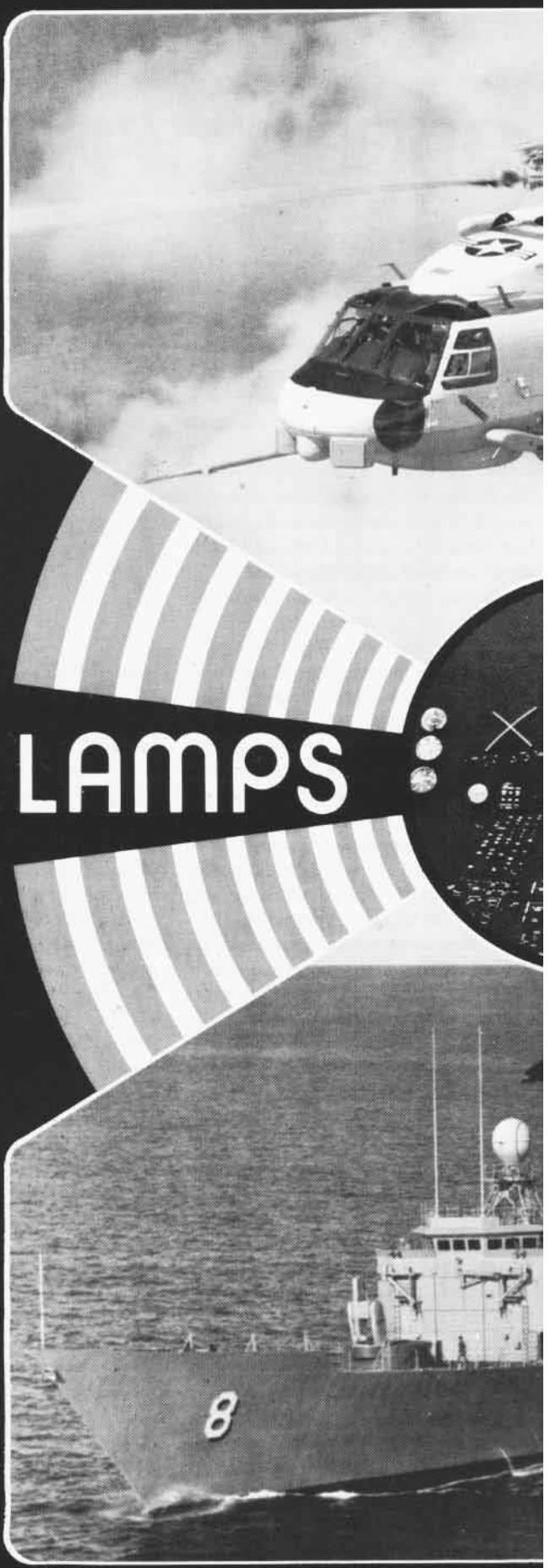
A console between the pilots, about a foot and a half across, contains a legion of switches, buttons and dials used to operate the aircraft and manage the proliferation of search, detection and weapons equipment, all of which is designed to electronically probe the depths and, as necessary, launch torpedoes.

Ninety miles away, the frigate plows slowly through the choppy seas. Inside its darkened combat information center, an operator wearing earphones and a lip mike sits before an array of electronic gear. He selects various switches in sequence and on a cathode ray tube, which is his focal point of concentration, different sets of information flash onto the screen. Some of the data races across the TV screen like a fast typewriter at work; some is in the form of vector lines accompanied by course readings, distances and a myriad of other figures. The Aviation Tactical Control Operator, ATACO as he is called, peruses the information, absorbs it and constructs a detailed picture of the scenario. He is helped by two other experts nearby and another man gathering signals in the sonar room. But the weight of responsibility lies on the ATACO's shoulders.

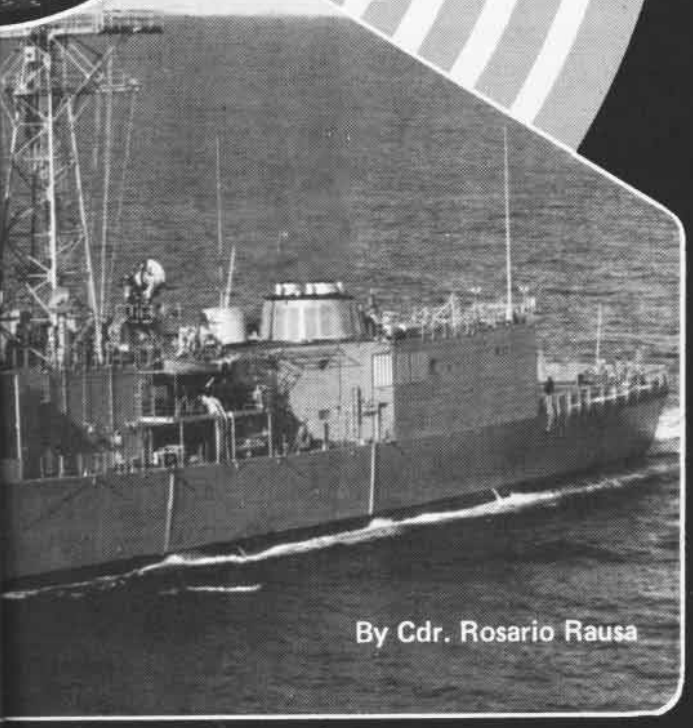
"Lamplighter One," advises the ATACO, "this is Heartbeat. Stand by for sonobuoy release."

In the *Seahawk*, the airborne tactical officer reports, "Lamplighter One, standing by."

There is minimum need for elaboration. This dynamic team of ship and aircraft, united by a data-link communications system unparalleled in warfare, functions as one. The pilots in the helicopter eye the high seas ahead, alert but wary. In



MK III



By Cdr. Rosario Rausa

contrast to a fighter crew maneuvering against another fighter to launch a missile, or an attack pilot rolling in with bombs on an oil refinery, theirs is an "invisible" target. In order to prevail, the *Seahawk* crew and its counterparts in the frigate must apply the full measure of the technology at their disposal *and* their personal skills.

The aircraft flies on a course directed by the ATACO who also actuates sonobuoy release. The helo crew barely hears a series of dull thuds as five of them are ejected in sequence over the next several minutes from their external chambers on the port side. The sonobuoys plunge into the water and almost immediately go to work listening for the unfriendly sub. Fifteen more sonobuoys are available and can be released into the sea by either the *Seahawk* crew or, as in this case, the ATACO, almost 100 miles away in the frigate.

The action accelerates as the sensor operator in the helicopter cabin and the CIC team in the ship begin the concentrated scrutiny of acoustic signals. The complex suite of computers and electronic sub-hunting gear used in this endeavor is baffling if not incomprehensible to the uninitiated. But the trained professionals operating the equipment are collecting data, interpreting it and making rapid judgments based on it with practiced ease. The pace quickens even more when signals reveal the precise location of the alien submarine. There are cross-checks and verifications. The ATACO makes a decision.

"Lamplighter One," he reports, "the contact is at zero four zero degrees, three miles, straight ahead. Stand by to drop torpedo."

"Roger, Heartbeat, standing by." The copilot and his pilot exchange glances. The ultimate moment in antisubmarine warfare is at hand. The necessary weapons switches are selected and the pilot banks slightly onto the prescribed course dictated by the weapons system. The beat of the rotor blades coupled with the sound of the twin engines seems to grow in magnitude as the *Seahawk* rapidly closes the distance to the target.

"Contact is one and one-half miles," advises the ATACO from Heartbeat.

Dark as the clouds are and agitated as the sea is, the *Seahawk* crew presses on. All their mental and physical faculties are brought to bear. The key players in the frigate are in an identical state of stimulation.

"Lamplighter One, you are on course, target is one-half mile. You are cleared to drop."

"Roger," comes the call from Lamplighter. The airborne tactical officer makes a quick, final study of indicators and switches, then advises the pilot that all is ready for the attack. The pilot makes a succinct acknowledgement and actuates a switch. There is an ever-so-slight trembling of the airframe as the Mk 46 falls from its pylon.

"Mad man, torpedo away," transmits the *Seahawk*.

The weapon dives into the sea and begins its lethal search and attack. . . .

Fiction, of course. Hopefully, a torpedo will never have to be fired at an enemy submarine. But one of the best ways to prevent such an action is to be prepared to take it. The U.S. Navy's LAMPS MK III ship/aircraft system is the best guarantee that such an event will not occur.

Rear Admiral Fred Baughman, senior Aeronautical Engineering Duty (AED) officer, former LAMPS MK III project manager and now Commander, Pacific Missile Test Center at Point Mugu, Calif., amplifies:

"It is absolutely essential to the health of our surface Navy that we be able to reach out many miles to detect the enemy and stop him before he destroys that platform we expected to come home to, or the carrier or convoy we were out there to protect. . . .

"Just the fact we're out there with this ship/air weapons system will help us not (have to) prove the point."

First, the nomenclature: LAMPS means Light Airborne Multipurpose System. MK III represents the third phase of the system.

"The name is somewhat misleading," says Rear Admiral Ray Winkel (AED), who is the LAMPS MK III project manager in both the Naval Air Systems Command and the Naval Sea Systems Command, and spearheads a vast Navy-Industry task force. "The *Seahawk,* for example, is not really a light aircraft. It has a 20,000-pound gross weight compared to the H-2 *Seasprite,* which is the mainstay of LAMPS MK I and has a gross weight of a little over 12,000 pounds.

"More importantly," declares RAdm. Winkel, "LAMPS MK III is *not* an aircraft system. It is a ship *and* aircraft system — a single, combative unit with two major elements united by a communications data link that is unsurpassed in its capabilities. The system is in reality 'the main battery for ASW for our small combatants,' states Vice Admiral J.H. Doyle, DCNO(Surface Warfare). We work closely with VAdm. Doyle, his staff and a number of other surface and subsurface activities, as well as Vice Admiral W.L. McDonald, DCNO(Air Warfare) and a host of aviation activities."

LAMPS MK I, which will continue to be in force through the turn of the century, began in the spring of 1970. *Seasprites* were configured with some basic electronics gear and operated from destroyers in the ASW and antiship missile defense effort. A data link system was established to handle acoustic signals. An excellent aircraft, the H-2 first flew in 1959 but was used primarily for plane guard and utility missions before it was adapted to ASW. By late 1971, frigates, command and guided missile cruiser-class ships with LAMPS MK I capability were operating in the fleet. Success of the program led to LAMPS MK II, which existed from 1971 to 1974 and involved the development of better ASW avionics packages to serve the LAMPS concept. There was no specific helicopter associated with LAMPS MK II and this phase was terminated to make way for LAMPS MK III which began in 1973. Studies and evaluations from 1974 through 1976, which focused on short-range capabilities, were favorable and led to a go-ahead for full-scale development of an extended missions version of LAMPS MK III. Contracts were awarded to industry in early 1978. As a result, the new LAMPS system represents a quantum leap forward in the development of ASW technology.

It was decided that because avionics play such an overwhelmingly significant role in ASW and because no helicopter manufacturer had ever developed a complete ASW system, it was best to assign as prime contractor a company with avionics expertise. The Federal System Division of IBM, with its development and manufacturing facility in Owego, N.Y., became the prime contractor. Thus, IBM is responsible for integration and total performance of the entire system. The Sikorsky Aircraft Division of United Technologies, located in Stratford, Conn., was tasked with building the air vehicle, the SH-60B *Seahawk.* The Military Engine Division of General Electric, in Lynn, Mass., is assigned to supply the engines, while Dominion Aluminum Fabricators (DAF) of Ontario, Canada, is providing the Recovery, Assist, Secure and Traverse (RAST) system. RAST enhances the *Seahawk*'s ability to land safely on ships in poor weather conditions, day or night.

"The threat we face," says RAdm. Winkel, "encompasses an enemy nuclear-powered submarine force which is growing in size; long-range attack aircraft; surface-to-surface guided missiles; and satellite reconnaissance. LAMPS MK III will counter this threat by combining a sensor-laden helicopter with the endurance of a surface warship. The combat horizon of the ship is extended since the *Seahawk* can carry sensors and torpedoes to ranges unattainable by other means. Perimeter defense against all threats is likewise attained."

Commander Jack Costello (AED), director of test and evaluation, veteran rotary wing aviator and test pilot serving on RAdm. Winkel's staff, explains, "The new long-range *Seahawk* will more than double LAMPS' range, time on station, armament and avionics. Its modern avionics will integrate with the parent ship's electronics to provide a combination never before possible in surface ASW."

Primary mission of LAMPS MK III is, of course, Antisubmarine Warfare. Secondarily, it provides Antiship Surveillance and Targeting (ASST). Fleet commanders will derive outstanding benefits from ASST. The commanding officer with a *Harpoon*-capable weapons system can obtain precise targeting information from the *Seahawk*-ship tandem in real-time and consequently fire the missile with utmost accuracy in a hurry.

Other LAMPS missions include search and rescue, medical evacuation, vertical replenishment and communications relay.

In a typical (and simplified) scenario, initial detection of a threat at sea may be achieved by the parent ship's hull-mounted or towed-array sensors, another ship, a land-based P-3 *Orion*, a carrier-based S-3 *Viking,* or satellite data. A *Seahawk* is then launched. Once the target is redetected, reclassified and relocalized, the *Seahawk* descends close to the surface and confirms the position using magnetic anomaly detection (MAD) gear, electronic warfare support measures (ESM), radar or passive and active sonobuoys. In-

formation obtained by the ship through its sensors and data processors is continuously transferred to the *Seahawk* and vice versa. A vast network of data is collated with the ultimate goal of defeating the alien sub.

Aboard ship, the air tactical control operator is a highly trained ASW expert. He has all the available information at his disposal and therefore assumes control of the hunt and attack. He directs the dropping of torpedoes or delegates that authority to the *Seahawk* crew.

If necessary, the *Seahawk* can operate autonomously. It can collect and process acoustic information, then pursue and attack the target entirely on its own.

In its ASST mission, *Seahawk* extends the "detection reach" of the ship, which is limited to the radar horizon when trying to identify surface contacts. The helicopter rapidly relays target information to the ship which can almost instantly unleash its precision-honed *Harpoon* missiles.

THE AIRCRAFT

The *Seahawk* evolved from the Sikorsky-built UH-60A *Black Hawk* which is operated by the Army as a squad carrier. As expressed by Gerald J. Tobias, president of Sikorsky Aircraft Division, the *Seahawk* has a distinct advantage over other development programs: "Since the Army UH-60A *Black Hawk* is scheduled to attain 350,000 hours by the time the first *Seahawk* enters the fleet," he notes, "the Navy will receive maximum benefit from UH-60A maturity."

The SH-60B has dramatically improved maintainability and reliability characteristics with advanced crashworthiness and survivability over any helicopter in the Navy's inventory. Its avionics/electronics package, of course, sets the *Seahawk* apart from all other ASW helicopters.

Basic details of the *Seahawk*, in round numbers, follow:

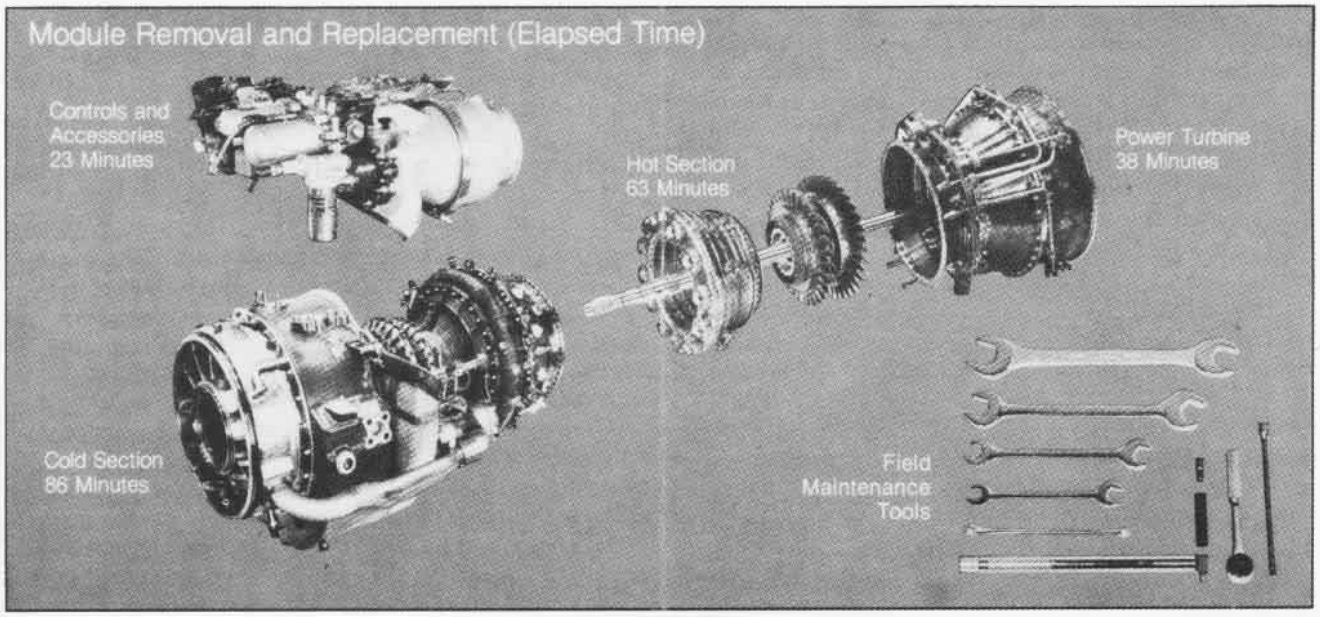
Length (rotors turning)	65 feet
Fuselage length	51 feet
Height	17 feet
Fuselage width	8 feet
Main rotor diameter	53 feet
Tail rotor diameter	11 feet
Engine	two T700-GE-401 turboshaft
Maximum continuous power	1,284 shaft horsepower (shp)
Intermediate power	(30 min.) 1,632 shp
Contingency power	(2½ min.) 1,713 shp
Gross takeoff weight	19,985 pounds (about 1,800 pounds less for antiship surveillance and targeting missions)
One-engine-out climb rate	770 fpm
Two-engine vertical climb rate at gross takeoff weight	1,192 fpm
Sonobuoys	25
Weapons	two Mk 46 torpedoes

The crew of three includes the pilot, copilot/airborne tactical officer (ATO) and a sensor operator (SO), the latter an enlisted ASW specialist. (See chart for an outline of their duties.)

The SH-60B's streamlined airframe is made primarily of aluminum, fiberglass and a fiberglass-like composite material called kevlar, the latter used on cowlings, doors and certain access covers.

Two General Electric T700 turboshaft engines power the *Seahawk;* each is light (400 pounds) and fundamentally simple in its modular design.

"The engine can be taken apart with 10 tools," says RAdm. Winkel, "all of which can be held in one hand."



Except for a torque wrench, these tools could be purchased in any hardware store. A person with only basic mechanical skills can be taught in half a day to dismantle engines into the hot section.

"There is no safety wire on the engine," he adds, "which should please the mechs. Also, the engine can be inspected by a boroscope, has apertures for sight-checking filters, and is Murphy's Law-proof." (Murphy's Law states that if an aircraft part can be installed incorrectly, someone will install it that way.)

Other features of the T700 power plant:

- No need for engine trim.
- Extra salt water corrosion protection built in.
- Has contingency power: If one engine fails, the pilot can flip a switch and instantly increase power on the good engine by 10 percent.
- Has self-contained lubrication system.
- Maximum time to replace an individual accessory is 16 minutes for one man.
- A two-man military maintenance team, using 10 standard tools and an engine sling, has replaced the T700 accessory module in 24 minutes; the cold section module in 79 minutes; the hot section module in 55 minutes; and the power turbine module in 32 minutes.
- Engine is started by pneumatic pressure from an auxiliary power unit (APU) which is, itself, started by hydraulic pressure from an accumulator that is automatically recharged after engine start.

The APU provides a backup power source for electrical and hydraulic components, blade-fold mechanism and the environmental control system. It also powers systems during ground maintenance operations.

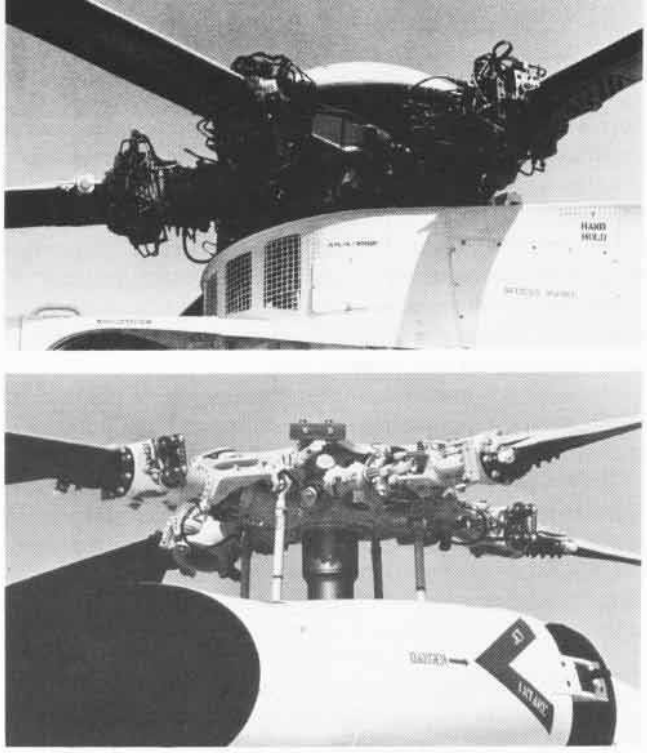
The main rotor head has elastomeric bearings that require no lubrication and an electromechanical blade-fold system. Even veteran helicopter operators will be impressed with this streamlined arrangement. It is a sharp contrast from previous models with multiple, spaghetti-like hydraulic lines. A vibration absorber is mounted above the rotor head to reduce the stresses caused by blade forces.

Flight controls are powered by two separate and independent hydraulic systems. Driven by the APU, a third system hydraulically powers the controls in case the others fail. A leak detection/isolation feature senses loss of fluid, will automatically secure necessary valves and activate a backup pump. Single point servicing of the hydraulic system is also typical of the excellent maintainability incorporated in the SH-60B.

The automatic flight control system (AFCS), with its digital computer, provides airspeed, altitude and heading "hold," automatic turns and automatic hover modes of operations. A stability augmentation system is installed to provide enhanced pilot flying qualities.

Bleed air from either of the engines provides cooling for some of the avionics equipment and for crew comfort through the environmental control system.

The RAST system concept has been successfully utilized by Canadian helicopter pilots since 1968. They call it *Beartrap*. In essence, it assists/guides the *Seahawk* down



Comparison of the CH-53 main rotor head, top, and that of the new SH-60B, bottom, shows simplicity of design.

THE SH-60B SEAHAWK

from its hover over the flight deck. A landing safety officer, one of the air department pilots, will help control the landing sequence. *Seahawk* units will deploy with a parent ship as its air department. The landing safety officer, manning his station in the flight deck, will be able to sense the null as the ship rolls and advise the pilot accordingly.

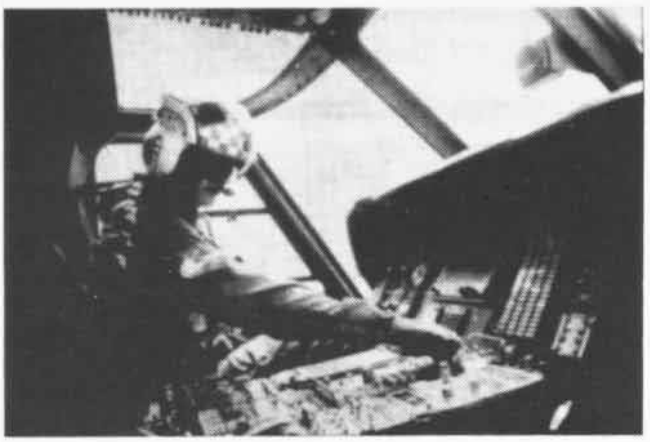
"RAST," says LCdr. Nick Brown, Canadian exchange officer and RAST Project Director on the LAMPS staff, "provides the advantage of allowing large helicopters to operate consistently on small surface combatants during adverse sea states."

A messenger cable is lowered from the helo hovering a few feet above the flight deck, hooked onto the recovery assist cable which is connected to a constant tension hydraulic winch aboard the ship. The messenger cable retrieves the recovery assist cable and locks into the main probe on the aircraft. Up to 4,000 pounds of selectable tension can then be used to assist the helicopter to the deck where a rapid securing device can lock onto the aircraft's main probe within four seconds of landing.

PILOT

Functions

- Aircraft Commander
- Fly Aircraft
- Drop Torpedo



AIRBORNE TACTICAL OFFICER (ATO)

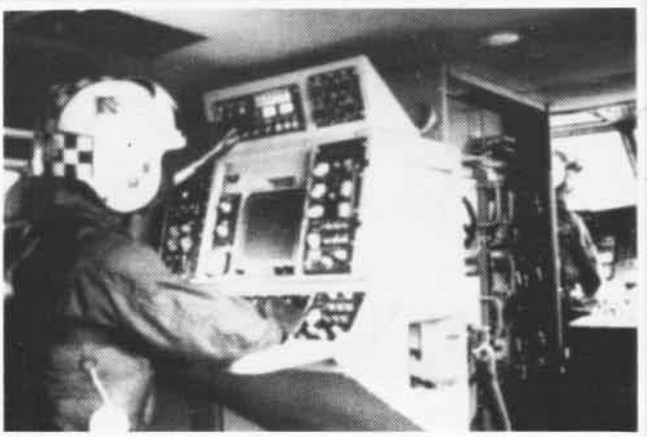
Functions (Helo Control)

- Tactical Operations
- Direct Mission
- Configure Communications
- Generate Fly-to Points
- Monitor ESM
- Monitor Search Radar
- Select/Deploy Buoys
- Designate Buoys to be Processed
- Localize Contacts
- Enter Target Tracks
- Select/Preset Torpedoes
- Back Up Pilot

SENSOR OPERATOR (SO)

Functions

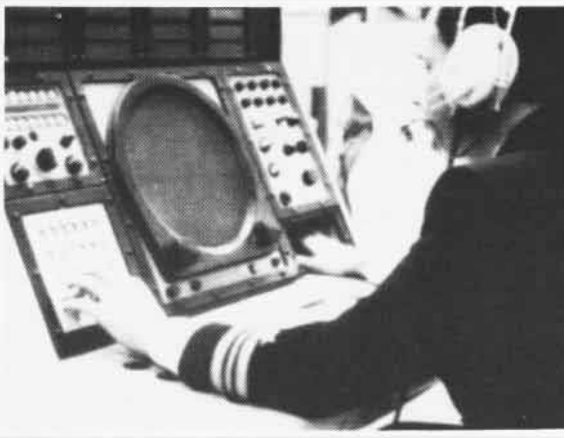
- Monitor Radar/ESM
- Monitor/Analyze Acoustics
- Enter Acoustic Contacts
- Control Active Buoys
- Monitor MAD Trace
- Enter MAD Contact



AIR TACTICAL CONTROL OPERATOR (ATACO)

Functions (Ship Control)

- Tactical Operations
- Direct Mission
- Control Ship/Aircraft Communications
- Controls Data Link
- System Initialization and Recovery
- Generate Fly-to Point
- Select/Deploy Sonobuoys
- Designates Buoys to be Processed
- Localize Contacts
- Enter Target Tracks
- Authorize Prosecution



REMOTE RADAR OPERATOR (REMRO)

Functions

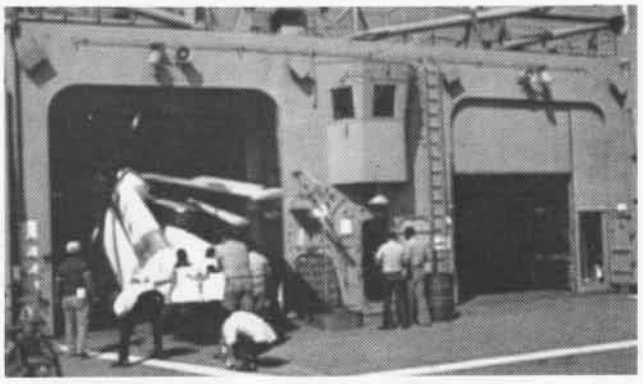
- Operate Airborne Search Radar
- Operate Airborne IFF Interrogator
- Detect and Track Targets

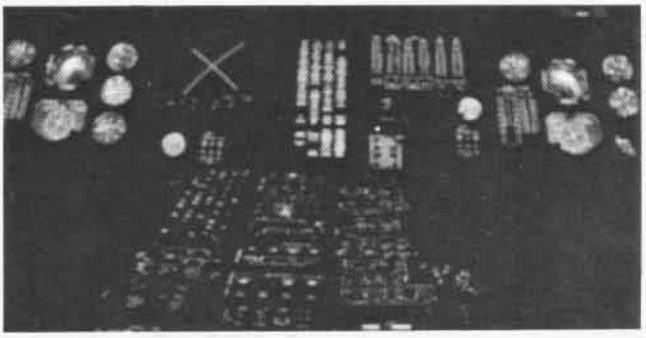
After touchdown, the engines are secured and the blades folded. The aircraft is then automatically towed forward along a track into one of two hangar compartments.

Canadian pilots proved that the stern approach is better for their *Beartrap* recovery system, from which RAST is derived. So, although LAMPS MK I procedures call for a quartering approach, the *Seahawk* will come in lined up with the ship's fore and aft axis.

Lineup lights along the deck's centerline continue vertically, up between the hangar doors. A 10-foot-long light bar, which receives signals from the ship's gyro, is mounted atop the hangar. It is illuminated with electroluminescent panels, simulating the true horizon. The light bar will be especially helpful to the pilot in rough sea states with limited visibility and during night operations.

RAST is designed to work in sea states with the ship rolling as much as 28 degrees, pitching 5 degrees and heaving at a rate of 15 feet per second. As RAdm. Winkel points out, "Using it will be similar to fixed wing pilots catching the carrier's number three wire on every pass."





One unusual milestone in helicopter development within the program was a cockpit lighting review. Mock-up reviews, where technicians and flight crews carefully evaluate a new aircraft's cockpit configuration, are common. But preproduction examination of cockpit and instrument lighting in a helicopter for both day and night conditions, is not. The review demonstrates the attention to detail which has characterized the LAMPS MK III program since its inception. The Seahawk will have the Navy's first white-lighted cockpit. Left, SH-60B with blades secured.

ESM OPERATOR (ESMO)

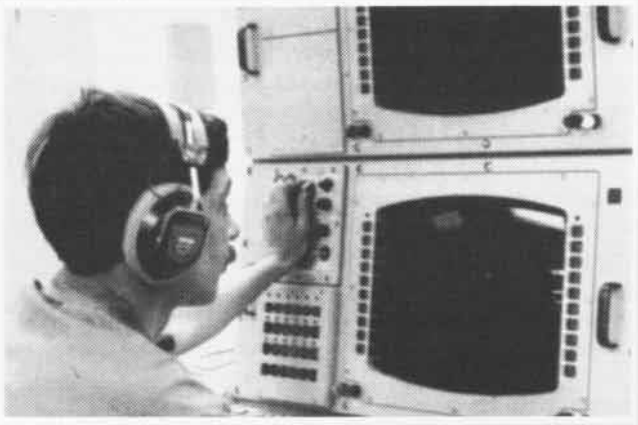
Functions

- Establish Threat Processing Parameters
- Control Airborne ESM Receiver
- Identify/Classify Emitters
- Enter ESM Bearing Lines
- Fix Emitter Positions

ACOUSTIC SENSOR OPERATOR (ASO)

Functions

- Process Sonobuoy Acoustic Data
- Detect Submarine
- Identify Submarine
- Enter Contact Position Data
- Controls Active Buoys



AIRCRAFT ASW EQUIPMENT

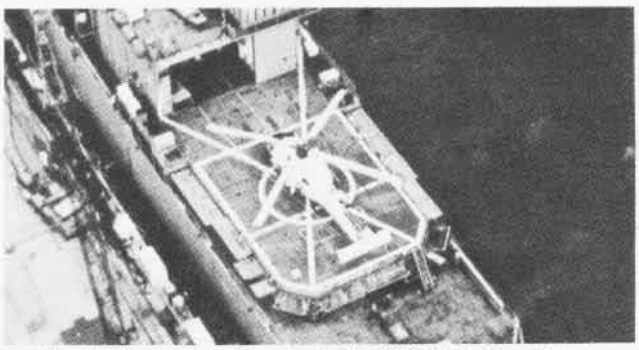
In addition to MAD gear, mounted externally on the starboard side, 25 sonobuoys are carried in Swiss cheese-like chambers on the port side. Sonobuoys are pneumatically launched from these stowage chutes in the aircraft. A pair of Mk 46 torpedoes (LAMPS MK I had only one) is loaded on pylons on either side of the aircraft.

The *Seahawk's* most vital feature is its mission avionics suite. It weighs in excess of 2,000 pounds, a considerable amount, but compensates for this by providing super-sophisticated ASW capabilities that extend LAMPS MK III's operating parameters far beyond what could have been imagined not too many years ago. THE LAMPS MK III effective operating range has been expanded three-fold from the LAMPS MK I – out to 100 miles.

Included in the package are two sonobuoy receivers (ARR-75), an acoustic analyzer (UYS-1 Proteus), radar (APS-124), and an electronic warfare support measures set (ALQ-142). Integration of the various inputs from these sensors is achieved through the best available state-of-the-art airborne computers.

THE SHIP AND ITS ASW EQUIPMENT

Seahawk will operate from frigates, destroyers and guided missile cruisers. USS *McInerney* (FFG-8), follow-on to the FFG-7 class of guided missile frigates, is the first to employ LAMPS MK III. In an unprecedented step, the ship will be totally devoted to both the technical and operational evaluation of the system. Launched at the Bath Works, Bath, Maine, in November 1978, *McInerney* has completed preliminary trials and is now in the shipyard in Bath for installation of LAMPS gear. Actual full-scale testing of LAMPS MK III will start in late 1980 aboard the ship.



The air department aboard a LAMPS MK III ship with one SH-60B will include 4 officer pilots and 11 enlisted personnel. Normally, there will be a chief petty officer as crew leader, two mechanics, two metalsmiths, one electronics technician, one ASW technician, two electricians and two aircrewmen. With two SH-60Bs, there will be two more pilots, one more aircrewman and two more technicians.

McInerney is 445 feet long with a 45-foot beam and a draft of 24 feet. Her crew consists of about 170 enlisted personnel and over a dozen officers, including the air department. Her helicopter facilities include the flight deck, aft, a two-bay hangar to accommodate a pair of SH-60Bs, and below-deck spaces. Technicians from the air department will be able to conduct a full spectrum of organizational level maintenance on the aircraft in these spaces.

McInerney has long-range air search and surface search radars, her own sensor system, a missile launcher, two triple-torpedo tubes, and a fire control system. She is powered by a pair of LM-2500 gas turbines with a reversible pitch propeller.

FFG-8's first commanding officer, Commander J. S. Berg, commenting on the ship's propulsion and maneuverability, says, "She can go from 'ready to answer all bells' to flank speed in two minutes, and in an emergency she can go from 30-plus knots forward to back full and be stopped in two ship lengths."

The data link antenna, the key element of the LAMPS MK III concept, is located on the main mast. Three of the four key LAMPS stations are in the combat information center (CIC). The ATACO functions here along with the Remote Radar Operator (REMRO) and Electronic warfare Support Measures Operator (ESMO). The Acoustic Sensor Operator (ASO) works in sonar control. The ship's Tactical Towed-Array Sonar System operator (TACTAS), incidentally, operates alongside the ASO. (See chart for an outline of LAMPS operators' duties.)

In addition to operator displays, other key elements include the LAMPS UYK-20 computers and the UYQ-21 display, an acoustic analyzer detecting set, sound reproducer recorder and a data terminal.

The LAMPS MK III ship's electronic gear weighs about 7,000 pounds. It provides all the elements necessary to collect, process and display acoustic information as well as radar, ESM and tactical data. Additionally, communications and control equipment represents the latest and best that technology has to offer.

There is an air of expectant vitality permeating both Navy and industry offices involved in LAMPS MK III. It existed at the beginning of the program and reached a midstream peak last December 12 when the *Seahawk* flew for the first time at Sikorsky's West Palm Beach facility in Florida. With company pilots John Dixson and Richard Mills at the controls, the SH-60B completed ground tests and went aloft at 0800. This maiden sortie took place ahead of the forecast schedule. Later in the day, as if to add its own exclamation point, the aircraft was flown again. This is most unusual for modern day aircraft – flying a second hop on the same day of its very first flight.

Meeting milestones is most pleasing to RAdm. Winkel, not to mention the contractors.

"In the next 10 years," reminds the Admiral, "except for the F/A-18 *Hornet*, the *Seahawk* may well be the only new aircraft in the Navy inventory. More significant is the fact

FFG-8 is named after Vice Admiral Francis X. McInerney, USN (Ret.), who commanded a destroyer squadron which saw action at Coral Sea and the Solomon Islands early in WW II. In 1943, he was in charge of Pacific Fleet destroyer training. In subsequent years, he had seven other commands, including C.O. of USS Washington (BB-56), two different cruiser divisions, an amphibious group and the Pacific Fleet's Amphibious Training Command. In the Korean War, he led a logistics task force which supplied the Seventh Fleet. McInerney's first C.O. is Commander J. S. Berg.

that it is one-half of a unique ship/aircraft combination with a crucial role to play in the future – a role as important as any facing our U.S. armed forces. Reaching, or beating, milestones is a goal we hope to achieve through every phase of the program."

In addition to the first SH-60B prototype, there are four other *Seahawks* in the test and evaluation program. The first is devoted to aerodynamic and structural testing; the second to development of the new digital flight control system. The remaining three will have the ASW gear installed and will be used for test and evaluation by Sikorsky and IBM at their facilities, and by the Navy at NATC Patuxent River, Md. In fact, the first two Navy pilots slated to fly the aircraft, Lieutenant Commanders A. J. Olmstead and Dick Childers of NATC, have already undergone training in Army *Black Hawks* at Fort Rucker, Ala., in preparation for the work ahead. Last year, Navy pilots from NATC and VX-1 flew with the Canadian Navy in *Sea Kings* near Nova Scotia making landings in the Canadian *Beartrap* system to familiarize themselves with what might be expected from the RAST system.

More than 5,000 people work at IBM's sprawling complex in Owego (LAMPS MK III land-based test site) located along New York State's southern tier. Among them is a unit called the Defense Contracts Administration Services, Plant Representative Office (DCASPRO), headed by Commander Carl S. Park (AED). A veteran flyer, Cdr. Park is deeply immersed in LAMPS MK III.

"There's an excellent rapport between IBM and Navy personnel," he notes. "We complement each other nicely. In addition to our own administrative unit, we have a team of Navy specialists who are training and working side by side with IBM technicians. Our people make inputs based on their practical experience at sea."

"All of us, contractors and Navy alike, know the system will work," says Park. "The LAMPS system is exceeding initial performance goals and, in a sense, is more mature at this stage than any previous, comparable system."

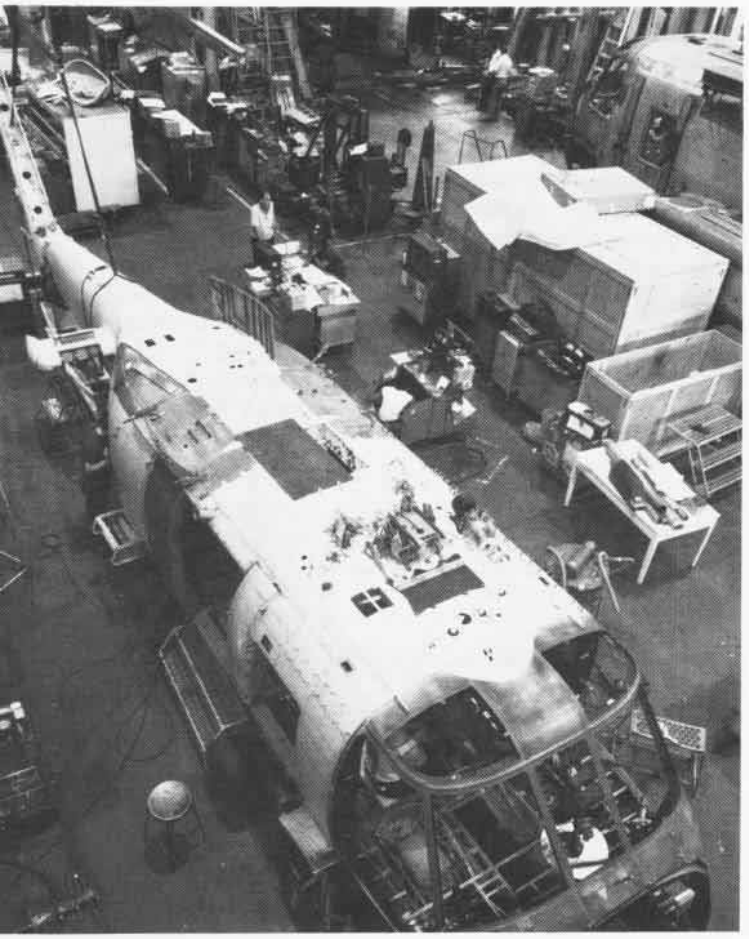
George Houser, IBM's LAMPS MK III deputy program manager, supports this feeling. "There is great confidence in the technology," he says. "We're most optimistic about LAMPS MK III's success."

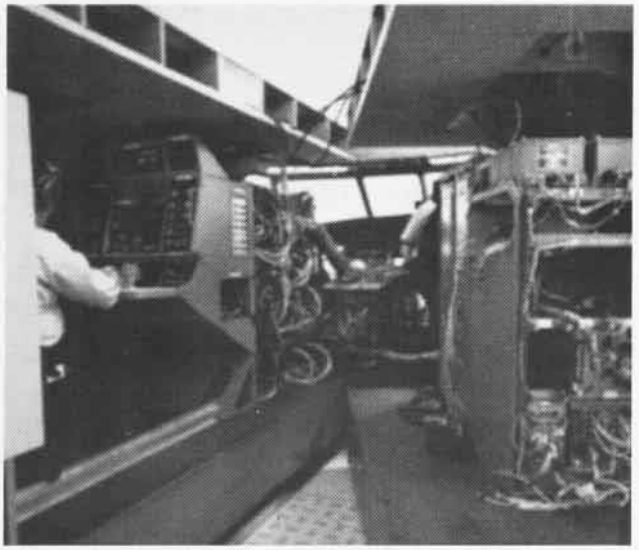
The program office's technical representative at Owego, Lieutenant Commander Wynn Montgomery (AED), is an experienced helicopter pilot and extremely knowledgeable of the weapons system. He echoed thoughts on the contribution of six hand-picked enlisted technicians on the scene at Owego.

"They bring their fleet viewpoints to bear and lend an operational flavor to the program. Their contributions are extremely important and will have lasting value."

The unique mix of enlisted personnel skills is certain to pay dividends. Among the men involved are AWCS R. N. Deyo, AXC R. M. Johnston, ATCS F. D. Kurkowitz, AS1 E. J. Lambert, ETCM K. McKean and STGCS W. S. Vestel at Owego; and AEC R. E. Hall, ADC S. R. Smith and AMHC F. C. Vickers at Stratford.

IBM has built a ship master system bench, as it is called,





Top, Seahawk on Sikorsky production line in Stratford. Above is the air master system bench at Owego.

Later this year, dockside tests will be conducted with McInerney and the Seahawk, after which LAMPS MK III will go to sea for technical and operational testing. An operational evaluation is scheduled for late 1981 and will be conducted by Operational Test and Evaluation Force, the Navy's independent testing agency.

and along with it an air master system bench at Owego. They consist of authentic LAMPS MK III equipment and control stations arranged almost exactly as they will be aboard the ship and aircraft. The ship bench has been used for unit testing, software development and system integration. The air bench, which resembles a flight simulator but houses the actual *Seahawk's* avionics suite, is employed for similar test work.

"For all practical purposes," says Montgomery, "the ship and aircraft are 'wired together' right here at the building. Personnel have slightly more room to move around than would be the case aboard ship, but otherwise accommodations are identical."

Software, the computer programming material which represents the very heartbeat of LAMPS MK III, is as crucial to its success as the hardware components themselves. Therefore, it has been given special attention from conception through development of the system. A LAMPS software committee, made up of Navy and contractor experts, leads this effort. It coordinates avionics and shipboard software planning, production and acquisition. By February of 1980, 90 percent of LAMPS MK III software had been coded and tested. All development milestones have been met since then. Testing of software has been conducted at a variety of activities including IBM's ship and air master system benches.

In Mississauga, Canada, DAF INDAL has constructed an integrated test facility which duplicates the shipboard RAST system. It consists of an aluminum flight deck and a steel hangar deck which are exact replicas of those in DD-963/FFG-7-class ships, respectively. Below-deck spaces are also similar to what crews will experience at sea. A huge quonset hut-shaped shelter, which can be removed in summer, has been erected over the deck as a shield against the Canadian winter. Realistic tests are being conducted with a dead-load tester which looks like the lower third of a *Seahawk*.

An oscillating hydraulic cylinder installed atop the tester is rigged so that it imposes stress loads on the tester, simulating the rolling effect of the ship in high seas. This allows technicians to study the wear and tear on the RAST installation and to take action accordingly. Further testing of RAST will be conducted at NAEC Lakehurst, N.J.

At the Sikorsky plant in Stratford, Conn., where the first five *Seahawks* came off the assembly line right on schedule and where the planned 200-plus SH-60Bs will be built, there is a Navy presence similar to that at IBM's Owego facilities. Among the personnel, there is LCdr. Bob Spalding (AED), LAMPS MK III project mangers' rep, who also works on the staff of the Navy Plant Representative Office (NavPRO). LCdr. Spalding's NavPRO duties call for him to fly acceptance checks for the Army in its new *Black Hawks*. That experience, combined with his work with the *Seahawk*, gives him a close-up knowledge of the LAMPS MK III air vehicle and how it will operate.

"A lot of human engineering has gone into the aircraft,"

he says. "It has a very comfortable cockpit; the overall arrangement is excellent. Plus, there's plenty of redundancy in the aircraft's mechanical systems. There are three hydraulic pumps, for example, and as many reservoirs. It's a well thought out helicopter, and I believe aircrews will find it an easy aircraft to learn to operate."

The *Seahawks* share the Sikorsky flight line with not only the *Black Hawks* but CH-53 *Super Stallions*, the Navy/Marine Corps new heavy-lift helicopters. Sikorsky's long association with the Navy began 52 years ago when the Navy took delivery of a fixed wing amphibian, the S-36. The first Sikorsky helicopter entered the inventory in 1943.

The name *Seahawk* has historical significance as a name for a naval aircraft. The first Navy *Seahawk*, designated F7C-1, was built by the Curtiss Aeroplane and Motor Co., in 1927 (*NANews,* August 1979). A single-engine biplane fighter, it was originally designed to be either carrier-based or with float landing gear to be operated from battleships. It was used by the U.S. Marine Corps until the early 1930s. The second *Seahawk,* SC-1, was the last of a long and colorful line of catapult-launched seaplanes to operate from fleet battleships and cruisers (*NANews*, August 1975). It was produced by the Curtiss-Wright Co. and used in ASW, reconnaissance spotting and rescue missions. The SC-1 was the first fixed wing aircraft to be replaced by the helicopter in 1949. As the airborne vehicle of the LAMPS MK III system, the SH-60B *Seahawk* will provide the traditionally non-aviation surface ships with an air capability.

In summary, the officer at the hub of LAMPS MK III's multi-spoked wheel, RAdm. Winkel, recognizes that many challenges lie ahead for the Seahawk and its parent ships.

"Even though all the key development milestones have been met, we have to press on with the same vitality and dedication that have been exhibited up to now. I am most confident that the Navy-Industry team will sustain the pace and the spirit of the program. We have to. The mission demands it."

Project Manager

One of the comparatively few men to reach flag rank after starting out as an enlisted man, Rear Admiral Ray Winkel joined the Navy in 1947. He became an aviation electronics technician, then an aviation cadet, and earned his wings and ensign's commission in 1951. He flew P4Y2 Privateers *in the Korean War with VP-28 and had subsequent tours in FASRON 117 and then as a flight instructor. He attended the General Line School at Monterey, Calif., was Air Operations Officer in* USS Salisbury Sound, *flew P-2 Neptunes in VP-22, and returned to Monterey, earning a B.S. degree at the postgraduate school there. He was designated an Aeronautical Engineering Duty Officer in 1966. At NADC Warminster, Pa., he worked on ASW radar systems, was a project test pilot and Director of the Electronics Technology Department. During this tour, he earned an M.S. degree from Villanova.*

After staff duty with Commander Fleet Air Wings, Atlantic, he commanded the Naval Electronic Systems Test and Evaluation Facility at St. Inigoes, Md. He joined NavAirSysCom in 1971 and was AED and Aviation Warrant and LDO Management Officer. In 1973, he completed the Advanced Management Program at Harvard University under Navy sponsorship and returned to NavAirSysCom. He became Director of Avionics and then Project Manager for the CH-53E Super Stallion *before taking the helm of LAMPS MK III as Project Manager in 1978.*

Both extremes of the Winkel family tree were on hand at his promotion-to-Rear Admiral ceremonies in 1979 – his parents, Mr. and Mrs. Norman Winkel, and Raymond J. Darby, nine and one-half months, his grandson. Raymond wore a T-shirt declaring, "My Grandpa is an Admiral."

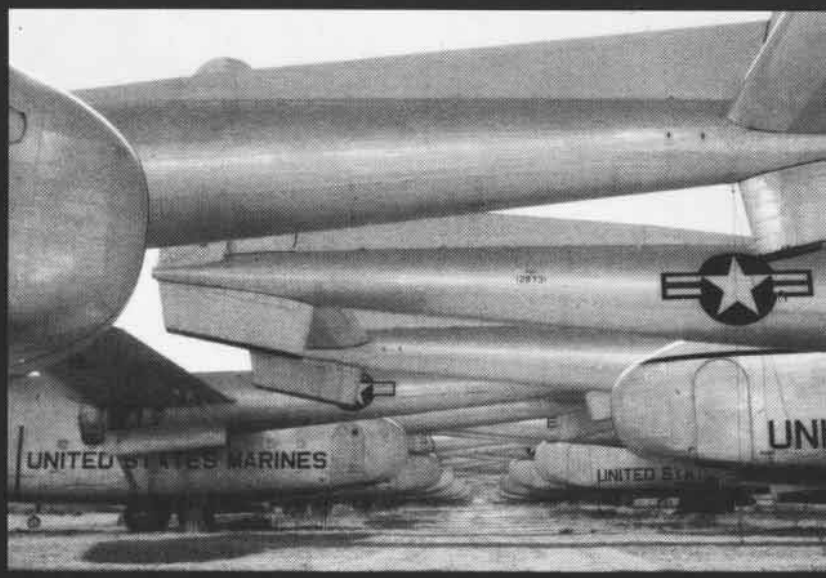

ANG
ANG
11509
ANG
ANG
11436
ANG
11394
ANG
11412
ANG
PA


WHOI
GL
134059
ZH
415
NAVY

Boneyard


L
NAVY
VW-15
NAVY

"All's well, for over there among his peers
A happy warrior sleeps." J. C. Jones, *The Returning Man*



Commander S. M. "Marty" Shelton, USNR-R, who works at the Naval Weapons Center, China Lake, Calif., submitted these photographs of aircraft at rest in the clear, dry air of Arizona. The "boneyard" scenes were recorded at Davis-Monthan AFB and Litchfield Park (phased out in mid-1967), where old warriors wait in silence. About half of the over 4,000 aircraft stored at Davis-Monthan will return to service with the U. S. military, various branches of the federal government, or be sold to foreign governments and other buyers. The other stored aircraft that do not fly again will be used as a source for parts.

There is a certain sadness in the sight of flying machines poised in silent, orderly ranks or heaped roughly atop one another. One observer of this desert panorama was pondering the individual lives of the multitude of aircraft and was moved to say, "If only they could speak, what stories they might tell."


U.S. AIR FORCE
U.S. AIR FORCE
U.S. AIR FORCE

HAL-5

Story by Connie Lantrip

Like dragonflies watching for prey, the aircraft sat in the early morning downpour waiting for the thunderheads to pass. Once the command was given, personnel from Point Mugu's Helicopter Attack Squadron Light Five (HAL-5) lifted off to join the combined services' reserve/guard exercise *Ready One 80*.

Conducted in the San Francisco Bay area last December, the exercise involved more than 3,000 active duty and reserve personnel from the Navy, Marine Corps, Army and Coast Guard. Ships, helicopters and jets coordinated to simulate combined amphibious and helo assaults and anti-riverine support.

"Our primary mission was to assist in special warfare," explained Lt. Dave Grupe, HAL-5 public affairs officer. "We supported Seals Underwater Demolition Team 119 while it parachuted into the ocean near the amphibious landing beach. We also inserted and extracted the Seals behind simulated enemy lines."

Equipped with door-mounted machine guns, two rocket launchers and Gatling-type miniguns, the HH-1K *Hueys* are well prepared to fly over enemy terrain at treetop level.

Designed to provide close tactical air support for the Navy's special warfare groups, the HH-1K can also be used for intelligence gathering, logistics support, and search and rescue. According to Lt. Grupe, night vision goggles enable the crew to perform these missions in complete darkness.

HAL-5 was established as a reserve unit in 1977 at Point Mugu and is one of two helicopter light attack squadrons in the Navy. The unit's 22 officers and 88 enlisted personnel train regularly. More than half of the squadron's personnel are weekend warriors, who work together as a total unit once a year during their two weeks of active duty training.

Teamwork could be the squadron trademark. Upon completion of the recent joint exercise in the San Francisco Bay area, Rear Admiral Donald Albright, Commander Naval Reserve Readiness Command, Region 20, said, "The total force concept has become a reality."

Ready One 80

Photos by PH2 Nathan Gates

PEOPLE·PLANES·PLACES

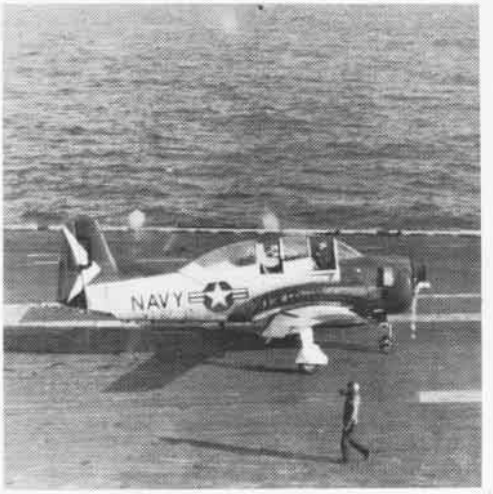
Records

When Cdr. Charles Steckler, ComHelWingRes, landed his SH-3D at North Island last December 20, it was more than the completion of another training flight – it marked over 5,000 career flight hours. Cdr. Steckler has a certain sentiment for this helo, as he flew it when he was a young pilot with HS-5 in 1968, HS-1 in 1969 and HS-11 in 1976 and 1977. "It seems to be following me everywhere I go," he said. The aircraft has logged 5,554 hours. C.O. of the Navy Fighter Weapons School, Cdr. Lonny K. McClung, also recently passed this total pilot time mark in a Topgun F-5E *Eagle*. His aviation career began in December 1962 and has included flight time in the S-2, T-2, T-34, F-9, E-2, A-1, A-4, T-33, F-4 and F-14.

It is not often that Marine Corps aviators have the opportunity to become centurions, but during a recent deployment, 15 Marines of VMAQ-2 Det Yankee individually completed 100 arrested landings aboard *Midway*. Those achieving this milestone were: Capts.

T. H. Koger, E. M. Armstrong, J. J. Roddy, S. T. York, D. R. Miller, K. L. Collyer, P. R. McGrew, B. A. Corr, M. J. Marazzini, D. P. Rann and W. B. Shores; Majs. J. C. Garbrous and P. R. Seipt; and 1st Lts. M. A. Smith and D. P. Grow. The detachment flies the EA-6B *Prowler* and is based at Cherry Point.

Late last October a milestone was recorded in Naval Aviation history as Lt. Keith Herrel, VT-27 LSO, waved the last T-28 *Trojan* over the ramp aboard *America*, bringing to a close carrier qualification in a prop-driven training command aircraft. Along



with Lt. Herrel and the staff of CQ instructors, seven student aviators became the last Navy pilots to qualify, flying the aging *Trojans* down to the wire. Included in the group was the first known U.S. Navy woman to trap solo in an aircraft, Ltjg. Jonnie Bennett. She is presently assigned to VR-24, Sigonella.

A VA-115 *Intruder* was recently credited with making *Midway*'s 100,000th arrested landing since the carrier's recommissioning in March 1970. Pilots were LCdr. Buzz Radican and Lt. John Henson. Meanwhile, LCdr. Harry Rittenour, VA-56, made the 246,000th trap aboard *Midway* since her original commissioning. It marked his 520th career trap (and 189th *Midway* trap since he reported to the squadron in November 1978).

VRC-30, commanded by Cdr. W. J. Dooley, recently celebrated the 25th anniversary of the Grumman C-1A *Trader.* Presently, the C-1A is the only piston-engine aircraft in carrier service and, out of 84 built, 44 are still in commission. VRC-30, flying seven *Traders* on COD missions, has hauled everything from live sea turtles and sick sea lions to Soviet cosmonauts. Aside from flying cargo, passengers and mail, the squadron functions as a C-1A mini-RAG, and C-1A West Coast Natops evaluator, and provides support for the Navy Parachute Team during training and air shows.

Rescues

After floating aimlessly in the Atlantic for nearly seven hours in mid-February, a local shrimper was rescued by the Key West SAR team. The boat's anchor had given way, causing the craft to drift into a shoal and break up. Coast Guardsmen noticed the sunken boat and put in a call to the air station. Flying an SH-3G, LCdr. Woody Woodroof, Ltjg. Larry Roth, AD3 Cowan and AT3 John Gaines located the victim by following the drift of loose debris from the boat in the water and transported him to the Navy branch medical clinic at Boca Chica Airfield. He was then transferred to the Florida Keys Memorial Hospital for treatment of exposure.

Two Navy SAR helos were launched recently in response to a Coast Guard request for assistance in evacuating crewmen aboard the burning tanker *Aries,* 70 miles west of Dry Tortugas. The 605-foot American ship was on fire. Most of her crew were in lifeboats after failing to put out the blaze. First on the scene were members of the Key West SAR team who airlifted two injured crewmen, flying them back to Key West where they were taken by ambulance to a local hospital. The Coast Guard cutter *Cape York* picked up the remaining crewmen. SAR team members were: LCdr. Woody Woodroof, Lts. Eric Heublein and Dale Schmauder, Ltjg. Larry Roth, AT2 David Hill, AD2 John Aiello, AD3 Donald Cowan, AMH1 Toby Rask, and AME3 Joe Porco.

While returning from an ASW training mission, naval reservists from HS-84 rescued a San Diego fisherman after his 36-foot, steel-hulled boat sank. The victim was afloat in a small life raft when aircraft commander LCdr. Ken Goodsell saw him and alerted his copilot LCdr. Mike Scuro and aircrewman AW2 Rich Folsom to prepare for a rescue. Folsom used the rescue hoist to bring the fisherman aboard the squadron helo. The man was flown to the North Island dispensary where it was determined that he was suffering from exposure and possibly would not have survived the night.

Recently, HC-1 Det 3, on board *Coral Sea,* rescued a seaman swept overboard during an underway replenishment. The helo, piloted by LCdr. Richard T. Sadlier and Ltjg. Richard V. Kikla, reacted promptly to the call and within minutes the crew located the survivor about one mile from the ship. While Sadlier maintained a hover over the victim, other crew members freed him from ropes which had entangled his body. Shaken, but unhurt, the man was hoisted aboard and and flown back to *Coral Sea.*

A young man was dying of kidney failure in Memphis, Tenn. His brother, who was to be the kidney donor, required immediate transportation from Loring AFB, Maine. A crew from Brunswick's VP-11 responded to the call for help and rushed its passenger to NAS Memphis where a vehicle was standing by to transport the donor to the hospital. The *Pegasus* flight crew were Lts. Dan Murphy, Bob Buzby and Dave Goslin; AE1 Joe Miller; AMS2 Patrick De Wit; and AW3s William Dearie and Paul Sullivan.

PEOPLE·PLANES·PLACES

Honing the Edge

In a recent combat readiness assessment exercise, VA-85 led the *Forrestal* air wing with 226,000 pounds of ordnance delivered on targets during the two-day period. Impressively, the *Black Falcons* are only one of six squadrons and accounted for over 60 percent of the air wing's total ordnance expenditure, with a success rate of 99.4 percent.

There's a new plane in the skies over Point Mugu. Two TA-7C *Corsair IIs* were delivered recently to Pacific Missile Test Center to support test and evaluation projects. Capt. Jim Hickerson, head of the weapons systems test department, was the first to fly the aircraft there. These aircraft will replace three A-4 *Skyhawks*. The TA-7C is a two-seat version of the A-7 *Corsair II*. In photo, AMH2 Steve Gillan checks the TA-7C prior to its acceptance flight at PMTC, while Capt. Hickerson (front seat) and LCdr. Rick Brydges prepare for flight.

Flying in and landing without lights during a night operation is a difficult job demanding careful planning by both pilots and ground unit commanders. Pilots from HMH-363, in three CH-53s, learned just how difficult it is during a reconnaissance night mission with 100 Marines from Kilo Company, 3rd Battalion, 4th Marines, at Futenma. "For night pickups, without any lights, a guide angle indicator lights (GAIL) system is used by the ground unit to aid us," said 1st Lt. Vincent J. Allenburge, HMH-363's air team commander. This battery-powered light with three different colored lenses indicates the angle the helo must use to safely land. It's unusual to use CH-53s in a reconnaissance mission because of their noise and size. But as crew chief Sgt. Jeff H. Sommers remarked, "The CH-53 may be the loudest aircraft but it's also the fastest and can lift the most troops."

Change of Command

ComNavAirSysCom: VAdm. E. R. Seymour relieved VAdm. F. S. Petersen.

HAL-4: Cdr. Don Yost relieved Cdr. John Westbrook.

HC-11: Cdr. David L. O'Neill relieved Cdr. James A. McCallum.

HMM-162: LCol. Gary W. Parker relieved LCol. Kenneth L. Holm.

NAS Patuxent River: Capt. Thomas N. Flanary II relieved Capt. Verle W. Klein.

VA-45: Cdr. Robert Wainscott relieved Cdr. Gerald Hertzler.

VAW-124: Cdr. L. N. Oden relieved Cdr. J. R. Slaughter.

VF-51: Cdr. Jerry D. Norris relieved Cdr. F. Lee Tillotson.

VF-102: Cdr. Daniel C. Bunting relieved Cdr. William J. Denning.

VF-114: Cdr. Ernest E. Christensen relieved Cdr. David E. Frost.

VP-9: Cdr. Charles C. Nute relieved Cdr. Peter H. Cressy.

VS-37: Cdr. Ronald B. Baker relieved Cdr. Paul A. Ruth.

TIME TO STAY
...and come back in

Pilot Recall Program

Former Navy pilots are now being considered for recall on an individual basis. Pilots must be from year group 68 or junior; separated from service less than four years; never separated from the service twice; physically qualified; agree to at least a two-and-one-half-year commitment; and have had a good past performance record. For more information and application, call the aviation detailer, Lt. Dave Goulette, collect at (301)427-5623. The Navy needs you back on the team — more now than ever before.

Re-up Relocated

The Reenlistment Incentives Branch of the Naval Military Personnel Command (NMPC-483), which handles star, score, lateral conversion, SRB, CREO and pro-pay matters, has relocated to the Navy Annex in Arlington, Va. New phone numbers are: autovon 225-0656 through 9; commercial (202) 695-0656 through 9.

Did You Know?

That over 500 petty officers in aviation ratings returned to active duty during 1979 after varying periods of broken service. In addition, more than 200 pilots and NFOs returned to active duty during the same time frame.

Re-upped for Education . . .

AMS3 Shannon Knight reenlisted for two years for a tour with VP-45, NAS Jacksonville.

"My first enlistment ended none too soon as I was anxious to apply my knowledge toward a good-paying job in the civilian aviation field. I soon found out that the good jobs require special licenses and more skills than I had acquired in four years. My next choice of employment was in marketing and sales. I believe, with more training, I could have done all right financially. However, I found little reward in this type of work.

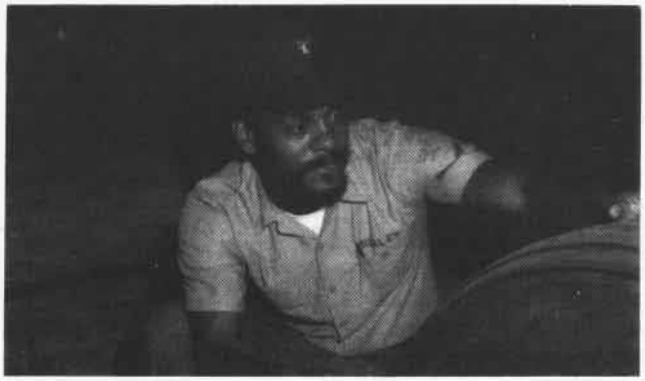
"More and more my thoughts drifted back toward aviation where my true interest and skills were. After a year as a civilian, I really started to miss working around something that gave me a feeling of accomplishment and being a trusted individual in a tight-knit community. I had not found this in my civilian endeavors. The final reason I decided to come back in was to take advantage of the Navy's many educational opportunities, both aviation and non-aviation related."

. . . and Travel

AMS3 Reginald Hurley reenlisted for two years for a tour with VP-45, NAS Jacksonville.

"During my first enlistment in the Navy I was attached to an A-7 squadron and made several Mediterranean cruises. I got out to pursue a civilian aviation career and got a job as an assistant airport manager in Petersburg, Va. After a year in this job I got tired of the 9 to 5 routine. It was boring compared to flight deck operations on a carrier. I also missed the travel the Navy has to offer.

"I'm quite satisfied with my decision to come back in. I will be able to continue a career in aviation and continue traveling. I'm really looking forward to the squadron's upcoming deployment to Bermuda."



TOUCH AND GO

Sec Nav visits CV-63

Kitty Hawk returned recently to her San Diego home port from a 69-day extended Indian Ocean deployment. During her total 8.8-month cruise, her crew and aircrews compiled impressive logistic and material readiness statistics. Secretary of the Navy Edward Hidalgo flew out to the carrier as she was making her way into port. He later talked with awaiting families and friends on the pier.

He addressed the officers and men aboard *Kitty Hawk*, saying, "I've come to tell you how deeply proud, movingly so, we are of all of you. We're proud of the fact that you've written a great page of history. You've been the cutting edge of our military strength. . .implemented our foreign policy. . .made evident, which I've said several times in my hearings on the Hill recently, the tremendous flexibility and power of our Navy-Marine Corps team, that we can be there when needed without

asking anyone's permission.

"You have done all those things and have done them magnificently well. In Washington we share your pride and recognize the importance of every single thing you've done.

"I've been up on the Hill with the Chief of Naval Operations and the Commandant of the Marine Corps, telling members of Congress, with respect to our 1981 budget and the years ahead, that we need a strong Navy — more ships, more aircraft and more missiles; all the things we need to maintain that unmistakable strength. But, let me tell you, all those things are absolutely academic and meaningless unless we have the strength that you, our manpower, our human resources, represent. Without that strength, the rest means nothing . . . it's you and your continued loyalty and devotion and skills that are the real strength of the Navy."

Helo Trainer

Most emergency procedures are covered in the Natops manual. However, there are some emergency situations helicopter pilots need to be especially familiar with, such as engine fires and hydraulic or electrical failures. Previously, these procedures were assimilated by word of mouth from experienced pilots, and from manuals.

Now, after some four years of design and evaluation, an operational CH-46 flight trainer, Device 2F117, will change that. Designed by

Reflectone, Inc., this multimillion dollar flight simulator will give the CH-46 pilot the opportunity to practice in-flight emergencies without leaving the ground. It will also enable him to complete at least half of the required instrument flight time without using a single drop of JP-5 fuel. A CH-53D trainer is planned for the future.

"The trainer is not designed to teach pilots to fly better," explained retired MGy.Sgt. Jim Cleghorn, trainer foreman at MCAS(H) New River, Jacksonville, N.C. "What it is going to do is help the pilot experience and control some of the emergencies he can't attempt while in flight. It's also going to save gas because eventually the

pilot will be able to log up to 50 percent of his required instrument flight time in the trainer."

In addition to computerized programming for routine flight, there are nearly 190 emergencies and various weather conditions, including hail, for the pilot to contend with.

"Everything works," Cleghorn said. "There are no dead dials, knobs or switches, or pictures of phony instruments. The trainer responds to the controls like a real helicopter."

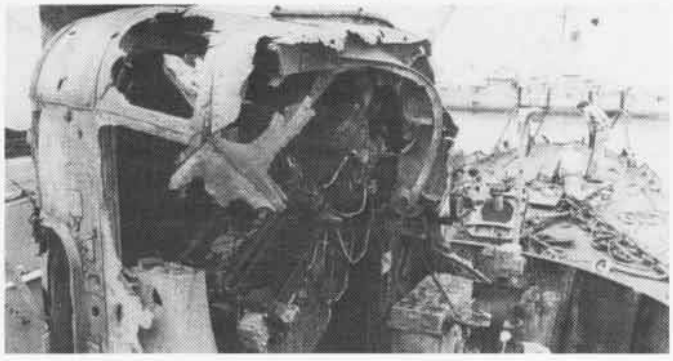
The trainer's spider-like legs can duplicate any real helicopter movements, including 45-degree tilts to the right or left. "The legs can extend only so far," Cleghorn added, "but the feeling of ascent and descent is genuine."

Pilot instructors program problems for trainees, monitor their performance and act as control tower operators. The instructors can provide instant playback of cockpit operations and pilot performance.

"Realism is the word for this trainer," said Cleghorn. "While the trainer is programmed to indicate when the pilot makes a crucial error, the system is also programmed to crash. When such a situation occurs, the trainer freezes in position, a light flashes, and the instructor and pilot go over what went wrong and how to avoid it the next time."

Surface Targets

In the dark of night the 380-foot ship moves quietly through the moonlit water. Only her massive silhouette can be seen on the horizon as she is towed to the designated mooring site and securely linked to a 15,000-pound anchor with heavy steel chain. She sits, waiting, ready for a rendezvous with fate.



The scenario is not a night-training exercise but rather the empty shell of a destroyer being towed out to sea to serve as a target for missiles at the Pacific Missile Test Center's sea test range.

Nearly 40 years old, this ship has joined a special fleet at Port Hueneme, Calif. and is maintained and operated by PMTC's surface targets division. Others in this exclusive fleet are several 56-foot seaborne-powered targets (Septar), trimaran targets, and floating pontoon barges.

"We can augment these surface targets to appear to the missiles many times greater than their actual size," explains Pete Marvin, head of the division. His team of 45 engineers, technicians, electricians and mechanics keep the boats and ships functional for operations around the world. Activities which they support are located in Hawaii, Virginia, Maryland, California (San Diego), Puerto Rico, Greece and the Philippines.

A crew of experts combine talents to prepare the targets for missile-firing operations. To avoid rough seas during the daytime, personnel often work during the calm of the night to set up the target ships at their moorings.

Radar reflectors and electronic gear augment the targets for each individual missile test operation. Both the Septars and destroyer hulks can be equipped to serve in a wide variety of missions – representing anything from enemy missile-firing fast patrol boats to the massive destroyers and cruisers of the modernized fleets of major world powers.

These target ships are quite successful in their performance. Many can be used over and over. The destroyer hulks resist sinking despite numerous explosions, fires and large damaged areas. The smaller target ships are the Septars, trimarans and pontoon barges. Equipped with as many as five engines, the Septars can travel unmanned at speeds up to 38 knots during missile tests. Each boat is configured to represent a different threat as needed for the operation.

Filled with plastic foam, the Septars usually don't sink when hit by missiles and can therefore be reused. One has been recycled five times, each time with a new electronic configuration for different operations.

Vital to the mission of testing and evaluating missiles, these surface targets provide realistic threat simulation.

OTD

By Lieutenant Bill Christman

His title is Operational Test Director (OTD). He has just returned from a productive but tiring week-long antisubmarine warfare program review where he represented both the commanding officer of Air Test and Evaluation Squadron One (VX-1) and Commander Operational Test and Evaluation Force (ComOpTEvFor).

On the flight home, he organized his notes from these high-level meetings. His trip report on significant events, trends and comments is invaluable since he was the sole representative of the operational fleet customer at these meetings.

One might expect him to be a captain or a commander since he is directly responsible for the operational evaluation of a multimillion-dollar weapon system. However, he is a middle-grade lieutenant with about six years of commissioned service. He earned these responsibilities through outstanding performance and recent operational experience.

He could be a pilot or Naval Flight Officer, but no matter what community this lieutenant is from, at VX-1 he can expect diverse professional challenges and personal job satisfaction. His duties, though, require long hours of hard work and first-rate managerial skills. There is a high probability of experiencing intense short-term frustration. The OTD is a strong link between the fleet operators, who need a better "mousetrap," and the program manager in Washington.

The primary mission at VX-1 is to conduct operational test and evaluation (OT&E) of all ASW aircraft and associated equipment proposed for production and procurement. Squadron aircraft include the P-3C, S-3A, SH-3H, SH-2F and, soon, the SH-60B LAMPS MK III. Organizationally, VX-1 is similar to any fleet squadron, with the addition of an OT&E department called the evaluation directorate. Headed by a commander, an aeronautical engineering duty officer, this department is responsible for all project work. Each project is assigned to a project officer, officially the OTD.

Operational test and evaluation, and developmental test and evaluation (DT&E) are equal in importance. There is no duplication or overlap. However, OT&E, through DT&E, is based on the premise that equipment meets its technical specifications. OT&E is not concerned with technical specs. It wants to know whether the equipment "can complete the mission for which it was designed."

OT&E has three characteristics: (1) It is carried out in the operational environment, with all the temperature extremes, pitching flight decks and pouring rain that the real world provides. (2) Operation, maintenance and evaluation of the equipment are handled by fleet experienced personnel, not test pilots, not technicians or engineers, but average sailors. (3) OT&E is conducted against a "simulated enemy" who is being as unpleasant as he can by using countermeasures and every dirty trick that might be expected from the adversary.

By design, DT&E holds as many factors constant as possible. It isolates others to allow the tester to measure the parameters of interest. Many times, in OT&E, it isn't possible to measure specific items. The idea is to take the new system, with fleet operators, to the "enemy," create combat conditions as closely as possible and evaluate success against failure. Former ComOpTEvFor, Rear Admiral Robert Monroe, summarizes the difference: "DT&E is a science; OT&E is an art."

On the schedule is an 18-month operational evaluation of the LAMPS MK III. VX-1 pilots, aircrew and maintenance personnel from the HSL and HS communities will team with S-3 and P-3 NFOs, plus a surface warfare officer, to provide the expertise required. Additionally, other ASW communities are assigned projects. While not as broad as an entire new aircraft/weapon system, the projects are nevertheless equally important. The VP and VS communities currently are conducting 40 projects encompassing titles such as S-3A avionics improvement, vertical line array difar (VLAD), dwarf buoy, P-3/*Harpoon*, directional command active sonobuoy systems (DICASS), expendable reliable acoustic path system (ERAPS), and P-3C Update III advanced signal processor. Many of these are follow-on (FOT&E) which is the ongoing evaluation of a system. If a system is discovered to have correctable problems while in the initial (IOT&E) stage, it is returned to the contractor for improvement. FOT&E takes the system for evaluation after the contractor has reworked the equipment. Continuing projects such as the P-3C Update III and S-3A avionics improvement are major projects in the FOT&E stage.

Other VX-1 projects include sonar data computer or AQS-13E sonar. This improvement program enables the SH-3H to process and display all types of operational sonobuoys and will provide for improved active sonar capabilities. This system should provide a quantum leap in SH-3H capabilities.

The VLAD sonobuoy program is another ongoing project which is designed to be used by all air ASW platforms. It will allow detection and classification at longer ranges and against quieter targets than is now possible.

The concept behind the dwarf buoy is that a greater number of smaller and lighter buoys can be carried by a single aircraft, or that a reduction in mission loading is possible for a fixed number of aircraft.

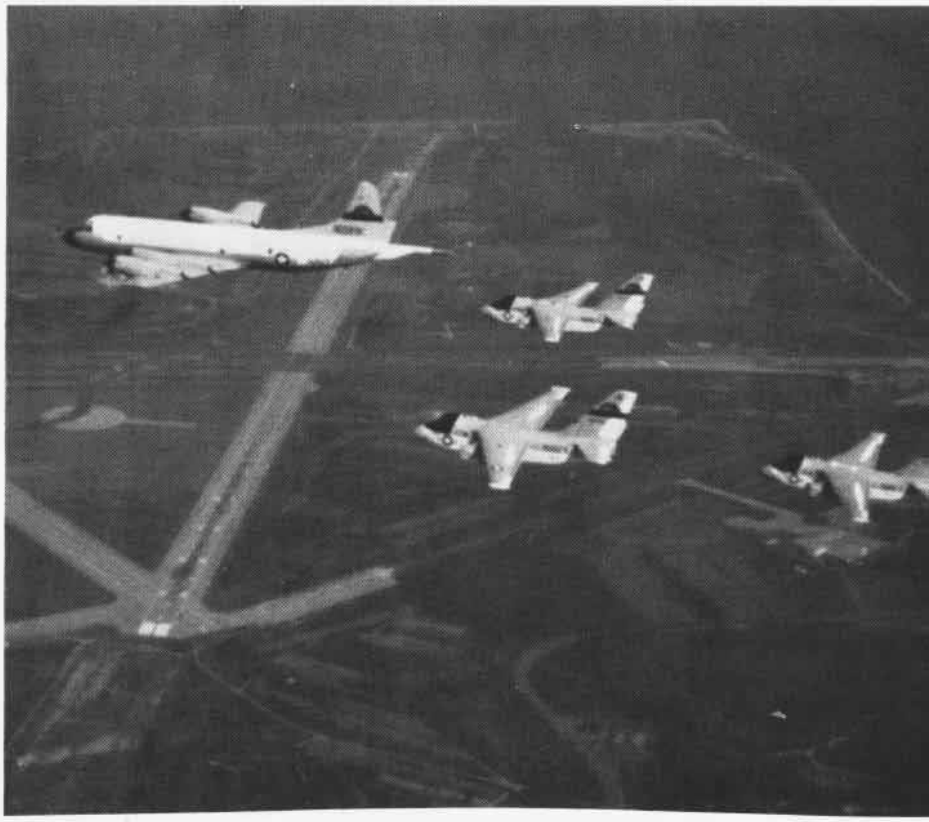
In addition, VX-1 is the model manager for the ASW tactical airborne information document and ASW air-

craft tactical manuals. It is responsible for keeping the fleet abreast of current tactical doctrine by ensuring the manuals are updated.

VX-1 also has projects not directly related to ASW. The sonobuoy missile impact locating system (SMILS) project provides support for Navy submarine-launched ballistic missile firings. The SMILS project involves work at such places as Ascension Island, Antigua Island, and Recife, Brazil.

The electromagnetic performance of aircraft and ship systems (EMPASS) is another project. EMPASS is a high-quality airborne measurement platform which is able to quantitatively assess the performance of electromagnetic systems in the operational environment.

No matter what community he is from, the pilot or NFO will find OTD duty challenging and rewarding. The OTD plays a key position in the acquisition cycle of a weapons system and has the special opportunity to manage programs today that will be vital to the fleet tomorrow.




FLECOMPRON EIGHT
VC-8
NAVY
NAVY
NAVY
36
NAVY
34

To accomplish its mission, VC-8 employs target drones which are mounted under the wings of the Neptune. The engine is ignited and, when ready, the drone is launched by the push of a button. A ground unit guides the drone to an assigned dump area after the firing run, where it is lowered into the water by parachute, hooked by a helicopter and carried back to the squadron. The drone is then disassembled, immersed in fresh water for decontamination from salt water, rinsed and submerged in a corrosion preventative. All electrical parts are dried in ovens. Speed is essential, for a few hours' delay can cause destruction of vital components by corrosion. The drone is reassembled and checked out, ready for its next flight. The Skyhawk's primary mission is enemy aircraft and cruise missile simulation, banner towing for fleet gunnery, plus serving as a launch platform for the AQM-37A supersonic target missile.

VC-8's hard work and skillful maneuvering of the drones during operations have paid off, providing the fleet with the needed targets to test the Navy's new missile systems.

In the December 1979 "People, Planes, Places," *Naval Aviation News* printed the following statement: "In June 1978, VR-24 became the first and only squadron to operate all the basic types of aircraft." Responses received from VX-1 and VX-5 were published in the "Letters" section in March and April 1980. They make the same claim. The most recent rejoinder was from the Public Affairs Officer of Fleet Composite Squadron Eight (VC-8), Ltjg. C. E. Renner. He said, "The *Redtails* are not asking for a piece of VR-24's cake, but would just like to say, 'Welcome aboard!' VR-24 might be the *second* and only other squadron to fly all three basic types of aircraft, but it is far from being the *first*."

VC-8's roots reach back to 1958 when it was established as Guided Missile Service Squadron Two. The *Redtails'* designation was changed to Utility Squadron Eight and then, in 1965, became VC-8. As early as 1959, the squadron flew all three types of aircraft, fixed wing reciprocating, rotary wing and jet – P2V, UH-34 and DF-1D.

The squadron is home-based at NS Roosevelt Roads, Puerto Rico, and presently flies the EP-2H/DP-2H *Neptune* (prop/jet), SH-3G *Sea King* (helo) and TA-4J *Skyhawk* (jet). Its mission is to provide aircraft and target services to air and surface units of the Atlantic Fleet and to naval units of allied nations in support of the Atlantic Fleet Weapons Training Facility. VC-8 has flown and maintained as many as seven different aircraft at one time. Its inventory has contained such aircraft as the DP-2E, A-4B/C, US-2C, QF-9G/J, DT-28B, F-8K, DF-8F, DF-1D, RH-3A and UH-34D/E.

With more than 23,000 accident-free flight hours, VC-8 recognizes the task of operating and maintaining three diverse aircraft types safely and efficiently, and willingly accepts the challenge. (See "Add Two More," page 40.)

EXPANDED

A-7E Corsair II

With the addition of the forward looking infrared receiver (FLIR), the *Corsair II* "Night Raider," developed by Vought, is a fully integrated extension of the current A-7E navigation and weapons delivery system (NWDS). The FLIR system consists of a wing-mounted pod, expanded NWDS computer with software, and airframe changes to incorporate associated FLIR switches and controls. All new production A-7Es are FLIR-capable and some existing A-7Es will be modified to be FLIR-capable.

Mounted on wing station six, the FLIR pod houses the IR sensors, scanner array, pointing servos, an on-board air refrigeration unit and provision for a video tape recorder. The pilot controls FLIR through the NWDS computer. The FLIR scene can be viewed in either a narrow or a wide field of view on the pilot display unit. It is so well integrated with the existing weapons system that there are very few FLIR-only associated controls, easing the pilot's transition to the FLIR system. The pilot soon becomes comfortable with it, relying primarily on the head-up display for altitude, airspeed, heading and range-to-target information.

FLIR navigation relies mainly on the A-7's inertial navigation system, using the FLIR scene to positively identify checkpoints. It also gives the A-7 a low altitude capability at night, allowing the pilot to navigate much as he would during the day.

Weapons delivery with FLIR uses all current attack modes. The pilot can make a FLIR or non-FLIR delivery by selecting one switch. Using FLIR, night deliveries have proven to be as accurate as day deliveries.

Application of FLIR for war at sea, sea, search, surveillance and control (SSSC), night reconnaissance and attack of unlighted night targets is especially promising. When used for SSSC and war at sea, FLIR allows for passive target identification far outside visual range, day and night. If hostile, the target may be attacked on the same pass.

The FLIR A-7 has joined the fleet with VA-81 in the Mediterranean and VA-146 in the Western Pacific.

CAPABILITIES

A-6E Intruder

The Navy's first fleet A-6E target recognition attack multisensor (TRAM) aircraft was received by Commander Medium Attack Wing One in September. In addition to all the state-of-the-art features of the A-6E carrier aircraft and inertial navigation system, it includes a detecting and ranging set which consists of FLIR, a laser receiver/transmitter, and a laser receiver. These subsystems are contained in a 20-inch-diameter ball turret mounted beneath the radome. The turret is gyro-stabilized, with the laser systems colinearly (lying in the same straight line) mounted to the FLIR or crosshairs. The turret's stabilization and pointing system provides full lower-hemispheric coverage and can be slaved to the computer-driven radar crosshairs, or vice versa. The high resolution of the FLIR systems with a continuous zoom and magnification of the target provides target identification at greater standoff ranges.

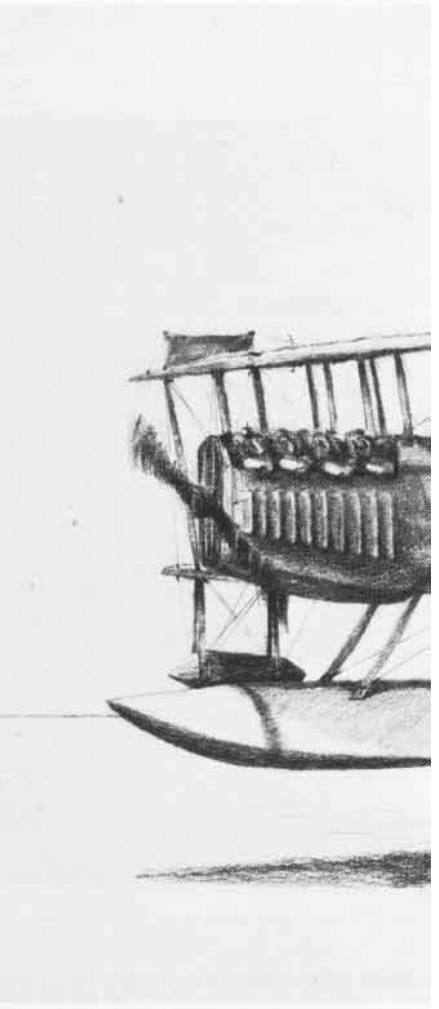
The FLIR detects targets which might otherwise be obscured by darkness, foliage or camouflage, by sensing their infrared heat radiation. The radiation is processed and displayed in a high-resolution TV format above the B/N's radarscope and the pilot's attitude reference system. FLIR permits A-6E TRAM flight crews to passively identify targets at standoff ranges and execute a first-pass attack, day or night. The most vulnerable part of a ship, the waterline or engine room, may now be specifically targeted. A video tape recorder already installed in the A-6E provides a viable bomb damage assessment capability as well.

The laser is aligned to point along the FLIR line of sight. The laser receiver/transmitter can be used in a range-only mode to improve aircraft-to-target slant range calculation, which significantly improves freefall weapons delivery accuracy; or it can be used to designate targets for delivery of laser-guided weapons. The laser also has a forward air controller receiver to detect the presence and location of targets illuminated by a ground observer or another aircraft.

The *Tigers* of VA-65 are the first squadron to deploy with this new version.

Golden Eagles

Secret Project



RELEASE

By Joseph A. Eaton, NA #184

I was assigned to experimental duty at a station on the Potomac River about 60 miles south of Washington to help in the development of the greatest weapon ever. Today, it would be said that we were developing the cruise missile.

This secret project, a small airplane that could carry a torpedo, was really a flying torpedo with a pilot on board. Of course, an automatic pilot had to be developed to guide this weapon and we were experimenting with all kinds of instruments.

Actually, the pilots rode in this aircraft during the test flights. Whenever anything went wrong with the automatic controls, they shut them off, took manual control, flew back and let the engineers work on it.

At that time, the gyroscope, the base of the automatic control, caused us trouble. It worked O.K. for half an hour but there was constant error and, after 30 minutes, the plane would go into a spin. Each time this happened, the controls had to be pulled out and worked on.

The cause of that constant error turned out to be the weight of a tiny silver wire that led from the electrical circuit to the motor in the gyroscope. But what we developed ultimately helped lead to the automatic pilot system.

The chief engineer on this flying torpedo was Carl Norden, later the developer of the Norden bombsight.

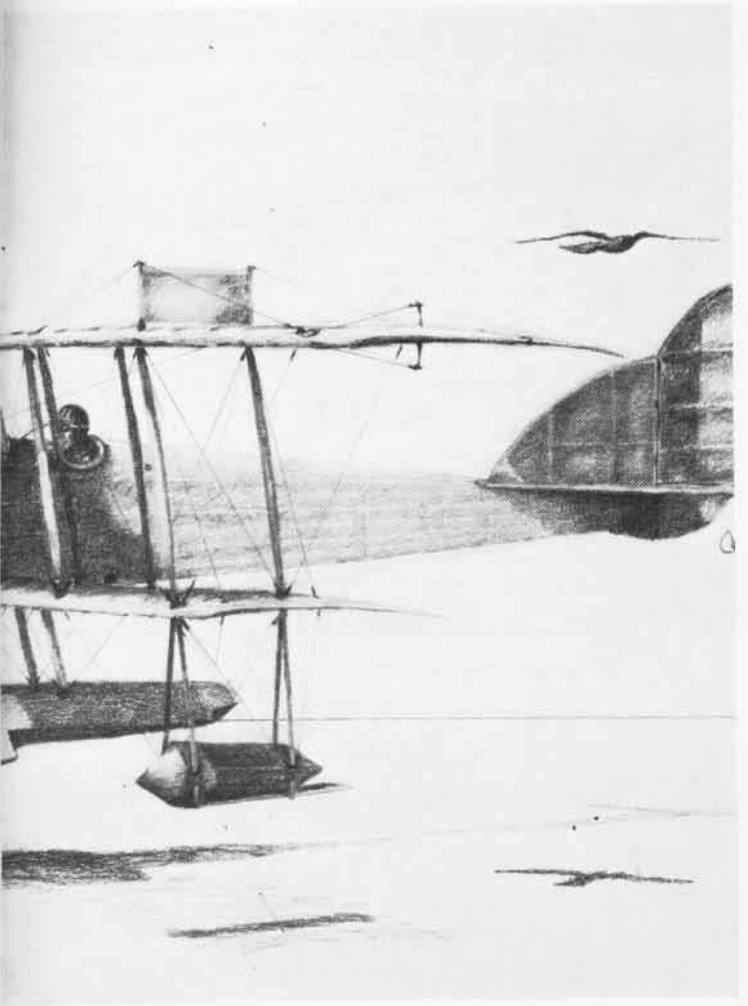
During this time, six of us lived in a cottage on the lower proving ground. There was no entertainment, no town. We got lonely and decided to have a party. We invited some girls. But I had to make an experimental flight before the party. I took off and, at 500 feet on automatic control, stood up to watch the girls come up the road to our cottage. The autopilot quit after five minutes this time. I spun in. The engine was driven into the ground. I went through the gas tank and ended up where the motor had been.

I spent the summer in the hospital — the end of my experimental work.

By George van Deurs, NA #3109

When Naval Aviators received primary training in seaplanes, they were warned, in ground school, never to try to make a normal landing on glassy water because it was impossible to judge one's height above the mirror surface. Low flying above glassy water, however, was seldom specifically mentioned.

Commander George Loony ("Dick") Richard is a WW I Naval Aviator and a Golden Eagle. In the summer of 1923 he was instructing in primary seaplanes (N-9s) at Pensacola. One of his students, Jack Shoemaker,



UNDERWATER

soloed, then a few days later asked Dick how to cure his habit of slipping on all of his turns.

"Easy," Dick said. "Fly around the bay a couple of times about three feet off the water and you will be afraid to slip. Come on, I'll show you."

It was the kind of a summer afternoon that made flying in an open shirt and goggles pure joy. The two climbed into an N-9. Dick took off and flew three feet off the water, toward Pensacola's lighthouse. In front of Fort Barrancas, no breeze riffled the water. Dick saw a seagull fly under the plane's pontoon. The bird passed so fast that he didn't notice that it seemed to be flying on its back. Dick just thought that if a bird was lower, the plane was too high for the demonstration he had promised his student. He dipped the nose very slightly. The plane hit with a splash like a 16-inch shell and scrunched into wreckage. Dick had been decoyed by the reflection of a seagull flying overhead. The plane was junk but the two men received only duckings.

I saw Dick splash. Nevertheless I had to learn about glassy water the hard way, nine months later. The final check of the torpedo plane course required three good torpedo drops, at least one of which had to be a hit. The target was anchored in Pensacola Bay about 1,000 yards east of the drop point, abreast of Fort Pickens. The school's torpedo planes were R-6Ls, twin-float machines that needed full throttle to stay in the air. They carried 20 minutes of fuel, a pilot and a type D torpedo. (That 12-inch tin fish might run 1,000 yards if released with the plane perfectly level and not more than five feet above the surface.)

On April 4, I took off in R-6L #A-970, lined up the target and went down to release altitude. The water on the range was just as smooth as it had been the day the gull gulled Dick Richard.

A moment after I leveled off, I decided I didn't know how high I was and tried too late to abort the mission. The pontoons kissed the water, their overloaded struts gave way, the machine went in nose first, then bobbed up to float with its tail high in the air.

I looked around the fuselage. The torpedo was gone; I supposed it was stuck in the mud at the bottom of the bay. The chase plane, however, followed it down the range for a perfect hit. After considerable argument it counted for my required hit, although the plane was junk.

Grampaw Pettibone was never noted for his patience with flyers who had to learn the hard way. But as far as Richard and I know, he never lectured on our glassy water troubles.

Nevertheless, I was red-faced a month later when I reported for duty in Torpedo Squadron One at Norfolk. Si Ginder, the squadron executive, roared, "Oh, yes! We have been waiting for you," and pointed to a bulletin board. Posted there was a half column newspaper clipping naming me as the first pilot to make a successful submerged launching of a torpedo from an airplane.

Letters

Champions' Insignia

When he was a commander, now vice admiral and DCNO(Air Warfare), Wesley L. McDonald was skipper of, and I was a plane captain in, Attack Squadron 56. The boomerang in the *Champions'* insignia had a different meaning than that stated inside the back cover of the March 1980 issue. At that time, it indicated the degree of reliability achieved by our aircraft maintenance department. We always knew, from a maintenance standpoint, that our pilots would return home safely.

ADC George C. Floyd
VA-205
NAS Atlanta
Marietta, Ga. 30060

Add Two More

In the December 1979 issue, VR-24 was referred to as the first and only squadron to operate all the basic types of aircraft: helos, props and jets. This is not entirely true. VRF-31 has been operating all basic types of aircraft for so long that most of your readers probably take it for granted. The *Storkliners* fly 104 different models of aircraft, nearly everything in the Navy/Marine Corps inventory. VRF-31 is responsible for the safe, expeditious and economical delivery of Navy and Marine Corps aircraft in direct support of all aviation activities throughout the world.

Lt. Ivey F. Walker
VRF-31
NAS Norfolk, Va. 23511

In your December 1979 issue you refer to VR-24 as the first and only squadron to operate all the basic types of aircraft. In your March 1980 issue, VX-1 was heard from. And, now, for more one-upmanship. Since being assigned to the VX-5 *Vampires*, China Lake, Calif., in December 1977, I have witnessed our operation of the following aircraft: As for jets, we fly the OA-4M, TA-4J, A-4M, A-6E, TA-7C and the A-7E. Our props include the C-1A and US-2C. Our helos are of the green *Cobra* attack variety, namely, the AH-1J and AH-1T. Also thrown in at times are the VSTOL AV-8 *Harrier* and the OV-10 *Bronco*. The mechanics in our power plant shop find it a great challenge to troubleshoot and maintain the seven different power plants used in these aircraft. Operating at NWC China Lake with no local AIMD facility for our engines, we strongly emphasize the use of maintenance publications on every job and are quick to utilize the experience and knowledge of our five tech reps.

ADC Tom G. Forrest
VX-5
NWC China Lake, Calif. 93555

Flying Fortress

I am preparing a volume on the B-17 *Flying Fortress* and want to go into detail on the Navy's PB-1W *Fortress* operations after WW II. I'd like to ask *Naval Aviation News* readers who served with PB-1W aircraft and who have anecdotes, or photos which I could borrow, to get in touch with me. I will return any photos or materials after copying them. I'd be especially grateful if anyone has color slides of the PB-1Ws which I could copy for possible use as the cover of the upcoming *Fortress* publication.

Frederick A. Johnsen
Bomber Books & Echelon Magazine
Box 98231
Tacoma, Wash. 98499

Reunions

The Professional Aviation Maintenance Association, Inc., will hold its annual convention August 22-23, 1980, at the Radisson Plaza Hotel in Nashville, Tenn. PAMA was organized in 1972 to promote a high degree of professionalism among aviation mechanics, technicians and repair agencies. It is dedicated to promoting safety and knowledge in the aircraft maintenance profession. For further information contact Mr. Paul Wooten, 202 Gracey Avenue, Smyrna, Tenn. 37167.

The USS Pittsburgh Association will hold its annual reunion in Pittsburgh, Pa., in July 1980. Former officers and crew members are urged to contact J. C. Ayers, Box 74, Wildwood, Ga. 30757, (404) 820-2360 or (404) 820-1601 for information.

There will be a reunion of former crew members of USS *James E. Craig* in Providence, R.I., August 8-10, 1980. Write or call Abbie Ise, 83 Sherwood Street, Providence, R.I. 02908, (401) 521-2081.

Patrick J. Byrne, Naval Aviator No. 3422 and NAP No. 10, is dead at the age of 83. "Pappy" Byrne enjoyed a long and distinguished career in aviation – Navy and civilian. He retired from the Navy in 1958 after 40 years' service. During that time, Pappy flew in more than 140 different types of aircraft for a total of over 22,600 hours. He spent over two years and seven months of his life in the air.

Pappy did much pioneering work in Naval Aviation, particularly with seaplanes. He is credited with helping to establish practically every U.S. seaplane base in the world, and laid out for the Navy and commercial airlines the world's major seaplane routes. A former commanding officer remarked that he was "without peer in the field of flying boats."

Captain Lee Noble, who instructed Pappy in flight training at Pensacola in 1920 and observed his performance during WW II, said, "Pat is one of the most moral, upright, true Americans I have ever known." He will be missed.

Published monthly by the Chief of Naval Operations and Naval Air Systems Command in accordance with NavExos P-35. Offices are located in Bldg. 146, Washington Navy Yard, Washington, D. C. 20374. Phone 202-433-4407; Autovon 288-4407. Annual subscription: $18.00, check or money order ($4.50 additional for foreign mailing) direct to Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Single copy $1.50.

squadron insignia

Fighter Squadron 154 traces its history back to 1951 when it flew F9F-2 Panthers during the Korean Conflict. In 1957, when VF-154 received supersonic F-8 Crusaders, cartoonist Milton Caniff, creator of the "Terry and the Pirates" and "Steve Canyon" comic strips, was commissioned to design a squadron insignia representing the new concept of fighter tactics. The Black Knight (also the squadron nickname) stands girded in full armor, ready to strike back at any enemy threat. Home-based at NAS Miramar, the squadron has as its primary mission today the employment of the F-4J/S Phantom II in its multi-role capabilities as fighter, bomber and interceptor. Present skipper is Commander Gary N. Cook.

naval aviation news