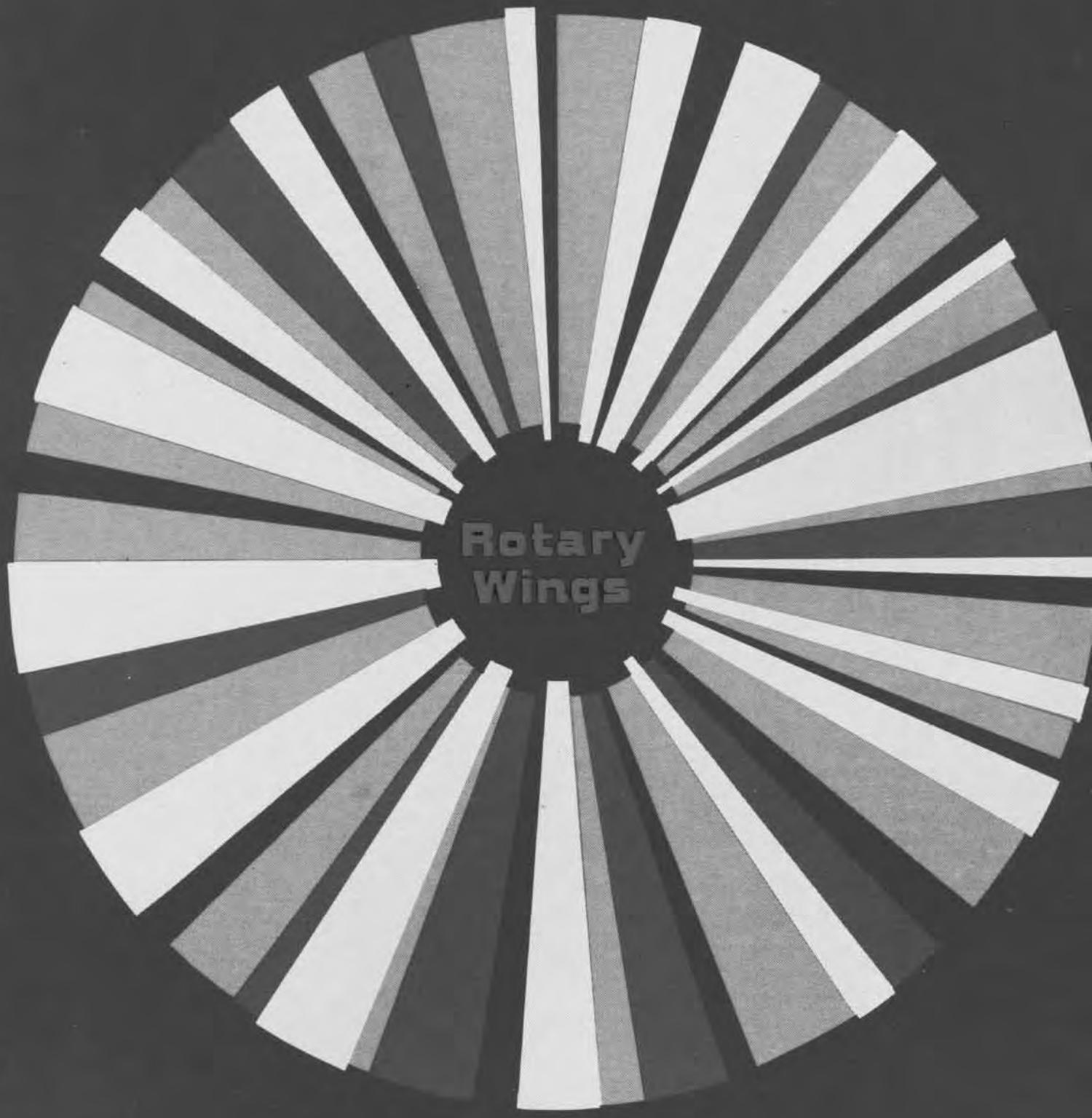
May-June 1985 The Voice of Naval Aviation US NAVY

naval aviation news



naval aviation news

Sixty-Seventh Year of Publication

(ISSN 0028-1417)

COVER—*NANews* Art Director Charles Cooney's cover design creates an illusion of the dynamics of a helicopter's rotor blades and symbolizes the continuous state of change and growth of the helicopter's position in Naval Aviation.

Features

Departments

Naval Aviation News is published bimonthly by the Chief of Naval Operations and Naval Air Systems Command in accordance with Navy Publication and Printing Regulations P-35 (revised May 1979). Opinions expressed are not necessarily those of the Department of the Navy. Reference to regulations, orders and directives is for information only and does not by publication herein constitute authority for action. All material not copyrighted may be reprinted. Naval Aviation News offices are located in Building 159E, Room 512, Washington Navy Yard Annex, Washington, D.C. 20374. Phone (202)433-4407/8/9, autovon 288-4407/8/9. Annual subscription is available through Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Phone (202) 783-3238. Second-class postage paid at Washington, D.C., and additional mailing offices. POSTMASTER: Send address changes to GPO Order Desk, Superintendent of Documents, Washington, D.C. 20402.

With a naval helicopter, you always get at least two missions for the price of one. For 40-plus years, the naval rotary-wing aircraft has proven its true multimission capabilities. That's why it is "A Machine for Many Missions." Page 4.

Technology has increased the naval helicopter's capabilities, reliability and performance. From an inventor's early rotor system design to gas turbines and computers, it has evolved to where it now serves in virtually all aspects of Naval Aviation. Read "The Evolution of the Navy Helicopter." Page 8.

A helicopter pilot to be proud of and listen to is Capt. John W. Thornton, USN (Ret.), who was a POW during the Korean War and a rotary-wing pioneer back when they had to "milk them off the ground on a hot day." Read how it was done in the 1950s. Page 18.

HT-8 and HT-18 instructors are the experts teaching student Naval Aviators the "special touch" needed to make a helicopter do what makes it so versatile — hover and fly sideways and backwards. It's tough to master and that's why it takes the best to be the instructors. See "The Dynamic Duo." Page 22.

Reservists at HAL-4 enjoy the rewards of flying an unusual mission in Naval Aviation. They may be called upon for SEAL special operations at a moment's notice. Get a sample of what they do in "A Unique Navy Squadron." Page 24.

Paul E. Garber, 85, is now Honorary Naval Aviator No. 16. A pioneer in his own right, he is one of the few still living who witnessed the Wright brothers' flying machines, and he is noted for his long-term support of Naval Aviation. Page 29.

Relieves VAdm. Schoultz

VAdm. Martin Becomes DCNO (Air Warfare)

Vice Admiral Edward H. Martin relieved Vice Admiral Robert F. Schoultz as Deputy Chief of Naval Operations (Air Warfare) in February. The job gives Martin the responsibility for establishing policy on the conduct of naval air warfare and determining plans and requirements for naval aircraft, air weapons systems, aircraft carriers and specified aviation type ships. He is also the principal advisor to Admiral James D. Watkins, Chief of Naval Operations, for all matters involving Naval Aviation.

Martin, born in Savannah, Ga., graduated from the U.S. Naval Academy in 1950 and was designated a Naval Aviator in 1955. While assigned to VA-34, his A-4 *Skyhawk* was hit by a surface-to-air missile on July 9, 1967, over Hanoi, North Vietnam. He was captured by the enemy and held for five years and eight months as a prisoner of war.

VAdm. Martin graduated from the National War College with distinction in 1974 and went on to serve as Executive Assistant to the Deputy Chief of Naval Operations (Air Warfare). He subsequently became C.O. of the USS *Canisteo* (AO-99) and then commanded USS *Saratoga* (CV-60). Prior to becoming Commander, Carrier Group Four in February 1982, VAdm. Martin served as the Chief of Naval Air Training. From September 1982 to May 1983 he was Commander, Battle Force Sixth Fleet and Commander, Carrier Group Two. He was Commander, Sixth Fleet prior to relieving VAdm. Schoultz.

During his career, VAdm. Martin has been awarded the Silver Star, Defense Superior Service Medal, Legion of Merit with Combat Distinguishing Device (two awards),

JOCS Kirby Harrison

Distinguished Flying Cross, the Bronze Star with Combat Distinguishing Device (two awards) and the Navy Commendation Medal with Combat Distinguishing Device (two awards). In addition, he has received the Purple Heart (two awards) and numerous other awards and decorations.

VAdm. Martin holds a Master of Science degree in International Affairs from George Washington University, Washington, D.C. He and his wife Sharron have three children: Michelle, Edward II and Peter.

STATE OF THE ART

Reborn C-2A

Grumman Aerospace Corporation unveiled the first reprocured C-2A *Greyhound* production aircraft at a rollout ceremony last January 16 in Bethpage, N.Y. Designated "aircraft number 20," this C-2A follows 19 earlier ones built for the Navy by Grumman from 1965 to 1968. Grumman will deliver 39 C-2As to the Navy between 1985 and 1989 under a $678 million multiyear contract. Designed as a carrier on-board delivery (COD) aircraft, the *Greyhound* is a vital link between the carrier fleet at sea and the shore.

Grumman Aerospace Corp.

The first reprocured C-2A Greyhound successfully completed its first flight on February 4, 1985.

SH-3 ASW Trainer Modified

A new dimension has been added to ASW realism for SH-3H flight crews. The British Ferranti computer and acoustic system, procured through the Naval Training Equipment Center and a Reflectone Corporation contract, has been installed in the *Sea King* weapons systems trainer at NAS North Island, Calif. Training capability has now improved to nearly that of real-world ASW training. The modification was installed with minimum delay, enabling the Navy to maintain its student training schedule. Flight-hour cost savings and improved readiness will result from this addition to the system trainer.

T-45 Training System

The U.S. Navy has awarded McDonnell Douglas Corporation a contract for full-scale development of the T-45 Training System (T-45TS), an entire training package under a single system on which up to 600 Naval Aviators will be trained each year for carrier-based fighter and attack squadrons. Using the system, the Navy expects to significantly cut the costs of training pilots.

The prime contractor, the Douglas Aircraft Company division of McDonnell Douglas, will share aircraft development and production with British Aerospace, upon whose *Hawk* aircraft design the T-45A trainer is based. Sperry Corporation will develop the simulators and Rolls Royce will produce the aircraft engines.

Some 300 T-45As are needed for the Navy's training requirements. McDonnell Douglas will begin construction of two test aircraft late in 1985, with the first flight scheduled for late 1987. Present plans call for work to begin on the first 12 production aircraft in 1988 which, along with the associated ground training systems, are scheduled to be in operation in the Navy in 1990 at NAS Kingsville, Texas.

Grampaw Pettibone

Old and Bold?

A gathering storm, punctuated by gusting winds, thunder, heavy rain and plentiful bolts of lightning, was moving swiftly toward the C-131F's destination, an East Coast air station. Although cautioned that the already bad weather was deteriorating, the aircraft commander decided to continue. In the approach, the *Samaritan* broke out temporarily at 600 feet. The aircraft commander pointed out the runway to the copilot who was at the controls and, despite the rain-splashed, distorted view and below-minimum visibility, the transport continued to touchdown. Hydroplaning a bit, it traveled about 1,000 feet down the runway before a sudden blast of crosswind blew the machine off the port side of the runway. The nose gear struck an old asphalt-covered arresting gear support and mound and collapsed. Both props struck the ground, causing sudden engine stoppage. It was ultimately decided to strike the bird from the inventory.

Grampaw Pettibone says:

What a pain in the pancreas! I feel like hurlin' a few lightning bolts at somebody. This experienced aircraft commander, an 05, pressed on in violation of NATOPS by entering known severe thunderstorm weather without an operable weather radar on board. Turns out that preflight briefing and in-flight crew coordination were way below par to begin with. That crosswind, by the way, was part of the downburst from a thunderstorm cell and was calculated to be 48 knots!

Some other accidents in the recent past involved experienced flyers and this adverse trend prickles my neck hairs. Samples:

- Practicing a single-engine landing, a very experienced C-12 crew forgot the wheels, sparked the runway with the props, waved off, secured the severely vibrating right engine and made a real live, single power plant recovery.
- A very experienced fighter crew was making a single-engine carrier approach, got slow and uncontrollable and had to punch out.
- Flying a low-level awareness training hop, a very experienced attack pilot flew into the ground and was killed.

You old, bold heads, beware! Remember, you're supposed to be settin' the example.

ILLUSTRATED BY Osborn

Toxic Tales

A C-118B *Liftmaster* was slated to haul cargo that didn't properly match the manifest. The aircraft commander rejected the load. An on-scene departure commander representing the load's "owners" was unavailable. All cruise boxes were opened and reexamined, a task that took five and a half hours. Improperly purged CSDs, fuel hoses and a hydraulic bowser were discovered.

During a transport evolution overseas, a C-130 was on the runway, holding for release from the tower, when the loadmaster reported fumes emanating from a palletized NS-2 light cart. The *Hercules* taxied back to the loading area. There was no fuel gauge and a screen inside the filler neck prevented a dip check. A shipping document indicated that the NS-2 had been serviced with one-fourth of a tank of diesel fuel. But the filler neck was damp from sloshing and the tank turned out to be full. The cart was defueled, reloaded and carried to its destination.

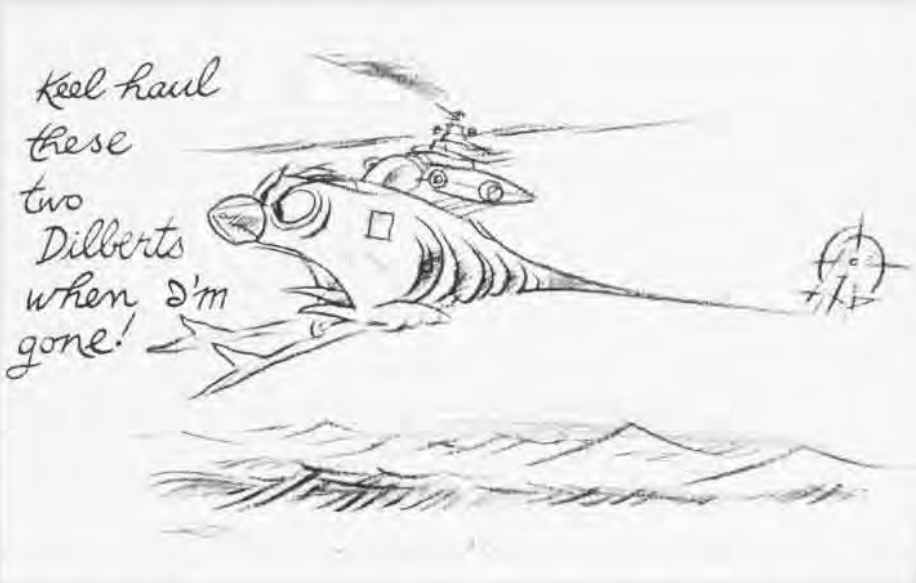
A loadmaster saw orange-hued fluid draining from a container being moved by forklift to a *Hercules* for transport. Movement stopped, the container was opened, and inside lay cans and bottles in a state of disarray. The fluid was presumed to be turbine engine lubricant. After repacking, the container was hoisted aboard for an uneventful flight.

Grampaw Pettibone says:

Early on in this aviatin' business, the word "toxic" made you think of somethin' served up at a back-alley pub on the western front. Nowadays, toxic substances – hazardous materials – can spell big trouble. Get careless totin' this snakey stuff around and you're askin' for a prime-time nightmare. It can be flammable or in other ways dangerous to health.

Ladies and gents, the trend is scary. I'm seein' too many reports like the ones above.

Prepare such materials as if you were going to sit next to them on a long hop at altitude. For those of you accountable for such transactions, the bible is NAVSUPP 505. Crews should receive special training, like CinCLant-Flt's workshop at NAS Norfolk. Packaging, certifying and handling hazardous cargo is no less important than properly cinching down a Hornet on the number one cat!



Lighting the Way

The hard-working HH-2D *Seasprite* crew was at an overseas location transporting passengers and cargo from ship to shore sites. After more than two hours of operations, the helicopter landed aboard the det's host ship, took on three passengers, an external load of cargo slings, pallets, etc. and, with 400 pounds of fuel remaining, launched for a shore site 10 miles away. En route, the 30-minute fuel light flickered intermittently but the *Seasprite* continued, made the scheduled stop and took off for a second shore site 14 miles away. On this leg the warning light became steady. After a quick stop, the helo took off again with a little over 200 pounds of fuel and aimed for the ship, 19 miles away. There was minimum discussion in the cockpit about the diminishing fuel state despite the steady 30-minute light.

The *Seasprite* flew at 110 knots airspeed in an attempt to increase range. Halfway to the ship the co-pilot reduced rpm to 103 percent. Then as the ship came into view the fuel boost light illuminated, one minute after which both engines flamed out. The fuel totalizer showed 30-50 pounds at the time. The pilot in command radioed the ship that the helo was going down (the ship's first indication that the *Seasprite* had problems) and autorotated to impact. The H-2 rolled left as all four aircrewmen egressed safely, and then went belly-up, lingering on the surface for about seven minutes before sinking. A ship's lifeboat retrieved the flyers shortly thereafter.

Grampaw Pettibone says:

Fumin' fuel tanks! This Seasprite dang near up and told the pilots: "Hurry, feed me some fuel!" But the wicked demon complacency struck again. Takes only 10 to 15 minutes from request to hookup for hot refueling, and no operational commander is gonna kick if an aircrew takes a needed gas break.

These folks got too settled in the routine of point-to-point flying, dug themselves into a hole that got deeper every minute, and didn't even try shutting down one engine for a last-gasp leg to the ship. Brain power took a holiday.

The thought of a perfectly good whirlybird slippin' to the bottom with home base in sight busts my gut. Ain't no excuse for this one.

The Naval Helicopter:
A Machine for Many Missions

By Commander Howard A. Wheeler

During the Korean War, helicopters in the Navy were somewhat of a novelty, even though they had been tested and used for several years. This is reflected in *Naval Aviation News,* which referred to them in stories of their war exploits as *windmills* and *pinwheels.*

During the Vietnam conflict, although they were much less of a novelty, it was fashionable to call them *copters, choppers, whirlybirds and jolly green giants.*

Today, after some 40 years of operational employment, naval helicopters have achieved high-tech status and are often called *systems.* But the nicknames still persist. Are you familiar with *snakes, slicks, frogs or wind wagons?* On the other hand, helicopters wouldn't be bona-fide members of the Naval Aviation community without nicknames.

One popular story claimed that they had been misnamed in the first place. That is, they should have been called "transformers" because they transformed gasoline into wind and noise. But the wind and noise are necessary by-products of this type of aircraft, which has the unique ability to do an incredible variety of missions without the need for arresting gear or runways. In fact, many of the missions performed by helicopters cannot be carried out by any other type of aircraft.

From light attack missions to hauling beans and bullets, they are involved in virtually every aspect of Naval Aviation fleet operations in the 1980s. But it wasn't always this way.

When they were first introduced to

A HU-2 helo rescues a pilot who ditched on takeoff from USS Block Island.

naval service, rotary-wing aircraft did not receive spontaneous and enthusiastic acceptance. It took a lot of convincing to sell the idea of the value of the then fragile, complicated and underpowered flying machines to fleet operations, because carrier deck space has always been prime real estate and every square inch had to be packed with the maximum possible punch. Needless to say, these seemingly impractical early helicopters did not offer a great deal in the way of firepower, and provided little in the way of glamour with their flapping blades and low-and-slow flying envelope.

In the early days, the 1940s, the helicopter took up a lot of room for the relatively few missions it could perform. But all that has changed. Today, they are powerful, reliable and packed with state-of-the-art mission systems. The fact is that helicopters are always where the action is which most recently included Grenada, Beirut and the Red Sea. Virtually no operation is without the firepower, support and services provided by Navy and Marine Corps rotary-wing aircraft.

The evolution of helicopter missions in Naval Aviation is an interesting tale of utilizing ingenuity, technology and know-how to support the aviation needs of the fleet. Each step of the way, helicopter pilots and crews had to prove the abilities of both themselves and the amazing machines they were flying.

Modern rotary-wing aircraft are a tactician's dream come true because no other type of aircraft has its unique variety of capabilities. With the possible exception of the pure gunship, all naval helicopters are inherently multi-missioned. And that means a greater return on the investment made in both machine and manpower, in cost and training.

The venerable UH-1 *Hueys,* for example, during the Vietnam war proved that even a light helicopter could not only provide rapid-response, precise and effective firepower for close air support but also quick and safe troop transport to the hot areas, aerial reconnaissance, medevac, combat logistics, and search and rescue (SAR). In short, helicopters brought ammunition, troops, equipment and supplies to the scene of the action.

Mission One: Antisubmarine Warfare . . . and SAR

Igor Sikorsky's successful creation of the first truly practical helicopter, the VS-300, opened the door to greater exploitation of rotary-wing aircraft in the fleet. The first Army XR-4 Sikorsky helicopter took to the air on January 14, 1942, just over a month after the Japanese attacked Pearl Harbor. On July 24 of that year, the Navy's Chief of the Bureau of Aeronautics issued a directive for procurement of four of the Sikorsky helicopters for study and development.

Marine CH-53A combat support helicopters were reconfigured for Navy mine sweeping operations during Operation End Sweep, the mine clearing of North Vietnamese waters.

The interest in this new flying machine was shared by the Navy and the Coast Guard, and this time there was a mission for it waiting in the wings. The sinking of merchant ships in the Atlantic caused enough concern for the Navy to devote time, effort and money to see if the helicopter could be used against this growing threat. It was Coast Guard Lieutenant Commander F. A. Erickson who recommended that helicopters be obtained for antisubmarine warfare (ASW) and SAR in June 1942 after observing the Sikorsky VS-300 prototype.

It was Lt.Cdr. Erickson — the Coast Guard's first helicopter pilot — who accepted the Navy's first helicopter, a Sikorsky HNS-1 (virtually identical to the Army's R-4) in October 1943.

These events amounted to the beginning of rotary-wing aviation in the Navy, but not without skepticism. Erickson wrote later, "The helicopter program [for ASW and SAR] was assigned to the Coast Guard. Yet, many of the old Coast Guard seaplane drivers were very unhappy with this turn of events." They considered the idea that helicopters would someday replace seaplanes in offshore ASW and SAR as ridiculous. The Coast Guard operated almost all of the Navy's helicopters during WW II, and wartime testing and evaluation were primarily aimed at determining whether the helicopter had a place in antisubmarine warfare while retaining SAR as an essential secondary mission.

In spite of the limited lifting capacity and relatively short range of these early helicopters, they proved they had potential in the ASW and SAR roles.

The Navy demonstrated its confidence in rotary-wing development with the establishment of the first helicopter squadron, VX-3, at Floyd Bennett Field, Long Island, N.Y., on July 1, 1946. Its mission was primarily "to study the helicopter's operating techniques for fleet and land-based use." Two years later, on April 1, VX-3 split into Helicopter Utility Squadrons (HUs) 1 and 2 at Lakehurst, N.J.

On October 3, 1951, Helicopter Antisubmarine Squadron (HS) 1, the first of its kind in the Navy, was established at Key West, Fla. Interestingly, the squadron did not receive its first helicopter until the following February. Technology once again played a significant role in the

Never performing only one mission, this SH-3 ASW helicopter turns up a Russian Ka-25 Hormone during surface surveillance.

mission capabilities of the naval helicopter with the development of the variable-depth, dipping sonar, a new sensor that added greatly to detecting and tracking submarines, and a new dimension to airborne ASW.

Mission Two: Combat Support

Combat support became an important mission for the Navy's fledgling helicopter community during the late 1940s and the early 1950s. The Korean conflict offered an outstanding opportunity to not only develop combat support vertical envelopment and medevac operations in actual combat conditions, but to become aware of its other battlefield possibilities.

The Marine Corps was introduced to the helicopter's battlefield potential when it began adapting the helicopter to amphibious warfare. On July 24, 1947, the Chief of Naval Operations established a requirement for a type capable of transporting assault troops from an escort carrier and setting them down ashore along with their necessary combat equipment and supplies.

Helicopter testing by the Marine Corps was picked up by Marine Helicopter Experimental Squadron (HMX) 1 at Quantico, Va., when it was established on December 1, 1947. The squadron was tasked to "develop techniques and tactics in connection with the movement of assault troops by helicopter in amphibious operations." The lessons learned were soon to be applied to actual combat.

U.S. Marine helicopters were introduced to Korea when VMO-6 arrived in Pusan on August 2, 1950, with the 1st Provisional Marine Brigade. Less than 24 hours later the squadron was flying combat observation missions. Its official mission was to conduct "tactical air reconnaissance, artillery spotting and other flight operations within the capabilities of assigned aircraft in support of ground units." VMO-6 was rarely idle and, during some operations, helicopter medical evacuations flew nearly hourly. These missions, according to official reports "helped the morale of the fighter pilots in support of the Marine Brigade."

The experience gained during the Korean conflict proved the helicopter could operate effectively in actual combat conditions even in its early developmental stages. The final report of the Marine Brigade operations dated September 1, 1950, stated, "There are many missions, both combatant and noncombatant, which these helicopters could perform. It is believed that their use would materially contribute to the effectiveness and security of the [United States'] operations and ensure the timely defeat of the enemy. They should be made available for use at the earliest possible date."

Other developments took place during the Korean War that were not documented but nevertheless gave distinct clues to the additional combat uses of naval rotary-wing aircraft. Lieutenant Junior Grade John W. Thornton (see *NANews* Interview, page 18) performed some of the earliest helicopter light attack experiments when he and his crewmen fired .45 caliber pistols and carbines at, and dropped hand grenades on, the North Koreans. These exploits earned him praise from the task force commander but, unfortunately, where not documented. There were also reports of the first engagements of fixed-wing enemy MiGs attacking Navy helicopters in Korea.

Combat support has taken on a slightly different flavor since Korea. Today, blue water fleet operations rely heavily on a brand of Naval Aviation called *vertrep* (vertical replenishment). It is carried out by helicopter combat support squadrons which support the fleet with helicopter detachments aboard the numerous supply ships such as AFSs, AEs and AORs. Performing vertrep at sea, which used to be exclusively a "highline" operation, the dets move cargo from ship to ship with speed, ease and precision.

One Navy helicopter combat support squadron (HC) recently proved that logistics helicopters are capable of supporting fleet warfare in a more direct way. During *BattleEx 84-2* in the spring of 1984, HC-5 was the first HC squadron to actually carry sonobuoys for launch against submarine targets and was actively brought into the ASW mission with other units while performing vertrep and logistics services. During that exercise, HC-5 trained in sonobuoy deployment and patterns to provide a means of prosecuting submarine targets located during vertrep or logistical support flights.

The Joint Services Advanced Vertical Lift Aircraft (JVX) program is shaping up well and is likely to revolutionize rotary-wing aircraft uses in the combat support role. With the proven tilt-rotor technology of the XV-15, mobility, speed and flexibility will be brought to an unprecedented level.

Mission Three: Light Attack

In the 1960s, once again a crisis provided the proving grounds for another combat mission for naval helicopters. This time the opportunity certified the ability of the helicopter to serve as a most effective weapons-carrying platform.

In Vietnam, support of riverene operations became paramount early in the conflict. Captain John T. Shepherd, then Assistant Chief of Staff for Operations, U.S. Naval Forces Headquarters, Saigon, developed the idea of using U.S. Navy helicopter gunships to support the fast river patrol boats. Det 29 of HC-1 was formed in late June 1966 and arrived in country on July 4 that year with Lieutenant Commander William A. Rockwell as its officer in charge. The following year on April 1, the combined detachments of HC-1 were brought together to form Helicopter Light Attack Squadron (HAL) 3, the first Navy squadron of its kind and the first Navy squadron to be established in a combat zone. Flying UH-1Bs and Ls with flex-mounted M-60 machine guns and 2.75-inch rockets, the squadron routinely conducted aerial assault missions in support of operations.

Today, two Naval Reserve squadrons maintain a high state of readiness in helicopter light attack. They are HAL-4 at NAS Norfolk, Va., and HAL-5 at NAS Point Mugu, Calif. (See "HAL-4: A Unique Navy Squadron," page 24.)

HC-9 at NAS North Island, Calif., is presently the Navy's only combat SAR unit flying the armor-plated HH-3A configured with 4,000-rounds-per-minute miniguns and M-60 machine guns. (See *NANews,* January-February 1984, page 12.)

Mission Four: Airborne Mine Countermeasures

The Navy has always had a healthy respect for the sinister danger of enemy mine warfare and benefits of effective mine countermeasures. This turned to serious concern in the 1960s during a period when Russian mine warfare was obviously developing into a most serious

threat. Soon after becoming Chief of Naval Operations, Admiral Elmo Zumwalt announced his Project Sixty decision to augment the surface mine warfare forces by the accelerated introduction of the H-53 mine countermeasures (MCM) system into the Navy. In October 1970, the first of 13 CH-53As were transferred from the Marine Corps inventory to HC-6 as the foundation for the desired airborne MCM capability.

On April 1, 1971, HC-6's H-53 assets were released to establish Helicopter Mine Countermeasures Squadron (HM) 12 at NAS Norfolk, Va. It was the first Navy helicopter squadron created exclusively for minesweeping. The squadron eventually received the RH-53Ds which were designed and built to handle the elaborate and sophisticated minesweeping equipment. This aircraft will soon be replaced with the three-engine, air-refueling-capable MH-53E which is scheduled for fleet introduction during fiscal year 1987.

The mission of the helicopter mine countermeasures community, which now consists of HM-12 (the fleet readiness squadron), HM-14 and HM-16, has never changed. It is to provide the fleet with a worldwide, quick-reaction mine countermeasures capability.

This capability has been used on numerous occasions, not the least of which was during Operation *End Sweep* in 1973 (the sweeping of Haiphong Harbor), and Operations *Nimbus Star* and *Nimbus Stream*, the 1974-75 Suez Canal sweeping operations. Most recently, HM-14 was called to the Red Sea last fall to assist with mine countermeasures operations in that troubled part of the world.

Mission Five: Antisubmarine Warfare (Light)

Having the carriers loaded with their own HS antisubmarine assets is ideal for close-in submarine protection, but the Navy's fast frigates and destroyers also needed the added capabilities of the helicopter. However, the smaller flight decks of the fast frigates and destroyers were only capable of handling small helicopters so they had to be configured accordingly. Antisubmarine warfare and antisurface ship surveillance and targeting were the missions that the helicopter could perform most effectively, and they developed into the Light Airborne Multi-Purpose System (LAMPS) MK I.

On July 31, 1973, HSL-33, flying SH-2Ds and Fs, was established at NAS Imperial Beach, Calif. It was the Navy's first squadron dedicated solely to providing LAMPS detachments for small subhunter ships.

Hailed as the first true integration of the surface forces and Naval Aviation since the days of fixed-wing aircraft launched from cruisers of the scouting fleets of the 1930s, the LAMPS program was a success from the beginning. Not only are the aircraft able to operate independently, but they are an integrated part of the ship's sensors and weapons systems.

Mission Six: Antiship Warfare

The LAMPS MK III system is an outgrowth of the early LAMPS programs. The aircraft part of this new system is the state-of-the-art SH-60B *Seahawk* which saw fleet introduction in October 1984 with HSL-42, NAF Mayport, Fla., and HSL-43, NAS North Island, Calif. Not only does it perform antisubmarine search and attack, but it also provides over-the-horizon targeting against surface combatants.

In 1979, CinCLant documented the first operational requirement for LAMPS aircraft to have offensive air-to-surface capability. This requirement was reexamined in 1982 after the success of helicopter air-to-surface missile firings during the Falklands War.

Recently, the operational requirement was approved for the FFG's SH-60Bs to have an airborne antiship missile capability and it has been funded for initial development. The air-to-surface missile being developed for this mission is the Norwegian-made *Penguin* Mk 2 Mod 7, a fire-and-forget weapon which allows the helicopter to break off immediately after launch. After being fed trajectory instructions, the missile is fired and finds its way to the vicinity of the target using inertial navigation. When it is close to its destination, the passive infrared guidance takes over until it hits the target at the waterline. This system is used when the FFG is performing convoy escort duties or operating independently and not under the carrier's air umbrella.

Planned initially to be placed aboard the FFG-7 class ship, the program presently calls for operational evaluation during in the early 1990s with fleet introduction beginning in fiscal year 1991. It is anticipated that some 193 *Penquin* Mk 2 Mod 7s will be purchased.

Mission Seven: Helicopter Aerial Defense (under study)

The most recent addition to the growing list of capabilities of naval helicopters is aerial combat. With the availability of highly maneuverable, state-of-the-art helicopters and lightweight, effective sensors and missile systems, aerial combat is now being studied. With the increasing numbers of combat helicopters being fielded by both sides to perform antitank and combat support missions in the land battle environment, it is reasonable to assume that they will engage each other. Therefore, developing tactics to counter this growing threat is becoming increasingly important.

In recent years, the Naval Air Test Center at Patuxent River, Md., has been interested in this previously unexplored aspect of aerial helicopter combat. In April 1983, a series of flight tests were conducted using an AH-1S *HueyCobra* with an OH-58 *Kiowa*. The program was designed to gather data on how the helicopters performed in this relatively new combat scenario.

Accordingly, words like *evasive maneuvering* are becoming less of an exclusively fixed-wing phrase.

Mission Eight: To Be Announced

There is no telling for sure what the next mission will be for helicopters in the Navy. A great deal of it depends first on technology and then on the imagination to use it most effectively. So far, the Naval Aviation rotary-wing community has done exactly that.

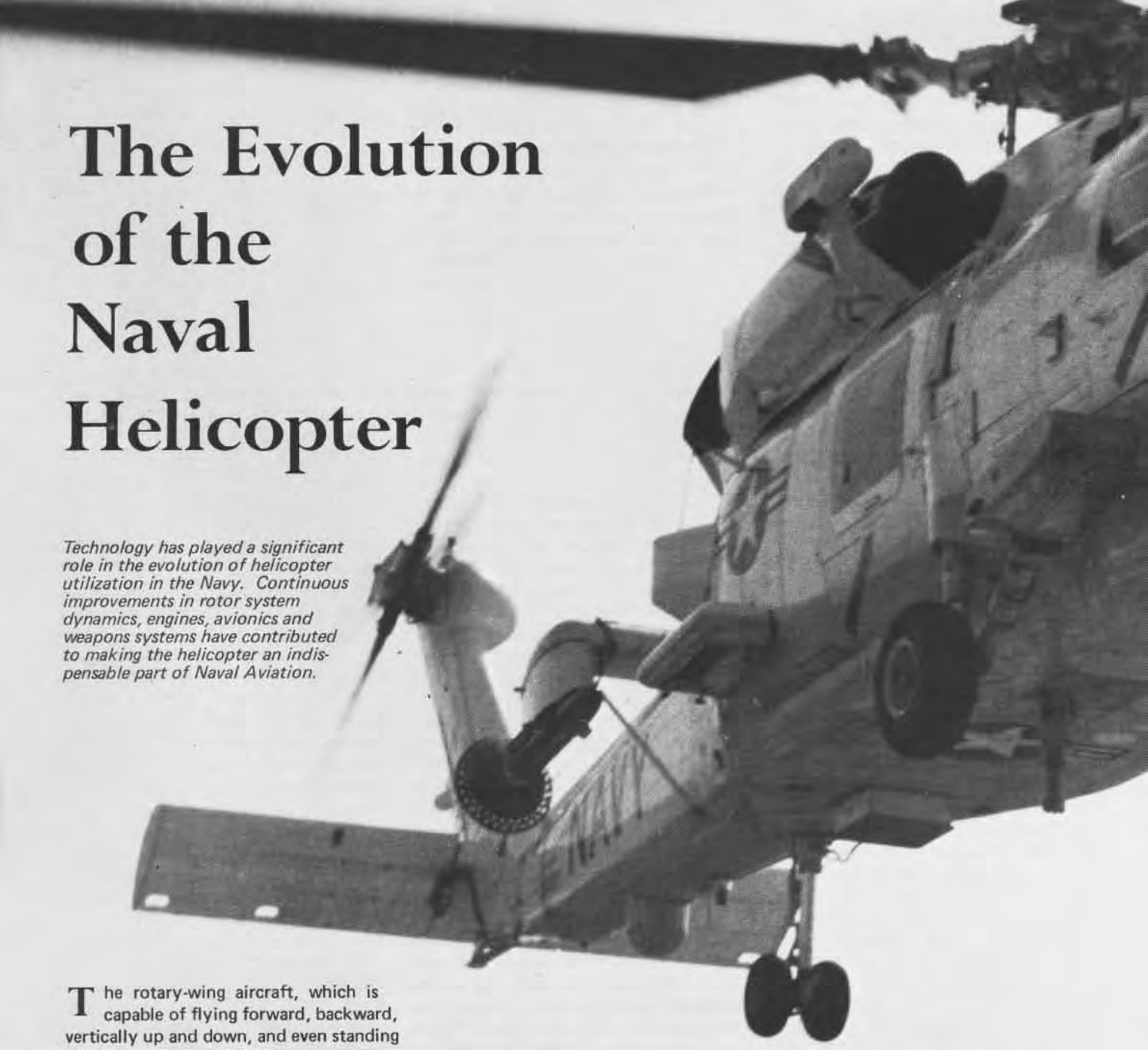
It is difficult to keep track of everything naval helicopters are doing in the fleet but one thing is certain — in virtually every case, it is never one mission at a time. Thus far, we have rotary-wing aircraft firing air-to-ground missiles and machine guns while performing battlefield logistics; antisubmarine helicopters performing antiship targeting; mine countermeasures helicopters capable of heavy logistics; ASW dipping-sonar-equipped helicopters providing emergency medevac; gunship helicopters providing aerial surveillance; combat support helicopters performing sonobuoy ASW deployment; and virtually all of them capable of search and rescue.

The naval helicopter has not only endured but has grown, multiplied and expanded for more than four decades because technology has increased its capabilities. And its unique capabilities have become better understood and appreciated in the operational sense.

Perhaps naval helicopters should have been called *transformers* after all, because today *they transform jet fuel into performance.* ■

The Evolution of the Naval Helicopter

Technology has played a significant role in the evolution of helicopter utilization in the Navy. Continuous improvements in rotor system dynamics, engines, avionics and weapons systems have contributed to making the helicopter an indispensable part of Naval Aviation.



The rotary-wing aircraft, which is capable of flying forward, backward, vertically up and down, and even standing still in the air, is special in a way that traditional airplanes have never been. Its unique capabilities are virtually unmatched. Every street corner is a potential landing site. And when you consider that the military use of the helicopter was brought to maturity in only 20 years – a third less time than it took to mature the technically more simple fixed-wing aircraft – it makes its development seem even more phenomenal.

In the 1940s, Igor Sikorsky, one of the most prominent helicopter pioneers, called the helicopter "the most versatile means of transportation ever devised by man."

Mikhail L. Mil, a Russian aeronautical expert, capsulized the fundamental im-

LAMPS MK III Seahawk

portance of the helicopter when he said, "A train needs a railroad track, an automobile needs a road, and an airplane needs an airport. But a helicopter can fly to or from whatever place it pleases."

It is believed that man began dabbling with helicopter design as far back as 400 B.C. In fact, up until the helicopter's inception in the 20th century many men, among them painter Leonardo da Vinci, sketched their own personal renditions of how the helicopter should look. But these early rotary-wing enthusiasts couldn't get any further than the design stage because they lacked certain crucial ingredients for successful helicopter flight — technical know-how and mechanical power.

The first evidence of U.S. Navy interest in rotary-wing aircraft was the procurement in 1931 of three Pitcairn autogiros, which looked like a combination of an airplane and helicopter. The autogiro was a two-seat, open-cockpit aircraft which had a rotor system consisting of four blades mounted on a free-rotating hub and was powered by one 300-horsepower, air-cooled radial engine. The autogiro was tested at NAS Anacostia in Washington, D.C., and on September 10, 1931, made three successful landings aboard the aircraft carrier *Langley* with Lieutenant (later Admiral) Alfred M. Pride at the controls. One of the autogiro's greatest benefits over fixed-wing aircraft at that time was its resistance to stalling at low speeds.

In 1932, the Marine Corps used the autogiro to support combat troops in the mountainous jungle ranges of Nicaragua, although not very successfully because of its weight-carrying limitations. Nevertheless, it convinced the Marine Corps that keeping a close eye on rotary-wing development could be beneficial in later years. Even as early as 1932, the Marine Corps was considering the possibilities of landing troops by air at strategically favorable positions during combat.

In the 1930s, the autogiro's ability to take off and land in limited spaces and sustain slow flight also appealed to the Navy, particularly for shipboard operations that might include missions of general utility, submarine hunting and aerial protection of convoys. After tests, most of which dealt with comparing autogiros to fixed-wing aircraft, the advantages at the time were considered insufficient to overcome the shortcomings in payload, range and the difficulties of flying. Sporadic but unsuccessful attempts to resurrect rotary-wing activity followed from 1932 through 1939.

Igor Sikorsky brought the helicopter further along in its early development stage in 1939 when he designed and built the experimental three-bladed VS-300. The original version used a 65-horsepower Lycoming engine, but it was later equipped with a 90-horsepower Franklin engine. In 1941, with Sikorsky at the controls, the VS-300 set a new helicopter international record by staying aloft for one hour, 32 minutes and 26 seconds.

Following inspection of the VS-300 on June 29, 1942, the U.S. Coast Guard recommended that the helicopters be obtained for antisubmarine convoy duty and search and rescue operations. In July, the Bureau of Aeronautics issued a planning directive calling for procurement of four Sikorsky helicopters for study and development by the Navy and Coast Guard. By the time the VS-300 was retired in the early 1940s, Sikorsky had tinkered so unmercifully with it that, in the end, only five items remained unchanged — the seat, landing wheels, transmission box, central fuselage and gas tank.

The successful flights of the VS-300 led to the experiments with the Sikorsky XR-4, which was the first helicopter built for military service in the United States. It received much of its fame in May 1942, when the XR-4 made the first cross-country helicopter flight from Bridgeport, Conn., to Dayton, Ohio. Sikorsky, who flew as copilot during some of that trip, was pleased with the accomplishment.

"It was a most pleasant and comforting feeling to fly the helicopter, knowing that literally any small, cleared spot could be a landing field and that routes could be checked by stopping in the air near a highway sign or by asking information of a passing motorist while hovering which, by the way, we actually did," Sikorsky wrote in his autobiography *The Story of the Winged S.*

Unequivocally, he added that with the successful flight of the XR-4 in 1942, the helicopter became a reality in America. It led to the development and testing of the XR-5 and XR-6A, as well as production of the R-4.

"Its [the helicopter's] practical value and potential possibilities were proven beyond any trace of doubt," Sikorsky wrote. "From then on, it became a question of improving the details, designing larger and more efficient types of craft, organizing production, etc., because all the fundamentals were already established."

These early tests and experiments were proof that technical expertise was now available as well as interests by U.S. military services. Developing bonafide missions for this incredibly useful flying machine was the next step.

In February 1943, Admiral Ernest King, then Chief of Naval Operations, gave responsibility for helicopter development to the U.S. Coast Guard. However, an Army pilot in an Army helicopter was the first to land aboard ship. And a Coast Guard helicopter and pilot made the first deployment aboard a U.S. Navy aircraft carrier.

In 1943, the Coast Guard procured a number of Sikorsky R-4Bs in the hope of testing the feasibility of antisubmarine warfare capability. The R-4B, a two-seat training helicopter, was equipped with a 185-horsepower, seven-cylinder, fan-cooled Warner radial engine which enabled it to fly up to 75 mph and climb nearly 8,000 feet.

The first Navy helicopter experimental squadron, VX-3, which was commissioned in 1946, was equipped with R-4s (HNSs) and R-6s (HOSs). Its task was to expedite the evaluation of helicopter operations, techniques for fleet uses and land-based operations. By the late 1940s, the R-4s and R-6s were replaced by HO3Ss and later Bell HTLs. Both of these helicopters would be used extensively in the Korean War and be responsible for saving hundreds of lives.

Despite the growing success of the helicopter, there were still many questions about its usefulness. The helicopter still had technical problems and was difficult to fly. At the time, it couldn't carry significant payloads, it had persistent stability and control problems, vibrated incessantly, and possessed little power. But over the course of a couple decades, these problems would be virtually eliminated. In fact in lifting, speed, range, reliability, stability and control, the helicopter's growth has been phenomenal. For example, in the 1940s helicopters could carry only a few hundred pounds compared to over 25,000 pounds in the 1980s. They could fly up to 100 mph compared to more than 200 mph today. And, in altitude, the 1940's helos could climb a mere 5,900 feet as opposed to modern figures of over 18,000 feet.

From 1940 to 1945, numerous proposals for helicopter military and other applications were suggested and demonstrated, including everything from delivering mail and conducting medical evacuations to bombing and dropping depth charges. Three months after the Navy bought its first helicopter, a Sikorsky YR-4B (HNS-1) on October 16, 1943, a Coast Guard pilot helped prove the value of the helicopter when he made an emergency delivery of 40 units of blood to survivors of an explosion aboard the destroyer *Turner*. In this first helicopter lifesaving operation, the pilot took off from CGAS Floyd Bennett Field, N.Y., stopped at Battery Park on Manhattan Island to pick up the blood, then on to Sandy Hook in New Jersey. One noteworthy accomplishment about this flight, other than the fact that it was the first of its kind, is that it was conducted through snow squalls and sleet which had grounded all other types of aircraft.

Prior to VJ day, other advancements in the areas of sensors and systems were made with the helicopter. On March 7, 1945, a dipping sonar suspended from an experimental Sikorsky XHOS-1 was tested successfully at Floyd Bennett Field. Then, on May 2, the helicopter proved its worth as a rescue vehicle when a USCG pilot flying an HNS-1 rescued 11 Canadian airmen that were marooned in northern Labrador. Within the next decade thousands of lives were saved by the helicopter, many times under most dramatic conditions, thus confirming its outstanding value. During the course of the Korean War alone, helicopters took literally thousands of U.S. fighting men to safety from behind enemy lines, not to mention the untold number of civilians who had to be evacuated from combat areas.

The developments of rotary-wing aeronautics continued briskly in the 1940s. The Piasecki Helicopter Corporation, for example, was awarded a contract by the Navy for the development and construction of a large tandem helicopter. The tandem-rotor concept was proposed as the answer for the larger helicopter, that is, to enable a transition to a larger machine without having to develop a new rotor blade and rotor system. Another advantage was that it was more efficient, since it did not require a tail rotor for anti-torque correction and direction control, which claimed to save up to 15 percent of power. The prototype, designated XHRP-X, was flown successfully in

A Piasecki HRP-1 Rescuer tandem helicopter comes in for a landing at the Piasecki Helicopter Corporation's heliport at Morton, Pa., in 1949.

A group of UH-34E helicopters support a Marine Corps exercise in 1962.

March 1945. A very comprehensive test program with this aircraft, involving 500 hours of both static and flight testing, was proved successfull in 1947. The first production of the HRP-1 was completed that same year, and the Navy later procured some of them.

The HRP-1, which was also flown by the Marine Corps and Coast Guard, was the largest cargo or personnel transport helicopter and the first successful tandem-rotor craft to be put into production. It was designed to carry a crew of two, and eight passengers. It could also be used to carry six stretcher cases, or serve as a medium-range rescue aircraft capable of picking up eight people (or the maximum of 8,000 pounds) within a range of 265 miles. Powered by a 600-horsepower Pratt & Whitney R-1340 air-cooled radial engine, the HRP-1 could fly up to 104 mph and ascend to more than 10,000 feet.

In February 1946, Piasecki was awarded another contract from the Navy to design and construct the extremely advanced tandem helicopter XHJP-1. After completing an extensive evaluation program, the Navy adopted it as the new fleet utility helicopter and a production order was placed for 22, under the designation of HUP-1. The HUP-1 was designed to meet the requirements of the Navy for shipboard operation. One of the main contemplated fleet uses for the helicopter was plane guard duty with aircraft carriers, to undertake the duties which until that time had been performed by an accompanying destroyer.

The HUP-1 was compact enough to fit easily into the smallest aircraft carrier without blade-folding, thus occupying minimum deck space. It had a large loading door and ample cabin dimensions to permit the transport of a wide variety of high or low-density cargoes. In addition, it had an internally operated rescue hatch adjacent to the pilot's seat which was large enough to allow the passage of a loaded stretcher. A hydraulically operated hoist could lift rescued personnel in flight. Its power plant consisted of a 525-horsepower, nine-cylinder, air-cooled Continental radial engine which permitted it to fly at speeds exceeding 117 mph and climb up to 12,000 feet.

As more powerful engines provided the potential for helicopter configurations with significant disposable payload, a number of problems became apparent. Some of the most obvious problems were obtaining an adequate center of gravity range and the control power to accommodate it, management of control loads as helicopters got larger and designs for blades. For the single-rotor helicopter, the center of gravity was critical. For a time, it appeared that the single-main rotor helicopter configuration might be limited to small vehicles for which variations in payload were insignificant. But this changed with the introduction of the Sikorsky S-55 (HO4S/HRS). A general utility helicopter, the S-55 had a three-blade, all-metal main rotor which, in addition to its powerful 450-horsepower Pratt & Whitney R-985 radial engine, could deal more effectively with the center-of-gravity problem.

The S-55 embodied many other technical innovations and departures from precedent. Technical developments up to the onset of the Korean War were carried out largely with little adequately supported research. Nevertheless, these developments provided the basis for the significant advances in system design, principally in payload capacity, speed and range, represented by the subsequent S-56 (HRS2) and S-58 (HSS-1). This was true, particularly with respect to the rotor and the control system, the basic configuration of which was first flown experimentally on late model S-51 (HO3S) in 1947. It was later applied to the S-55 in 1949, and remained substantially unaltered in their fundamentals through the S-65 (H-53) model which was begun 16 years later. These developments included the aluminum rotor blade, offset flapping hinge, development of hydraulic servo-boosted controls, and the initial development of an electronic auto-stabilization system.

During the mid-1940s, helicopters were becoming increasingly more reliable and useful, and recognized by many as having great potential on the battle field. For example, the Marine Corps in 1948 conducted combat tactics and logistics experiments with HMX-1 Piasecki HRPs during Operation Packard II, an amphibious exercise in which helicopters moved troops from an aircraft carrier to simulated combat zones behind the beach. In this first helicopter amphibious assault exercise, the helicopter proved that its use in amphibious operations was feasible. Payloads, of course, were miniscule by today's standards, but the helicopter could transport troops and cargo deep inland behind the beach, lay communications wire at very high speeds and over impossible obstacles, evacuate the wounded, and spot for artillery and naval gunfire.

In 1951, the Marines started the first helicopter transport squadron in history with the establishment of HMR-161. As a portent of things to come for Marine helicopters, HMR-161, equipped with HRS-1s, set sail for Korea on August 15,

1951, just seven months after establishment. Within a few days after landing at Pusan, the squadron was flying its first combat missions.

Korea turned out to be a good proving ground for helicopter combat tactics and the Marine Corps used the aircraft to good advantage. Missions included troop lifts, resupply, medevacs and large-scale helicopter night combat sorties.

The helicopter was quickly proving itself as a versatile workhorse. It added a new dimension to the mobility of the combat Marine and proved indispensable in military operations. It was considered an absolute necessity for future amphibious operations.

Between 1946 and 1951, helicopters had become well established in the utility and rescue roles. However, the early concept of the helicopter as a part of an antisubmarine warfare system had not been completely abandoned. The Bureau of Aeronautics and the Naval Air Development Center in Johnsville, Pa., produced the first helicopter sonar equipment. Early trials were conducted by Operational Development Force Squadron (VX) 1 at Key West, Fla. The HO3Ss that were employed were considerably overloaded and the program was delayed due to the loss of aircraft. However, the HRP, because of its size and lifting capability,

An AH-1 Cobra in flight.

was called in to carry on the testing and performed very well. In fact, after the preliminary tests with the HRP, plans were laid for the procurement of aircraft, equipment and personnel for the ASW mission. Not long after ASW was perfected, helicopter ASW squadrons were established on both U.S. coasts. Since that time, the helicopter has played a formidable part of the ASW mission.

During the 1950s and 1960s, ASW helicopters operated principally from ASW carriers. However, in the late 1960s, budget constraints forced the phaseout of ASW carriers and resulted in the consolidation of ASW squadrons with fighter and attack squadrons in the air groups on the remaining carriers.

Aside from the research and development into establishing the helicopter as an ASW platform, it became evident during the Korean War that helos were valuable in spotting mines. This helicopter capability was needed to facilitate the landings in Wonsan Harbor, North Korea, which were impeded by 3,000 enemy mines. The idea that helicopters might be employed with comparatively little risk to tow minesweeping gear followed naturally. At first look, it appeared impractical. The Armament Division of the Bureau of Aeronautics pursued the problem tenaciously and not long afterwards Piasecki Helicopter Corporation demonstrated that the helicopter could be used in this fashion. A little over a decade later, the first airportable minesweeping gear, which enabled a helicopter to become a self-sufficient aerial minesweeper, was demonstrated by the Navy. Also demonstrated successfully was equipment for transferring the minesweeping gear towline from a surface minesweeper to a helicopter, from one helicopter to another, and from a helicopter to a surface minesweeper.

The 1950s marked the beginning of the maturity of the helicopter, largely because it marked the departure from trial-and-error experimentation. The knowledge gained through research would, as in fixed-wing aircraft, be of increasing importance in the advancement of helicopter technology. To a large degree, the Korean War had a lot to do with the military's growing interest in using the helicopter as a military platform. Less than 15 years after Korea, the helicopter's popularity as a warrior improved dramatically with the beginning of U.S. involvement in Vietnam. Heavily armed helicopters were used to attack enemy positions, carry troops and supplies, and ferry wounded to safety. In fact, during Vietnam, Helicopter Combat Support Squadron (HC) 7 was specifically designated for combat support and rescue. Also, Helicopter Light Attack Squadron (HAL) 3 flew armed *Hueys* and operated off LSTs in the Mekong Delta.

Power plant technology contributed significantly to improving helicopter capabilities. The advent of the gas turbine engine in the early 1950s broadened the range of possibilities for helicopter design. Lightweight, high-power units with extreme dependability and long life made major improvements in the capabilities of rotary-wing aircraft. Formerly a large percentage of the total weight went into the power plant necessary to lift that weight off the ground. This cycle was almost self-destructive in some instances. The gas turbine changed this picture. It gave the designer a tiny package of hundreds of shaft horsepower (shp) that could be lifted by two men. It took 10-15 years of aircraft gas turbine development to get them to the state where they could replace the highly developed piston engines that had up to then powered the helicopter.

The gas turbine offered unique advantages for helicopters. Because rotary-wing aircraft hover at high power, a condition in which gas turbines run most efficiently, they were able to outperform piston engines significantly. The fewer moving parts and lighter weight of the turboshaft improved both the reliability of the engine and the performance of the helicopter. At only half the weight of an equivalent piston engine, a turboshaft engine was much smaller and thus permitted more flexible installation and ran on less expensive kerosene. But more significantly these characteristics enabled the helicopter to increase its payload.

In 1951, the Kaman K-225, powered by a Boeing 502 turbine engine, made the first gas turbine-powered helicopter flight in history. Three years later, a Kaman HTK-1, powered by two Boeing gas turbines, made the world's first twin gas turbine helicopter flight.

In the late 1950s, General Electric's T58 provided a benchmark against which all other helicopter gas turbine power plants were measured. In fact, throughout the more than 30-year history of its development and production, the basic engine design of the T58 has been modified continually to meet a variety of helicopter turboshaft applications. In 1960, Lycoming developed the 2,200-shp T55, which outpowered previous engines that ranged from 860 to 1,485 shp.

Recognizing the need for a new lightweight, low-fuel consumption, low-maintenance turboshaft engine, General Electric in 1972 initiated a new gas turbine engine design. It called for reduced fuel consumption, less need for spare parts, and significantly better maintenance time in the field. The answer was the T700. Ultimately, it was selected to power the Sikorsky UH-60A, HH-60D and SH-60B, the Bell AH-1T+, as well as other military helicopters, flown both nationally and internationally. The T700 is four times better than the previous generations of helicopter engines like the T55 and the T64.

An HC-1 SH-2 Seasprite, hovering at 20 feet, uses a jet-powered hoist to pull a crewman from the water.

JOC Peter Sundberg

A U.S. Marine Corps CH-53 takes off after loading Marines in the vicinity of Pearls Airport. The troops were flown into Grenada from USS Guam.

GySgt. Bob Jordan

A South Vietnamese Ranger and a CH-46D from from HMM-263 prepare for action near An Hoa, South Vietnam.

Looking back from the 1980s, helicopter technology has made tremendous leaps in the areas of aerodynamics, acoustics, vibration, rotors and power plants, to name a few. And the current crop of Naval Aviation helicopters, like the SH-60B, CH-53E, TH-57, SH-2F and AH-1J, attests to the successful gains made in these areas. But efforts are ongoing to improve the rotary-wing market even more in such areas as noise reduction, maintenance and reliability, productivity, fuel consumption, safety, all-weather capability, avionics control and vibration reduction. Perhaps one of the biggest elements that will affect the helicopter in the 21st century will be the continuing revolution of microelectronics. It is projected that the size, cost, weight and power of computers will be improved at least 100 times over what they are today. Speed of computation will approach that of light, and memory density will nearly equal that of the human brain.

The use of digital electronics in rotary-wing control systems will make it possible to ensure full control of the helicopter under virtually any adverse flight conditions. The control systems will be self-adaptive, eliminating compromises in flying qualities with changes in gross weight, altitude and center of gravity. Low-cost miniaturization will permit the installation of backup systems and failure-management features that eliminate any loss of control following an electronic failure. Flight tests for certification will be much simpler than they are today, since there will be no degraded flight

modes and failure transients to demonstrate in flight.

The control system in the next generation of rotorcraft will be without today's pulleys, cables, bellcranks and pushrods. In fact, these devices will give way completely to actuators controlled by electrical or optical sensors. Large-motion flight control and other manual controls will be replaced by limited-motion force controls. With aircraft performance data monitored and stored in the on-board computer core, flight planning will be as simple as dropping a disk into the home computer.

An indication of 21st century helicopter technology is happening right now with the research and development of the tilt-rotor and X-wing aircraft.

The high-speed tilt-rotor aircraft has been demonstrated successfully using the XV-15, which combines the features of an efficient hover and low-speed helicopter with the high-speed cruise efficiency of a fixed-wing turboprop aircraft. The wingtip-mounted engines, transmissions and 25-foot rotors tilt from a vertical position for hover and vertical takeoffs and landings, to a horizontal position for forward flight. The transition between these two extremes is accomplished through a broad speed corridor with minimum pilot workload. Full conversion from hover to fixed-wing mode at 180 knots can be made in approximately 12 seconds. The potential benefits of the tilt-rotor concept include the ability to conduct missions of twice the speed and range of the helicopter using a given quantity of fuel. Recent military suitability tests with the XV-15 demonstrated advantages in agility, handling qualities, precise control in nap-of-the-earth flying, shipboard operations and simulated search and rescue missions.

The production tilt-rotor aircraft, designated V-22 for the Navy, will have a capacity to move 30 assault troops on missions with up to a 250-mile radius. It will have twice the speed, range and altitude of today's helicopters and will be self-deployable throughout the world.

A recent rotorcraft concept to evolve is the X-wing configuration, which has a design speed goal of 450 to 500 knots. The primary enabling technology in this concept is the X-wing rotor, which functions much like a helicopter rotor in hover and low-speed flight, then converts to a stopped-rotor mode at a speed of approximately 200 knots. The vehicle then flies as a fixed-wing aircraft while accelerating to high speed with an auxiliary propulsion system. This amazing design incorporates circulation-control rotor technology that enables the rotor to perform the dual function of a helicopter mode when rotating and fixed-wing mode when stopped.

A great deal has changed since the seat-of-the-pants flying in the rotary-wing aviation days of the 1940s when the Navy bought its first helicopter. And current technological research is predicting even more spectacular gains by the beginning of the 21st century. But no matter what the outcome of this rotary-wing technical development, one thing seems certain – as long as there is a Navy, the need for aircraft with helicopter capability will exist. ■

JOCS Kirby Harrison

NANews extends appreciation to the National Air and Space Museum for permission to use information from *The Age of the Helicopter/Vertical Flight* (Smithsonian Institution Press, 1984) and to the *Journal of the American Helicopter Society* for the use of excerpts from an article published in 1950.

Top, an SH-60B Seahawk in the tactical paint scheme. Above, a group of CH-53E Super Stallions taxi at NAS Norfolk, Va., following a flight.

Rotary Wings of the Fleet

The helicopter has come a long way since it entered naval service in the 1940s. Its expanded capabilities and mission have enhanced the role of Naval Aviation in general. The 30-percent increase in the number of helicopter squadrons over the past decade indicates a growing need for the unique contributions of rotary-wing aircraft to fleet operations. And the larger number of squadrons provides a bonus of greater command potential for Naval Aviators in the helo community.

The following chart lists today's rotary-wing aircraft and the commands to which they are assigned.

Navy

ASWWingPac

HC-1
CH-53E
SH-3G

HC-3
CH-46A/D
HH-46A

HC-11
CH-46A/D

HS-2
SH-3H

HS-4
SH-3H

HS-6
SH-3H

HS-8
SH-3H

HS-10
SH-3D/H

HS-12
SH-3H

HS-14
SH-3H

HSL-31
SH-2F

HSL-33
SH-2F

HSL-35
SH-2F

HSL-37
SH-2F

HSL-41
SH-60B

HSL-43
SH-60B

FAirMed

HC-4
CH-53E

FAirWestPac

HC-5
HH-46A

VC-5
CH-53E
SH-3G

HSWing-1

HS-1
SH-3D/G/H

HS-3
SH-3H

HS-5
SH-3H

HS-7
SH-3H

HS-9
SH-3H

HS-11
SH-3H

HS-15
SH-3H

HS-17
SH-3H

HelSeaConWing-1

HSL-30
SH-2F

HSL-32
SH-2F

HSL-34
SH-2F

HSL-36
SH-2F

HelSeaConWing-3

HSL-42
SH-60B

HelTacWing-1

HC-6
CH-46A/D
UH-46A/D
VH-3A

HC-8
CH-46A/D
UH-46A/D

HC-16
UH-1N
UH-46A

HM-12
CH-53E
RH-53D

HM-14
CH-53D

AH-1

SH-3A

TH-57

SH-60B

SH-2F

CH-46

RH-53D

HM-16
CH-53D
RH-53D

HelWingRes

Atlantic Fleet

HAL-4
HH-1K

HS-75
SH-3D

HSL-74
SH-2F

Pacific Fleet

HAL-5
HH-1K

HC-9
HH-3A

HS-85
SH-3D

HSL-84
SH-2F

TraWing-5

HT-8
TH-57A/B/C
HT-18
TH-57C

Marine Corps

MC Dev & Educ Command

HMX-1
CH-46E
CH-53D
UH-1N
VH-1N
VH-3D (*Marine One*)

1st Marine Brigade

HMH-463
CH-53D

HMM-165
CH-46E

HMM-262
CH-46E

HMM-265
CH-46E

HMM-364
CH-46E

1st Marine Air Wing

HML-267
AH-1J
UH-1N

HMM-161
CH-46E

2d Marine Air Wing

HMA-269
AH-1J
AH-1T
UH-1N

HMH-362
CH-53D

HMH-461
CH-53D

HMH-464
CH-53E

HML-167
AH-1T
UH-1N

HMM-162
CH-46E

HMM-261
CH-46E

HMM-263
CH-46E

HMM-264
CH-46E

HMM-266
CH-46E

HMM-365
CH-46E

HMT-204
CH-46E
CH-53A

3d Marine Air Wing

HMA-169
AH-1T

HMA-369
AH-1J
UH-1N

HMH-361
CH-53A/D

HMH-363
CH-53A/D

HMH-462
CH-53A/D

HMH-465
CH-53E

HMH-466
CH-53E

HML-367
AH-1J
UH-1N

HMM-163
CH-46E

HMM-164
CH-46E

HMT-301
CH-46E
CH-53A/E

HMM-268
CH-46E

HMT-303
AH-1J
UH-1N

4th Marine Air Wing

HMA-773
AH-1J

HMH-772
CH-53A

HML-767
UH-1N

HML-771
UH-1N

HML-776
UH-1E

HMM-764
CH-46E

HMM-774
CH-46E

CH-53E

CH-53A/D

NANews Interview with Captain John W.

Captain John W. Thornton is a survivor. His military career spans three wars (WW II, Korea and Vietnam) and he has earned numerous awards including the Navy Cross, Legion of Merit, Distinguished Flying Cross, Navy and Marine Corps Medal, Bronze Star, Purple Heart, Air Medal, and 22 other citations and campaign ribbons.

During his 28-year career, begun in August 1942, he managed to escape death on many occasions. In WW II, he crawled from a plane as it sank in the ocean. As a Navy helicopter pilot, he twice crashed in Korea. The second of those occurred on a mission to rescue three American Intelligence agents trapped behind enemy lines. Despite the crash of his own helicopter, he directed the evacuation of the three men, and then eluded the North Koreans for 10 days before being captured. A few years after the end of the Korean War, while riding as a passenger, he was involved in a third crash and received severe burns while pulling the copilot to safety.

But nothing tested his will to survive more than spending 30 months in a North Korean POW camp, which he recounted in his book *Believed to be Alive* (1981). There, the enemy's treatment of its captors was brutal. Inadequate food and shelter was standard, and beatings and executions common. Still, Thornton's tenacious will to live and human spirit won out. He never lost faith in God, his family, the fraternity of honorable prisoners (POWs), nor the cause for which he was fighting.

"The role played by faith in our captivity cannot be understated by those who survived," he said. "For the faithful who did not survive, it was a solace, a promise of something better awaiting men whose suffering was insurmountable. Watching men such as these die would seem ample reason to abandon faith, condemn God and scramble to stay alive at any cost. In fact, there were those who did so. But for most, the realization that those close to death — those who were actually about to 'cross the bar' — continued to cling to their faith to the end was evidence of its durability and its value."

Some of Thornton's most moving recollections concern the compassion and kindness that passed between the men trapped in this wretched setting. He describes a personal example. "It was afforded me in the earliest days of captivity by a South Korean who had no reason to care for me and every reason to avoid it. Yet he fed me, cleansed me and was killed for it."

During his career, Thornton spent a lot of time at sea aboard aircraft carriers like *Antietam, Valley Forge, Ranger, Forrestal* and *Franklin Roosevelt.* He also spent a great deal of time lecturing in several capacities, including that of Special Assistant and Military Advisor on Prisoner of War Matters to the Assistant Secretary of Defense for International Security Affairs. In addition, he has been a regular lecturer at the U.S. Air Force Academy, U.S. Air Force Special Operations School, Air University, Naval War College and other universities. Much of his lectures dealt with Communism vs. Americanism, survival and the Military Code of Conduct (which he helped write). Over the years, he has also made many appearances on radio and TV including interviews by Edward R. Murrow and Walter Cronkite, and the Ralph Edwards show, *This is Your Life.* He is now retired and living in Pensacola, Fla., with his wife Virginia.

Because of his association with helicopters throughout most of his career, *NANews* thought it appropriate to interview Capt. Thornton for this issue on naval helicopter aviation.

NANews: Why did you switch from flying Navy Corsairs to helicopters during the early 1950s? What attracted you to rotary-wing aircraft?

Capt. Thornton: I was a fighter pilot flying with VX-3 at NAS Atlantic City, N.J., and I had a fighter squadron buddy who was flying helicopters with HU-2, at NAS Lakehurst, N.J. During a visit with him, I asked for a flight in a chopper. It was October 6, 1949. After that flight, I developed a yen to be part of this new art of aviation.

Don't get me wrong, I wasn't unhappy flying fighters. VX-3 was a fighter pilot's

John Thornton is reunited with his wife and son following his release from a North Korean POW camp. Upon his return, Thornton was given four medals, including the Navy Cross.

Thornton

Captain John W. Thornton

dream and I got a chance to fly many new types of Navy aircraft, including the AD-1, F4U-4/5, F6U-1, FH-1 and F2H-1. But, although this was experimental jet development flying, I still felt a desire to join the rotary-wing community because helicopters were in their infancy and the pioneering aspect was strong. So, I kept trying to get orders to HU-2. Requirements then to become a helicopter pilot included having 1,000 flight hours preferably in fighter aircraft, which I had. The Korean War started on June 25, 1950, and I received my orders to HU-2 two months later.

My instructors were pioneers and I got to meet the great helo inventors and designers (like Igor Sikorsky, Frank Piasecki and Charlie Kaman) and they all taught me well. It was like being a part of living aviation history. I became qualified on October 28, 1950, and I was designated Helicopter Pilot #298.

What did you think of men like Sikorsky, Piasecki and Kaman?

They did what others said couldn't be done. The helicopter community was so small in those days [less than 300 pilots] that we knew the people that built the aircraft personally. Usually we met with them when they came to NAS Lakehurst, or when we went to their plants. They were experimental pilots who endured despite many failures. And their "great experiment" has probably saved more lives than any other mechanical machine in existence today. They were dedicated great men!

Was it difficult transitioning from airplanes to helicopters?

The transition was not difficult because of the highly qualified instructors and most capable enlisted personnel. It was a matter of understanding the dynamics of rotating wings vice fixed. All helicopters were underpowered back then so one had to "milk" them especially on hot, high density altitude days. They were unstable, simply rigged and had practically no instrumentation. You flew them with strengthened arms, legs and back. And you never let go of the controls. An hour's flight time was really earned. But this type of flying made you feel like a bird – hovering, gliding, going every way, even up. I really enjoyed the challenge. I felt like one of the Wright brothers. Everything was so new.

In Korea, for instance, when our helicopters would get a bullet hole in one of the blades, we would patch it with some rice paper using rice paste. Tougher repairs required bailing wire, ball peen hammers and mechs with know-how. We had no instrumentation to speak of back then. We had a magnetic compass, but other than that we navigated by the seat of our pants – especially at night or under instrument flying conditions.

Realizing that the operational use of rotary-wing aircraft was still in its infancy, how was the helicopter perceived during the early 1950s?

The helicopter was perceived poorly. As a matter of fact, my fighter pilot colleagues looked down on me. I think even to this day most helo drivers are looked on as second-class citizens – at least until they are needed to pull some airplane pilot out of the ocean. In rescue situations the old rotating-wing bird was suddenly a beautiful sight to behold. If it were not for the U.S. Coast Guard proving helicopters at Floyd Bennett Field, where all the first helo pilots were trained, I don't think the Navy would have used them. Commanding officers of carriers, air groups, squadrons, etc., thought they took up too much deck space and were of little use except for mail delivery and passenger runs to the beach. Their capabilities and limitations were not understood by those outside the helo community. At times, helicopters were *tasked to do the impossible.* And sometimes, much to many fixed-wing aviators' surprise, *they did.*

What types of helicopters did you fly during your career? What were the pros and cons of these helicopters?

I flew the HTL-2/3/4/5, HO3S-1, HTK, HOK, HUK, HUP, H-21, HRS-1/2, HUL-1, HSS-1 and SH-34. These helicopters were young, experimental and durable. They had uncomplicated maintenance, less restricted flight regulations, and were about as good as the pilots who flew them. They made aeronautical history and helped to mold the helicopter into what it is today. Flying them was a terrific experience.

On the negative side, these helicopters were unstable, underpowered, lacked instrumentation, had fabric-covered blades, and didn't have much speed or fuel capacity.

In the HO3S, for example, we could only move the center of gravity three-quarters of an inch forward and an inch and a half back. We had to carry rocks in the helicopter for ballast. And, if we had to pick up a man of average height and weight, he had to sit in the back and throw out stones to regain the proper attitude. It was primitive.

There were a lot of people around back then who were doubtful that the helicopter had a future. Some concluded that it was a useless quest, technically impossible and would never become a useful machine. But I thought it had a future, especially once we were able to get more engine power. We experimented with helicopter gunship tactics in Korea by attacking the enemy with .45 caliber pistols, carbines and hand grenades.

How would you compare the helicopters you flew in Korea to the helicopters the Navy flies today?

Today's helos are the beneficiaries of the technology explosion of the last 20 years. They are sophisticated, computerized, highly powered, with greater stabilization equipment, autopilot, radio navigation, etc. They're far superior to the helicopters I flew during my career, and they're getting better all the time. ■

H-13D

By Harold Andrews

Nowadays it's common to note that various aircraft models have been in Navy service for 20 to 25 years. With only a few exceptions, this wasn't the case in the past. One of these exceptions was Bell's Model 47 helicopter – initially the HTL, subsequently the HUL, and following the 1962 redesignations, the H-13.

Bell developed the 47 in 1945 as a two-place light helicopter for training and general use. It evolved from Bell's WW II helicopter research, using the company's two-blade, teetering-rotor design with a stablizing bar rotating under the rotor. A tail rotor provided anti-torque and directional control. Power was supplied by a six-cylinder Franklin air-cooled opposed engine, mounted vertically and equipped with a cooling fan.

The first 47s had a well windowed cabin. This was soon replaced by a full bubble cabin which became one of the 47's distinguishing features. While a major effort was directed towards certifying the new helicopter for civilian use, 47s were also being built for the Army Air Force as YR-13s. Ten of these became Navy HTL-1s, with deliveries beginning in late 1946. Design improvements led to new designations for the next two batches bought by the Navy in the late forties, 12 HTL-2s and nine HTL-3s.

HTL-3

The Korean War brought a major expansion in the use of helicopters, with larger numbers of the considerably improved HTL-4 and 5 (46 and 36, respectively) being purchased for Marine liaison use as well as training. Having higher powered Franklin engines, the most noticeable change was their uncovered tail booms, with a vertical fin added forward of the tail rotor to provide directional stability in forward flight The Army bought larger numbers for similar use as H-13Ds and Es (H for helicopter had replaced the earlier R for rotorcraft).

Bell, by now Bell Helicopter in Texas, continued to improve the 47 for commercial as well as military use and both the Army and Navy bought improved models, the Navy acquiring 48 HTL-6s in the mid-fifties. These featured a new skid type landing gear for decreased weight and maintenance in place of the four swirling wheel gear. At the same time, Bell was bringing out a major redesign of the commercial 47 – a four-place model featuring a totally new fuselage and using a Lycoming engine in place of the Franklin. The traditional truss tail boom was replaced by a metal monocoque structure and a well appointed cabin replaced the bubble. The Navy purchased 28 of these for utility use as HUL-1s in the late fifties, with 18 modified two-place versions fully equipped for instrument training as HTL-7s following. The Coast Guard acquired two HUL-1s as HUL-1Gs. The last Navy model designation applied was to two HUL-1s modified to fly with the then new Allison T63 turboshaft engine as HUL-1Ms. With their initial flights in 1961, the Navy versions of the 47 had made the transition to the new era of turbine power for helicopters.

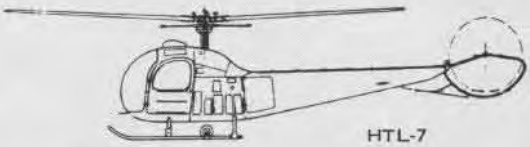
The 1962 redesignations saw the Navy models transferred into the H-13 series with the HTL-4 becoming the TH-13L; HTL-6 the TH-13M; HTL-7 the TH-13N; HUL-1 the UH-13P; HUL-1G the HH-13Q; and HUL-1M the UH-13R. Over the next decade, the H-13s were gradually phased out as new generation turbine powered helicopters took over their roles. In June 1973, the last H-13 series helicopter, a UH-13P, closed out some 27 years of Navy service for this pioneering helicopter design. Civilian versions can still be seen regularly among their more modern descendants. ■

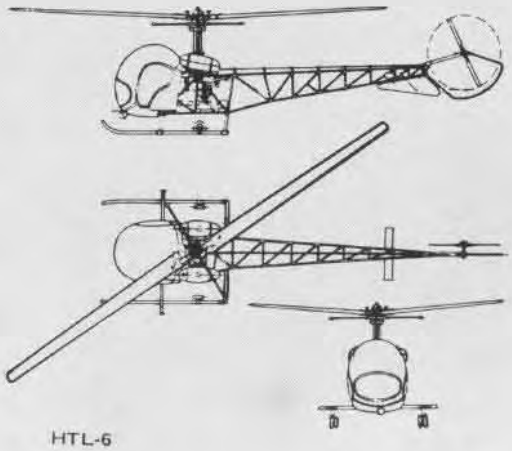

HTL-6

HTL-7


HTL-4


HTL-6


HTL-7


HTL-6

HTL

Rotor diameter	35'
Length	27'4"
Height	9'6"
Disc area	965 sq. ft.
Weight	
Empty	1,435 lbs.
Gross	2,350 lbs.
Maximum speed	100 mph
Service ceiling	10,900'
Range	250 mi.
Power plant	
One 200-hp Franklin 0-335-5B	
Crew	pilot and two passengers

Appreciation is extended to Mr. T. Thomason, Bell Helicopter Textron, for his assistance.

HT-8 and HT-18

The Dynamic Duo

They Share One Mission — Training Naval Helicopter Pilots

Today, Helicopter Training Squadrons (HTs) 8 and 18 provide helicopter training for the United States Navy, Marine Corps, Coast Guard and many allied nations at the south airfield aboard NAS Whiting Field, Fla.

Navy helicopter training began in 1943 with the Navy's purchase of its first helicopter, the HNS. The training site was Floyd Bennett Field, Brooklyn, N.Y., until after WW II, when operations were moved to NAS Lakehurst, N.J. In 1950, with the onset of the Korean War, the demand for fleet helicopter detachments increased dramatically. In that year, HT-8 was originally established as Helicopter Training Unit (HTU) 1, flying the HTL from Ellyson Field, Pensacola, Fla. The squadron was redesignated HT-8 in 1960. In 1972, with still expanding fleet helicopter pilot requirements, HT-8 split, forming HT-18. HT-8 and HT-18 became the training tandem stepping stones for the student Naval Aviator (SNA) along the path to the coveted Wings of Gold.

Today, HT-8 retains the mission of transition helicopter training, taking student aviators with roughly 100 hours of fixed-wing primary and intermediate T-34C *Turbo-Mentor* time and teaching them how to fly a helicopter. To HT-18 went the tasks of helicopter basic and radio instrument training, as well as formation, tactics and carrier qualifications.

HTs 8 and 18 train over 600 U.S. and 40 foreign student Naval Aviators annually. HT-8 also provides a helicopter flight syllabus for one-third of all U.S. Navy and many allied student flight surgeons.

Flight instructors have always been and will always be the principal tools of mission accomplishment in the Naval Air Training Command. For HTs 8 and 18, the production of safe, quality syllabus sorties falls to some 150 instructors: 54 with HT-8 (32 Navy, 20 Marine, 2 Coast Guard); 98 with HT-18 (52 Navy, 41 Marine, 5 Coast Guard). There are no selectively retained graduates or limited duty officer pilots in HT-8 or HT-18. Most instructors arrive at the squadrons directly from a fleet seat, with the experience of a fleet tour behind them. Total flight time for an arriving instructor is generally about 1,000 hours.

Newly arriving aviators quickly find a strong atmosphere of esprit de corps and camaraderie in both squadrons. This comes from sharing the aviation experience with instructor pilots and the inevitable "sea stories" and "you should have been theres." But it is also due to many other factors: the flight time is all anyone could want or imagine, the aviation maintenance support is unbeatable, the satisfaction of training future fleet helicopter pilots is strong, and the Pensacola/Milton, Fla., area is a great place to live, work, fly, get a master's degree and get involved in the community on a shore duty tour. In a normal two to three-year tour in HT-8 or HT-18, the aviator's greatest challenges and rewards will be found in the cockpit. As might be expected, the most vocal individuals when the topic turns to flying helos, especially when it's flying in Helicopter Training Squadrons 8 or 18, are the respective bosses, Commanders Nick Nichols and Dave Raffetto.

The challenge and pressure to do it, to do it safely with quality in mind, and to do it enough to fill vacant fleet seats are commonplace at HT-8 and HT-18. Together, the squadrons boast almost 12 years and 366,000 accident-free flight hours.

For the HT-8 student, the first challenge is to control the machine — an A or B model TH-57 *SeaRanger.* For the first few hops, the "57" flies the student, not vice versa. The student hangs on for the ride to Spencer OLF, an outlying field located about eight miles west of NAS Whiting Field. After nine flights and a FAM-10 safe-for-solo check, the SNA solos to Spencer OLF and back. A one-mile-square, uncontrolled field with two traffic patterns oriented about one cardinal "course" and nine aircraft to a pattern, Spencer will reinforce the SNA's already well practiced lookout doctrine.

Students who challenge Spencer in the summer, in a 16-year-old, unairconditioned TH-57A, *melt* in cockpit temperatures around 135 degrees. But regardless of the season, all student aviators put a great deal of sweat into mastering that mystical exercise in frustration, the maneuver in which "the helicopter is maintained in nearly motionless flight over a reference point at a constant heading and altitude," that most elusive cosmic balance — a hover. Generally, he will not be peeved by instructor requests to "keep it in the panhandle — of Florida, I mean, Ensign," if indeed he can. But with hover secure and basic air work coming along, he proceeds on to the most aeronautically demanding of the maneuvers taught in HT-8 (and one of the most unique in aviation) and the one HT-8 instructors pride themselves on most: autorotation. In 1984, HT-8 instructors performed more than 485,000 takeoffs and landings at Spencer OLF, some 90,000 of which were autorotations, half of which were full (power-off) autorotations to the ground.

After 17 familiarization flights and ground school completion, the SNA completes the 24-flight/38.1-hour syllabus with day/night VFR navigation introduction and low-level simulated tactical missions. As the SNA checks out of HT-8, he or she is NATOPS-qualified in the TH-57 A or B and has flown solo three times, one of which was on a VFR flight

Igor Sikorsky demonstrates the lifting capabilities of the HNS-1 at Floyd Bennett Field, N.Y., on August 14, 1944.

plan to one of three nearby Air Force bases. The student is a basic helicopter pilot ready for the challenges and lessons of HT-18.

Within recent years, notable changes have taken place in the helo training syllabus. One was the phasing out of the venerable TH-1 *Huey* as the HT-18 trainer and the introduction of the new TH-57C *SeaRanger* in the summer of 1983. For the fleet aviator accustomed to the bare necessities, and for one who was himself trained in the *Huey*, the "Charlie" has to be seen to be believed. It's a premier helicopter instrument trainer incorporating a ministab system, which will put your SCAS/AFCS to shame; two RNAVs that incorporate VOR/OME/TACAN/ILS and a 10-waypoint, point-to-point navigation capability; VHF communications as well as UHF; and, what else, ADF. It is flown by HT-18 on all of its flights and by HT-8 on all night and operational navigation hops.

Above, a student buckles up to fly. Below, the TH-57's crew chief gives the pilot an "all clear" to land.

In the TH-57C the SNA learns that modern instrument, stability and control systems are "to be believed in." Initially, he battles, as do new instructors-under-training in HT-18, with the old *Huey* motion base simulator. Now utilized solely as a procedures trainer, it hangs on. TH-57C motion training will be added during 1985.

With five flights for basic instrument procedures and eight for radio instruments in the simulator, the student is as ready as ever to dazzle the instructor with procedural prowess. Armed with classroom knowledge of IFR procedures and a sound instrument *scan*, SNAs today take to the air to battle the infamous Gulf Coast weather, noted for its thermals and turbulence. With all Navy, Marine and Coast Guard helicopters dual-piloted, there is a new relationship that must be fostered and a concept the student must learn to manage: crew coordination.

Says Lieutenant Jim Cox, an HT-18 flight instructor, "As the student sees the demands of a fully instrumented cockpit, he begins to see the necessity for coordination and leadership in the cockpit. Although the student/instructor relationship remains, the pilot/copilot idea blossoms."

The chance to prove his or her grasp of the "fly, think and crew coordinate" concept is brought to fruition in the next stage of training: helicopter tactics. This phase of training stresses maneuvers currently employed in fleet helicopters of the Navy, Marine Corps and Coast Guard. Service diversity is reflected in the fact that 22.2 hours of the 32.5-hour tactics phase is "service specific." Included in this stage are external load operations, night landing zone operations, low-level navigation, and formation parade, climbs, descents, crossovers, breakups and rendezvous.

With the Standard Instrument Rating hard-earned, the SNA anticipates carrier qualifications. With over 200 hours of flight time under his belt in a syllabus designed to be "rather demanding" in the words of Captain Jerry Hatcher, Commander, Training Air Wing 5, five touch and goes to *Lexington* (AVT-16) to cap it off, and a growing fleet awaiting his arrival, the new designated Naval Aviator can feel pride in a remarkable accomplishment.

In November 1968, HT-8 became the first single-engine training squadron to pass 200,000 accident-free hours, and currently stands at 165,000 hours and seven years mishap-free. HT-18 has recently passed 200,000 hours and four years accident-free. HT-8 and HT-18 continue to place safety first as they work together to prepare SNAs for duty with the fleet.

What does the future hold for the dynamic duo? According to Capt. Hatcher, a rotary-wing aviator himself, "Growth planning for it, accommodating it while all the time maintaining safety as the watchword, that's the challenge. And I don't see that changing. With the introduction of the CH-53E for heavy lift in the Marine Corps and mine countermeasures in the Navy, and the beginnings of LAMPS MK III, the pilot training requirement will continue to climb to a projected 670 designated rotary-wing aviators in 1988.

"Farther down the road is the Joint Services Advanced Vertical Lift Aircraft (JVX)," Capt. Hatcher goes on. "Flight instructors are, to a great extent,the key to accommodating that growth. We have had success acquiring high performers for the Training Command and that will continue in great part because the area is great, the flight time is super and these gents enjoy, I mean sincerely enjoy, instructing folks who will one day share fleet cockpits with them." ■

The Public Affairs Office, NAS Whiting Field, Fla., and the Public Affairs Officers of HTs 8 and 18 contributed to this article.

HAL-4: A Unique

By Lieutenant Junior Grade
Mitch Bogden, USNR

"Attention to brief," called the operations officer from Helicopter Attack Squadron Light (HAL) 4. The group of eager, camouflage-clad sea-air-land team members (SEALs) gathered to coordinate details of the day's training. The scenario involved armed hostiles occupying a two-story building in the center of a small town. The mission requirements: take the building, neutralize the hostiles and return unharmed.

A two-ship formation loaded with SEALs navigates at treetop level. The copilot of the lead helicopter determines that the target should be just over the trees at one o'clock. The "enemy" is still unaware of the events to come. As a row of buildings comes into view, the SEAL team leader points his finger to confirm the exact structure. Anticipating that obstructions could prevent a landing, the SEALs prepare to drop the "fast rope," which provides a method of disembarking a high-hovering helicopter with greater speed than rappelling. Following the quick-stop, a helicopter's way of "slamming on the brakes," the 50-foot length of thick braided nylon is deployed. In seconds, 12 SEALs (two squads) have dropped on their startled victims, fireman style. The helos find safety behind an adjacent treeline while the building is quickly penetrated. Having swept through two stories in record time, the call is made for the extraction. "Fastbreak, fastbreak, fastbreak!" A smoke flare guides the flight crew to the group of SEALs positioned by the edge of a nearby field. As the *Hueys* prepare to touch down, the commandos maneuver toward them while still providing cover fire against the remaining hostile forces. Rotor blades pound the air as the helicopters strain to lift off with the added weight of the SEAL teams. Success of the assault is reflected in the jubilation in the helicopters' rear cabins.

Recent events in Grenada and Iran are the inspiration for such training, which

PH2 Dan Kneisler

"Fast roping," developed by the British for rapid insertions, is practiced by Navy SEALs from an HAL-4 Huey.

Navy Squadron

exercises many of the basic skills of an HAL-4 crew member. Support of Naval Special Warfare has earned HAL-4's *Redwolves* the reputation as one of the most unique squadrons in the Navy.

Established during the Vietnam conflict, Helicopter Attack (Light) Squadron (HAL) 3 began supporting the Navy's river patrol boats in the Mekong Delta region. At the same time, HAL-3 took on the job of air support for assault missions by Naval Special Warfare teams which had previously relied on Army and Air Force support. Following Vietnam, the HAL concept was reestablished within the Naval Air Reserve with HAL-4 in Norfolk, Va., and HAL-5 at Point Mugu, Calif.

Because of technological advances in enemy weaponry, HAL squadrons have evolved tactically in order to insure survivability in combat. Reliable as they are, the basic single-engine HH-1Ks and their weapons systems have changed little since Vietnam. Relying on a clandestine approach to tactics, HAL-4 trains in techniques to avoid detection by the enemy. Nap-of-the-earth flight and terrain masking are basic skills which provide for a flight regime unknown to most Naval Aviators.

Today's aircraft have little future in the sights of modern surface-to-air missiles and common sense dictates staying out of their envelope. HAL-4 pilots and aircrewmen train to navigate around such antiaircraft hazards. If you've ever become lost while flying a cross-country on a VFR chart, try navigating at treetop level using a chart scaled for an infantryman while relying on recognition of modest elevation changes. Even slight deviations from course could become an encounter with an exhaust-hungry heat seeker.

Night provides an extra amount of security to a pilot who uses it to his advantage. HAL-4 has made night vision goggles (NVGs) an integral part of its training. Relying on ambient light, the NVGs produce an image similar to a television screen. Although the goggles allow night flight at treetop level and below, the navigator is taxed to the extreme. In this environment, he must be able to relate the less-than-perfect images of the goggles to a dimly lit chart.

HAL-4 pilots and aircrews are leaders in NVG flight time in both the Naval Air Reserve and the fleet, including the Marine Corps.

Weapons also remain an integral part of HAL-4 training. The mission still calls for close air support of Special Boat Squadrons and Navy SEAL elements. A coordinated effort with gunships could also enhance the success of an assault by providing air cover and diversion fire during inserts and extractions. The squadron frequently trains at the firing ranges of Fort A. P. Hill, Va., where pilots become proficient at firing ballistic-type rockets and 4,000-round-per-minute gatling guns. Door gunners practice guiding tracers of M-60 machine guns toward the carcasses of old tanks and personnel carriers.

The woodland setting of Fort A. P. Hill reveals yet another unusual aspect of HAL-4. Roughing it in the woods, generally unheard of by most Navy people, is practiced regularly by squadron personnel. Further participation by enlisted personnel in land navigation problems, coupled with helo inserts/extracts, adds to the realism of weekend firing exercises. A squadron such as HAL-4 could expect to be living in field conditions whenever mobilized. The enthusiasm exhibited by squadron personnel is a good indication that a realistic setting enhances their training.

An important fact to remember is that HAL-4 is a Naval Air Reserve squadron. The sole purpose of a reserve squadron is to be ready to mobilize in the event of a crisis or national emergency. Deployment capability is tested annually in JCS exercises in Europe as well as Latin America. Readiness requires a great deal of dedication from the Selected Reserve officers and men of HAL-4. The "weekend warrior" label is difficult to apply here. These people hold down two jobs: their regular civilian jobs and their jobs within the squadron. While their civilian counterparts might go home at night, or spend a weekend with their families, the reservists of HAL-4 spend many additional hours at the squadron planning and flying their missions or maintaining the aircraft. In addition, the squadron carries out several periods of active duty beyond the normal one-weekend-a-month cycle. These extra periods can last a few days or sometimes a week or more, all of which require extra time and dedication from the members of the squadron.

HAL-4 retains a wealth of flying experience at a relatively low price, due to reduced manpower costs. Some of the pilots and aircrew have been in Naval Aviation for over 15 years. HAL-4 prides itself on its mobilization readiness and continually strives to update its capabilities.

The *Redwolves* are weekend warriors in a big way. ■

PH2 Dan Knelsler

A SEAL team is field briefed for a "special mission" by three HAL-4 Redwolves at Fort Pickett, Va. From left to right are AMS1 John A. Schnabel, Lt.Cdr. "Butch" McKee and Lt. John Welch.

Manpower, Personnel and Training Analysis

A Subspecialty That Counts

By Lieutenant Chuck Deitchman

Interested in improving manpower utilization not only in your squadron but in the entire Navy? Make your ideas count by becoming a Manpower, Personnel and Training Analysis (MPTA) subspecialist. Aviators working in the MPTA arena determine squadron manning levels and training requirements, resolve personnel policy issues, and develop appropriate pay and bonus levels. There is no other area in the Navy where an officer can make such a direct impact on naval personnel assets.

Vice Admiral William P. Lawrence, Chief of Naval Personnel, says that the Navy's requirement for MPTA subspecialists has never been greater. "Defense dollars are becoming more scarce, competition from the private sector is increasing, and it is becoming more difficult to recruit, train and retain our highest quality individuals. We must be able to prove to Congress that the manpower dollars they give us will be spent in the most efficient manner. No longer is the expert opinion of the military hierarchy enough to win Congressional approval. It must be supported by facts. We look to our manpower *experts* to provide these facts. . . ."

Subspecialization is not only increasingly important to the Navy but also to the individual officer. It provides selection boards with a broader view of an officer's potential. Recent selection boards have clearly recognized the importance of the MPTA subspecialist. Over the last five years, MPTA subspecialists have averaged significantly higher selection rates than nonsubspecialists for promotion to the ranks of commander (92.5 versus 79.1) and captain (79.2 versus

Typical XX33-coded billets:

Captain

Executive Assistant, Office of ASN(MR&A)
Deputy Director, Total Force Training and Education Division, OpNav (OP-11B)
ACOS, Manpower/Personnel, CinCLantFlt
C.O., Naval Personnel Research and Development Center
Deputy Director for Aviation Manpower, OpNav (OP-59B)

Commander

Special Assistant for Recruiting, Office of ASN(MR&A)
Assistant for Compensation Programs, OpNav (OP-134E)
X.O., Navy Manpower Engineering Center
Manpower Plans, ComNavAirPac

Lieutenant Commander

Military Manpower Requirements, CinCPacFlt
Head, Training Section, OpNav (OP-135E)
MPTA Instructor, Naval Postgraduate School
Head, Aviation Squadron Manpower Requirements, OpNav (OP-123E)

Lieutenant

Manpower Requirements, Navy Manpower Engineering Program
Manpower Plans, CinCPacFlt
Manpower Requirements, Naval Recruiting Command
Manpower Officer, CinCUSNavEur ■

Aeronautical Engineering Subspecialty

Opportunity Knocking

Opportunity doesn't usually knock. One must pursue it. But an excellent opportunity is easily accessible to Naval Aviators who wish to enhance their warfare specialties. They can do this by enrolling in the Aeronautical Engineering Program at the Naval Postgraduate School (NPS), Monterey, Calif., which offers the chance to earn a master's degree and a subspecialty code in Aeronautical Engineering.

The NPS program begins with a preparatory phase to brush up on basic technical skills and knowledge which will be necessary before moving on to a graduate core phase. There are two advanced graduate phase curricula which are designed to meet a broad spectrum of skill requirements for the Navy, including flight structures, dynamics and propulsion; gas dynamics; systems engineering; electrical engineering; and material science. An important feature of Curriculum 610 is a comprehensive sequence in aircraft/missile design. Highlighting the graduate phase of Curriculum 611 are sequences in guidance and control, aero-computer science and electronic warfare.

Completion of either curriculum earns the student a Master of Science in Aeronautical Engineering. Following that, advanced programs are available to a few selected students for a doctoral degree. The master's program takes up to two years for direct-entry students, depending on their background and ability. Students may enter an Aero program during any quarter of the year.

All Navy graduate programs have a Navy consultant who is responsible for identifying the educational skills to be covered in that program. For the Aeronautical Engineering programs, the primary consultant is the Commander, Naval Air Systems Command (NavAirSysCom), and the subspecialty codes assigned to graduates are XX71P and XX72P for

Subspecialty Development Series Part III

RAdm. Hacker and Lt. Deitchman review career options for MPTA subspecialists.

44.1). And, promotion success usually increases as an officer gains experience in the MPTA subspecialty.

There are two ways an officer can earn the MPTA subspecialty code. The first is by completing the Manpower, Personnel and Training Analysis curriculum at the Naval Postgraduate School, Monterey, Calif. After graduation from the 18-month curriculum, an officer receives a Master of Science degree and the XX33P subspecialty code. Classroom lectures and courses covering such subjects as statistics, labor economics, manpower requirements, and personnel management are conducted by military, academic and civilian experts in the field. Graduates possess the analytical ability required to solve the Navy's most pressing manpower/personnel problems, and the relatively short course of instruction limits a young aviator's time out of the cockpit. The graduate education plus one experience tour in an MPTA billet ensure eligibility for the designation of *proven* subspecialist and the code XX33Q.

The second approach to becoming an MPTA subspecialist is through one tour of *significant experience* in an MPTA billet, which qualifies an officer for the XX33S code. Successful completion of a follow-on tour makes him or her eligible for the designation of proven subspecialist through experience, which changes the code to XX33R.

Rear Admiral Benjamin T. Hacker, Director, Total Force Training and Education Division in the Office of the Chief of Naval Operations (OP-11), is the primary consultant responsible for managing the MPTA program. His efforts have developed MPTA into a valuable subspecialty whose graduate program at Monterey is a leader in this growing field. The significant number of billets available provides a progression of assignments with increasing responsibilities as an officer gains expertise in the manpower arena.

The MPTA subspecialty offers a Naval Aviator the unique opportunity to directly contribute to the Navy's manpower/personnel process while staying current in his warfare specialty. During your next shore tour, take the opportunity to make an added contribution to the Navy by becoming a Manpower, Personnel and Training Analysis subspecialist.

For more information about the MPTA subspecialty or the curriculum at the Naval Postgraduate School, contact Lt. Chuck Deitchman, Office of the Chief of Naval Operations (OP-114D4), Washington, D.C. 20350-2000, or call (202) 694-4909 or autovon 224-4909. ■

Curriculums 610 and 611, respectively.

Experience gained in a subspecialty tour, extensive knowledge of aeronautical engineering theories and methods, and a master's degree qualify an officer holding either of these subspecialty codes as a *proven* subspecialist. The respective codes then change to XX71Q and XX72Q.

Upon graduation from an Aeronautical Engineering program, officers generally return to their warfare communities with their new skills and a new way of looking at aircraft.

After earning an Aeronautical Engineering subspecialty code, officers normally fill one of 380 Aero Engineering subspecialty billets during shore duty. The billets offer officers the opportunity to develop as subspecialists in a variety of challenging jobs from lieutenant to captain.

Aero subspecialty billets can be found at the Naval Air Systems Command, Naval Material Command and their activities where officers become involved with the development and improvement of today's air weapons systems, and help to shape their future. Over one-third of the unrestricted line Aero subspecialty billets are flying billets. That means that aviators can continue to sharpen their flying skills with the Navy's newest air weapons systems at research and development and test and evaluation facilities, such as the Naval Air Development Center, Warminster, Pa.; Pacific Missile Test Center, Point Mugu, Calif.; Naval Weapons Center, China Lake, Calif.; Naval Air Test Center, Patuxent River, Md.; Naval Plant Representative Offices at Grumman, Sikorsky, Lockheed and McDonnell Douglas; and on functional and type commander staffs on both coasts.

Subspecialists in this field continually draw on their postgraduate education. Commander Bob Sprigg, Executive Officer of VFA-113, NAS Lemoore, Calif., remembers his subspecialty tour. He worked on the F/A-18 and High-speed Anti-Radiation Missile programs while in a project officer subspecialty billet at VX-5. He says he had a grand old time in the "perfect job," flying A-7s and the A-6 target recognition attack multisensor aircraft. After leaving VX-5, he served his department head tour as maintenance officer of VA-27. Cdr. Sprigg says of that assignment, "I was surprised at how much I was able to draw on my education. I used it almost daily. You learn what resources are available and how to solve problems. I think that the biggest misconception of postgraduate education is that it is only used while in a utilization subspecialty tour."

(Continued on next page.)

Cdr. Sprigg has continued to make the most of his education as the current X.O. of an F/A-18 squadron. He is largely responsible for increasing the angle-of-attack limit for the F/A-18 with two drop tanks. Sprigg says, "I knew what questions to ask. I did some homework and found that the limits were based on old information. We got the facts, worked with the engineers and got the limits increased."

The X.O. is a strong supporter of technical postgraduate education for aviators. He still maintains close contact with the Aero Engineering curriculum office. Currently, he has a thesis student working for him on a computer model for F/A-18 weapons carriage and release restrictions, which he expects to be a valuable mission planning tool for all F/A-18 squadrons.

Commodore Richard C. Gentz, another NPS Aero Engineering alumnus, is the Program Director for Tactical Aircraft at NavAirSysCom, working with the E-2, A-6 and EA-6, F-14, AV-8 and F/A-18 programs. Besides two S-2 squadrons, Como. Gentz says he has "never done anything twice." As an aero-electronics major, he got into computer programming on the ground floor. He had a summer industrial tour at Hughes Aircraft and wrote his thesis on the AWG-9 for the F-111B. He used his background from the Aero curriculum at Monterey at every turn of his career – from his operational tour as squadron NATOPS officer, helping the other aviators with range economy and flight characteristics aboard ship, to his C.O. tour, where he took an early E-2C *Hawkeye* squadron to sea, and stressed mission efficiency and bingo optimization for the heavier "Charlie."

The Commodore says his aero-electronics graduate work served him well during his assignment with the Sixth Fleet ASW staff. His in-depth knowledge of energy propagation through air and water and his understanding of signal processing concepts and equipment enabled him to communicate effectively with the operators, maintainers and designers of equipment used on every platform available to the Sixth Fleet, in order to keep a watchful eye over the waters of the Mediterranean. Even as a cost analyst in the Office of the Chief of Naval Operations he was able to use the analytical tools he acquired at Monterey. Since then, Como. Gentz has worked in financial programming in the Office of the Deputy Chief of Naval Operations (Air Warfare), where he "learned Washington," managed the E-2 program and was selected to flag rank. He also served as Vice Commander of NavAirSysCom.

Como. Gentz' career is testimony to the fact that postgraduate education can boost an aviator up the career ladder to command. According to the Naval Military Personnel Command, at the commander and captain levels, the promotion percentages for officers with Navy-funded graduate education are 20 percent higher than those without it.

Opportunity is knocking. And those who answer the call as Aeronautical Engineering subspecialists not only enhance their own careers but they also enrich the Navy's stock of technical expertise.

Information concerning Aero programs is available from the Aeronautical Engineering Programs Officer, Naval Postgraduate School, Monterey, Calif., 93943, autovon 878-2491 or commercial (408) 646-2491. ■

TPS/NPS Cooperative Program

In 1981, a new program became available to selected officers with strong undergraduate engineering backgrounds. It combines portions of the 610 Curriculum at NPS with the complete program at the U.S. Naval Test Pilot School (TPS), NAS Patuxent River, Md. Graduates earn a Master of Science in Aeronautical Engineering, a Test Pilot Qualification, and the subspecialty codes XX71P, and XX73G designating a test pilot. (See "TPS/NPS Cooperative Program – Test Pilots Made One 'Degree' Better," *NANews*, July-August 1984.)

In this condensed 12-month program, NPS provides the technical instruction that teaches the students to better manage the procurement of naval weapons systems in the Naval Air community. The curriculum at TPS is geared to teach aviators how to effectively evaluate airplanes and helicopters to the extent that they can fly virtually any type of aircraft.

The cooperative program qualifies an officer for the few billets that require education from both schools. These include billets in test and evaluation of aircraft and weapons systems at NAS Patuxent River, management and procurement of weapons system at NavAirSysCom, and a variety of jobs at naval procurement offices and naval air rework facilities. Application for this special program can be made in accordance with NMPC Instruction 1331.1A of October 16, 1981.

Astronauts with Aero NPS Education

The Naval Postgraduate School (NPS) at Monterey, Calif., is for the career-minded – even though the added obligated service attached to a PG School tour may seem like a lot. Typically, it is three years of service for the first year at NPS, and one year for each additional year of study.

When you consider the career and promotional enhancements, and the rewarding mid and late career billets that an NPS Aero degree offers, the tradeoffs are more than worth the time and effort. Surely, the following Naval Aviators-turned-astronauts who earned Aero degrees at NPS would agree:

Navy

Eugene A. Cernan
Michael L. Coats
Ronald E. Evans
David C. Leestma
Michael J. Smith
Paul J. Weitz

Marine Corps

Jack R. Lousma
Robert F. Overmyer

Paul Garber

Honorary Naval Aviator Number 16

Paul Garber, the spry 85-year-old historian emeritus and Ramsey Fellow at the National Air and Space Museum, became Honorary Naval Aviator Number 16 on March 26, during a luncheon at the Officers Club at the Washington Navy Yard, in D.C. The designation, which has been given to such men as Admiral Arleigh Burke, Lieutenant General James Doolittle and Vice Admiral Hyman Rickover, was awarded to Garber for his many contributions to Naval Aviation.

Garber, for whom the National Air and Space Museum's Silver Hill restoration facility in Suitland, Md., is named, is something of a legend at the Smithsonian Institution. He joined the Smithsonian in 1920 and was responsible for acquiring a large portion of its current aeronautical collection. He is older than the airplane itself and has been intimately associated with its development from the beginning. Garber was present at the Wright brothers flight demonstration for the U.S. Army at Fort Myer in 1910, and has been associated with many of the great names of aviation history including: Captain H. C. Richardson, Admiral Pat Bellinger, Lieutenant Junior Grade Walter Hinton and Glenn Curtis.

From a Navy standpoint, Garber, who was a commander during WW II, has been a tireless and dedicated defender of the Navy's place in aviation history. He is credited with the preservation and display of many important Naval Aviation artifacts, including the NC-4 which he rescued from imminent destruction. Due to his efforts, the NC-4 is now on display at the Naval Aviation Museum, in Pensacola, Fla.

Garber, who had his honorary Wings of Gold pinned on by Vice Admiral Edward H. Martin, Chief of Naval Operations (Air Warfare), during the ceremony, said receiving the wings fulfilled a lifelong ambition.

JO2 Timothy J. Christmann

VAdm. Martin pins the honorary Wings of Gold on Paul Garber.

The Chief of Naval Operations takes pleasure in designating

Paul E. Garber

Honorary Naval Aviator #16

Citation

Mr. Garber's significant contributions to Naval Aviation span the age of manned powered flight. This includes service in World Wars I and II and impressive contributions in maintaining the history of Naval Aviation as the Ramsey Fellow and historian Emeritus of the National Air and Space Museum. Mr. Garber's tireless dedication and unselfish support of Naval Aviation make him richly deserving of designation as an Honorary Naval Aviator.

James D. Watkins
Admiral U.S. Navy
Chief of Naval Operations

1984 Year in Review

By Gwendolyn J. Rich

During a period dominated by unsettling international situations, Naval Aviation was highlighted in 1984 by its continued support of American foreign policy. Since WW II, the tasking of carrier forces has increasingly played a major role in providing that support.

Nearly three-quarters of a century since Eugene Ely proved to a skeptical Navy that aviation could be employed aboard ships, the capability of aircraft for shipboard operations has been clearly evidenced by carrier forces based in the Indian Ocean and Mediterranean and those forces that cruise the Pacific and Atlantic. However, not always so obvious are the components of Naval Aviation which support the smooth operation of those forces. For that reason, this review is highlighted by the activities of three such components, the VX community, which is primarily responsible for the test and evaluation of aircraft and weapons systems, and the HSL and HC helicopter communities, which typically deploy detachments aboard nonaviation ships. Although equally important to its mission, other components of Naval Aviation are not included here because of space limitations.

While arms control is the talk of the day and the need for increased U.S. military spending is continuously questioned, special emphasis is placed upon the Navy's test community, which in the face of time and cost limitations must assure the quality of equipment to support the readiness of the fleet.

Testing of weapons systems begins with contractor testing followed by two principal types of tests conducted by the Navy. Technical Test and Evaluation and Operational Test and Evaluation work hand-in-hand to transition naval weapons systems through full-scale development and into fleet introduction. The functions of air test and evaluation squadrons fall indistinctly between that transition. Under the operational

Other Highlights of the Year

January

4 Lt. Robert O. Goodman, a Naval Flight Officer from VA-85 deployed aboard USS *John F. Kennedy* (CV-67), returned to the U.S. after being held as a POW for a month in Syria. His A-6E was shot down on December 4, 1983, while participating in a retaliatory strike.

10 HC-1 received its first two CH-53E helicopters. Capable of lifting over 16 tons, the *Super Stallion* is the largest and most powerful helo in the western world. HC-1 is the only Navy West Coast squadron to fly the CH-53E. The squadron will also continue to fly the SH-3G *Sea Knight* in its current role.

12 The first AV-8B *Harrier* of projected orders for 336, was received at MCAS Cherry Point, N.C., by VMAT-203. With over 25 percent of the structural weight composed of carbon epoxy composite material, the AV-8B offers twice the payload or radius of the AV-8A. Eight squadrons are proposed to receive this aircraft.

23 USS *Constellation* (CV-64) completed a 14-month overhaul at Puget Sound Naval Shipyard, Wash. Finished two weeks ahead of schedule, the overhaul included a major conversion of the carrier to accommodate a self-defense weapons system and the F/A-18 *Hornet* strike fighter.

February

3 The space shuttle *Challenger* flew with a crew of Naval Aviators. The spacecraft commander, Vance D. Brand, was a Marine Corps aviator for five years. The two Navy members were Capt. Bruce McCandless II and Cdr. Robert L. Gibson.

13 The last instructional flight of the T-28 *Trojan* was flown by Ens. Michael Lee Gierhart of VT-27, ending the aircraft's 31-year career of training Naval Aviators.

March

12 A Beech Aircraft AQM-37 *Variant* target was flown to Mach 4.2 (2,775 mph) at 102,000 feet at the Navy's Pacific Missile Test Center, Point Mugu, Calif.

12 ComPatWingsPac Como. D. J. Wolkensdorfer presented the Air Force Commendation Medal to VP-40 for the squadron's participation in the search for survivors of the Korean Air Lines flight 007, shot down by a Soviet SU-17 *Flagon* interceptor. VP-40, during the midst of its deployment to northern Japan, provided P-3 *Orions* which served as the primary search platform, while the USAF maintained operational control of the effort.

14 The last T-28 in the Training Command, BuNo 137796, departed for Naval District Washington to be permanently displayed at NS Anacostia, D.C.

Roy A. Grossnick

Theodore Roosevelt (CVN-71), launched last October at Newport News Shipbuilding, is scheduled for delivery to the Navy in 1986.

control of the Commander, Operational Test and Evaluation Force, aviation tests are conducted by one of three squadrons: VX-1, NAS Patuxent River, Md.; VX-4, NAS Point Mugu, Calif.; and VX-5, Naval Weapons Center, China Lake, Calif.

VX-1 was established more than 40 years ago. Its present mission is to test ASW aircraft and related equipment for operational use in the fleet. Assigned to the squadron as of December 11, 1984, was at least one EP-3A, S-3A, SH-3H, SH-2F and SH-60B aircraft in addition to several P-3Cs. Amassing more than 4,161.3 total flying hours, the *Pioneers* completed several projects during the year. These included tests of the P-3C Update III, the MH-53E, and the SH-60B LAMPS MK III. The squadron was winding down the working group that had been formed during the development of the LAMPS MK III system, now almost fully introduced into the fleet.

Tests and evaluations of fighter weapons systems are assigned to VX-4 at NAS Point Mugu. The squadron performs its mission with a current assignment of F-14, F-4 and F/A-18 aircraft. Tests were conducted on components of the F-14 during 1984, in addition to a follow-on test and evaluation of the F/A-18. Evaluation of F/A-18 integration was conducted during a deployment aboard USS *Constellation* (CV-64) in June and July.

Among evaluations completed was that of the AIM-54C *Phoenix* missile. A final report of the evaluation was published in August. After funding was restored, Phase III testing of the AIM-7M *Sparrow III* missile resumed in October. VX-4 accumulated 3,551.8 flight hours, 2,576 sorties and 220 carrier arrested landings during 1984.

Tests of airborne attack weapons systems are conducted by VX-5 at Naval Weapons Center, China Lake. The squadron is assigned several A-6s and A-7Es in addition to other attack aircraft.

The Navy operated 12 light helicopter ASW squadrons in

---

20 Lt. Cathy Osman was the first female pilot to land a helicopter (HH-46A) aboard the battleship USS *Iowa* (BB-66).

21 USS *Kitty Hawk* collided with a Soviet *Victor I* submarine in the Sea of Japan. The submarine had been operating nearby during *Kitty Hawk's* participation in the annual *Team Spirit* exercise.

April

10 USS *Ranger,* after completing a seven-and-one-half-month deployment, departed San Diego for the Bremerton Naval Shipyard, Wash., for a year-long overhaul period.

26 The first EA-6B ICAP-2 *Prowler,* BuNo 161776, was delivered to the Navy. This was the first in a production schedule that will reach to 1990. Fifteen EXCAP models already with the fleet will be upgraded.

28 The first Master Augment Unit was established at NAS Brunswick, Maine. Its purpose is to train Naval Reserve personnel in the same type of aircraft being operated by active duty patrol squadrons so that the reserve flight crews can rapidly augment those squadrons in an emergency. Two additional units are scheduled to be established in other locations.

May

4 In a ceremony at the Naval Aviation Museum, Pensacola, Fla., four additional Naval Aviators were inducted into the Hall of Honor. These pioneers who have made significant contributions to Naval Aviation are: Capt. Kenneth Whiting, USN; Leroy Randle Grumman; VAdm. James H. Flatley, Jr., USN; and Adm. John S. Thatch, USN.

8 The first aviation supply "wings" were presented as a result of plans which began in 1982 for the establishment of a Naval Aviation Supply Officer Program and the authorization of a breast insignia for qualifying Supply Corps officers. The wings were presented at the 73rd annual Aviation Ball by VAdm. Robert F. Schoultz, Deputy Chief of Naval Operations (Air Warfare), to: VAdm. Eugene A. Grinstead, Jr., SC, USN; RAdm. Andrew A. Giordano, SC, USN(Ret.); and Como. John H. Ruehlin, SC, USN, Commanding Officer, Aviation Supply Office, Philadelphia, Pa.

23 Six Naval Aviators were among the 17 candidates selected for astronaut training by NASA: Cdr. M. L. Carter, Jr.; Lt.Cdrs. Michael J. McCulley, Frank L. Culbertson, Jr., and William M. Shepherd; Lt. James D. Wetherbee; and Marine Corps Maj. Kenneth D. Cameron.

1984, all of which provided Light Airborne Multi-Purpose System (LAMPS) helicopter detachments aboard destroyers and frigates. All of the squadrons operate the SH-2F LAMPS MK I aircraft except HSLs 41, 42 and 43 which fly the SH-60B LAMPS MK III. Naval Board of Inspection shipboard trials of the SH-60B were completed aboard USS *Underwood* (FFG-36) during the summer.

Atlantic Fleet HSL squadrons on the East Coast are under the operational control of either ComHelSeaConWing-1 or the recently established ComHelSeaConWing-3, both of which are under the cognizance of ComSeaBasedASWWingsLant.

Four HSL squadrons are under the command of ComHelSeaConWing-1. HSLs 30, 32 and 34 are assigned to NAS Norfolk, Va., and HSL-36 operates from NAF Mayport, Fla. Initial evaluation and development of the LAMPS concept was conducted by HSL-30 during the early seventies in addition to the squadron's mission of combat support and fleet replacement training. HSL-30 is presently the East Coast training squadron for the SH-2F. HSL-32 was formed in 1973 from personnel of HSL-30 in response to the increased demands for LAMPS detachments. The squadron originally operated both the SH-2D and SH-2F but since 1974 has employed only the SH-2F to fulfill its mission of deploying up to nine dets aboard frigates and destroyers. HSL-34 was established in 1974, followed by HSL-36, the first aviation squadron to be based at Naval Station, Mayport. HSL-36 provides support to newly established LAMPS MK III squadrons based at NAF Mayport, one of which is HSL-42. Established in 1984, HSL-42 is the initial SH-60B squadron assigned to ComHelSeaConWing-3 at NAF Mayport.

Pacific Fleet HSL squadrons are primarily located at NAS North Island, Calif. Two of these are fleet readiness squadrons: HSL-31, which provides replacement aircrews and maintenance training for the SH-2, and HSL-41, which is the only readiness squadron for the SH-60B *Seahawk*. In the past year, HSL-41 formed, trained and deployed the first two operational LAMPS MK III detachments for duty aboard USS *Cromelin* (FFG-37) and USS *Dole* (FFG-39). The detachments pioneered the tactical employment of the MK III weapons system and were the vanguard of the Navy's first two operational SH-60B squadrons established in October. Detachments of HSLs 33, 35 and 43, based at North Island, were deployed during the year performing either small ship ASW operations or traditional helicopter missions of search and rescue (SAR), surveillance and personnel transfer. In May, HSL-35 was reorganized into an all-detachment concept. The following month the squadron deployed eight LAMPS detachments.

HSL-37, based at NAS Barbers Point, Hawaii, deployed five detachments during 1984 and maintained two permanently forward-deployed detachments assigned to Destroyer Squadron 15 in Japan. Significant missions for the *Easy Riders* included surveillance operations against the Soviet *Minsk* battle group and support of fleet operations with *Midway, America* and *Enterprise* battle groups in the North Arabian Sea. The squadron finished the year with the most flight hours in its history and nomination by ComASWWingPac for the Arleigh Burke Award.

Reserve squadron HSL-84, formerly HS-84, joined the LAMPS community after receiving its new designation in

---

June

1 Disestablishment of VF-171 at NAS Oceana, Va., marked the end of the Navy's F-4 *Phantom II* aircraft on the East Coast. VF-171 was the East Coast F-4 fleet replacement squadron and became the last *Phantom* squadron on the East Coast in 1982.

23 Capt. Larry E. Kaufman, program manager, was awarded the Daedalian Weapon System Award on behalf of the High-speed Anti-Radiation Missile (HARM) project during a convention in San Antonio, Texas, celebrating the 50th anniversary of the Order of Daedalians.

July

1 The Gray Owl Trophy was officially transferred with the retirement of Naval Flight Officer Capt. Ken Haas. The trophy had been presented earlier by RAdm. Paul Gillcrist to Como. T. J. Johnson, designating him the senior active duty NFO.

2 CVWR-20 concluded its first at-sea deployment since 1978 when it returned from a week aboard USS *Eisenhower* (CVN-69). This also marked the first time in four years that CVWR-20 operated as a complete air wing and the first deployment of the A-7E *Corsair II* with a reserve squadron, VA-203.

4 After a seven-day mission, space shuttle *Columbia* (STS-4), with Capt. Thomas K. Mattingly II as spacecraft commander, completed its fourth and final orbital test flight when it landed at Edwards AFB, Calif.

15 HS-12 was assigned to CVW-5 aboard USS *Midway* (CV-41), providing the carrier's first on-board antisubmarine warfare capability.

21 WW II Marine Corps ace Joseph J. Foss was among four individuals enshrined in the National Aviation Hall of Fame to recognize their outstanding contributions to aviation and their achievements in air and space technology.

25 Como. O. E. Osborn, ComPatWingsPac, accepted the first Navy P-3C *Orion* Update III from Lockheed during a ceremony held at NAS Moffett Field, Calif. VP-31 will train personnel in the operation of the updated P-3 beginning with VP-40, the first fleet operational squadron scheduled to receive the aircraft.

August

17 HM-14, after receiving a Joint Chiefs of Staff notice of tasking for rapid deployment to the Gulf of Suez, commenced mine-hunting operations that continued for 22 consecutive days in the troubled area. Earlier, on August 6, HM-14 had embarked aboard USS *Shreveport* (LPD-12) with four RH-53Ds which were later augmented by others from the squadron's detachment, as well as an RH-53D from HM-12.

March 1984. Assigned to NAS North Island, the *Thunderbolts* shifted from the SH-3D to the *Seasprite*, becoming the first Naval Reserve LAMPS squadron. In the new mission, HSL-84 conducted its first shipboard landings aboard USS *Reid* (FFG-30) in September and had received four SH-2Fs by the end of the year. HSL-74, the second reserve LAMPS squadron, based at NAS South Weymouth, Mass., received the SH-2F in early 1985.

In addition to the support provided by HSL squadrons, logistics support is a vital requirement for aviation fleet activities both at sea and ashore. The ability of the naval forces to respond to global crises requires the support provided by the HC community. Nine HC squadrons, which include a reserve squadron, work to keep the fleet reinforced and resupplied.

Reserve squadron HC-9 is located at NAS North Island and is the Navy's only combat search and rescue unit. The squadron conducts combat SAR with both the reserve and fleet wings and operates the HH-3A.

Atlantic Fleet squadron HC-4 is forward-deployed to NAS Sigonella, Italy, under the operational control of ComFAir-Med. Activities of the squadron in 1984 included a detachment aboard *Nassau* (LHA-4), beginning May 12, during the ship's deployment to the Mediterranean.

HC-6 operates the CH-46 *Sea Knight* and is assigned to NAS Norfolk. The squadron continued in its primary mission during 1984 by providing nine extended detachments to Mobile Logistic Support Force ships deploying to three different parts of the world. The total number of days embarked was 1,614; an average of four detachments deployed per day. Although flight hours were increased by 17 percent, HC-6 experienced no alpha or bravo mishaps – completing the year as the safest in the *Chargers'* 17-year history. The squadron also continued to staff and administer the Helicopter Operations School until the task was taken over by a new squadron, HC-8, which was established at NAS Norfolk on December 3, 1984.

HC-16, the Navy's only single-site UH-1N fleet replacement squadron, is located at NAS Pensacola, Fla. The squadron provides training for pilots in the UH-1N *Iroquois* and also uses the HH-46A *Sea Knight* in the logistics support role. Tasked by CNO, HC-16 is the SAR Model Manager, responsible for the standardization and development of procedures and equipment for the search and rescue mission. During 1984, detachments of HC-16 made monthly deployments aboard *Lexington* (AVT-16) and, in addition, provided plane guard and logistics support for ships of the Atlantic Fleet, which included *Saipan* (LHA-2).

Pacific Fleet squadron HC-1 is the Navy's oldest helicopter squadron. The *Fleet Angels* were originally established in 1948 and celebrated the squadron's 36th anniversary on April 1, 1984. In addition to its mission of logistics support, HC-1 provides helicopter weapons recovery and search and rescue to fleet units and operates the West Coast SAR Swim School. The school is responsible for the training of SAR officers and refresher training of SAR swimmers. In addition to its assignment of SH-3Gs, the squadron received its first CH-53E on January 1, 1984, for use in vertical on-board delivery. HC-1's shore component is based at NAS North Island. Detachment 6 of the squadron is permanently home-ported at NAF Atsugi,

Roy A. Grossnick

This T-28B displayed at NS Anacostia marked the end of an era for the Trojan in the Training Command when it was transferred from VT-27.

Lockheed-California Co.

The new S-3B Viking with improved avionics and weapons systems makes its first flight from Lockheed-California Co., Palmdale, Calif.

A CH-46 Sea Knight of HC-6 performs its logistics mission as it moves in to pick up supplies to be transferred to Eisenhower.

An F/A-18 Hornet leads two F-14 Tomcats, an F-4F Phantom (top right), and a TA-4 Skyhawk (bottom right). All aircraft are flown by VX-4.

Japan, and deploys aboard *Blue Ridge* (LCC-19), providing transport for the Seventh Fleet. Detachment 2, one of the deployed units aboard *Midway* (CV-41), was disestablished on July 10 to make way for a helicopter antisubmarine squadron. During its last deployment aboard *Midway* in the Indian Ocean, Det 2 transported 880 passengers and 52 tons of mail.

HC-3 became the Navy's H-46 shore-based fleet replacement squadron in 1984, the second of three active duty squadrons based at NAS North Island. Detachments of the *Packrats* served both the Third and Seventh Fleets during the year.

The operational mission of HC-3 terminated after forward-deployed Detachment 106 returned in July from the Indian Ocean aboard *Kilauea* (TAE-26). Detachment 105, also forward-deployed, was disestablished in February after completing an assignment which began in December 1983 on board *Niagara Falls* (AFS-3). Detachment 104 was the last detachment put to sea by HC-3. Deployed aboard *Mars* (AFS-1) from November 1983 to May 1984, the det spent a total of 99 days in the Indian Ocean. Before its disestablishment in May, Det 104 provided a full spectrum of utility services for the battle group during which the *Mars*/Det 104 Replenishment Team transferred over 3,000 tons of cargo. All aircraft of the HC-3 detachments were transferred to the newly established HC-5.

HC-5 was established on February 3, 1984, at NAS Agana, Guam, as a forward-deployed vertical replenishment and logistics support helicopter squadron for support of the fleet in the Western Pacific. Thirty-eight days after establishment, with only 14 percent of the squadron's personnel assigned, Detachment 1 of the *Providers* deployed to the Indian Ocean with the additional mission of ASW. HC-5 was the first HC squadron to actually carry sonobuoys and actively integrate into the ASW mission with other units. Detachments 2, 3 and 4 embarked aboard *White Plains, Niagara Falls* and *Kilauea.* HC-5 was nominated by ComFAirWestPac for the Golden Anchor Award.

HC-11 was established at NAS North Island in 1977 and is the largest operational helicopter squadron in the Navy. The following report of the *Gunbearers'* activities during 1984 was submitted to the Naval Aviation History Office, Deputy Chief of Naval Operations (Air Warfare), OP-05D2:

COMMAND ORGANIZATION

Commanding Officer

Commander Martin L. Chamberlain — 14 Mar 1984 - 31 Dec 1984

Executive Officer

Commander Johnie M. Murphy — 14 Mar 1984 - 31 Dec 1984

Squadron Mission

HELICOPTER COMBAT SUPPORT SQUADRON ELEVEN's primary mission is airborne logistics support. Eleven detachments deployed aboard Mobile Logistic Support Force ships (AORs, AOEs, AFSs and AEs) vertically replenish operational forces while underway. Food, parts, ammunition, mail and other vital materials are VERTREPed to the Third and Seventh Fleets. Moreover, this capability permits simultaneous, multiple-ship servicing within the battle group.

The parent squadron supports a wide range of activities including: Surface and AIRPAC units, Special Warfare Units, Fleet Training Group Pacific, Helicopter Indoctrination School, Search and Rescue (SAR) school, and Deep Water Environmental Survival Training (DWEST) school. Services provided include carrier logistics flights, amphibious force training flights, emergency medical evacuations, target drone recoveries, marine mammal transportation within the Southern California area, photographic missions and training for squadron aircrews. Appendix I provides comparisons of 1983 and 1984 operating statistics.

Detachments

HC-11 provided 14 detachments of short duration, ranging from a few days to eight weeks, for support of units in the mid-Pacific, Eastern Pacific and Southern California areas during various fleet exercises.

During calendar year 1984, six detachments of 10 to 12 months

---

September

13 The newly configured S-3B *Viking* made its first flight at Lockheed facilities in Palmdale, Calif. The latest version of the *Viking* features improved avionics and weapons systems, including the *Harpoon* missile.

22 HM-14 conducted flight operations to support logistics, medevacs and embassy personnel evacuation after a terrorist bombing of the U.S. Embassy Annex in Beirut, Lebanon.

26 The XV-15 tilt-rotor aircraft demonstrator completed two weeks of concept tests at NATC, Patuxent River, Md. The first flight of the Joint Services Advanced Vertical Aircraft (JVX), the V-22 *Osprey*, is scheduled for early 1988.

October

2 The U.S. Navy signed a contract to initiate full-scale development of the T-45TS jet flight training system by McDonnell Douglas. The system's aircraft, the T-45, will replace the T-2Cs and TA-4Js used by the Chief of Naval Air Training in the intermediate and advanced phases of jet flight training.

12 VF-301's acceptance of its first F-14 *Tomcat* marked the introduction of the F-14 into the Naval Air Reserve Force as part of the Navy's total force defense concept.

20 USS *Saratoga* (CV-60), with CVW-17 embarked, returned to NAF Mayport, Fla., ending the carrier's first deployment to the Sixth Fleet since undergoing overhaul under the carrier service life extension program (SLEP) for two and one-half years.

27 The nuclear-powered USS *Theodore Roosevelt* (CVN-71) was launched during ceremonies at Newport News Shipbuilding. The ship is the fourth *Nimitz*-class carrier and is scheduled for delivery in 1986.

November

3 One week after the launching of USS *Theodore Roosevelt* (CVN-71), the keel was laid for USS *Abraham Lincoln* (CVN-72). The *Lincoln* will be followed by USS *George Washington* (CVN-73).

(including workup periods) were deployed to the Western Pacific, Northern Pacific and Indian Ocean theaters. Appendix II lists the achievements of these detachments.

Chronological Narrative

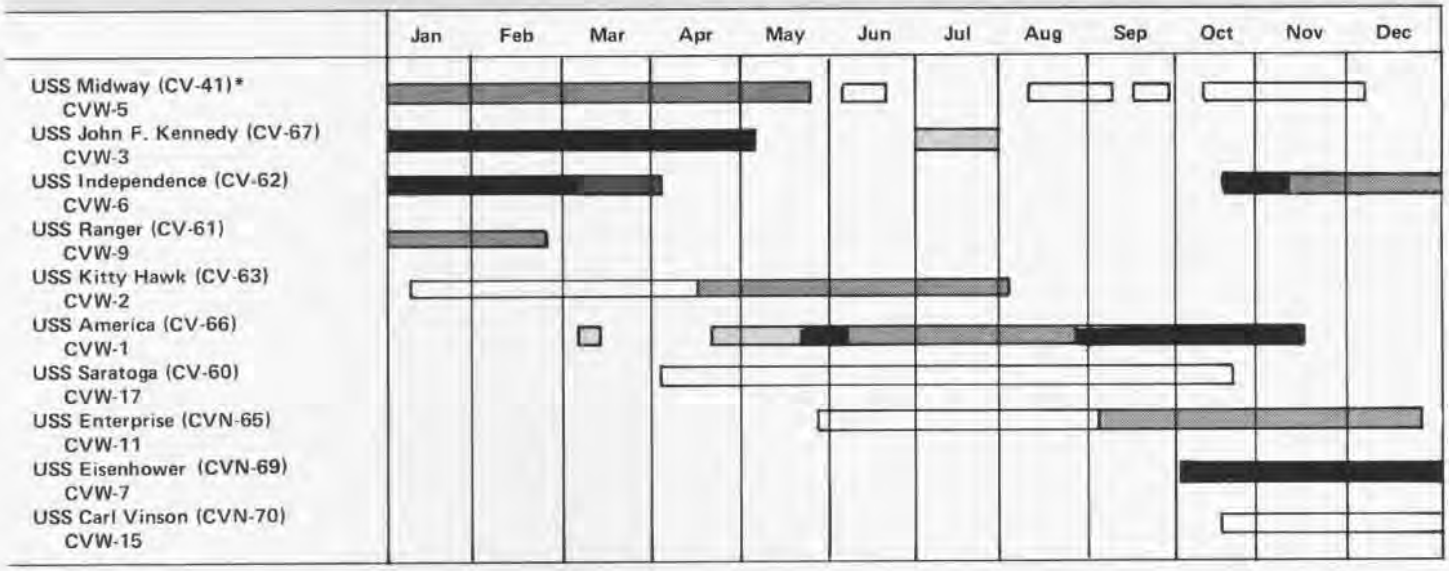
HELSUPPRON ELEVEN continued to forge its reputation during 1984 as the finest and largest operational helicopter squadron in the Navy. The squadron maintained its high standard of safety by celebrating 20,000 accident-free flight hours at year's end. HC-11 transferred over 21,656 tons of cargo and carried 24,556 passengers and 78 MEDEVACs. A total of 9,186 flight hours were logged for 1984. Transportation of VIPs continued to be one of the exemplary services provided during the year. Among the distinguished personalities to board HC-11's *Sea Knights* were VAdms. Schoultz, Busey, Walker, Jones and Easterling.

The squadron completed 97.7 percent of its Southern California commitments during 1984 (a 4.7 percent increase from 1983), a milestone of operational efficiency.

Chronology

3-12 January	Detachment SIX conducted five Masirah airhead operations.
11 January	Detachment FOUR deployed aboard the USS WABASH.
12 January	The entire H-46 community grounded for inspection of collective yolk assemblies.
16 January	Detachment EIGHT and USS SACRAMENTO performed refresher training.
25 January	Detachment SIX departed USS CAMDEN to shore base at NAS Cubi Point after 119 consecutive days at sea.
31 January	Detachment EIGHT embarked in USS SACRAMENTO participated in READIEX 84-2.
16 February	HC-11 participated in mass casualty drill with USS NEW ORLEANS.
1 March	Detachment NINE established.
9 March	Detachment NINE, embarked USS FLINT, completes 275 pallet VERTREP with USS CARL VINSON.
14 March	Cdr. M. L. Chamberlain relieved Cdr. T. C. Lackey as Commanding Officer.
14-16 March	HC-11 coordinated seminars and workshops for annual Naval Helicopter Association Convention.
15 March	Detachment EIGHT embarked in USS SACRAMENTO provided support for READIEX 84-3.
17 March	Detachment NINE medically evacuated an Egyptian naval officer attached to Naval Amphibious Base, Coronado, CA, to Balboa Naval Hospital.
4 April	H-46 Dynamic Interface conducted by Naval Air Test Center with HC-11 aircraft aboard USS CONSTELLATION.
8 April	Detachment FOUR embarked in USS WABASH departed for Indian Ocean to provide support for Battle Group Bravo.
27 April	Detachment FOUR rescued man overboard from USS WABASH.
1 May	Detachment ONE established.
2 May	Detachment EIGHT earned a grade of Satisfactory on their readiness inspection.
13 May	Detachment ONE flew a 2½ hour aerial photographic flight of an underway replenishment the USS ROANOKE conducted with five ships of the Japanese maritime self defense force during COMPTUEX 84-4.
17 May	Detachment NINE earned a grade of Satisfactory on their readiness inspection.
17 May	Detachment ONE flew first VERTREP, 70 pallets, to USS CONSTELLATION during RIMPAC 84.
24 May	Detachment EIGHT departs NAS North Island for NAS Whidbey Island to embark in USS SACRAMENTO for WESTPAC deployment.
29 May	Detachment SEVEN embarks in USS KISKA for mid-Pacific exercise with COMDESRON TWO and RIMPAC 84. Detachment NINE embarked in USS FLINT deployed to WESTPAC.
30 May	Detachment ONE embarks in USS ROANOKE and joins Detachments SEVEN, EIGHT and NINE for RIMPAC 84. Detachment FOUR flew a 23.4-hour evolution unloading the USNS SPICA in the Indian Ocean.

Carrier Deployments in 1984



*USS Midway is home-ported in Japan and all operations are considered part of a WestPac deployment.

2-3 June	Detachment NINE conducted major operations including ammo cross-deck, media transport from Ford Island to the USS ENTERPRISE, and a SAREX.
11 June	Detachment FOUR rescued two men overboard from the USS KITTY HAWK.
13 June	Detachment ONE transferred RIMPAC umpires to HICKAM AFB.
3-15 June	Detachment EIGHT conducted SEAL Team insertion exercises onto the island of Oahu.
20-22 June	Detachment FOUR transited to Australia.
28 June	HC-11 participated in a mass casualty exercise with the USS TARAWA.
5 July	USS FLINT/Detachment NINE conducted extensive weapons transfer with the Manua Koa.
10 July	HC-11 participated in COMASWWINGPAC aircraft crash/mass casualty exercise, CRASHEX 1-84, at NAS North Island.
13 July	HC-11 presented the CNO Safety Award for 1983 by RAdm. L. E. Levenson, COMASWWINGPAC.
15 July	Detachment TWO established.
17 July	Detachment EIGHT aboard the USS SACRAMENTO performed special weapons transfer.
16-20 July	COMNAVAIRPAC Maintenance Management Team reviewed Team Maintenance Organization (TMO) and supported incorporation in Naval Aviation Maintenance Plan.
20-30 July	Detachment EIGHT provided VIP support from U.S. Embassy in Manila.
23-30 July	Detachments FOUR and SEVEN combined assets for USS KITTY HAWK/USS KISKA VERTREP.
23-24 July	Detachment SEVEN embarked in USS KISKA participated in a 600-pallet ammunition download of USS KITTY HAWK and USS WABASH.
30 July	Detachment SEVEN conducted ammunition upload with USS CARL VINSON.
30 July	Detachments ONE and THREE fly to Alameda 31 Jul 84 to assist offload of returning USS KITTY HAWK. Five H-46 aircraft participated.
1 August	Detachment ONE embarked in USS ROANOKE for READIEX 84-4.
2 August	HC-11 provided two aircraft to the USS TRIPOLI for actual MEDEVAC.
8 August	Detachment SEVEN embarked USS KISKA for READIEX 84-4.
16 August	Detachment ONE conducts actual MEDEVAC from the USS CARL VINSON to NAS North Island.
18 August	Detachment EIGHT enters Indian Ocean and conducts all night VERTREP evolution with the USS ENTERPRISE battle group.
19 August	Detachment EIGHT tasked to search for survivors and debris of crashed LAMPS H-2 from USS LEFTWICH.
5 September	Detachment NINE provided drone recovery services for Pacific Missile Test Range.
13 September	Salt water fire extinguishing system on USS SACRAMENTO inadvertently activated in helicopter hangar. Both Detachment EIGHT aircraft required emergency salt water reclamation.
17-27 September	Detachment FOUR and Naval Air Test Center perform Dynamic Interface on board USS WABASH to establish new AOR wind limits for H-46.
19 September	Detachment THREE earned a grade of Satisfactory on pre-cruise material readiness inspection.
21 September	HC-11 receives Satisfactory grade on annual NATOPS evaluation.
24 September	HC-11's two-year, mishap-free anniversary.
24 September	Detachment ONE earned a grade of Satisfactory on pre-cruise material readiness inspection.
25-27 September	HC-11 participated in NAS Moffett site activation providing five pilots, six aircrew and two aircraft.
27 September	Detachment SEVEN earned a grade of Satisfactory on pre-cruise readiness inspection.
2 October	Detachment TWO embarked in USS KANSAS CITY. Joined Detachments ONE, THREE and SEVEN embarked in USS ROANOKE, MOUNT HOOD and KISKA for COMPTUEX 85-1, FLEETEX 85 and TRANSITEX 85-1A.
12 October	Detachment TWO supported Fleet Week activites in San Francisco.
24 October	HC-11 inspected by COMASWWINGPAC Maintenance Team. Graded Satisfactory.
1 November	Detachment EIGHT provided search and rescue assistance to crashed HC-5 H-46 from USS WHITE PLAINS.
1 November	HC-11 participated in a MEDEVAC/crash drill exercise with USS ANCHORAGE.

28 Deliveries of the F/A-18 *Hornet* were resumed four months after the McDonnell Douglas Corporation anannounced it would bear costs of modifications to correct a fatigue-related problem in the tail area of the aircraft.

30 USS *Nimitz* (CVN-68), with CVW-8 embarked, sortied in response to national tasking. After the Cuban government denied the U.S. Coast Guard permission to tow a U.S. vessel which had lost power and drifted into Cuban waters, a brief show of force by *Nimitz* diffused the incident. The carrier later resumed a scheduled four-day port visit to St. Thomas, V.I.

December

8 Attack Squadron (VA) 105's *Gunslingers* returned from a six-month deployment to MCAS Iwakuni in the Western Pacific. The squadron's assignment to MAG-12, 1st MAW marked the first time a Navy squadron participated in the Marine Corps Unit Deployment Program and the first time a Navy squadron came under the operational control of the Marine Corps since WW II.

28 VXE-6 rescued the aircrew and passengers of a downed LC-130 *Hercules* near McMurdo Station in the Antarctic. The successful rescue was made by another LC-130 in unexplored terrain under extreme environmental conditions within 16 hours of the incident.

31 The first T-47A for Naval Flight Officer navigation training was delivered to the Naval Air Training Command by Cessna Aircraft Corporation under a five-year agreement with the Navy, which encompasses a total training concept. Cessna will provide maintenance and support of the T-47A aircraft, which will replace T-39Ds used in flight officer training.

T-47A

21 November	Detachment EIGHT joined and participated in FLEETEX 85.
28 November	HC-11 participated in COMASWWINGPAC aircraft crash/mass casualty exercise, CRASHEX 2-84, at NAS North Island.
29 November	HC-11 provided eight pilots, eight aircrew and three aircraft for the combined Nuclear Projectile Logistical Evaluation (LEE)/stockpile evaluation conducted at NAS North Island.
19 December	HC-11 participated in crash drill at NAS Miramar.
20 December	Detachment EIGHT returned from WESTPAC.
21 December	Detachment NINE returned from WESTPAC.

Appendix I

Statistical Comparisons

	1983	1984	Comparison
Total Hours	9,186	9,052	-134
Total Night Hours	1,948	2,153	+205
Total Detachment Hours	6,007	6,198	+191
Total Det Night Hours	1,228	1,409	+181
Total Squadron Hours	3,176	2,854	+322
Total Socal Hours	1,951	1,569	-382
Squadron Night Hours	720	744	+24
Squadron PQS/Check Flt. Hours	823	1,283	+460

Appendix II

Detachments

Det	Deployed Aboard	Total Flight Hours	Total Night Hours	Total Cargo (Tons)	Pax	Mede-vacs	Rescues	Dates Deployed
1	USS Roanoke (AOR-7) USS Kansas City (AOE-3)	788.9	176.7	1,448	1,681	4	0	10 May 84 - present
2	USS Kansas City (AOE-3) USS Camden (AOE-2)	281.2	53.5	372	417	1	0	2 Oct 84 - 12 Nov 84
3	USS Mount Hood (AE-29)	391.0	91.4	732	628	2	0	1 Aug 84 - present
4	USS Wabash (AOR-5)	1,002.1	210.6	3,939	3,547	16	3	27 Jun 84 - 1 Aug 84
7	USS Kiska (AE-35)	596.8	156.7	1,828	766	5	0	18 May 84 - present
8	USS Sacramento (AOE-1)	1,415.8	301.2	5,416	5,661	14	0	7 May 84 - 20 Dec 84
9	USS Flint (AE-32)	924.7	219.1	2,923	2,622	23	0	19 Apr 84 - 21 Dec 84

Note: Figures provided for detachments which returned during the calendar year reflect the totals for the detachment during its complete deployment. The totals for the detachments which were still formed as of 31 December 1984 reflect the totals to that date.

Establishment/Disestablishment/Redesignation of Aviation Commands, 1984

1 Jan	VA-303	Redesignated VFA-303. Temporarily assigned to NAS Lemoore, Calif. Nickname: *Golden Hawks*
9 Jan	VFA-132	Established at NAS Lemoore, Calif. Nickname: *Privateers*
3 Feb	HC-5	Established at NAS Agana, Guam. Nickname: *Providers*
1 Mar	HS-84	Redesignated HSL-84 at NAS North Island, Calif. Nickname: *Thunderbolts*
29 Mar	CVW-13	Established at NAS Oceana, Va. Squadrons scheduled for assignment: VA-55, VFA-131, VFA-132, VAW-127, VMA-314, VMA-323 and HS-17.
4 Apr	HS-17	Established at NAS Jacksonville, Fla. Nickname: *Neptune's Raiders*
27 Apr	Naval Strike Warfare Center	Established at NAS Lemoore as Strike University. Later redesignated on May 8 to Naval Strike Warfare Center and moved to NAS Fallon, Nev.
27 Apr	VFA-106	Established at NAS Cecil Field, Fla. Nickname: *Gladiators*
1 Jun	VF-171	Disestablished at NAS Oceana, Va. Last East Coast F-4 replacement training squadron. Det Key West disestablished the same day. Nickname: *Aces*
10 Jul	HS-14	Established at NAS North Island, Calif. Flies the SH-3H *Sea King*. Nickname: *Chargers*
30 Sep	VFP-306	Disestablished at NAF Washington, D.C. Last East Coast photoreconnaissance squadron.
5 Oct	HSL-42	Established at NAF Mayport, Fla. Nickname: *Proud Warriors*
12 Oct	HSL-43	Established at NAS North Island, Calif. Nickname: *Battlecats*
15 Oct	VR-22	Established at NS Rota, Spain.
3 Dec	HC-8	Established at NAS Norfolk, Va. Nickname: *Dragon Whales*

Records

On January 3, 1985, AWC Ray Szczepan became what's believed to be the first individual to log 1,000 flight hours in the LAMPS MK III SH-60B *Seahawk*. Few people have logged more than a few hundred hours in LAMPS MK III since the system was implemented two years ago. Completing 1,000 hours in such a short time, shows the chief's dedication to the Navy and his squadron, HSL-43.

Nimitz (CVN-68) recorded her 100,000th aircraft arrested landing last November 1, when VS-24's S-3A *Viking* #702 trapped aboard. The aircrew on this historic landing was Cdr. Daniel L. Rainey, ComCVW-8, and Capt. Eugene D. Conner, the carrier's skipper.

Many units marked accident-free flight time: HML-267, 90,000 hours and 14 years; HT-18, 200,000 hours; VA-66, 20,000 hours and 4 years; VA-83, 24,300 hours and 5 years; VA-97, 22,500 hours and 5 years; VA-196, 25,700 hours and 5 years; VAQ-131, 21,500 hours and 13 years; VAQ-136, 5,000 hours and 3 years; VAW-114, 23,630 hours and 14 years; VF-114, 4,117 hours and 1 year; VMFA-232, 15,456 hours and 5 years; VP-4, 13 years; VP-19, 12,000 hours and 16 years; VP-49, 160,000 hours and 22 years; VR-24, 5,250 hours and 1 year; VRC-50, 49,200 hours and 5 years; VS-38, 38,000 hours and 11 years; and VT-9, 5 years.

The following individuals marked personal career milestones:

VA-66: Cdr. Bob Kelsey, C.O.; Lt.Cdr. Gene Smith; Lts. Jack Holt, Richard Vannatta, Bruce Fasterling and John Strang became double centurions on board *Eisenhower*. Lt.Cdr. James S. Shaffer recorded 1,000 career hours in the A-7 *Corsair II*.

VA-176: Eight *Thunderbolts* accumulated a combined total of over 2,700 day and night traps aboard *Independence*. They are Lt.Cdr. Charles Giger, 660; Lts. Alexander Sharp, Dwight Hunsicker and Alec Morris, 320 each; Lts. Wesley Schreiber and Richard Bainbridge, 300 each; and Lts. Edward Rosequist and Mark Sprenkle, 250 each.

VF-41: Skipper Cdr. D. M. Williams logged 400 arrested landings aboard *Nimitz*; Lt. Mark Clemente, 200; and Lts. Tim Freeman, Orlando Munoz, Dave Bentz and Don Driscoll, 100.

VS-24: Cdr. James R. Tomanelli, X.O., achieved 2,000 flight hours in the S-3A *Viking*, while skipper Cdr. Stephen M. Dwyer, Lt.Cdr. David S. Marzola and Lts. Robert A. Stobaugh, Karl G. Fremd, Joseph L. Rafalowski and John R. Warnecke recorded 1,000.

1984 was the safest year in Naval Aviation history. The mishap rate of 3.31 with 60 Class A mishaps was well below the Navy's stated goal of 4.0. The 1983 rate was 4.33 with 87 Class A mishaps.

Redesignated

HS-74, home-ported at NAS South Weymouth, Mass., was redesignated HSL-74 on January 1, 1985. The versatile SH-2F *Seasprite*, designated for LAMPS (Light Airborne Multi-Purpose System), is replacing the squadron's existing SH-3 *Sea Kings*. The *Seasprite* will deploy with Naval Reserve frigates at sea.

Anniversaries

While on board *Saratoga* (CV-60), VAW-125 celebrated its 16th anniversary on October 1, 1984. After returning to Norfolk, on October 20, the *Tigertails* marked the completion of their 11th Med cruise.

On May 10, 1985, VF-102 celebrated its 30th anniversary, during a two-day open house and reunion with former and present *Diamondback* squadron members.

Honing the Edge

The *Rampagers* of VA-83, made history on January 25 by becoming the first operational fleet squadron to successfully fire a High-speed Anti-Radiation Missile (HARM). Lt.Cdr. John Parker launched the HARM from an A-7E *Corsair II*, destroying a simulated radar target at the Naval Weapons Center, China Lake, Calif.

Fleetex '85, conducted last fall, involved more than 60 ships, including five aircraft carriers, 500 aircraft and more than 34,500 personnel. It was one of the largest maritime exercises since WW II.

Three historic firsts were recorded during this exercise: first operational use of the F/A-18 *Hornet* and SH-60B *Seahawk*, and the first use of LEASAT, a satellite that can transmit data and voice signals to mobile units at sea or on land.

Enterprise, Midway, Carl Vinson, Constellation and *Independence* participated in *Fleetex '85*, which provided a good opportunity to operate multiple aircraft carrier battle groups as one unit.

Ten squadrons and 30 aircraft participated in Naval Reserve Exercise 01-84 at NAS Point Mugu, Calif. The event, conducted by VA-305, was designed as a multimission, multiservice exercise to hone the edge of the sword of participating units.

Missions were flown off the coast of Point Mugu and as far east as Naval Weapons Center, China Lake, Calif. Each aircrew, whether Navy, Marine Corps or Air Force, joined in on the extensive mission briefs covering differences in aircraft performance, strike tactics and target area procedures.

The results: VA-305 boasts that all sorties were launched as scheduled and the missions were highly successful in providing the training required to keep Ready Reserves the cutting edge of the Navy.

Awards

Patrol Wing 1, Det Misawa was presented the Golden Orion Award for FY 84, recognizing excellence in career motivation programs. The det is now in competition for the Golden Anchor Award against all other Pacific Fleet commands.

The *Freelancers* of VF-21 were named winners of the 1984 ComNavAirPac Boola Boola Award, demonstrating the highest capability to maintain and utilize air-to-air missile weapons systems. The squadron excelled with an unprecedented 100-percent lethal kill ratio on all AIM-7 *Sparrow* missile firings and an 83-percent lethal kill ratio on all AIM-9 *Sidewinder* missile firings.

Et cetera

HSL-43 is one of two operational squadrons employing LAMPS MK III, the Navy's most technologically advanced antisubmarine/antiship weapons system. The *Battlecats* fly the SH-60B *Seahawk*, which serves as a remote platform for sensor deployment, data processing display and transmission, and weapons delivery for LAMPS MK III.

A flight line crewman signals "turn up engines" to the pilot of an HSL-43 Seahawk.

The first operational F/A-18 *Hornet* squadrons in the Atlantic Fleet flew into NAS Cecil Field, Fla., on February 1 from NAS Lemoore, Calif., where they were receiving training since their commissioning early last year. The squadron's arrival marked a major step in the replacement of Navy A-7E *Corsair II* and Navy and Marine Corps F-4 *Phantom* squadrons by the multimission *Hornet*.

Once VFAs 131 and 132 settled into their new spaces, they began preparing for a scheduled deployment aboard *Coral Sea* (CV-43), with the newly established Carrier Air Wing 13, for F/A-18 carrier training.

The Joint Services Advanced Vertical Lift Aircraft (JVX) has been designated the V-22 *Osprey* for the Navy, and MV-22A for the Marine Corps version. The *Osprey* will operate from LHA and LHD-class ships and support amphibious assaults up to 50 nautical miles offshore, or land assaults up to a 200-mile radius of action. NATC Patuxent River, Md., is the principal test site for the new tilt-rotor aircraft, which is a cross between a helicopter and a conventional airplane.

Change of Command

CarStkForSeventhFlt/CarGru-5: RAdm. W. Lewis Chatham relieved RAdm. Paul F. McCarthy, Jr.

HC-1: Cdr. John T. Francel relieved Cdr. William M. Calhoun.

HM-1686: Cdr. Walt Steiner relieved Cdr. Jerry Hickman.

HMH-772: Lt.Col. Alexander Kirk relieved Lt.Col. Michael J. Severson.

HS-75: Cdr. Ronald E. Becker relieved Capt. Robert A. Stabile.

HSL-33: Cdr. Frederick R. Sautter relieved Cdr. Jon L. Cook.

VA-86: Cdr. John L. Fitzpatrick relieved Cdr. Ralph J. Castor.

VAQ-209: Cdr. James E. James relieved Cdr. Robert G. Tyrrell.

VAW-1086: Cdr. Larry Ryan relieved Cdr. Dan Merkel.

VF-31: Cdr. F. G. Ludwig, Jr., relieved Cdr. J. C. Burch.

VF-124: Cdr. John W. Snyder relieved Cdr. Richard S. Farrell.

VR-52: Cdr. James P. Brennan relieved Capt. Thomas V. Brennan, Jr.

VRC-40: Cdr. Gary A. Lee relieved Cdr. Dante R. Marzetta.

VS-32 Cdr. Travis Kent relieved Cdr. Jack Potter.

VT-23: Cdr. James T. Hartnett relieved Cdr. John E. Brown.

Oldest Navy Helicopter Squadrons

HC-1: Established as HU-1 on April 1, 1948. Redesignated HC-1 on July 1, 1965.

HT-8: Established as HTU-1 on December 3, 1950. Redesignated HTG in March 1957, and HT-8 on July 1, 1960.

HS-1: Established October 3, 1951.

HS-2: Established March 7, 1952.

HS-3: Established June 18, 1952.

HS-4: Established June 30, 1952.

Note: The lineage/history of a squadron begins when it is *established* and is continued when it is *redesignated*. If a squadron is *disestablished*, the history of that particular unit ends. A new squadron may be established years later with the same designation, but there is *no connection* between the two units.

Blue Angels 1985 Schedule

May	
4-5	NAS Lemoore, Calif.
11	San Juan, P.R.
12	NAS Roosevelt Roads, P.R.
18	MCAS Cherry Point, N.C.
20	Naval Academy, Md.
25-27	Coney Island, N.Y.
June	
1-2	Flint, Mich.
8-9	Denton, Texas
15-16	Meridian, Miss.
22-23	Denver, Colo.
29-30	Reading, Calif.
July	
6-7	NAS Moffett Field, Calif.
13-14	Niagara Falls, N.Y.
20-21	Dayton, Ohio
27	Pensacola Beach, Fla.
August	
3	NAS Whidbey Island, Wash.
4	Seattle, Wash.
10-11	Richards Gebaur AFB, Mo.
17-18	NAS Miramar, Calif.
24-25	Peoria, Ill.
31-1 Sept.	Pease AFB, N.H.
September	
2	NAS Patuxent River, Md.
7-8	Salinas, Calif.
13-14	Reno, Nev.
21	Virginia Beach, Va.
22	NAS Oceana, Va.
28-29	Kelly AFB, Texas
October	
5-6	Albuquerque, N.M.
11-12	San Francisco, Calif.
17	MCAS Kaneohe Bay, Hawaii
19	Waikiki, Hawaii
20	NAS Barbers Point, Hawaii
26-27	NAS Point Mugu, Calif.
November	
2-3	Opa Locka, Fla.
9-10	Lake Charles, La.
16	NAS Pensacola, Fla.

PROFESSIONAL READING

By Lieutenant Commander Peter Mersky, USNR-R

Cagle, M. W., ed. *The Gold Book of Naval Aviation 1985.* Wings of Gold Press, Inc., P.O. Box 1865, Falls Church, Va. 22041. 296 pp. Illustrated. $14.95.

This unusual paperbound book is a compendium of information on the current state and equipment of U.S. Naval Aviation. There are several essays on various subjects dealing with Naval and Marine Corps Aviation and a liberal use of color photography. All types of aircraft currently in use in the fleet or under development are illustrated. There are also several full-color pages devoted to squadron and wing insignia. There is a section which details every operational aircraft carrier, complete with the ship's history and specifications as well as a page of insignia for the carrier's current air wing. Organizational diagrams also give a great deal of information on Navy and Marine wings.

The article and essay section covers a wide range of topics from the current status of U.S. Naval Aviation to Coast Guard Aviation, Marine Corps Aviation, the Naval Air Training Command, U.S. Naval Air Reserve, and *Top Gun* (the Navy Fighter Weapons School). Many of the essays are written by the flag officers responsible for the specific programs. But several are authored by civilian executives with great knowledge of their subjects. This book is a valuable reference at several levels of interest, and the use of color and timely information will make a valuable addition to the aerospace military library.

Tegler, John. *Gentlemen, You Have a Race, A History of the Reno National Championship Air Races 1964-1983.* Wings Publishing Co., Box 683, Severna Park, Md. 21146. 1984. 416 pp. Illustrated. Indexed.

This volume tells the story of the rebirth of national air racing and captures all the flash, color, courage and showmanship of the Reno races. Well-written, with a wealth of black and white photographs of classic aircraft, pilots and race personalities, this book covers a heart-pumping area of aviation little known outside the participants and enthusiasts.

The author begins with a resume of air racing in the United States which ended with the 1949 Cleveland Races. National air racing was rekindled by Bill Stead who set up the 1964 competition in Reno, Nev., working out of a local, dusty strip near Pyramid Lake. The idea caught on and the races flourished, bringing all types of aircraft, from fire-breathing WW II surplus fighters to the Formula racers, barely large enough to carry a normal-sized pilot. Military aviators, airline pilots and other flyers who had the money and drive to find, maintain and fly whatever aircraft they could, are also chronicled.

FLIGHT BAG

Articles Desired

NANews is interested in publishing articles from active duty and reserve military personnel, history buffs and enthusiasts who want to write about Naval Aviation. The magazine is receptive to a wide range of articles concerning Naval Aviation history, personal experiences, profiles on officers and enlisted personnel, news and feature stories about squadrons and naval air stations, etc.

If you have an idea for a story, write or call the Editor, *Naval Aviation News,* Bldg. 159E, Washington Navy Yard Annex, Washington, DC 20374-1595, (202) 433-4407/8/9 or autovon 288-4407/8/9, before submitting a manuscript. All feature articles should be no longer than eight double-spaced, typewritten pages and accompanied, preferably, by black and white 5x7 or 8x10 photographs. All manuscripts must include the author's name, duty station and work phone number. By-lines and photo credits will be given.

Athletes Wanted

NANews is compiling a list of active duty, reserve and retired Naval Aviators who made significant accomplishments as athletes in college. If you were a successful athlete in football, baseball, basketball, hockey, boxing, swimming, wrestling, track and field, etc., please send *NANews* a letter describing your achievements. In addition to the letter, also include any newspaper clippings recording your efforts. Send all correspondence to the attention of JO2 Tim Christmann, *Naval Aviation News,* Bldg. 159E, Washington Navy Yard Annex, Washington, DC 20374-1595.

Correction: The photograph of USS Iowa on page 6, NANews, March-April 1985, was taken by PH2 Paul Erickson vice JOCS Kirby Harrison.

Blimp Insignia

I am a member of the Naval Airship Association and am very interested in USN blimps and their history. I would like to purchase blimp squadron and wing patches for a personal collection that I'm starting.

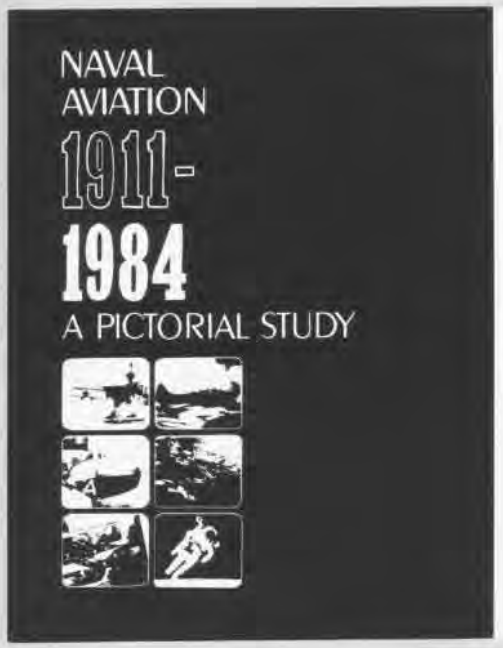
Patrick J. MacAuley
96 St. Marks Rd.
Dorchester, MA 02124

Reunions, Conferences, etc.

ICAP Mobilization Conference, May 16-17, Fort McNair, Washington, DC. For information, contact Mobilization Conference Committee, Industrial College of the Armed Forces, Fort McNair, Washington, DC 20319-6000, (202) 475-1887, autovon 335-1887.

Navy Air Group 153-15 squadron officers 1945-49 reunion, June 6-9, Pensacola, FL. Contact Al Rappuhn, 10920 Manatee Dr., Pensacola, FL 32507, (904) 492-1829.

USS Essex CV/CVA/CVS-9 ship's company reunion, June 12-15, Williams-



Naval Aviation 1911-1984, A Pictorial Study, now available for purchase, is a photographic history tracing the evolution of Naval Aviation from its humble beginnings to its current role as an essential element of U.S. naval warfare. It is a 93-page monograph designed to capture the essence of Naval Aviation and to convey to the reader something of the imagination, energy and commitment of those who made the dream a reality.

If you would like to purchase a copy, it sells for $3.50. All orders should be accompanied by payment in the form of a check or money order, payable to the Superintendent of Documents. Payment may also be made by VISA or MasterCard, furnishing expiration date. Send the order to: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

burg, VA. Write Jack Gallagher, P.O. Box 3156, Lakewood, CA 90711-3156.

HMX-1 Association reunion, June 14-16, Quantico, VA. Contact Danny Hall, 3914 Oklahoma Ave., Tampa, FL 33616, (813) 839-0537.

Association of Aviation Ordnancemen reunion, June 21-23, Comstock Hotel, 200 W. Second St., Reno, NV. Contact G. F. Gannon, 1245 Cunningham Ave., St. Charles, MO 63301, (314) 946-0503.

USS Salisbury Sound (AV-13) reunion, first week in July, Reno, NV. Contact Don Wade, 560 Campbell Hill, Marietta, GA 30060, (404) 422-7369.

Marine Detachment, USS Enterprise (CV-6) reunion, July 21-24, Edgewater Inn, Seattle, WA. Write Louis Michot, P.O. Box 52169, Lafayette, LA 97045.

USS Enterprise (CV-6) reunion, July 25-28, Eugene, OR. Write James Barnhill, 6633 Briley Dr., Fort Worth, TX 76118.

Guadalcanal Campaign Veterans reunion, August 1-4, Colorado Springs, CO. Contact Ted Blahnik, P.O. Box 181, Coloma, MI 49038-0181, (616) 468-5938.

VP-24 Batmen reunion, August 1-4, Jacksonville, FL. Contact Jim Ziegler, 6426 Ledbury Dr. S., Jacksonville, FL 32210, (904) 771-9637.

Aviation Boatswain's Mate Convention, August 6-10, San Diego, CA. Contact ABCM Charles Wyatt, Aviation Boatswain Mates Association, P.O. Box 228, Lakehurst, NJ 08733, (619) 437-5864, autovon 951-5864, or (619) 748-5197.

Fanshaw Bay (CVE-70) reunion, June 7-9, Kansas City, MO. Contact Harold A. Hoffman, 8647 Belhaven Dr., St. Louis, MO 63114, (314) 427-0126.

Rudyerd Bay (CVE-81) proposed reunion of WW II sailors and airmen, Sacramento, CA. Contact Richard Hansen, 11245 Dry Creek Rd., Auburn, CA 95603, (916) 885-4878.

VP-7 (VP-119, VP-ML-7), 1944-69 reunion, July 26-27, 1985, Jacksonville FL. Contact Bill Lally, 6160 Arlington Expressway, Jacksonville, FL 32211, (904) 724-4420.

VA-305 reunion in July 1985. Contact Lt. B. E. Rainey, VA-305, NAS Point Mugu, CA 93042-5019, (805) 982-8443.

USS Chandeleur (AV-10) reunion, July 31-Aug. 3, The Travel Lodge, San Antonio, TX. Contact Mrs. Kenneth E. Boyd, Rte. 4, Box 145, Culpeper, VA 22701, (703) 854-5076.

USS Ranger (CV-4) ship's company reunion, August 9-11, Colonial Hilton, Wakefield, MA. Contact George Pyle, 8629 Oakleigh Rd., Baltimore, MD 21234, (301) 665-1329.

USS Block Island (CVE-21) with VC-55 and DEs 51, 575, 576, 578 and 686 joint reunion, May 30-June 2, Union Plaza Hotel, Las Vegas, NV. For information, write USS Block Island Assoc., 4991 Merrill Dr., Las Vegas, NV 89120.

Last Crusader Ball, May 18, NAS Patuxent River, MD. Contact Cdr. Frank W. Butler, Air Operations Dept., NAS Patuxent River, MD 20670, (301) 863-3245 or autovon 356-3245.

Where is the Moffett Trophy?

NANews is interested in locating the original Rear Admiral William A. Moffett Memorial Trophy, which was presented from 1936 to 1940 to the best battleship or cruiser-based aviation unit. If anyone has information on the whereabouts of the trophy, please contact the Editor, *Naval Aviation News,* Bldg. 159E, Washington Navy Yard Annex, Washington, DC 20374-1595, (202) 433-4407/8/9 or autovon 288-4407/8/9.

naval aviation news