THE NAVAL HELICOPTER



HIGHLIGHTS IN NAVAL HELICOPTER HISTORY

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NAVAL HELICOPTER ASSOCIATION



The NAVAL HELICOPTER, Highlights in Naval Helicopter History. This booklet was commissioned by the Naval Helicopter Association (NHA) through the auspices of the NHA Centennial of Naval Aviation Celebration Committee specifically to be provided to Student Naval Aviators going through US Navy Rotary Wing Flight Training.

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From the R-4 to the H-60 Seven Decades of Progress

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built around new "Romeo" and "Sierra" configurations of the very successful LAMPS MK-III platform, the H-60 helicopter. But that is contemporary history, not in the scope of this brief compendium.

The past is only a prologue. The future of Naval Helicopter Aviation is only limited by the vision of the young budding pioneers that continue to join our community.



PH1 (NAC) Stephen Batiz USN

Brief Highlights of Cornerstone Events in US Naval Helicopter History

Today the US Navy accepts the helicopter and its capabilities as integral and essential parts of Naval Aviation. This has not always been the case. The early helicopter pioneers not only had to struggle with the formidable technical challenges and difficulties of an enormously dynamically complex machine, but they had to endure the criticism, contempt, and outright antagonism of their superiors in the Naval hierarchy. These pioneers had to endure the hardships, blind alleys and failures of the early days before emerging triumphant. It is important for us to know our history, particularly for the new aviators entering our helicopter community. They need to know where we have been, for that knowledge is the foundation for the vision of where we are going.

January 22, 1931. – The US Navy ordered three XOP -1 autogiro prototypes from Pitcairn Aircraft Co., to be evaluated for naval service. This was the first US Navy contract for rotary wing aircraft in history.

September 23, 1931. – LT Alfred M. Pride, USN, piloted an XOP-1 in the first rotary wing aircraft landing and take-off from a ship at sea, USS Langley (CV-1).

March 12, 1935. – The Navy awarded Pitcairn another contract to produce an autogiro without fixed wings and ailerons. The XOP-2 was the first Navy rotary wing aircraft without fixed wings. This modification, made possible by the implementation of cyclic control of the rotor blades pitch angle, greatly improved controllability at slow airspeeds.

August 9, 1937. – BuNo A8602, an autogiro built for the Navy by Pennsylvania Aircraft Syndicate, performed demonstration flights, including water landings and take-offs. This autogiro was a modified N2Y-1 tandem-seat biplane trainer.

The overall results of evaluations during the 1930s convinced the Navy hierarchy that the autogiro could not satisfactorily meet naval requirements. The Navy needed a hovering vehicle. It would have to wait a few more years before that need could be fulfilled.

June 30, 1938. – An Inter-Agency was created to administer the rotary wing development program funded by the Dorsey Act. CDR William J. Kossler, USCG, represented the Coast Guard. He would become one of the "Founding Fathers" of helicopter naval aviation.

July 19, 1940. – The US Army Material Division awarded Platt-LePage Aircraft Co. a contract to build an experimental helicopter, the XR-1, a twin-side-byside-rotor design based on the technology of the German Focke-Wulf Fw-61. This was the second helicopter contract awarded by the US military; the first, awarded by the Army to George de Bothezat in 1921, had failed to produce a practical helicopter.

December 17, 1940. – The US Army awarded Sikorsky Aircraft a contract to build the XR-4 single-mainrotor and tail rotor helicopter prototype. Sikorsky would use this configuration in all his future helicopter designs. The XR-4 first flew on 13 January 1942.

November 1 1941. – In view of the deteriorating diplomatic situation and anticipating the break of hostili-

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engines. IBM was selected as the avionics integration contractor.



February 28, 1978. – The Department of Defense authorized full-scale development of Sikorsky's SH-60B, the LAMPS MK-III helicopter.

August 30, 1979. – The first prototype of the SH-60B *Seahawk* was unveiled at the Sikorsky plant. It completed its maiden flight on 12 December of that year.

Mid-1981. – HMH-464 began to receive the Ch-53E Super Stallion. HM-12 received its first Super Stallion in November 1982. It was used for Vertical Onboard Delivery (VOD) operations. The MH-53E, a modification of the CH-53E to the minesweeper configuration, began service in 1986.

May 6, 1983. – The Navy's first heavy lift Helicopter Combat Support Squadron, HC-4 was established at Norfolk, VA. This was the second helicopter squadron to carry this designation. It was equipped with the new, three-engine, seven-blade rotor CH-53E *Super Stallion*. The squadron moved to its home base, NAS Sigonella, Italy, on 25 August 1983. It immediately took over the VOD mission in the Mediterranean.

Epilogue. In the 1990s the LAMPS MK-III program became a rotund success, leading to the establishment of a new breed of helicopter squadrons. During the first decade of the new century the Navy began the implementation of a new Navy Helicopter Master Plan,



YCH-53E lifted an external load of 17.8 tons, the heaviest payload ever lifted by a helicopter in the western world.

September 17, 1974. – After completing exten-

sive design modifications at the Naval Development Center, Warminster, PA, to incorporate the LAMPS MK-III developmental avionics package, the SH-2SR helicopter was delivered to Kaman Aerospace Corporation for flight certification tests.

July 24, 1975. – HS-6 helicopters operating from USS New Orleans (LPH-11) recovered the Apollo spacecraft and astronauts Vance D. Brand, Thomas P. Stafford, and Donald K. Slayton after their splashdown in the Pacific Ocean. This recovery marked the end of the Apollo-Soyuz mission, and the end of the Apollo program. It was also the final at-sea recovery in the US space program. Between 1960 and 1975, thirty-five spacecraft and astronaut recovery missions were completed by Navy and Marine helicopters.

1977. – VR-24, operating in the Mediterranean theater, received four RH-53Ds to be used as Vertical Onboard Delivery (VOD) aircraft. This event ushered a new era in combat logistics support. The "VOD Squad" provided service to ships of the Sixth Fleet until 1983.

September 1, 1977. – The winners of the LAMPS MK -III competition were announced. Sikorsky Aircraft was selected to build the helicopter. General Electric Aircraft Engine Division was selected to provide the ties in both, the Atlantic and the Pacific theaters, President Franklin D. Roosevelt issued an executive order transferring operational control of the US Coast Guard to the Navy Department. The Coast Guard would remain under Navy control until 1 January 1946. On that day President Harry S. Truman issued an executive order returning control of the US Coast Guard to the Treasury Department. However, the Coast Guard remained involved in the test and development of the helicopter as an ASW platform until 1951.

April 20, 1942. – Sikorsky offered an XR-4 flight demonstration for the Army and representatives of the US Navy, Coast Guard, and the Royal Navy. USCG CDR Watson A. Burton, Commanding Officer of the New York Coast Guard Air Station, Floyd Bennett Field, Brooklyn, NY, and CDR William J. Kossler, who was serving as Chief of the Aviation Engineering Division at Coast Guard Headquarters, witnessed the demonstration. They agreed that the helicopter could meet the requirements of a rescue vehicle and proposed that three helicopters be procured for test and evaluation. Their proposal was immediately rejected.

May 1942. – CDR Kossler did not give up on his quest. He arranged for his protégée, LCDR Frank Erickson, another helicopter advocate, to be assigned as Executive Officer of the New York Coast Guard Air Station. With their shared enthusiasm for the helicopter as a rescue vehicle, Kossler wanted to bring Erickson close to the Sikorsky factory.

June 26, 1942. – LCDR Erickson visited the Sikorsky plant in Connecticut and inspected the XR-4 development program. Three days later he submitted a report to Headquarters recommending the procurement of

helicopters for convoy antisubmarine patrol and search and rescue duty. Knowing that the Navy was very concerned with the convoy losses in the Atlantic caused by German submarines, Erickson placed emphasis on the helicopter antisubmarine role.

July 24, 1942. – The Bureau of Aeronautics issued a Planning Directive for the procurement of four Sikorsky XR-4 helicopters for evaluation by the Navy and Coast Guard. CDR Kossler convinced the Commandant of the Coast Guard, ADM Russell R. Waesche, to obtain authorization from ADM Ernest J. King, Chief of Naval Operations, to establish a Coast Guard helicopter test and evaluation program.

February 15, 1943. – ADM King issued a letter to the Bureau of Aeronautics directing the development and evaluation of helicopters deployed aboard merchant ships for antisubmarine patrol duty. It assigned responsibility to the Coast Guard for the testing and evaluation of helicopters.

May 7, 1943. – The Army conducted the first sea trials of the XR-4 aboard the merchant tanker *Bunker Hill*, with Captain Frank Gregory at the controls. The Maritime Commission sponsored this demonstration, conducted in the Long Island Sound. Captain Gregory circled and landed aboard the ship about fifteen times.

June 1943. – LCDR Erickson began helicopter flight training in the XR-4 at the Sikorsky plant in Connecticut. He soloed after three hours of dual flight training with Sikorsky's chief test pilot Les Morris, thus becoming Coast Guard helicopter pilot number 1.

March 1, 1972. – HT-8 was split into two squadrons, HT-8 and HT-18. HT-8 retained the primary helicopter training mission, flying the TH-57 A. HT-18 became the advance training squadron, flying the TH-1L. The Naval Air Training Command was reorganized late in 1972. A result of this reorganization was the closing of Ellyson Field and the move of HT-8 and HT-18 to NAS Whiting Field, Milton, Florida, in December 1973. Navy helicopter training remains at Whiting Field to this day. In 1985, the TH-57B replaced the TH -1L as advance trainer.

January 27, 1973. – The cease-fire announced in Paris three days before took effect this day, putting an end to American combat operations in Vietnam. During the long American involvement in the conflict (1961 to 27 January 1973), the Navy lost 13 helicopters to hostile fire. During that same period, the Marine Corps lost 270 helicopters to enemy action. The US Navy continued flying combat missions over Laos and Cambodia until the following August.

July 31, 1973. – HSL-33, the Navy's first squadron solely dedicated to deploy LAMPS detachments aboard



LAMPS-configured ships of the Pacific fleet, was established at NAS Imperial Beach, CA.

August 29, 1973. – HM-12 received the first of the new RH-53Ds helicopters.

March 1, 1974. – The first prototype of the threeengine, seven-blade main rotor YCH-53E *Super Stallion* completed its first flight. On 10 August 1974, a of helicopter-borne sensors.

April 1, 1971. – Helicopter Mine Countermeasures Squadron Twelve (HM-12) was established at NAS Norfolk, VA. This was the first minesweeping squadron in the US Navy. That year the Marines transferred fifteen CH-53As to the Navy to be used as minesweepers. They were redesignated RH-53As and assigned to the newly established squadron.

October 5, 1971. – HC-4, at NAS Lakehurst, NJ, became the first squadron to receive the LAMPSconfigured SH-2F *Seasprite* helicopter. HC-5, at NAS Imperial Beach, CA, received the first West Coast SH-2F a week later.

October 29, 1971. – HS-15, the first sea control squadron, was established at NAS Lakehurst, NJ. The squadron operated the SH-3H helicopters to provide protection to convoys or ships not operating with or within the protective range of aircraft carriers.

November 2, 1971. – Eleven Navy helicopter pilots and one civilian helicopter engineer met at the NAS Imperial Beach Officers Club and founded the Naval Helicopter Association. CAPT Alfred Monahan was elected the first National President. The Association's objectives were, and continue to be, to provide recognition and enhance the prestige of the US Naval vertical flight community; to promote the use of vertical lift aircraft in the US Navy, Marine Corps, and Coast Guard; and to keep members informed of new developments and accomplishments in rotary wing aviation. The NHA held its first Annual Symposium the week of 11 March 1972. **June 10, 1943**. – LCDR Erickson submitted another proposal, this time placing all the emphasis on the helicopter's antisubmarine potential. He recommended that helicopters be equipped with radar and dunking sonar to become "the eyes and ears of the convoy escorts."

June 22, 1943. – The Navy contracted a buy of 44 Sikorsky R-5 helicopters. By the time the first R-5, Navy designation HO2S-1, was accepted in December 1945, the war had ended. These helicopters were assigned to NAS New York and USCG Air Station, Elizabeth City, SC.

October 16, 1943. – The Navy accepted its first helicopter, a Sikorsky YR-4B, Navy designation XHNS-1, BuNo 46445, at Bridgeport, Connecticut. LCDR Erickson flew the one-hour acceptance flight. CDR Charles T. Booth, USN, went to Bridgeport to qualify as a helicopter pilot and to fly the XHNS-1 to the Naval Air Test Center (NATC), NAS Patuxent River, MD. CDR Booth was the first US Navy Officer to become qualified to fly helicopters.

October 20, 1943. – LTJG Steward R. Graham, USCG, completed helicopter flight training at the Sikorsky plant, soloing after three and a half hours of dual instruction. LTJG Graham became USCG helicopter pilot number two. LCDR Erickson was his flight instructor.

October 22, 1943. – CDR Charles T. Booth delivered the first XHNS-1 to NATC, Patuxent River. The Army transferred two additional YR-4Bs to the Navy. In time, a total of 20 YR-4Bs from the Army contract of 100 were transferred to the Navy. According to its records, between October 1943 and December 1944 the US Navy accepted 68 YR-4Bs (HNS-1s). They were powered with the R-550 radial engine, its various versions developing between 180 and 200 hp.

November 19, 1943. – The New York Coast Guard Air Station was designated the first US naval helicopter training base, newly promoted CDR Erickson commanding. Erickson began to train Coast Guard, Navy, Army Air Corps, and British helicopter pilots.

December 5, 1943. – LCDR John M. Miller, USNR, soloed the HNS-1, becoming US Navy helicopter pilot number 2. CDR Erickson was his flight instructor. A few days later the Navy conducted its first HNS-1 shipboard operational test. LCDR Miller, with Army Brigadier General Frank Lowe aboard as an observer, landed aboard the British freighter *M. V. Daghestan* in the Long Island Sound.

December 18, 1943. – Based on the results of this test, the Chief of Naval Operations directed the separation of the helicopter test and development functions from the pilot training function. He further directed that, effective 1 January 1944, the Coast Guard establish a helicopter pilot training program at Floyd Bennett Field, under the direction of the Deputy Chief of Naval Operations (Air). The directive established the criteria that after 25 hours of dual and solo flight time, a fixed wing pilot was qualified as a helicopter pilot. From its beginning, the Navy considered helicopter rating as a postgraduate qualification, and only Naval Aviators were sent to helicopter training. This policy continued until 1954.

tanks. For his heroic actions LTJG Clyde E. Lassen was awarded the Medal of Honor. He was the second helicopter pilot to receive the MoH in US Navy history, and the only one during the Vietnam War.

1968. – The Navy began to acquire 45 Bell TH-1L trainers.

January 27, 1969. – The CH-53 D, a more powerful version of the *Sea Stallion*, completed its maiden flight. CH-53Ds began to arrive in Vietnam later that year.

1969. – The TH-1L replaced the UH-34 as the advance helicopter trainer in HT-8, Ellyson Field, Pensacola. At the same time the TH-13 was also replaced by the Bell TH-57A, establishing an all-turbine helicopter training program in the Navy.

1969. – The Marines began to take delivery of the AH-1J *Sea Cobra*, with the 1,290 shp Pratt & Whitney T400 twin-pack engine. The new attack helicopter was armed with guided anti armor missiles, unguided rockets, 20-millimeter cannons or 7.62-millimeter machine guns. Through the 1970s, various models of the AH-1 were produced, featuring improved armament and more powerful engines. AH-1 development and deployment continues to the present, the most recently acquired model being the AH-1Z *Viper*, which is expected to continue in service until 2018.

March 16, 1971. – Tests of the SH-2D Light Airborne Multi-Purpose System (LAMPS) helicopter began at the Kaman plant in Bloomfield, Connecticut. The LAMPS system extends the Surface and Sub-surface Surveillance and Control (SSSC) range of cruisers and destroyers by adding the ASW and ASMD capabilities

had ejected twenty miles inside enemy territory after their F-4J aircraft was hit by a surface-to-air missile. After locating the survivors in a heavily wooded area, Lassen set his UH-2A down on a rice paddy while urging the two survivors to come out of the thick vegetation. The UH-2A began to take small arms fire. With "Come get us" calls coming through his earphones, Lassen decided to try to get above the survivors and hoist them aboard. Using the illumination from RESCAP parachute flares, Lassen positioned the helicopter above the survivors, between two towering trees. Before the air crewmen could begin the hoisting operation the flares went out and the world went pitch black. The helicopter hit a tree and started to spin right. Lassen regained control and waved off. The UH-2A had lost a door but was still flyable. A new RESCAP arrived with more flares. Lassen determined that the survivors would have to make their way to the clearing if they had any hope of being rescued. As Lassen approached the clearing for a second landing, small arms fire erupted along the perimeter. The survivors were too far away and Lassen aborted the approach. During the third approach the last of the illumination flares went out. Lassen decided to turn the landing light on and expose the aircraft to enemy gunners rather than to abandon the survivors. For two minutes he hovered. with the landing gear just touching the mud, while Dallas and West blasted away at the tree line nearby. Finally the survivors, LCDR John Holtzclaw and LCDR John A. Burns emerged from the dark and were yanked inside the helicopter. With the aircraft vibrating abnormally, a malfunctioning compass, and a low fuel state, Lassen headed for the coast while dodging antiaircraft fire. He landed the crippled helicopter aboard the closest ship available, USS Jouett (DLG-29), with 135 pounds of fuel, five minutes of flight time, left in the **January 1, 1944**. – The Navy signed a contract with P -V Engineering Forum, Frank Piasecki's emerging enterprise, for the building of a single XHRP-1 prototype. This was the first twin-rotor helicopter in the tandem configuration built in the US. The XHRP-X, a technology demonstrator, first flew on 7 March 1945. The XHRP-1 evaluation was very successful, and the Navy quickly ordered production of twenty HRP-1s, nicknamed the "Flying Banana."

January 2, 1944. – The first Atlantic convoy that used the new antisubmarine helicopter patrol capability sailed from New York to Liverpool, UK, with three HNS-1 helicopters embarked. The first sortie at sea was flown from *Daghestan* by USCG LTJG Steward Graham on 16 January, a 30 minutes flight. With the support of CAPT Kossler and ADM Waesche, CDR Erickson had been able to sell the Navy on the concept of using the helicopter in the convoy antisubmarine patrol role.

January 3, 1944. – CDR Erickson performed the first recorded helicopter mission of mercy when he flew an HNS-1 through a winter blizzard to deliver a cargo of blood plasma from Manhattan, NY, to the Hospital at Sandy Hook, NJ, to treat over 100 sailors injured in explosions aboard the destroyer USS Turner. This event helped to reverse the perception of helicopters as

impractical chines.

August 11, 1944. – CDR Erickson began testing a bombloading electric hoist installed in an HNS-



1, the first rescue hoist installed in a helicopter. After four days of testing over Jamaica Bay, its feasibility was clearly demonstrated, but the electric motor proved to be too weak and slow. Erickson switched to a hydraulic motor that could lift 400 pounds at two and a half feet per second. During new testing six weeks later the hydraulic system performed very satisfactorily, leading to its adoption for service use.

September 1944. – The Navy accepted three prototypes of the Sikorsky XR-6, Navy designation XHOS-1. Under Sikorsky license, Nash-Kelvinator in Detroit began production of the HOS-1 in 1945. The Navy accepted 36 helicopters from Nash-Kelvinator before all war production contracts were cancelled shortly after V-J Day, 2 September 1945.

February 6, 1945. – The sixth and final class of helicopter pilots graduated from CDR Erickson's helicopter training school. The school was closed after graduating 97 helicopter pilots, including 71 US Coast Guard, 7 US Navy, 11 British, 4 Army, 2 civilians, and 2 CAA pilots. 6 students dropped from training. Addi-



tionally, the school trained 255 mechanics.

March 7, 1945. – CDR Erickson reported that a dipping sonar suspended from an XHOS-1 helicopter performed success-

fully. LT Steward Graham conducted the test. He soon became the principal test pilot developing helicopter antisubmarine equipment and tactics.

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region. The Army lent the Navy a number of UH-1B helicopter gunships and provided maintenance support for them.

January 1967. – HMH-362 in Vietnam began to receive the CH-53A helicopters, a ten-ton lifter powered by two GE-T64-6, 2850 shp engines driving a six-blade main rotor. They proved to be very useful in the recovering of downed aircraft.

April 1, 1967. – Helicopter Attack (Light) Squadron Three (HAL-3) was established at Vung Tau, CDR Robert W. Spencer commanding. A spin off HC-1, the *Seawolves* took over the four HC-1 detachments and added, first three, and later two more, for a total of nine detachments. By the time the squadron was disestablished on 26 January 1972, its officers and men had been awarded 17,339 decorations and medals, making it the most decorated squadron in US Navy history.

September 1, 1967. – HC-1 was split into four different squadrons: HC-1, HC-3, HC-5, and HC-7. HC-1 retained the plane guard mission. HC-3 assumed the vertical replenishment mission. HC-5 became the Fleet Replacement Aircrew Training squadron. HC-7 took on the CSAR and minesweeping missions. In fulfilling the CSAR mission off the coast of North Vietnam, Navy helicopter crews wrote many pages of heroic history. The story of a rescue by HC-7 Detachment 104 in a dark summer night in 1968 is a stellar example.

June 19, 1968. – Shortly after midnight, LTJG Clyde E. Lassen, with copilot LTJG Leroy Cook, and gunners/rescue aircrewmen ADJ3 Donald West and AE2 Bruce Dallas, launched from USS Preble (DLG-15), on station off the coast of North Vietnam. Two aviators nado, California. Fifteen hours and 52 minutes later it settled down on the flight deck of USS Franklin D. Roosevelt (CVA-42), berthed at the Naval Base, Mayport, Florida. The distance of 2,116 statute miles broke the prior record by 768 statute miles.

June 1965. – An SH-3A from HS-2 flew non-stop from Seattle, WA, to NAAS Imperial Beach, CA, a distance of over 1,000 nautical miles, using the newly developed Helicopter In-flight Refueling (HIFR) capability to take fuel from USS O'Brien (DD-725) about 100 miles west of San Francisco. During the spring of 1965, working under the auspices of RADM Evan P. Aurand, Commander, ASW Group One, HS-2 had developed the capability to take fuel from destroyers while hovering alongside. HIFR was used extensively in the Gulf of Tonkin to extend the endurance of helicopters operating independently from aircraft carriers. In November 1965, an SH-3A from HS-2 remained airborne 11 hours and 18 minutes during a CSAR mission in the Gulf with the help of four HIFRs, three of them at night.

September 1966. – NATC completed a two-day shipboard suitability trial of the RH-3A minesweeper helicopter aboard USS Ozark (MCS-2). In 1967 an HC-6 helicopter minesweeping detachment embarked aboard Ozark conducted a mine countermeasures development program in the Atlantic Fleet. A similar program was conducted in the Pacific by an HC-7 detachment embarked on USS Catskill (MCS-1).

Mid-1966. – In response to the need for helicopter support for SEAL teams and River Patrol Boats operating in the Mekong Delta, HC-1 began to deploy small, two-helo detachments to four separate locations in the Delta

March 23, 1945. – The Navy awarded McDonnell Aircraft Co. a contract to build a prototype of the XHJD-1 *Whirlaway* helicopter, to be used as a research platform. Using the side-by-side design, the *Whirlaway* was the first twin-engine, twin-rotor helicopter built in the US. After completing a 250 hours technology development program, the *Whirlaway*, was donated to the National Air and Space Museum in 1951.

May 2, 1945. – LT August Kleisch, USCG helicopter pilot number 5, flying an HNS-1 helicopter, completed a three-day-long rescue of eleven Canadian airmen marooned after a plane crash in northern Labrador. The event brought worldwide attention to the novel new aircraft with a unique capability.

May 22, 1946. – The Navy successfully completed the operational test of the Hayes XCF dipping sonar off the coast of Key West, FL. LT Steward Graham, USCG, flew an HO2S-1 with the sonar suspended underneath. Using a captured German submarine as the target, the sonar provided good detection ranges and accurate bearings.

Summer of 1946. – A Sikorsky S-51 civilian helicopter, piloted by Dimitri "Jimmy" Viner, Igor Sikorsky's nephew, performed plane guard duties aboard USS Franklin D. Roosevelt (CVA-42) during a Caribbean cruise. Jimmy Viner rescued several pilots that had to ditch near the carrier, and one sailor that was blown off the flight deck. These incidents sold the Navy on the concept of helicopter plane guard during carrier flight operations.

July 1, 1946. – The Navy established a new squadron, VX-3, at NAS New York with the mission to train heli-

copter pilots and other personnel and to develop the tactical employment of helicopters. VX-3 immediately resumed the training of helicopter pilots, a duty previously assigned to the Coast Guard. On 10 September of that year, VX-3 moved to NAS Lakehurst, NJ, and continued training pilots.

September 18, 1946. – A Sabena Airlines DC-4 crashed near Gander, Newfoundland, on a flight from Brussels to New York. Seventeen people survived the crash, but they were trapped in a heavily wooded area in the middle of a large bog. The survivors, many seriously injured, would not survive over-land evacuation. In less than 48 hours two helicopters, an HNS-1 and an HOS-1, were disassembled at Floyd Bennett Field, NY, loaded on a C-54, flown to the Gander Airport, reassembled and tested. The pilots, CDR Frank Erickson, LT Stewart Graham, LT Walter Bolton, and LT August Kleisch, made repeated flights between the crash site and Gander Lake to extract all 17 survivors. This event brought international recognition to the helicopter rescue capabilities.

September 1946. – In preparation for Operation High Jump, the first post-war Antarctic expedition, the Navy bought four off-the-shelf S-51s, Navy designation HO3S-1. They were assigned to VX-3.



November 1946. – The Navy began to receive the first of the new HO3S-1 helicopters equipped with blade-folding rotors and externally be used for AMCM development and training, and eventually would be deployed in fleet squadrons.

1964. – Sikorsky began the conversion of nine SH-3As to the RH-3A minesweeper configuration.

1964. – Production began of the Bell UH-1E helicopters for the Marine Corps. 192 units were built between 1964 and 1966. They were used to perform airborne command and control, assault transport, medevac, and other utility missions.

November 1964. – The Navy began to receive the Boeing Vertol UH-46A tandem rotor helicopters. That same month, USS Sacramento (AOE-1) deployed with



two UH-46As embarked. This was the first deployment of the UH-46 in the modern VERTREP role. The Marine Corps also began to receive the CH-46A, which replaced the HUS in the

medium lift role. The Navy retired the UH-46 from service in 2004, replacing it with the MH-60S *Knighthawk*. The USMC, however, plans to keep the CH-46s in service until the MV-22 is fully fielded in the 2014-2015 time frame.

March 6, 1965. – An SH-3A piloted by CDR James R. Williford, USN, with Lt David A Beil, USN, as copilot and ADJ1 Paul J. Bert as crew chief established a new unrefueled distance record. The helicopter tookoff from the flight deck of USS Hornet (CVS-12), berthed at the carrier pier, NAS North Island, CoroNavy and Defense officials by the Navy Mine Defense Laboratory and the Navy Air Mine Defense Development Unit at Panama City, FL. The first was an airportable mine sweeping gear that enabled a helicopter to become a self-sufficient aerial minesweeper. The second was equipment for transferring the minesweeping gear towline from a surface minesweeper to a helicopter, from one helicopter to another, or from a helicopter to a surface minesweeper.

August 26, 1961. – USS Iwo Jima (LPH-2) was commissioned at Bremerton, WA. This was the first of a series of Navy ships built from the keel up as Helicopter Combat Assault carriers. Over the years, twelve LPHs were put into service, seven Iwo Jima class newconstruction ships and five converted aircraft carriers. Six Tarawa class LHAs and eight Wasp class LHDs have replaced the aged LPHs, with more LHAs and LHDs in the planning stage.

February 5, 1962. – An SH3A established a new speed record of 210.6 mph (183 knots) on a measured track in Long Island sound.

March 1962. – BuWeps issued a request for proposals for the Heavy Helicopter Experimental, HH(X), Marine Corps heavy lift helicopter for the transportation of equipment, supplies, and personnel during the assault phase of amphibious operations. After an intense competition with Boeing's *Chinook*, Sikorsky won the contract in July of that year. In September 1962 the contract was signed for two YCH-53A prototypes.

October 1962. – The CNO directed the conversion of a number of helicopters for the Airborne Mine Countermeasures (AMCM) mission. These helicopters would

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mounted rescue hoists. They were based on several warship classes, mainly the aircraft carriers, seaplane tenders, icebreakers, cruises, and battleships. The HO3S-1 was the first Navy helicopter to replace some fixed wing aircraft in the fleet. By late 1949 the HO3S-1 had totally replaced the small seaplanes carried by cruises and battleships.

December 25, 1946. – An HO3S-1 piloted by LCDR Walter M. Sessums became the first helicopter to fly over the Antarctic.

February 9, 1947. – A Sikorsky HO3S-1 that was being evaluated by CTF-2 in the Atlantic picked up LT Frank A. Shields, a SB2C pilot that had to ditch near the carrier USS Leyte, and deposited him safely on the carrier deck in just six minutes.

February 1947. – The Army transferred ten Bell Model 47 helicop-

ters to the Navy for evaluation as HTL-1 trainers. Subsequent buys of more advance models increased the total Navy acquisition of HTLs to 187. Starting in April



1948, some were assigned to HU-1 and HU-2 and used aboard icebreakers. Some were used by the Marines in liaison, transport, and casualty evacuation roles. The majority was used as primary trainers in HU-2, and later in HTU-1 at Ellyson Field, Pensacola. They remained in service as primary trainers until 30 June 1973. **July 24, 1947**. – The CNO established a requirement for a helicopter capable of transporting assault troops and their combat equipment and supplies from an escort carrier to the beach. This directive marked the birth of the assault helicopter in amphibious warfare.

December 1, 1947. – Marine Helicopter Experimental Squadron One (HMX-1), was established at MCAS Quantico, VA, under the command of Colonel Edward C. Dyer. The new squadron's mission was to develop techniques and tactics for the use of helicopters in amphibious operations. HMX-1 would later assume the responsibility to provide helicopter transport to the President of the United States.

March 1948. – Piasecki's XHJP-1 tandem rotor helicopter began flight-testing at the factory in Philadel-



phia. After successful completion of NATC evaluation, the redesignated HUP-1 entered production in 1950. The initial order of 32 HUP-1s was followed by another order for 165 HUP-

2s, which were fitted with the more powerful R-975-46, 550 hp engine. The HUPs were assigned to HU-1 and HU-2, and eventually replaced the less capable HO3Ss.

April 1, 1948. – VX-3 was disestablished. That same day Helicopter Utility Squadron One (HU-1) and Helicopter Utility Squadron Two (HU-2) were established at NAS Lakehurst, with many of VX-3 personnel mak-

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four LSDs equipped with helicopter platforms. Boxer was being used as an experimental helicopter carrier. She was redesignated LPH-4 on 30 January1959. The newly formed squadron's mission was to deploy a "vertical envelopment team" of Marine combat troops and helicopters.

March 11, 1959. – The XHSS-2 *Sea King* first prototype performed its maiden flight. The helicopter was



especially designed to be an all-weather dipping sonar platform. It was equipped with Doppler radar integrated in an

automatic approach and hover system. This system made the HSS-2 a significantly safer night ASW operations platform than prior machines. The HSS-2 joined the fleet in September 1961. In 1962, under the new DoD standardized system, the HSS-2 became the SH-3A.

June 1959. – Kaman began flight-testing the first prototype of the UH-2 *Seasprite* helicopter. After completing evaluation at NATC, Patuxent River, the Navy began to accept deliveries of the UH-2A and UH-2B models in December 1962, these two models only differing in electronic equipment. The UH-2 was delivered to HU-1 and HU-2 for service with detachments aboard aircraft carriers.

February 29, 1960. – The Department of Defense announced that two new developments in airborne mine countermeasures had been successfully demonstrated to

2100 hp radial engines and a five-blade main rotor. The contract, signed on 9 May 1951, called for a helicopter capable of transporting twenty fully loaded soldiers. Deliveries to HMX-1 began in July 1956. Between 1956 and 1959 the Marines accepted 59 units. The redesignated CH-37s served with HMR (M)-461, based at MCAS New River, NC, and HMH-462, based at MCAF Santa Ana, CA. They were retired from service on both squadrons in 1966, being replaced by the much more capable CH-53As.

March 1954. – Kaman fitted an experimental HTK-1 with two B-502 turbines, this becoming the world's first twin-turbine powered helicopter.

July 20, 1956. – After completing the conversion to the new mission at the San Francisco Naval Shipyard, USS Thetis Bay, the old CVE-90, was recommissioned as CVHA-1, the first helicopter assault carrier in the US Navy. On May 28, 1959, while on her first deployment to WESTPAC, Thetis Bay was redesignated Landing Platform Helicopter Six (LPH-6). She carried a Marine Assault Team of about 1,000 combat troops and the helicopter assets to transport them ashore during the vertical assault phase of an amphibious landing.

January 1957. – The US Marines began to receive the HUS-1 (UH-34). They used it extensively in Vietnam as troop transport. On 18 August 1969 the last Marine UH34D in Vietnam was retired from HMM-362 at Phu Bai.

October 21, 1958. – The Commander in Chief, Atlantic Fleet, announced the formation of a new Amphibious Squadron composed of USS Boxer (CVS-21) and ing a lateral transfer to the new squadrons. HU-1 was moved to NAAS Miramar, San Diego, CA, shortly thereafter. The primary mission of both squadrons was to provide helicopter detachments to be deployed on ships of the Atlantic and Pacific fleets. HU-2 also took over the responsibility for helicopter pilot training.

June 11, 1948. – The CNO issued new standards for training aviators as helicopter pilots and decreed that helicopter pilots previously trained by the Coast Guard or VX-3 would retain their qualification.

April 3, 1949. – LT Steward Graham and his crewman, AM2 Robert McAuliffe, completed the longest unescorted helicopter transcontinental flight on record. They flew an HO3S-1G from the Coast Guard Air Station, Elizabeth City, NC, to the Port Angeles Coast Guard Air Station in Washington State, via San Diego, CA, covering a distance of 3,750 miles in 57.6 flighttime hours over a period of ten and a half days, proving the helicopter's suitability for extended operations.

March 1950. – Kaman Aircraft delivered two K-225 helicopters to NATC, Patuxent River, for test and evaluation. Successful results encouraged the Navy to place an order for new observation helicopters, designated HOK-1, to be used by the Marines in Korea.

April 28, 1950. – The Navy purchased ten H-19s,

Navy designation HO4S-1, for evaluation in the helicopter ASW project. A total of 129 HO4Ss were delivered to the Navy between August 1950 and January 1958. They were



used by the HS Squadrons in their ASW configuration. The HO4S was the first antisubmarine helicopter to operate from aircraft carriers. The utility version was used by the HU squadrons, by the Air Stations, and as advanced trainer in HTG-1, Ellyson Field, Pensacola.

August 3, 1950. – Elements of VMO-6 equipped with the HO3S helicopters began operations in support of the First Provisional Marine Brigade in the vicinity of Changwon, South Korea. The helicopters were put to use immediately delivering rations and water to the troops on a mountain, and evacuating casualties.

August 4, 1950. – An HO3S evacuated a casualty from a firefight along the Pusan perimeter; five more were evacuated the next day. This event marked the beginning of one of the most dramatic and important uses of the helicopter in the Korean War. Helicopter medevac would revolutionize the triage of battlefield casualties and significantly decrease the mortality rate.

September 1950. – The Navy awarded Kaman a contract for a trainer, the HTK-1, an improved K-225 de-

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fore they were sent to Pensacola, where they were redesignated TH-43As and used as trainers until 1957.





Helicopter ASW squadrons until replaced by the HSS-2 (SH-3A) in 1961. In 1962 all military services adopted the USAF aircraft designation sys-The UH-34D, the tem. utility version of the HSS-

1, replaced the HO4S-1 as the advance helicopter trainer in HT-8, Ellyson Field, Pensacola, in mid-1963.

November 18, 1952. – VX-1 pilots flying an HRP-1 helicopter off the coast of Panama City, Florida, demonstrated the feasibility of using a helicopter to tow minesweeping equipment. This was the first of a series of tests.

April 21, 1953. – Kaman's XHOK-1 prototype per-

formed its first flight. It proved to be a very capable helicopter. Deliveries to the Marines started that same month. A total of 81 HOK-1s powered by a 600hp R-1340-48 engine were assigned to the VMO



squadrons. The Navy bought 24 HUK-1s, the Navy version of the HOK-1, powered by the R-1340-52 engine. The last HUK-1 was delivered in December 1958. They were initially assigned to the helicopter utility squadrons.

18 December 1953. – The XHR2S-1 flew for the first time. This was the first twin-engine helicopter built by Sikorsky. It used two Pratt and Whitney R-2800-5,

October 3, 1951. – Helicopter Antisubmarine Squadron One (HS-1) was established at NAS Key West, FL. After the squadron establishment, LCDR Graham, who led the seven-year-long development effort that made this event possible, reported to NATC, Patuxent River for duty as a helicopter test pilot.

October 11, 1951. – Marines wrote a new chapter in military history. Using HRS-1 helicopters, HMR-161 aircrews inserted nearly 1,000 Marines atop a 3,000-foot mountain near the front lines. Over a period of six hours a dozen HRSs flew a total of 156 sorties. The success of this operation marked the first implementation of the vertical assault concept.

December 12, 1951. – A Kaman K-225 fitted with a Boeing YB-502, 190 shp turbine engine performed its maiden flight. This was the first gas turbine-powered helicopter in the world. With the advent of the gas turbine engine, the helicopter finally found its ideal power plant.

March 7, 1952. – Helicopter Anti-Submarine Squadron Two (HS-2) was established at ALF Ream Field, Imperial Beach, CA. HS-2 was the first antisubmarine warfare helicopter squadron on the West Coast. Initially, it deployed small detachments flying the Sikorsky HO4S-2 helicopter.

June 30, 1952. – Looking for a more capable helicopter to replace the HO4S in the ASW role, the Navy awarded Sikorsky a contract for a prototype, designated the XHSS-1. The XHSS-1 first flew on 8 March 1954. Production deliveries started in early 1955. The Navy accepted a total of 385 HSS-1s, the last aircraft being delivered in April 1966. The HSS-1 served with the

December 3, 1950. – Ellyson Auxiliary Landing Field (ALF) and its main tenant, Helicopter Training Unit One (HTU-1) were established. HTU-1 took over the training of helicopter pilots from HU-2, based at NAS Lakehurst. HTU-1 used the Bell HTL-4 (TH-13) and Hiller HTE-1/-2 as primary trainers. Advance training was conducted in the Sikorsky HO3S-1 and the Piasecki HUP-2. The HLEs were retired by late 1952.

July 3, 1951. – Late in the afternoon, LTJG John K. Koelsch, serving with an HU-2 detachment embarked on an LST off the coast of Wonsan, North Korea, launched to rescue a Marine F4U pilot that had bailed out 35 miles inside enemy territory. Without RESCAP protection due to poor visibility, LTJG Koelsch located the survivor and began hoisting him aboard when enemy fire downed his HO3S-1 helicopter. LTJG Koelsch, his crewman, AM3 George M. Neal, and the F4U pilot, CAPT James V. Wilkins, survived the crash and hid in the mountains, evading enemy patrols for three days. Then they began to slowly make their way down to the coast. Six days later they reached a coastal village and hid in a hut. They were captured the next day. In the months that followed LTJG Koelsch refused to submit to his interrogators and was tortured mercilessly. His fortitude, personal bravery, and consideration to others were sources of high morale and inspiration to his fellow prisoners. John Koelsch died of malnutrition and dysentery in a North Korean POW Camp on 16 October 1951. On August 3, 1955, LTJG John Kelvin Koelsch was posthumously awarded the Medal of Honor for his actions in Korea. He was the first helicopter pilot to be awarded the Medal of Honor. AM3 Neal was awarded the Navy Cross.