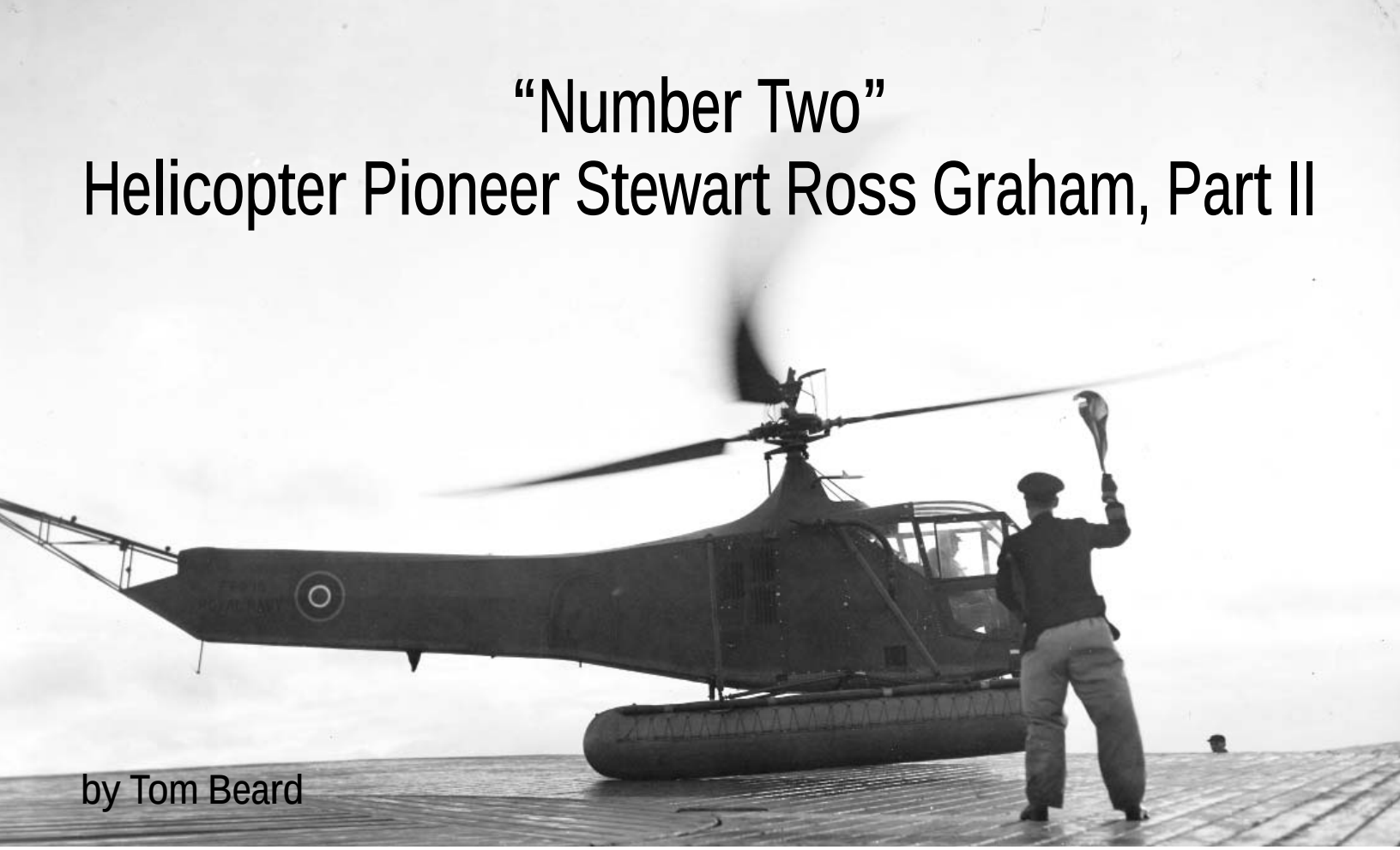
"Number Two"
Helicopter Pioneer Stewart Ross Graham, Part II



by Tom Beard

Stewart Ross Graham making the first ever takeoff on the high seas in convoy to England on January 16, 1944, aboard the British freighter MV Daghestan*. The helicopter is a Sikorsky YR-4, FT835, of the Royal Navy. (Photo from the author's collection)*

> *"I have always been fascinated by the wonders of flight—the flying machines as well as the daring aviators who flew them. The flying machine I came to know best was the helicopter."* Steward Ross Graham, Naval/Coast Guard helicopter pilot number two.

A New Direction

Then, as the New Year began, calamity struck. All helicopter training was terminated unexpectedly and without prior announcement on February 6, 1945. The school closed with the graduation of its sixth class. This ended Erickson's access to helicopters for his experimental work, adapting this machine for search and rescue — his primary goal. Fixed-wing patrol aircraft were moved back to Coast Guard Air Station Brooklyn to resume routine Coast Guard flight operations. Most helicopters went into storage. Bitterly, Erickson noted "because [helicopters] did not fit into the air-sea rescue program as it was then envisioned by those in control of Coast Guard aviation."[1]

Motor Machinist Mate 2nd Class Stewart Ross Graham in August 1941 after receiving his aviator wings at NAS Pensacola, Fla. (From the author's collection)

The war's winding down further impaired the barely-developing helicopter industry. Most rotary-wing production contracts were canceled. The Coast Guard's allocation of HO2S helicopters was cut from 50 aircraft to two. Erickson's spirits were further crushed with the knowledge that "any hopes of converting the HO2S for Coast Guard rescue operations went down the drain."[2]

Predictably to this point, when Erickson saw an opening, he acted immediately, aggressively, and generally without regard to conventional attitudes. His belligerent behavior, protecting the helicopter and *his* programs, also

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tended to create enemies, particularly among those from whom he needed support. Search and rescue helicopter development for Erickson — with Graham as the only other test pilot — for the Coast Guard was virtually dead without some ploy.

The winter of 1945 was Erickson's nadir in his dream of a rescue helicopter. He had the beginnings of his grand scheme after a great struggle then the programs and helicopters were snatched away. Added to his anguish was the death in March of his friend, mentor, and nearly sole supporter for helicopters in headquarters, Capt. William Kossler. Erickson was virtually alone now without the support and friendship he could count on from Kossler.

Erickson's much-expressed opinion of helicopters-only for the Coast Guard was now troubling for many including contemporary and senior Coast Guard aviators. The foundation of Coast Guard aviation was always, and remained then, the seaplane. All Coast Guard pilots were seaplane pilots including Erickson, and there were no obvious, according to its leadership, needs for a change to an unproven aircraft.

Erickson created many enemies within the Coast Guard with his staunch, single-mindedness. His attitude toward using helicopters in the Coast Guard was now troubling many. Erickson was quoted frequently as saying, "The road ahead [for the Coast Guard] is helicopters only."[3] This oft-repeated prediction, staunchly declared by him, with the optimism of a seer in an overwhelming crowd of doubters, finally led to Erickson's critics referring to him and other helicopter pilots derisively as "rotor heads."

An Arctic Rescue

While Graham was flying previously obligated experimental helicopter ASW flights from Brooklyn for the Navy, Erickson continued altering aircraft with his SAR modifications and conducting experiments. Then serendipity came to Erickson in the form of an arctic rescue. Erickson had already demonstrated the helicopter capable in a humanitarian role when he delivered plasma to victims in a navy destroyer explosion in New York Harbor in January 1944. His noteworthy event, reported in a *New York Times* editorial, took place during a storm that left all other transportation unable to deliver the critically needed medical supplies.

So, when Erickson learned, in April 1945, of the stranded crew from a crashed Canadian military aircraft on a mountaintop in Labrador, and that available rescue efforts may be months away due to weather and inability for access to the location by all then-known conventional means, Erickson immediately volunteered the helicopter.

Erickson's complex rescue, already with a precedent established by Harmon's Burma rescue a year earlier, involved disassembling and loading his lone helicopter, a HNS trainer still at Brooklyn, in an Air Transport Command Douglas C-54 Skymaster then flying it to Goose Bay, Labrador. Once the helicopter arrived and was reassembled, the pilot, Kleisch, former helicopter instructor at the now defunct school, extracted the nine survivors, one at a time over three days, on an arctic cross-country adventure where he carried his own fuel in jerry cans lashed to the floats. News of this spectacular accomplishment by a virtually unknown aircraft type reached a worldwide audience.

Public Events

At New York after the fledgling helicopter school closed, but still with a single HNS trainer, Erickson and Graham continued with SAR modifications to the airframe and conducting experiments. They also spent some time qualifying interested pilots. More significant, were renewed efforts, encouraging support from all venues, to bring awareness to anyone of influence to endorse the helicopter's abilities. This meant public demonstrations. Graham did most demonstration flights. A popular event was where he raised 'survivors' up to the hovering helicopter's cockpit using the newly created hoist.

One particular event Graham remembered vividly was where he flew with an experimental open platform slung beneath the helicopter. This attachment was intended to scoop victims from the water then hold them beneath, but outside the helicopter, as it flew off. Erickson volunteered as the victim. "He kinda helped himself into [the scoop] for the demonstration purposes," remembered Graham, "I took him off and flew him all round, came around and landed. He was purple, and he said he just about froze — we got to devise something better than this."[4]

Graham repeated a frequent closure to his many accounts: "This was all the trials and tribulations we went through to get something for rescue purposes."[5]

Among the flights Graham took to expand on the helicopter's usefulness included aerial photography. Helicopters were used also to spot and locate spent navy practice torpedoes. They were used as in-flight targets to calibrate naval ships' gun radars. Aerial spraying for mosquitoes was attempted to prove this method to eliminate the malarial hazards facing American

Experimental scoop to recover people in the water. Erickson rode in this device on a cold day as Graham flew. The extreme chill Erickson experienced during that one demonstration called for another option to recover people from the water. That pressure put the force behind the development of the hoist. (Photo from the author's collection)

troops during Pacific island invasions. Erickson was grasping for ways to prove the helicopter.

But these activities didn't reach public's awareness like the "Congressional Page" project. Graham flew a HNS to Washington, D.C., in April 1945, to demonstrate its capabilities to members of congress and kick off the 7th War Bond Drive. He reflected on his experiences flying the HNS above the Capitol steps, "for the benefit of members of congress." The new hydraulic hoist and rescue harness were also demonstrated by actually hoisting a Coast Guard crewman right in front of the Capitol. Some congressional members that day flew as passengers in the virtually, to them, unknown aircraft. Graham remarked, "This was the first time most in Washington even knew of the helicopter."[6] Yet as congress was just introduced to the helicopter, the first rocket motors, eventually for spaceships, six months earlier roared off in German V-2s. The entire world would know of the first atomic bomb within three months. But few were even aware of the helicopter's existence. The job ahead for Graham and Erickson was immense.

Erickson devised frequent public displays where Graham flew amazing feats showing the helicopter's remarkable rescue abilities. Graham stated that Erickson continued with his unchanging refrain that "even other Coast Guard pilots were not interested and I [Graham] was looked upon as not having all my marbles. I was ridiculed beyond belief among my fellow flyers, that I would jeopardize my well-being to fly such a contraption!"[7]

HNS designated "Capitol Page," demonstrating for congress members, April 1945, in conjunction with a Savings Bond Drive. This was the first view many lawmakers had of the revolutionary aircraft. Graham hoisted a crewman with the newly developed hoist, showing the able craft's SAR abilities and took several congressmen for rides taking off and landing right at the base of the Capitol steps. (Photo from the author's collection)

Graham's summer of 1945 was busy apart from Erickson and the fledgling helicopter development scheme. He was in Detroit testing new HOS-1 helicopters manufactured at the Nash Kelvinator assembly plant. He did deliver a few new helicopters to the Coast Guard Air Station Brooklyn during this job. In the fall he continued to be away attending the advanced instrument flight training course at the Civil Air Administration Flight Center, Houston, Texas.

WWII's end brought collapse to a huge aircraft-building industry, and even a greater disaster befell the nascent helicopter industry. Nearly all rotary-wing production contracts were cancelled. Allocation of 50 new Sikorsky HO2S (R-5) for the Coast Guard was cut to two helicopters. Erickson's schemes to convert any helicopters for Coast Guard rescue operations, as he bitterly expressed it in private, "went down the drain."[8]

The U.S. Army still had an order for 20 R-5s from Sikorsky. Ironically, it was one of these helicopters that exemplified, in widely followed news reports, the rescue potential for this yet-proven aircraft in a first-ever direct and immediate saving of lives by helicopter.

An oil barge broke loose from an oil tanker off Bridgeport Harbor in a November 1945 storm. It drifted free until it smashed onto Penfield Reef off the Connecticut town of Fairfield. Two endangered crewmen were stranded aboard. Winds were gusting over 50 knots. With eight tanks leaking and the cabin full of water, the two men feared the barge would soon break up in the pounding. Rescue boats could not reach the foundering barge in the shoals and heavy surf. All attempts to reach the ill-fated crewmen failed.

Viewers on the nearby beach watched helplessly. Finally police, in desperation, called the Sikorsky plant asking if they could help in any way. Sikorsky's chief test pilot, Dmitry Viner, said he could do something. He and Capt. Jackson E. Beighle, Army Air Force representative at Sikorsky, took off in a helicopter without a hoist. Shortly, over the barge, they lowered the end of a rope with a message. The return message from the crewmen indicated conditions for them was critical.

Viner flew back to the aircraft factory and got one of the new R-5s with the newly developed and never before used attached rescue hoist. Erickson had made his debut performance with a public demonstration of his hoist at Floyd Bennett Field only three months previously. Once more over the barge in the R-5, Beighle, operating the hydraulic hoist controls, lowered the wire cable with a sling attached as Viner flew in the storm-tossed air. The first man was lifted quickly, but there wasn't enough room for him inside the helicopter's two-seat cabin. He rode to the beach hanging just outside the cabin still in the sling, clutching Beighle. The second man, the barge captain, was being hoisted when the cable jammed. He hung free in space 30 feet beneath the helicopter whipped by winds. And in that position, in the sling, yet holding onto the cable above for "dear life," he was transported to shore in winds so fierce that "sand on the beach was blowing up in sheets." This first ever

Left: *The synthetic helicopter trainer developed by Erickson and Graham was scrapped before it could be put into instructional use.* **Above:** *HNS-1 landing on moving platform,* Mal de Mer*, the simulated ship landing deck on the field at Floyd Bennett Field. This platform mimicked the pitching deck of a ship in the open sea, and was also scrapped following the war. (Photos from the author's collection)*

helicopter drama was filmed by a news photographer and the following day, newspapers throughout the country and around the world showed the dramatic photo of the rescued crewman hanging in mid-air, heading for safety. The still-novel craft with the yet proven device saved its first two lives. [9] More than a million were to follow.

Although the first rescue using Erickson's hoist was not a Coast Guard achievement, this fact did not diminish his resolve. This event was one more proof supporting his quest. Yet Erickson lamented, "This real life rescue demonstration should have provided convincing proof of what was to come but many people in the rescue business still closed their eyes to the helicopter's capabilities."[10] Worse times were to come for Erickson and Graham.

Disgrace

Air-sea rescue was not a defined postwar activity for the Coast Guard. So Erickson explained: The helicopter sonar dipping "test program came along at a time when it seemed that the whole helicopter program would come crashing down around our ears."[11]

The situation at Brooklyn left an uncomfortable environment for the new fixed-wing command with Erickson, a senior officer, sharing offices and hangar spaces just for unnecessary helicopter experiments with helicopters not contributing to Coast Guard missions. The only justification then was the earlier agreement with the Navy for an evaluation to determine the feasibility for helicopter use in ASW. It was a tenuous justification but one Erickson used to continue with his work.

Erickson later wrote in a personal letter: "I was relieved of my command because of my supposed over enthusiasm for helicopters." He lost backing even from his earlier supporters through his stubborn single-mindedness. "They claimed I was pushing the helicopter program too much to the detriment of fixed-wing aviation. I nearly got passed over because of it. A senior officer promised me that he would see to it that I never again held a responsible job in Coast Guard aviation." He never did. Years later, in retirement, in a moment of self-satisfaction, justifying his life's dedication, Erickson wrote: "Helicopters are replacing all seaplanes and amphibians."[12]

This period, starting with the loss of his school early in 1945, was for Erickson the beginning of a long slide downward in helicopter development. His losses at this time — piling on each other as they did — were tragic. Kossler died on active duty in 1946. Erickson not only lost a close friend but also the support Kossler alone could give. Erickson was stricken — he lamented: "The training came to a halt, except for…Navy personnel so they could commission their first squadron." Even worse, he wrote: "The entire program went down the drain including the synthetic helicopter trainer and USS *Mal de Mer*, both of which were dismantled and junked."[13] The unique trainer had not even been put into instructional service.

The Coast Guard returned from Navy's control back to the Department of the Treasury on January 1, 1946. And with this change, the commandant, Waesche retired. Waesche was one of few senior officers still supporting Erickson's efforts.

In April, Cmdr. Charles R. Wood, USN, took possession of four Coast Guard HOS helicopters for the Navy. This was

followed with the Navy picking up the pieces of Erickson's shattered domain, assuming the small tasks Erickson used to justify his helicopter connection.

Cmdr. Charles Huston, USN, and Maj. Armand DeLalio, USMC, arrived at Floyd Bennett Field with a contingent of naval officers and enlisted men to establish the Navy's first helicopter squadron, VX-3. They took 14 more helicopters out of Coast Guard storage and assumed the responsibility then for training all Navy helicopter personnel.

The Navy resurrected helicopter operations from the ashes of Erickson's lost domain. Years later Erickson lamented: "It looked like [headquarters] had killed the helo program for good. We no longer had either Bill Kossler or Admiral Waesche to defend the program…It looked pretty hopeless."[14]

Graham and a few enlisted volunteers remained dedicated to Erickson and stayed with him. They continued their commitment to helicopter development despite the obvious negative impact of their allegiance on their careers and the waning official interest in the helicopter ever becoming a rescue craft.

The long-ignored ASW program would provide the single fragile thread that would keep the helicopter alive for Erickson.

Helicopter Antisubmarine Warfare

In June 1943 when Erickson began his training as the Coast Guard's first helicopter pilot, he visited Dr. H.C. Hayes, scientist at the Naval Research Laboratory in Anacostia, D.C. Erickson was grasping for helicopter missions, any war-time missions, to justify aircraft and flight time to support his experimental SAR work. Erickson's purpose, in this meeting with Hayes, was to examine a dipping sonar device developed for the navy blimp. Hayes and his assistant, Dr. Jessie James Coop, were creating an underwater sound detection system designed to track submerged submarines. Coop, who was to fly with the Coast Guard pilots for the next few years was, as Graham described, "a typical philosopher, wearing thick tortoise-rimmed eyeglasses…rather unkempt in general appearance, but one who was always calm and patient under all circumstances."[15]

If helicopters could carry this device, Erickson surmised, his scheme to justify rotary-wing aircraft to the Navy would gain some support. Erickson urged Hayes to submit a proposal to the Bureau of Aeronautics recommending the installation of Hayes' experimental sonar equipment on ship-based helicopters. Changing wartime priorities by this time, however, delayed the Navy's response until January 12, 1945, — ironically the same time as Erickson was forced to close his school. Urgency driven by quick results for wartime need was now long-past. The Chief of Naval Operations, however, now did direct the Submarine Development Detachment, Atlantic Fleet, to evaluate and test equipment using a Coast Guard supplied helicopter and crew.

Erickson, at first, unable to achieve his goal of rescue helicopters for the Coast Guard, eventually through these devious efforts, created the potent weapons system, helicopter ASW, with Graham's leadership in the highly speculative program. This, however, was not a career-enhancing option for any Coast Guard aviator.

Graham, sitting calmly across the room from me at the end of a lengthy interview — following an extended pause — uncharacteristically somber, stated with his detectable Brooklyn accent," The early development of the helicopter-dipping sonar program…was beset by very stiff opposition. However, there has always been a premium and a penalty on pioneering, but both must and always will be accepted by men of vision."[16]

Helicopter development led by Erickson, with his principal test pilot Graham, continued but as a single thin thread of the post-wartime transition. The one or two airframes Erickson was able to keep were constantly modified to adapt and test search and rescue equipment and methods. The ASW project, justifying even having a helicopter, occupied the rest of their time. Preliminary flight test with the Hayes Sound Recording System devices installed in a helicopter started in January 1945, on Jamaica Bay, New York. Lt. Roy Rather, USNR, became the project officer for the helicopter-platform research phase. Rather got the helicopter sonar program moving for the Navy with Coop as assistant.

Helicopter ASW Firsts

The major difficulty, with then the only available helicopter, was the ability for the HNS to lift the heavy sonar device and remain in a hover for extended periods without the engine overheating. But, already a solution for this problem was just delivered to the hangar at Brooklyn: a new experimental more powerful Sikorsky XHOS-1.

Chief Machinist Oliver Berry, USCG, modified the XHOS-1 (Navy BuNo 46448) powered with a Franklin O-405-9, 235-hp engine (HNS had 200 hp). It was a "lengthy process of modifying the small cabin of the craft to accommodate all components," Graham noted. Berry was the "magician who fitted it all in."[17] Coop once lightheartedly remarked, admiring Berry's skills in getting any job done, noting if Rather "wanted something, [Berry] got it…. [T]he supply department later had some problems in obtaining the proper papers to confirm actions taken."[18]

The first helicopter flight-test with the dipping sonar took place in April 1945 off Block Island flying from the deck of CGC *Cobb*. Graham flew evaluation flights to determine the helicopter-generated sound level entering the water beneath the hovering craft. These tests proved satisfactory with non-interfering noise levels. Helicopter pilots Erickson and Graham took turns hauling Coop and Rather aloft in the sonar equipped XHOS-1.

Graham explained their first problem was one of positioning the helicopter above the water in a stationary spot "keeping the suspended sonar cable vertical while dipping the sonar head. [We needed] a reference on the water to hover over. [We tried] float lights and dye markers but the helicopter's downwash from the main rotor blades swept away the float lights, and scattered the dyes over a wide area, thus making precision hovering impossible. Finally," *recalling the simplicity in which they solved the problem — bursting forth with a gusty laugh* — Graham said, "[we] found that a sheet of the Sunday newspaper comics worked best as a reference. The brightly colored paper soaked up enough water to keep it from blowing away, and could be easily seen at a flight altitude of 20-25 feet."[19]

The evaluation proved that helicopter-borne sonar equipment had sufficient potential for locating and tracking submarines warranting further development. Coop immediately began redesigning the sonar equipment at the Naval Research Laboratory for use in helicopters.

Eight months later, in January 1946, Coop notified Erickson that the new helicopter dipping sonar (designated XCF) was ready for installation. The complete weight of this new sonar gear was about 175 pounds, including connecting cables and control panels. Also, the helicopter carried a 13-pound wire recorder for the early tests. Within a week of Coop delivering the unit to New York, on January 17, the Coast Guard took delivery of a new 450-hp HO2S Sikorsky helicopter, BuNo 75690. Installation of the XCF sonar took six weeks. Jamaica Bay, N.Y., was once more the scene for sonar flight tests.

Graham's ASW Experiments Accelerate

"On March 12, after minor adjustments to the equipment," Graham wrote, [I] "flew 75690 to Key West, Fla., with my mechanic, Merwin Westerberg." Following the four-day trip from New York, Graham reported to Commander Anti-Submarine Development Detachment (VX-1), Key West, Fla., for temporary duty. In mid-April, Ens. William Coffee, USCG, joined the detachment as the second Coast Guard aviator to assist Graham in the program, which eventually led to the creation of helicopter ASW.[20]

Graham's flight by helicopter from New York to Key West created some confusion among a public still largely unaware of the helicopter's existence. For example, airport tower operators, after giving landing instructions for the runway would suddenly see this strange machine fly in close and park next to the tower, not using any runways. Graham took delight in presenting his novel flying machine to the unwary observers and *chuckles at the recalled, startled reactions of first time viewers*.

U.S. Navy Experimental Squadron (VX-1)

"The Coast Guard pilot, his mechanic, and the rotary-wing machine did not fare well at the Navy fixed-wing base. As members of the Coast Guard," *Graham started his statement in the third person then continued:* "We did not feel welcome at the Key West naval base. Because our orders had high priority — meaning that our requirements, which were many — they had to be fulfilled without delay. This interrupted the daily routine of the base, which was resented. We were considered outcasts from the Wright Brothers' era, evaluating a makeshift device to track submarines."[21]

"To carry out my orders," Graham, then a junior Coast Guard lieutenant, persisted in the face of unrelenting authority: "I requested the following: an LST from which to operate the helicopter; a submarine as our target; a destroyer to serve as the project control vessel, taking duplicate sound measurements to compare results with the helicopter's dipping sonar, and last, a crash boat in case the helicopter went down."[22]

"The authorities considered my requirements excessive." Graham continued, "However, after consulting with all the department heads involved," he said, "I convinced them that my request was essential for a comprehensive evaluation of the helicopter dipping-sonar combination project." Graham believed, "I had the feeling these people thought the program was doomed from the start. It was up to us to prove them wrong."[23]

Actual test of the underwater detection equipment began in March 1946 with a Navy submarine submerged somewhere between Key West and Cuba. Success for the project was immediate. "The submarine," Graham enthusiastically noted, "was located by tracking ranges which were considered to be *very* good." These testing exercises continued almost daily with Coop and Rather alternating as the sonar operators.[24]

The HO2S had tandem seats with the pilot flying from the rear seat. Graham's problem—at five feet eight inches—he claimed, was that Coop, in the observer's front seat was "over six and a-half-feet tall, thus blocking all forward vision." Furthermore, Graham recounted: "This helicopter was very unstable and hard to fly because of the heavy control stick forces." To resolve this, Graham said he rigged a bungee cord to the control stick to help him hold it in position.[25]

"Nevertheless," Graham emphasized *(sitting across from me— scooting his body forward from a relaxed position to the edge of the couch in the shoulders hunched, forward-leaning position of a helicopter pilot, his right hand taking a position of gripping an imaginary cyclic control stick)*, "it still took sheer strength and determination to maintain a good hovering position with the sonar sphere lowered at a depth of 60 feet with no reference to hover on." Graham, *(after a long pause, smiled)*, then vividly brought a five decades forward in mind and body with: "After flying several hours in these early machines I would alight from the aircraft and walk with a one-per-rev beat for several minutes until I was able to assume control over myself and to unclench my white fists to get the blood circulating once again. It was up to us, as pioneers, to prove, not only to the military but to civilians as well, that helicopters were here to stay. Even then, we were laughed at, but look where helicopters are today." *(Following another long pause, he sat back now relaxed and returned to the present.)*[26]

The advantage of the helicopter-borne sonar was dramatically proved during the concluding tests. "Our last flight," on one phase, Coop reported, "was conducted against a German U-boat, the streamlined type XXI operating at a speed of 15 knots." The passive listening test was terminated while still in contact at a range of 3600 yards "when suddenly I heard Morse code signals, which I could not read, and soon saw the target surface." Graham landed back aboard LST *506*, and Coop states he "played the tape recording of the signals in the presence of my assistant, who could read Morse code." The crucial, coded message from the submarine indicated it had sprung a leak and was surfacing. Coop clarified: "The surface ship assigned to protect the submarine in case of just such an emergency, as well as to pull us out of the water, did not detect the urgent underwater telephone message from the XXI submarine — the signals we had received and recorded."[27]

Once the final results of the helicopter sonar tests were analyzed, Graham wrote later: "Even the most skeptical decision-makers were convinced that the helicopter-mounted sonar was the answer for the antisubmarine warfare program."[28]

However, Graham's optimistic view was deflated by a problem that would plague helicopter ASW operations for more than a decade. And it was a problem severe enough to sustain standing arguments against the helicopter's acceptance for any purpose. The dramatic end of the project foretold the immediate future and supported naysayers' arguments. This happened on the last ASW evaluation flight. It was the last flight because the helicopter and the sonar unit were lost. "Unfortunately," reported Coffee, "the project ended with the whole helicopter getting dunked." The helicopter did not have sufficient power to stop its descent in its landing approach to the deck of the LST. It crashed into the water alongside the ship, and sank. The crew escaped.[29] Helicopters lacked sufficient engine power using existing aircraft engines.

Yet, Graham concluded optimistically: "When the Key West tests results were analyzed, even the most skeptical decision makers were convinced that the helicopter-mounted sonar was the answer for the antisubmarine warfare program." "I returned to Floyd Bennett Field [released from the Navy]… early June 1946." This was nearly five years after earning his wings as a Coast Guard enlisted pilot in Pensacola, and almost two years since being designated Coast Guard Helicopter Pilot number two. He was soon making headlines in newspapers for his novel helicopter rescues.

Rotary Wing Development Unit Elizabeth City

Loosing Waesche and Kossler, "both staunch advocates of promoting the helicopter," according to Graham, now negatively affected Erickson and his project even more. The loss of these two essential men left Erickson vulnerable "against rotary-wing opponents at headquarters and elsewhere."[30]

Graham continued: "This was the opportunity the vigorous antagonists were waiting for; we were at their mercy. Without any warning, whatsoever, Erickson and I, plus, a few dedicated enlisted men received permanent transfer orders to the Coast Guard Air Station in Elizabeth City, North Carolina." Graham detailed in memoirs the depth of feelings against Erickson and his project: "Before we left Brooklyn word had gotten to us the transfer was designed to downgrade the helicopter program as a passing fancy and would never be introduced into Coast Guard aviation."[31]

Capt. Arthur Hesford, new commanding officer at Brooklyn, looking for some solution to relocate Erickson, made personal calls to other commanding officers asking if anyone might take Erickson off his hands. It was nearly a year and a half later when finally the commanding officer at CGAS Elizabeth City offered a space. What he could furnish was an abandoned Navy hangar last used to house sheep. Without Kossler's support, a command, a school, or a staff, Erickson retreated to the promise that brought him the helicopter project originally.

Erickson and his small crew moved to the abandoned Navy hangar on the airport hosting the Coast Guard Air Station Elizabeth City, North Carolina. Graham was Erickson's unit's only other officer, "XO, admin," and "test pilot." The small group with the two officers and 16 enlisted mechanics began work in June 1946 at the new facility by wearing gas masks and using snow shovels to clear the hangar deck deep in sheep manure.

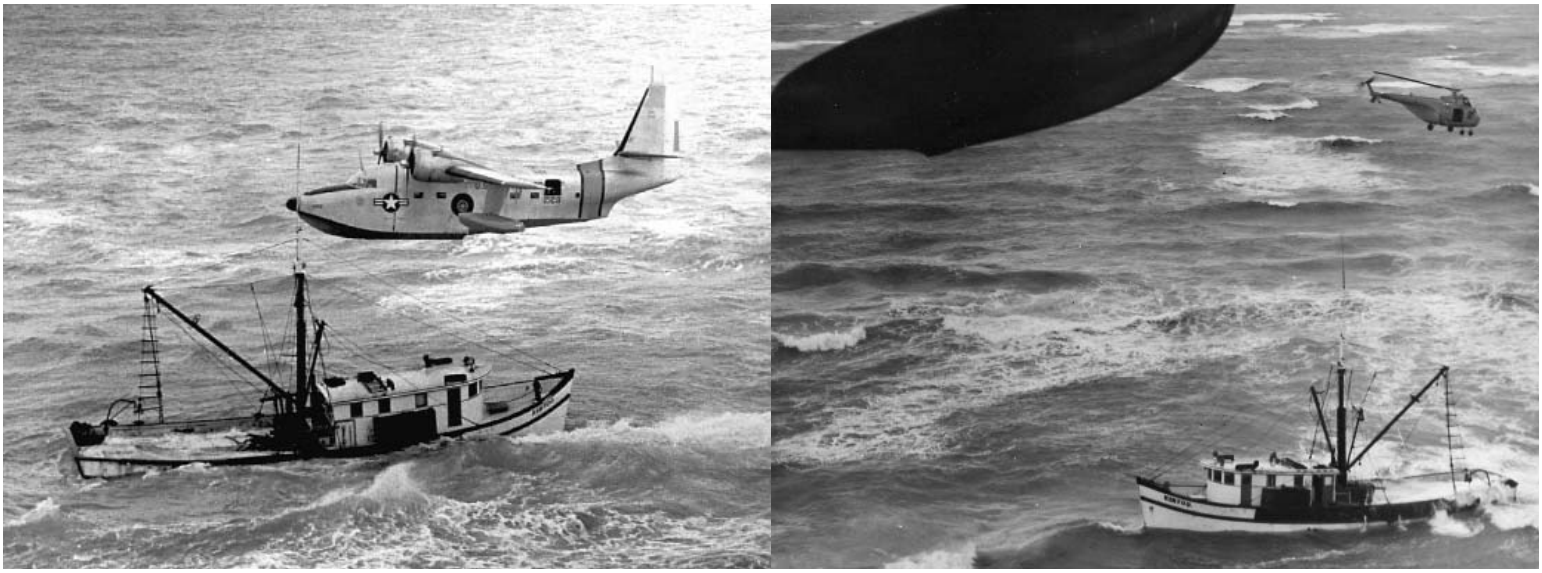
So it was that this ungainly rotary-winged phoenix eventually rose in an almost literal sense from a noisome pyre. The humble beginnings were an obvious message to Erickson and those who dared to follow him. Their existence in the hangar "across the field" still did not relieve them of near constant hazing. There was no seating in the wardroom for the helicopter developers.[32] Open animosity was exhibited among the local senior officers, including the commander of the air station, to Erickson and his crew. These acts extended even to trivial matters. For example: Erickson had to personally requisition toilet paper for his unit.

The helicopter test unit was officially established under the command of the Coast Guard air station placing this antagonistic commanding officer directly in control of Erickson. But all projects were dictated by Headquarters' Office of Operations. However, another officer, the engineering chief in headquarters established the technical control of testing. This arrangement gave Erickson three bosses and a command structure that immediately caused him grief. But, as Graham noted, "no more than he was causing grief among the Coast Guard officers in his persistent pursuit of the helicopter for rescue work; this at a time when Coast Guard headquarters was concentrating fully on new seaplanes to replace the ragtag wartime fleet."[33]

"The outlook for us was very bleak and disheartening, especially so, when we were assigned an abandoned navy hangar, which was used to store fertilizer." Graham repeated, expanding on their problems with this apparent punishing assignment for the miscreants, Erickson and Graham, "This hangar had no facilities, taking at least a month to make it livable. The building was remotely located from the air station's operations. Even though we were part of that command we were treated as outcasts. Support from the air station was practically nil, thus creating immediate conflict between Erickson and the commanding officer," who was staunchly antagonistic towards Erickson, openly and vociferously opposing any efforts towards helicopters.[34]

The hangar was devoid of even the most rudimentary tools for aircraft maintenance. It was bare. Furthermore, there were no desks, files cabinets, or lockers for offices. Then Erickson learned that the Coast Guard Air Station in Biloxi, Miss., was being decommissioned. He and Graham flew immediately to Biloxi and had all the shop machinery, tools, and office equipment instantly trucked to their new hangar before the usual administrative details would normally divert surplus property items into the system. The new helicopter test unit was operating by mid-summer 1946. Their job then was to create a helicopter capable of search and rescue.

This group of two officers and 16 enlisted mechanics designed and fabricated equipment to further fulfill the helicopter's potential for search and rescue missions. Some of the accomplishments were: the hydraulic hoist; redesigned interior space to accommodate standard Stokes litters; rescue basket (now more than 60 years later little changed from the original concept) and today known as the "Erickson Basket." The rescue harness used by the military was designed and developed here as well as rescue harnesses and life jacket combinations along



Following the war, Erickson's helicopters were called for SAR missions only when fixed-wing and boats could not safely attempt the rescue. Here is a daytime view of fishing vessel Kimtoo *grounded on a reef following the first nighttime helicopter hoist of its three crewmen. Graham received the Distinguished Flying Cross for this first-ever event. (The wing float in the photo foreground is on a Grumman HU-16E Albatross, Coast Guard number 2129. The author flew this aircraft on CG SAR flights sixteen years later.) (Photos from the author's collection)*

with emergency flotation bags for helicopters landing on the water. Flight control stabilizers for hands-off helicopter flying, instrumentation for night and instrument flying and sensitive hovering indicators were designed and tested. The flight-deck hangars used on icebreakers were designed by Erickson and his crew as well as flight-deck layout and design for shipboard helicopter landing areas. All these and more were created in the former sheep pen at Elizabeth City.

Turn About

Except for the isolated rescue cases mentioned, helicopters were not yet considered rescue vehicles. The Coast Guard did not dedicate helicopters to any SAR services. But a series of attention-grabbing events began almost immediately, mainly due to the location of the test unit and their helicopters with unique abilities.

Elizabeth City was close to the famed Outer Banks where marine casualties were historically prominent. A typical response by Coast Guard units was with amphibious aircraft only if they could be safely landed near the casualty or persons needing assistance. Another rescue aid was time-consuming boats to reach those in need if airplanes could not. The isolated Outer Banks offered a heavy schedule of assistance cases for the fixed-wing amphibians stationed at Elizabeth City and small-boat stations along the coast. However, due to flight restrictions, planes could not always land to assist and boats sometimes could not get to where they were needed.

Calls came almost immediately to the test unit for rescue assistance for these special cases even though they were not prepared with properly configured aircraft nor did they have any training with helicopters in rescue procedures. And the unit was tasked full time to accomplish a heavy schedule testing helicopters.

Graham, much later, gleefully reported that "we garnered recognition and publicity almost immediately, much to the dismay of the air station." His observation was based on "the novelty of the helicopter as we demonstrated the machine to the populations along the coast regions of Virginia and the Carolina's."[35]

The test unit's close proximity to the Outer Banks offered many opportunities for unanticipated rescue work. Graham was soon engaging the helicopter in local rescue missions, absorbing some of the SAR responsibilities assigned to the fixed-wing aircraft across the field, and significantly more effectively.

The novelty of the craft along with its obvious unique abilities began attracting public attention. The high-recognition medical and humanitarian cases were swooped up by helicopters while the fixed-winged crews spent hours searching for survivors only to have some other surface units do the actual rescues. This dichotomy rankled the station's pilots whose primary task was rescue. Graham was there only to test helicopters that, according to conventional attitudes prevalent among the majority fixed-winged aviators, were not going to be accepted for service. But to the fixed-wing establishment's chagrin, the helicopter began making remarkable and newsworthy rescues.

Graham, though he was only a test pilot for the test unit, took on these extra emergency flights. He could fly the helicopter directly to the location where people were in medical need then fly directly to the hospital. The local paper reported, "During his five year stint of duty in Elizabeth City, the famous helicopter pilot has made many outstanding and unbelievable rescues off the North Carolina, South Carolina and Virginia coasts. He is called by his nickname of 'Stew' by many Outer Bankers, who look to the Coast Guard in time of need or emergency."[36] The many fixed-wing rescue pilots at Elizabeth City remained anonymous.

These mercy acts by Graham began a trend, which engaged

Shadow of Coast Guard PBY-5A overflying crashed SABENA Airline DC-4 in Newfoundland tundra. PBYs dropped supplies to rescuers and survivors on the ground until evacuation was completed. Lumber was also dropped from the amphibians at the site to construct landing pads for helicopters. (Photo from the author's collection)

HOS-1 landing at the lakeside platform bringing one more survivor of the SABENA crash to be ferried by life raft to a waiting PBY floating on the lake. Platforms were necessary to prevent helicopter's landing gear from sinking into the muskeg. (Photo from the author's collection)

the possible application of helicopters for medical evacuation, a mission that was later suddenly discovered by the military in the Korean War a decade after being envisioned by Erickson in Hawaii and developed by Graham in the years that followed.

Airliner Crash Rescue

A civil airliner crash on September 18, 1946, in Newfoundland brought world attention to helicopters for the first time. A SABENA (Belgian airline) DC-4 crashed into a hilltop during an instrument approach to Gander airport. Seventeen passengers and one crewmember survived among the 44 onboard. Most were in critical condition from broken bones and severe burns. The crash site in forest and tundra rendered it unreachable by any ground vehicles. Overland travel on foot was near impossible due to the difficulty in trudging through bog and the distance needed to go to reach the site in the critical hours remaining to the survivors. Remoteness and terrain impenetrability meant rescue could only be by helicopters — still largely unknown and unavailable.

Shortly following the Wednesday morning crash, two Coast Guard PBY amphibians, used in iceberg patrols from their base in Argentia, Newfoundland, began searching along with other aircraft. The crash site was not located by darkness the first day. The SABENA pilots did not follow a standard approach procedure, thus crashing west of the airport when their expected path was to the east of the airport. Searchers were in the wrong area. The following morning two Coast Guard PBYs were again searching in the eastern region when a TWA airliner inbound from the west spotted the crash site. A Coast Guard PBY directed to the scene located and confirmed the SABENA crash and spotted survivors near the wreckage. A full day following the crash the PBY crew dropped the first survival equipment.

A local ground-rescue group was flown by the amphibian PBY to a lake near the crash scene. From there the rescuers floated down a river in rafts to a landing about a mile from the site before starting their uphill trek. But during the river trip, rafts capsized. A radio needed for guidance to the site from the circling PBY and medical supplies were lost. Later this rescue party became disoriented in the woods and did not arrive at the scene until late that evening after finally following directions from messages dropped by a PBY.

Meanwhile, a second ground party was sent in the same manner and successfully reached the site before the first unit arrived. Capt. Samuel P. Martin, U.S. Army medical officer,

SABENA crash victims in life rafts being rowed to the middle of the lake where they were loaded aboard PBY-5A amphibians for their trip to Gander airport. They arrived at the lakeside location, shuttled one at a time in the two helicopters flying from lumber platforms laid down near the crash site to similar lumber platforms constructed at lakeside. (Photo from the author's collection)

Graham, flying a HOS-1, demonstrates developing search and rescue techniques before a crowd at Kitty Hawk, N.C., on Coast Guard Day, August 4, 1946. A HNS hovers overhead. (Photo from the author's collection)

who was a member of this rescue group worked untiringly treating the injured with airdropped medical supplies. All suffered from exposure, hunger, thirst and insect bites in addition to burns and broken bones. Doctor Martin contacted the orbiting PBY by radio reporting his findings: "Eighteen survivors, of which 14 are stretcher cases, four ambulatory and 26 dead. Conditions of the injured demanded immediate hospitalization. After a thorough survey of the situation, I suggest evacuation via helicopter, due to the remoteness and impenetrability of the terrain." An impossible situation for the survivors and those helping, and impossible since helicopters were near nonexistent. Only one was in New York City 1,108 miles away.

More survival and medical supplies were dropped at the crash from a PBY.

On September 20 the Coast Guard's Eastern Command ordered Graham at Elizabeth City to disassemble their HNS to prepare it for flight as cargo in an Air Force C-54. Erickson, absent from his unit, was in New York at the moment and when he learned of the need, had a second helicopter, a HOS, there broken down for air cargo in a second C-54. Graham took the call at 2:45 in the afternoon; by 11:25 that night, he and his crew, the HNS, tools and spare parts, and Erickson who returned from New York, were aboard the C-54 en route to Gander. The second C-54 was en route from New York with the HOS shortly after.

Offloading and reassembling the helicopters began immediately on arrival at Gander in early morning of September 21 — end of day three for the survivors. Most of the day was spent rebuilding the two helicopters and conducting test flights. Meanwhile, that same afternoon, the helicopter pilots flew aboard a PBY surveying the crash scene scouting for a reasonable landing zone as close to the survivors as possible. A relative flat area close to the crash scene on top of the mountain was viewed as ideal for helicopter landings.

One helicopter was operational when the helicopter pilots in the PBY returned to Gander. Immediate evacuation of the most serious injured began. It was late afternoon, however, with only one round trip possible before dark. Then, the first attempted landing in the muskeg unveiled yet another serious problem — halting rescue efforts. The HNS's wheels sunk into the "muskeg ooze" nearly ensnaring the helicopter. Graham noted later it "required full power to break loose from the muck."[37] The rescue crew then realized before they could do anymore helicopter evacuations some sort of platform was necessary.

The fourth night on the tundra at the wreck site for the critical victims was to pass before the full evacuation could begin. Only one survivor was flown out the day the helicopters arrived.

As dawn broke on September 22, beginning day five after the crash, lumber was air-dropped to the clearing from PBYs. Ground-party members constructed a small platform. Both helicopters began the evacuation. However, valuable time was consumed flying victims, one at a time, the 27 miles to Gander.

A faster method was improvised. The helicopters flew survivors individually from the crash site platform to a new platform built at lakeside seven miles away. There the survivors were floated on life rafts to waiting amphibians. PBYs, two Coast Guard and one US Army OA-10 version, flew survivors from the lake to Gander airport.

By the end of the day on September 22, the remaining survivors, as well as the ground rescue team were evacuated by this helicopter/amphibian team from the crash scene. All survivors of the SABENA crash were delivered alive to hospital. Graham, along with the other pilots involved in this rescue, received, "The Knight of the Order of Leopold" medal from the Belgian government and an Air Medal from the Coast Guard.

Back at Test Unit

Three days later, "on September 25, 1946, Commander Erickson and I returned to Elizabeth City. We were surprised to learn that during our absence we had been assigned (from storage) a Grumman J4F-2 Widgeon amphibian (number 33956) to be used for administration purposes. Our total rotary-wing aircraft allotment consisted of 10 HOS, three HNS, and one HO2S Sikorsky helicopters for search and rescue evaluation."[38]

Extensive publicity about the Gander rescue "besieged [us]," said Graham, "with requests to demonstrate the helicopter to the military as well as to civilians."[39]

Graham noted also, with some bewilderment, that "dignitaries often arrived for demonstration rides. Commander Erickson was in his glory showing these people just what the

helicopter could do, claiming (to me) that it was worth our while to maintain good relationships with the other military establishments as well as with the general public." Erickson, however, certainly did not experience this same spirit of interest or enthusiasm with Coast Guard members.[40]

Helicopter flight testing at Elizabeth City began in earnest for Graham, in an attempt to expand their usefulness in areas other than SAR. Graham also established the first federal helicopter-airmail service to the North Carolina Outer Banks—ironically near the birth of aviation 43 years earlier — at Kill Devil Hill. He began the first direct air mail delivery service to the previously remote Outer Bank's villages in October 1946 as one example of extremes the team pursued to promote the helicopter's universality. The aircraft's unique ability allowed Graham to hover over areas where ordinary airplane landings were not possible and exchange mail sacks at local post offices while still airborne.

Retired Coast Guard Capt. John Daniels rides as passenger with Graham flying a HNS. Daniels was then the only surviving crewman that assisted the Wright Brothers in their initial powered flight from Kitty Hawk in 1903. (Photo from the author's collection)

One historic moment occurred when Graham, on a mail run, landed at the Roanoke Island airport. He was introduced, at his aircraft, to retired Coast Guard Capt. John T. Daniels. Daniels, as a seaman for life, had only a single aviation experience according to Graham's account. And it was bad. He was with the Coast Guard lifeboat crew on the island assisting the Wright Brothers during their initial testing of their Flyers. Daniels became aviation's early accident victim when he broke three ribs in a crash of the Wright's airplane on Kill Devil Hill. He was not a passenger but holding a wingtip when a wind gust lifted the craft "about 30 feet off the hill with the captain still holding on." He crashed with the plane. Graham noted that this flight with him in a helicopter was Daniel's first in an aircraft of any kind in the 43 years following this incident. Daniel's comment to Graham afterwards: "What a pleasure that was in comparison to my very first unplanned one back in December 1903."[41]

Flight testing continued interspersed with occasional routine humanitarian assistance flights by Graham. But it was on December 5, 1947, when Graham successfully completed the first night, helicopter medical evacuation flight. This took place from an isolated area along North Carolina's Outer Banks. Helicopters were not instrumented or tested yet for either night or instrument flight. This flight, because of the critical nature of the victim, was made in fog, rain and at night. Graham's only reference for visual flight was by following the shoreline where crashing waves illuminated the beaches with a phosphorescent glow. Graham noted in an offhanded manner, "This method afforded a ready reference to fly by until lights from the town of Elizabeth City became visible."[42]

Flight testing was a daily practice for the small unit at Elizabeth City with added occasional rescues. But most of these almost routine activities went unreported. It was the rare occasions where public exposure brought attention to this still enigmatic flying machine such as happened during the first week in August 1948. Graham flew the new Sikorsky HO3S-G at the grand opening ceremonies of the Idlewild Airport (now JFK), New York. He flew one of the first public displays of helicopter rescue abilities; methods and equipment created and developed by Erickson's team. "The daily dedication ceremonies lasted until August 8. I participated in these ceremonies by demonstrating both the maneuverability of our latest Coast Guard … helicopter as well as its search and rescue capability. At the end of each day's events, using a hydraulic hoist, I pulled up all of the international code flags from a barrel that was positioned at the far end of the field, circled the airport and the grandstand area, and returned to the starting point. I then lowered the flags back into the barrel before landing."[43]

Winding Down

Graham stacked up more helicopter "firsts" by flying the first Coast Guard transcontinental flight, unescorted through the 3,900 mile trip, from Elizabeth City to the Coast Guard Air Station Port Angeles, Washington. Flying a HO3S-1G with just one crewman, the mission from March 24 through April 3, 1949, took 57 hours flight time. This, according to Graham, was intended as a "pathfinder" flight for all future transcontinental Coast Guard helicopter flights. *[The author repeated this route—roundtrip—24 years later in a "modern" helicopter at 93 knots. Even with turbine power, all-weather instrumentation, and navigation aids, the trip was still an adventure.]*

On March 31, 1951, the Rotary Wing Development Unit was decommissioned after the assigned projects were completed and at a time when the Coast Guard had few helicopters and

Graham, as the navy' first helicopter test pilot, flew a camera-rigged HNS to travel alongside a landing Grumman F7F Tigercat as it was being trapped in the aircraft carrier arresting gear located on navy's Muston Field, Pennsylvania. Engines were tearing loose from the airframe of the twin-engine fighter aircraft when being stopped by the arresting gear. The helicopter-mounted camera recorded the occurrences for later engineering study. (Photo from the author's collection)

no expressed need to proceed with their further use. Graham, earlier, had already moved "across the field" to Elizabeth City's air station as assistant operations officer. He flew search and rescue missions primarily in fixed-winged aircraft for a brief period — with an occasional helicopter rescue.

Graham was the first U.S. military pilot to log over a thousand helicopter flight hours. His mascot and companion, Brownie, a cocker spaniel, accompanying Graham on many test flights, accumulated more flight time than most helicopter pilots up to that time in the brief rotorcraft history.

The Coast Guard's helicopter program was dead. Erickson was removed from any connections with its further development or operations. Other than rare notable rescues, the helicopter for the Coast Guard was not accepted as the rescue vehicle of which Erickson dreamed. He was transferred to the New York District Office into a non-flying, demeaning, desk-job, never to be assigned any flying billets again. He was intentionally assigned to work for a former ship's captain who had open distain for aviation. Erickson retired soon after; not recognized by the Coast Guard for his contributions, and a dream not then realized.

Graham Returns to ASW

The navy had developed sonar equipment for helicopter ASW over the four years since Graham's early experiments off Long Island Sound and Key West. He was ordered back to duty with the Navy. The Coast Guard lieutenant transferred to the Naval Air Development Squadron, VX-1 in Key West to train naval aviators and aircrews in the tactics of helicopter ASW. The revived program started in February 1951.

An unusual event occurred during testing when elements of the small naval force were invited to operate from the "excellent harbor and airfield facilities" at the Cuban Naval Air Station at Puerta Mariel. This group included the submarine USS *Amberjack*, escort patrol craft *1431*, LST *209*, and five Piasecki HRP helicopters. Daily exercises used the nearby deep waters off the Cuban coast.[44]

The Mariel flights continued through February until March 10 when the group unexpectedly had to do a rapid, before-dawn, evacuation from Cuba due to the Batista coup.

Operations resumed out of Key West. When Graham wasn't flying helicopters on flights from the temporary deck aboard the LST, he served as an official observer aboard participating submarines. He claims that he "is the only one in the Coast Guard ever to be assigned such duty."[45] Training was completed by the end of August 1952. The program eventually succeeded. Graham with his usual repressed modesty claims:

> [I] believed that I am the only one in the Coast Guard ever to be assigned such duty. At the end of August 1952, sufficient data had been processed successfully to warrant the Navy's acceptance of the AN/AQS-4 helicopter-sonar package. The entire group of pilots and sonar operators had become quite competent by this time, and the Navy formally recognized them as the first and second Naval Antisubmarine Squadron, dubbed HS-1 and HS-2.[46]

Navy's Helicopter Test Pilot

Graham, still assigned to the navy, left Key West in September 1952 for the Naval Air Test Center at Patuxent River, Maryland. There he became the test center's first head of the Rotary Wing Section.

He evaluated each new helicopter determining their abilities for various proposed uses. One example of many projects Graham tackled was how to use the helicopter in landing marine assault troops. *(In telling this account he could not suppress a chuckle, yet this reveals the thoroughness of his attention to detail in testing.)* "I had [volunteer sailors] dressed in full combat rig, landed in an open field, then had them rush into battle. The first man fell jumping down and the rest ended in a squirming pile on top. I recommended that assault helicopters be redesigned with a combination ramp/door configuration."[47]

One morning while getting a helicopter ready for flight, Graham noticed future astronaut and then test pilot, Alan Shepard, waiting nearby for a bus to take him to his workplace across the field. Graham offered Shepard a "lift." "You can do that?" Shepard queried. Graham invited him to hop in and delivered him across the field saving the two-mile bus trip.

Graham did this taxi service several times eventually providing Shepard with his initial helicopter-piloting instruction.[48]

Graham claimed when his tour of duty with the Navy was completed he had checked out in 25 different fixed-wing aircraft including the Grumman F6F Hellcat and the Lockheed P-80 Shooting Star and 17 various helicopters.

Back in the Coast Guard

Graham, returning to the Coast Guard, received a lesser punishment for his fealty to Erickson. Helicopters were still not an aircraft assigned to the Coast Guard's mission. There were a few scattered aircraft among air stations more for pilot proficiency and occasional SAR missions where conditions called for this craft. Primarily, the few scattered among the stations were leftovers from the testing program.

Graham was assigned to Coast Guard Air Station St. Petersburg flying fixed-wing Grumman amphibians and the Martin P5M seaplane. The unit still had a HO4S helicopter assigned, not for SAR but for pilot proficiency. Graham received the Distinguished Flying Cross for making the first night hoist offshore during severe weather conditions with this helicopter. He recovered three mariners from a vessel breaking up on a reef in the Gulf of Mexico.

In August 1955, Graham transferred to Argentia, Newfoundland, as executive officer at the Coast Guard Air Detachment and flying PB-1G (surplus B-17s) locating and tracking icebergs impeding North Atlantic sea lanes. Helicopters were not assigned to the unit nor was there any opportunity to exhibit his extensive background with helicopters. Assignments appeared almost by design to keep him from helicopters.

Two years later Graham was transferred once more to a non-helicopter unit at Salem, Mass., again as executive officer. However, the need arose for an experienced helicopter pilot, and Graham was selected. He spent two weeks in the summer of 1959 flying a Sikorsky HO4S-1G providing air coverage from Buffalo, N.Y., to Chicago for the Queen of England and President Dwight D. Eisenhower on *Royal Yacht Britannia*. The Queen dedicated St. Lawrence Seaway on this journey through the newly opened road from the Atlantic Ocean to the Great Lakes.

Graham Retires

With no prospects for further helicopter flying opportunities and a bleak outlook in the Coast Guard for the advent of helicopter operations, Graham retired in 1960 after 24 years' service. There was little need for the naval service's number two helicopter pilot's experience. However, Graham laid irrefutable groundwork in helicopter development.

The helicopter's image today, 70 years after Igor Sikorsky's first demonstrations and the pioneering efforts by Erickson and Graham, is nearly universally accepted as apowerful and sometimes ultimate tool for many missions. However, in its first decade the "flying palm tree" was considered by many as just a remarkable curiosity with no serious potential abilities.

The few who believed in its future and dedicated their lives to its acceptance suffered in an emotionally hostile environment generated by rejection and a general derisive attitude from peers and superiors alike. It took courage, and an uncanny vision of what would come, all the while suffering career-threatening situations by a few men such as Erickson and Graham to bring this strange looking canvas-covered, tube-framed contraption that could fly backwards, to the awe inspiring respect it holds now. The United States Armed Forces today are unmatched in global authority, in part, because of the dreams and schemes of these Coast Guard pioneers.

Gold-Plated Cadillacs

Two decades and two months after a young Graham first wrote: "We were all awestruck at the maneuverability of the machine;"[49] 28 new Sikorsky HH-52A "Seaguards," from an order of 97, were delivered in January 1963. Bases were created 150 miles apart along the U.S. coastline for new helicopter-only search and rescue responses. A training base was created in Savannah, Ga., for standardized training, which in 1966 was moved to a new base established for this purpose in Mobile, Alabama.

The rescue helicopter envisioned by Erickson, and largely developed through Graham's dedication and demanding perfection, became the most successful life-saving vehicle of all time, with over 15,000 lives saved in the Seaguard's 25 years of service.[50] Sergei Sikorsky reported that over a million lives have been saved by helicopters worldwide since Erickson first wished for an airborne lifeboat at Pearl Harbor.[51]

This legacy began within a month of the HH-52A entering service at Newport, R.I., when a nearby Navy ship lost a man overboard. The alert HH-52A crew — already searching for a missing fisherman — quickly spotted the seaman in the freezing water. The pilot landed the amphibian in the waves, scooped the unconscious sailor aboard, and saved his life by flying him directly to a local hospital. A Navy helicopter pilot searching for the sailor, in an aircraft with no abilities to recover a comatose body from the sea, landed at the hospital parking lot next to the Coast Guard rescue helicopter. The Navy pilot, greeted Cmdr. John Waters, Coast Guard pilot of the HH-52A, and closely examined the novel new helicopter. With respect, he asked: "You wouldn't like to trade, would you?"

"Not for a lot full of gold-plated Cadillacs," Waters thought.[52]

The Stump Jumpers Lament

By Stew Graham, Sergei Sikorsky and Sam Constantino, 1944

Beneath the spreading rotor head
The helicopter stands.
With an under-powered engine
And blades like rubber bands.

The fuselage looks silly
The whole idea's absurd.
Why anyone would fly it

I really haven't heard.

There's an anti-torque propeller
Sticking out the tail.
It looks for all the world
Like a highly pregnant quail.

One doesn't need a parachute
One doesn't need a brain.
In fact to fly this monster
It helps to be insane.

Oh, how I hate da Vinci
And Sikorsky's on my list.
If they had kept their traps shut
This mess I would have missed.

But I am brave and I am strong
And greatly in demand.
For I'm a helicopter pilot
In the Purple Heart Command.

Notes

All references and quotes in this story are from personal papers, from both Erickson and Graham held by the author. Further information comes from principals with interviews by the author.

Erickson wrote at least three books and parts of a fourth recording his experience in helicopter development. None of Erickson's book manuscripts was published. Also included in references are personal letters and other documents saved by Erickson comprising about 50 pounds of paper. All Erickson papers are held by the Erickson family with copies in the author's possession. For reference purposes each book is arbitrarily assigned, by the author, with a Roman numeral, chapter, and page number. For example: "Erickson, III-3-8," (book three, chapter three, page eight). No manuscript is dated. Furthermore, there are various versions to chapters collected by the author as Erickson circulated individually altered chapters or pages to friends to check for accuracy. A single quotation, or variation, may appear on two or more different documents.

Quotes attributed to Graham come from personal interviews with the author over 20 years plus copies of personal recollections written by Graham, news clippings saved by him, and a documentary film featuring Graham and Sergei Sikorsky filmed in March 2006 by Shoestring Productions, San Diego, Calif., with the author as interviewer. Copies of all Graham references are held by the author.

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