

1946 – Post War Helicopter Development:

In January of 1946 work on the new sonar, designated XCF, moved ahead. Dr. Coop and assistants redesigned certain components and improved the electrical components. The Coast Guard took delivery of a new 450-horsepower HO2S and by March 12 the sonar had been installed and tested. Graham and his crewman, Martin Westerburg, flew the helicopter to Key West and reported to Commander Anti-Submarine Development Detachment VX-1 for temporary duty. They were joined a month later by ENS William Coffee, USCG as a second pilot.

A LST fitted with a platform served as a helicopter carrier, a destroyer served as the control station, two smaller vessels took underwater sound measurements and several submarines – including a captured German U-boat – served as targets. Actual testing began on 22 March using a U.S. Submarine between Key West and Cuba. Success was immediate. The final test was conducted using the German U-boat, the newer type, capable of a

sustained 15 knots underwater. The sonar worked very well. Graham later wrote “that once the helicopter sonar tests were analyzed even the most skeptical decision-makers were convinced that the helicopter mounted sonar was the answer for the anti-submarine warfare program.”

At the beginning of May CDR Charles Houston USN and Major Armand DeLalio, USMC arrived at Air Station Brooklyn with a contingent of officers and enlisted men to establish the Navy’s first helicopter squadron. The new Navy squadron, VX-3, acquired 14 helicopters from Coast Guard storage. VX-3 took over the responsibility for training all Navy helicopter personnel. They also assumed the responsibility for the radar calibration flights that Erickson had continued doing. VX3 moved to NAS Lakehurst, New Jersey on 10 September and continued training helicopter pilots.

On 18 June 1946 Erickson was moved to the Coast Guard Elizabeth City air station. His downsized Helicopter Test and Development Unit consisted of a small group of dedicated personnel, one hangar, one HNS and two HOS helicopters. The hangar had been used for livestock and required considerable effort to make it suitable. The first project the unit undertook after arriving at Elizabeth City was the development of floatation gear that was concealed in “pants” on the landing gear, with the wheels extending through for normal ground operations. In case a forced landing on water, the donut shaped floats inflated keeping the fuselage out of the water.



HO2S with sonar head lowered into the water

Erickson had been and continued to promote the helicopter. In July of 1946, the Coast Guard icebreaker *Northwind* with a HNS helicopter aboard participated in Operation NANOOK. The purpose of this mission was to assist in the establishment of advanced weather stations in the Arctic regions and to aid in the planning and execution of more extensive naval operations in polar and sub-polar regions. The HNS, on floats performed very well. This would lead to the Coast Guard icebreaker *Northwind* having a helicopter aboard for Operation HIGH JUMP at the end of the year.



HNS-1 landing on a wood platform at the rescue site

On 20 September, 1946 a Belgian airliner operated by Sabena Airlines crashed about thirty miles from Gander, Newfoundland in country that was inaccessible for any type of surface vehicle. The rescue party requested helicopters as the only practical means of bringing the survivors out. CAPT Richard Burke USCG, the Eastern Area Rescue Coordinator, immediately contacted the Army Air Force and requested

the assignment of two C-54 transports to fly Coast Guard helicopters to Gander. There were two helicopters at Brooklyn. The HOS-1 had been modified and was chosen. A HNS at the Development Unit at Elizabeth City was chosen as the second aircraft. Both Helicopters were partially disassembled for transportation and arrived in Gander the next day. The area next to the crash site was vast marsh covered with muskeg. Lumber was dropped from a Coast Guard PBY and a platform to support the weight of the landing helicopters was built. The survivors were flown from the platform to a small lake seven miles distant. From there they were transported by PBY. All survivors were flown out plus a 14 member Army rescue crew. It was a remarkable operation and the story was picked up by the national news media generating favorable attention for the helicopter.

In December 1946 Operation HIGH JUMP began. This was an exploratory expedition to Antarctica. The Navy had purchased four new Sikorsky S-51s in November which they designated HO3S. One was placed on the Seaplane Tender *Currituck*, another on the *Pine Island*. A third was placed on the carrier *Philippine Sea* and the fourth on the icebreaker *Burton Island*. The *Burton Island* was not commissioned until January 1947 and joined the expedition later. The Coast Guard ice breaker *Northwind* had a Grumman J2F-6 Duck aboard and, at the insistence of the commanding officer, a Coast Guard HNS-1. The *Northwind* lead the center group through the ice pack to the Bay of Whales. It was this group that established Little America. CAPT Charles W. Thomas, commanding officer of the *Northwind*, was euphoric in his praise of the helicopter. He sent the following message to the Commandant U.S. Coast Guard: "HELICOPTER BEST PIECE OF EQUIPMENT EVER CARRIED ON ICE VESSELS." He deliberately capitalized all letters for effect. The Navy lost two of the HO3Ss.

In January 1947, four Sikorsky S-51 helicopters, which had been sold to small commercial operators, were returned to Sikorsky. Sikorsky had originally designed the S-51 with rescue utilization in mind. They were offered to the Coast Guard. CAPT Richard Burke, who had been responsible for sending the helicopters up to Newfoundland for the Sabena rescue, had been assigned as the Chief of the Coast Guard Aviation Division at Headquarters. He managed to find the money for the purchase and the Coast Guard acquired four S-51 helicopters which were designated as HO3S-1G. The HO3S saved thousands of lives over the next several years.

Emergency flotation gear was developed for the HO3S as was an external stretcher that was equipped with a blister to protect a survivor during a medical evacuation. This concept was used by the U.S. ARMY during the Korean War to transport wounded directly from the front lines to Mobile Army Surgical Hospitals (MASH) in Bell HTL helicopters. The saving of countless lives was the direct result. Many other lives were saved when survivors were hoisted from the sea by HO3Ss operating as “plane guards.” The hoist operation had been improved upon but the development of a rescue basket was essential, especially for Coast Guard operations, because in addition to men it was called upon to rescue women and children who did not fit into the type of sling that had come into use. Records showed a significant number of cases where people could not get into the sling or they put it on backwards or fell from the sling while being hoisted. Gus Grissom, for instance, got into the sling backwards on his first sub-orbital flight which led NASA to use a basket device for further water recoveries.



LT Stew Graham at the hatch of a HO3S with a rescue basket attached to the hoist. With the advent of the HO4S the basket could be brought inside the cabin.

The Coast Guard rescue basket was designed with a spreader and floats which, when deployed, submerged the basket about 20 inches under the surface of the water in a level position. When a pull on the spreader bar was initiated and the basket heeled over approximately 45 degrees. The helicopter was maneuvered to bring the basket to the person in the water. If the person in the water was unconscious or disabled he/she could be “scooped” into the basket and hauled up. The HO3S did not have sufficient room in the cabin to accommodate a rescue basket so it was not until the Coast Guard got the HRP-1 and the HO4S helicopters that full use of the basket was realized.

During World War II, while the Coast Guard was serving as part of the Navy, there had been some helicopters ordered specifically for Coast Guard use. The aircraft did not come off the production line until after the war and in June of 1947 Erickson’s program received a shot in the arm with the delivery of two Bell HTL helicopters. Erickson used them to replace worn out helicopters in his training program. A year later, three Navy HRP-1 tandem helicopters were also turned over to the Coast Guard. One was assigned to the Rotary Wing Development Unit. The other two went to the Elizabeth City Air Station.



Coast Guard Piasecki HRP-1

The Coast Guard had been involved with the design of the HRP-1. The Navy Bureau of Aeronautics had asked the Coast Guard in 1943 for its requirements for a rescue helicopter. CAPT William Kossler drew up specifications for an amphibious helicopter with overlapping rotors at each end of the aircraft. He further recommended that it be powered by two 450 horsepower engines. Erickson spent time with Frank Piasecki who developed and submitted the design accepted by the Bureau. The HRP was the first helicopter with sufficient room in the aircraft to accommodate either the rescue basket or a stretcher. The door had to be redesigned as a sliding door and the hoist was redesigned to swing in and out like a boat davit. Donut floats were designed for it. It was a good rescue helicopter except for one unsatisfactory feature. The main door was located so far behind the pilot he could not see the hoisting operation. These

modifications and drawbacks were corrected by Piasecki resulting in the H-21 which became a standard Air Force rescue helicopter.

In early 1948 CDR Erickson was ordered to proceed to Buffalo, New York in one of the HO3S-1G helicopters and report on board the Coast Guard icebreaker *Mackinaw*, which was about to start the icebreaking season. With the demand for steel the greatest since World War II it was essential that the Great Lakes be opened as early as possible to transport iron ore from the Mesabe range in eastern Minnesota to the steel producing centers. CDR. Edwin J. Roland was assigned as Commander of a task force which consisted of the *Mackinaw* and several buoy tenders with icebreaking capability. CDR Harold J. Doebler was in command of the *Mackinaw*. An ice survey and photographic flight of Lake Erie was conducted on 16 March and on 18 March the *Mackinaw* led a convoy of ore carriers out of the harbor and headed for Cleveland. It was the earliest opening of Buffalo Harbor in recorded history. CDR. Roland flew every day keeping a constant check on the ice conditions. A change of direction or force of the wind could cause windrows of ice to form or blow an ice field ashore with ships trapped in it. Advantage was taken of open leads in the ice that could only be spotted from the air. This speeded up the operation considerably and as a result the Great Lakes were opened to navigation two months earlier than in the past.

The helicopter was praised in the press for its part. One aviation periodical carried the following account:

“Use of helicopters operating with Coast Guard icebreakers in the Great Lakes last winter freed icebound shipping at Buffalo 67 days ahead of schedule and increased the effectiveness of ice breaking operations by 50%. The helicopter scouted as much as 100 miles ahead of the icebreaker and determined the route of the thinnest ice ahead. It also permitted the icebreaker skipper to perform frequent inspections of icebound groups of ships to determine the most effective route for freeing them.”



HO3S-1G

The Navy was expanding its helicopter operations. In April of 1948 VX-3 was deactivated to form two helicopter utility squadrons. HU-2 took over the training activities and the responsibility for providing the helicopters and personnel for plane guard and utility duties on board vessels of the Atlantic Fleet. HU-2 records indicate that the demand for helicopters was so great that out of 25 HO3S helicopters on hand during 1948, 23 were constantly deployed. Catapults were removed from cruisers leaving sufficient room for helicopter operations. HU-1 was assigned to the Naval Auxiliary Air Station Miramar and supported the Pacific Fleet. The Marines were also making progress in their assault concept and the Army, now separate from the Air Force, was expanding helicopter operations.

Unfortunately the Coast Guard program continued to fall behind. The HNS and HOS helicopters were obsolete and wearing out. The only helicopters acquired since World War II were four used HO3S-1s and two new Bell HTLs previously mentioned. Three HRP's had come on board at the end of the year. This was the extent of the Coast Guard helicopter program, most of which took place at the Rotary Wing Development Unit. There was no helicopter available for the *Northwind* on Bering Sea patrol that year and the commanding officer, stated in his report, that the lack of a helicopter reduced the effectiveness of the patrol. In general, the more senior Coast Guard administrative officers supported the helicopter program as did all of the commanding officers of the icebreakers. Commandant Farley wrote an article published in *American Helicopter* supporting the development of the helicopter for Coast Guard use. This position was backed by the EBASCO Group, a firm of efficiency experts, hired by the Coast Guard in 1948 to conduct a study of the Coast Guard and make recommendations to improve its operations. On the subject of aircraft the following was concluded.

“With the exception of helicopters, which should be replaced as soon as possible by an increased number of more recently developed and highly versatile rotary wing aircraft, there appears to be no alarming shortage of operational aircraft as a whole.”

The report further recommended:

“Research and development in application of helicopters to Coast Guard rescue work should be materially increased. Additional helicopters of modern type and increased capacity should be authorized and obtained. All Coast Guard air stations should be provided with helicopters, and be authorized trained complements of personnel to operate and maintain this additional equipment.”

As a result of this report the Rotary Wing Development Unit was established as a separate Headquarters unit under the direction of the Engineer in Chief. In addition an order was placed for five new HO3S helicopters.

The Coast Guard helicopter program continued to have difficulties because of opposition from several senior aviators in key positions. Most of the recommendations submitted by EBASCO were simply ignored. The seaplane advocates did everything in their power to make the seaplane

look good while strongly pointing out the shortcomings of the helicopter. There is no doubt they believed themselves to be right and the helicopter, at this stage, did have significant shortcomings but also entering into the equation is a resistance to change and the old idea of a “flying lifeboat” seaplane died hard. As is the case in many instances the immediate dominates and vision suffers.

The Coast Guard rotary wing advocates were just as determined to prove that the helicopter was the future in Coast Guard rescue operations. Over the next several years Erickson and his group took every opportunity to showcase the helicopter and demonstrate that it could do things that the seaplane could not do. In the process they stretched the existing aircraft to the limits and in some cases beyond. HO3Ss made medical evacuations at night using the phosphorescence of the surf as a visual clue. Rescues were made in swamps as well as the open sea. The hoist was used effectively and at times the helicopter actually touched down on the ship in distress to affect the rescue. Range was stretched to the limit and many times skill and experience compensated for the machine’s lack of power. Erickson wrote prolifically for various publications and would talk to any group that would listen.

In early 1949 the Marine Division of the Canadian Department of Transport became interested in using helicopters. A Mr. Jack Charleson, who had received helicopter pilot training provided by the U.S. Air Force, spent a period of a week on the *Mackinaw* which carried a Bell HTL-1 on floats. Thus he had the opportunity to fly ice recon flights and become familiar with icebreaking work. On Charleson’s return to Ottawa he submitted a request through the U.S. Embassy to U.S. Coast Guard Headquarters that CDR Erickson be assigned temporary duty with the Canadian Department of Transport in connection with drawing up plans for a flight deck and hangar facilities for the icebreaker *D’Iberville*. The request was granted and the Canadians became the first to design an icebreaker from the keel up with all of the facilities needed for helicopter operations. A later modification provided a telescoping hangar to accommodate larger helicopters. This led to hangars being placed on Coast Guard icebreakers and the high endurance cutters when built.

During 1949 the Air Force loaned the Navy a new Sikorsky H-19 for tests at the Naval Test Center. The aircraft had been designed to carry ten passengers. The cabin was directly under the main rotor which eliminated potential center of gravity problems. The aircraft had a hydraulic flight servo control system that relieved the pilot of the heavy control forces encountered in earlier helicopters. It was equipped with a rescue hoist on a boom just forward of the sliding cabin door and could be cranked out to clear the side of the helicopter. The hoist had 110 feet of cable and a lifting capacity of 400 pounds. The Navy placed an order for a HO4S-1, which was equivalent to the Air Force H-19A, on 28 April, 1950. On 25 June the Republic of Korea was invaded by North Korean Forces and helicopter production increased significantly.

In early 1950 the Coast Guard Rotary Wing Development Unit had completed the development projects it had been authorized and as a result the unit was decommissioned on 31 March, 1950.

The December 22nd issue of *Colliers Magazine* in 1951 announced that:

“ The nations top aviation award goes this year to the Industry, the Coast Guard and the Military Services for developing and using the craft (sic helicopter) in air

rescue work. In Korea alone, over 10,000 UN wounded have been evacuated with whirly birds.”

Colliers explained the Coast Guard’s contribution in the following statement:

“Deservedly sharing honors with the helicopter industry and the military services is the United States Coast Guard. It has pioneered in peace-time rescue work. During the eight years it has been using helicopters; it has saved many hundreds of lives in offshore rescues, in floods, fires and other disasters on land.”



HO4S-3G making hoist with rescue basket

During November 1951 the first of seven HO4S-1Gs was obtained followed by an additional seven HO4S-2Gs. In January of 1952 the first of 23 HO4S-3Gs were purchased. The 3G was powered by a Wright R-1300-3 700 horsepower engine. It was instrumented and had all weather capabilities. It had a cruise speed of 80 knots and a range of almost 400 miles. It would be operated inshore and far out at sea. The cabin could easily accommodate the rescue basket. An additional eight HRS-3 were obtained and configured for Coast Guard operations. The HO4S -3Gs were placed at all major air stations. An additional eight HO5S-1Gs were

purchased in 1952 but proved too small and short ranged to be effective.

With the purchase of the HO4S-3G the helicopter became an integral part of the Coast Guard search and rescue operations. In the years to come the helicopter became predominant. During the 1960s, Frank Erickson’s dream of having helicopter life-saving stations along the coasts had become a reality.