Missions for America
Semper vigilans!
Semper volans!

The Coastwatcher

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LtCol Stephen Rocketto, Editor
srocketto@aquilasys.com
Maj J.Scott Farley, Publisher
Lt David Meers & Maj Roy Bourque, Papparazis
Hap Rocketto, 2nd Lt, AUS, (ret'd.), Features
Capt Edward Miller, Features

Issue 11.20 30 May, 2017

CALENDAR

See the Squadron Calendar for Meeting Details

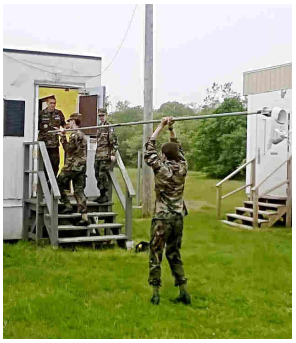
03 JUN-NEAM/springfield Arsenal Field Trip
06 JUN-TRCS Senior Staff Meeting
Cadet PT & Rocket Building
13 JUN-Commander's Call
Cadet Char. Dev. & Promotions
17 JUN-Commander's Cup Rocket Contest
19 JUN-01 JUL NER ES Training
20 JUN-ES Training
Cadet Aerospace or Emergency Serv.
27 JUN-ES Training
Cadet Aerospace or Emergency Serv.
25 JUN-WAA Pancake Breakfast
23 JUL-FAA Av. Career Ed. Academy
24 JUN-TRCS SAREX
14-20 AUG-CTWG Encampment
19 AUG-National Aviation Day
09 SEP-CTWG Smallbore Rifle Clinic
23 SEP-WAA Young Eagles
06-07 OCT-AOPA GON Flying
21 OCT-CTWG Smallbore Rifle Clinic

CADET MEETING

30 May, 2017

The main part of the meeting was the erection of the weather station mast. A review of WWII history was conducted. Several cadets worked on their Emergency Services qualifications.

C/MSgt Ben Ramsey wields a tool while assembling the weather station assisted by 1st Lt Heard and C/CMSgt Hannah Ramsey.



C/Maj Hollingsworth supervises the raising of the mast.

Not as dramatic as the raising of the colors over Mt. Suribachi, the mast is up and affixed to the structure.

SENIOR MEETING

30 May, 2017

The Seniors met at Casa Farley for a picnic and chinwag. Maj and Mrs Farley provided a selection of meats and *hors d'oeuvres* and the officers each brought a contribution which resulted in a cornucopia of edibles.

ACHIEVEMENTS

Lt Col John deAndrade has been appointed CTWG Director or Operations.

CURRENT EVENTS

Drone Registry Ruled Illegal

The Court of Appeals, D. C. Circuit have ruled the FAA requirement for registering drones illegal. The ruling was based upon the 2012 FAA Modernization and Reform Act, Section 336 which states that "the FAA may not promulgate any rule or regulation regarding a model aircraft.'" The FAA is reviewing the decision and considering a response.

Commercial drone industry representatives and the FAA considered the registration a reasonable step to ensure safety. Atty. John Taylor, who brought the suit considers it a case of "government overreach."

If the ruling stands, *The Coastwatcher* wonders what will happen to the approximately 3.5 million dollars collected illegally from the 700,000 citizens who registered their drones.

AEROSPACE HISTORY

May 25th marks the 128th anniversary of the birth of Igor Sikorsky. The Coastwatcher will celebrate the event with a series about the three eras which defines his career as a pioneer designer of aircraft.

The Multi-faceted Genius of Igor Ivanovich Sikorsky

Part Three-The Helicopter Era
by
Stephen M. Rocketto

By the end of thirties and the onset of World War II, the flying boats, even when capable of amphibious operations were obsolescent. Some still served useful purposes: transport, maritime patrol, anti-submarine campaigning, and air-sea rescue activity. But the rapid development of large numbers of land airports and the aerodynamic superiority of land planes ended the golden age of flying boats.

Fortuitously, Igor Sikorsky was both ready and eager for a new challenge, the helicopter. United Aircraft had purchased the company in 1929 and in 1939, amalgamated Sikorsky with Chance Vought.

Sikorsky was relieved of the administrative and financial oversight responsibilities and assumed the duties which he loved best, design and engineering. The luxury of extra time enabled him to pursue his earliest dream of flight, the helicopter.

The first attempt had been made while living in Kiev in 1909. The technology of the day and his lack of experience resulted in the early abandonment of the project. In 1931, he filed a patent for a direct lift engine which was granted in 1935. The patent application specifically referred to the difficulty of

controlling the height and vertical movement of the craft while in flight and simultaneously

controlling the stability and directional motion of the craft while it is being navigated through the air.

His proposal was a design incorporating a "single vertical lift propeller, coupled to a torque compensating propeller, a control for varying the pitch of the vertical propeller, another control for varying the pitch of the torque compensating propeller."

Overseas, a number of machines had achieved vertical flight. Heinrich Focke and Louis Brueget both had achieved vertical flight but their machines utilized *pairs* of bi-axial blades either mounted on outriggers or coaxially stacked. In both cases, the blades counter-rotated to eliminate the effects of torque. Sikorsky was aiming to overcome the torque problem using a *single* main rotor by utilizing the principles stated in his direct lift patent.

Wearing his signature fedora, Igor Sikorsky performed the first flight of the VS-300 on Sept. 14, 1939. Its design would profoundly influence modern helicopters. Sikorsky Photo

The VS-300-Note the weight and tether.

In 1938, he pitched the idea of a practical helicopter to the the directors of United Aircraft and they provided the resources for the initiation of a design and experiment program, Sikorsky's 46th design bearing the company designation, VS-300. Within a year, Sikorsky and his design team built the first version of the aircraft. The simple skeleton design of the fuselage simplified modifications and the repairs needed after accidents.

On November, 14th, 1939, the aircraft made its first tethered flight. Steel cables attached to heavy weights restricted the movements of the aircraft, allowing Sikorsky and other pilots to safely practice control manipulation and engineers and technicians to observe the behavior of the plane and its constituent parts.

The historic first free flight occurred on March 6th, 1940 but during the ensuing six months, dozens of major changes were made to the structure the control system.

The experimental flights demanded that the VS-300 features be repeatedly changed.

Controls and structural elements were changed to solve each issue as it arose. However, the most serious problem was that of excessive vibration. The balance of the blades was critical but solving that problem was accomplished by care in construction and assembly. Worse was the problem of induced vibration. Perfectly balanced blades can shift positions relative to each other and in the worst case, the the vibrations of the blade assembly matches the natural frequency of the aircraft structure and combine to shake the aircraft to pieces. A child in a swing is a simpler example of the phenomenon of feedback. Think of students in bleachers bouncing up and down in concert and how the bench upon which they sit starts flexing. After a series of experiments, a method to aerodynamically balance the blades to they tracked each other in the same plane and reduced induced vibrations to a safe level.

The short take-off and landing characteristics of autogyros had interested the US Army in using them as observation craft and had actually been

testing one at Wright Field in Ohio. The concept of a helicopter's vertical lift ability drew their attention and early in 1940 the US Army appropriated $250,000 for prototype helicopters. A version of the German Focke design was under consideration as the XR-1 and expected to win the award. United Aircraft officials gave Sikorsky permission to enter the competition.

On May 20th, 1940, after the first public demonstration of the VS-300C at Bridgeport Airport, the Connecticut State Aviation Commissioner, Lester Morris, presented Sikorsky with State Helicopter License No. 1!


Form 100—100-10-39

STATE OF CONNECTICUT
DEPARTMENT OF AERONAUTICS
Aircraft Pilot's License ..... 1 .....

HELICOPTER

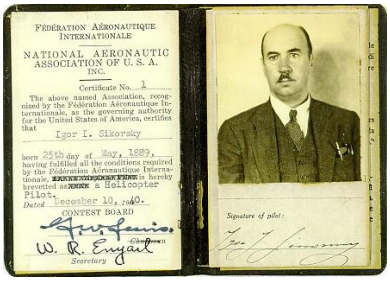
has complied with the provisions of the law concerning the licensing of Aircraft Pilots and is hereby licensed to operate an aircraft of the above class in this State until the last day of December, 1940, at midnight.

CHARLES L. MORRIS, Commissioner

Dated May 11, 1940 Per .....

If not revoked or suspended this license expires December 31, 1940

At least Sikorsky did not have to stand in line at the Connecticut Helicopter Vehicle Department.


FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

NATIONAL AERONAUTIC ASSOCIATION OF U. S. A. INC.

Certificate No. 1

The above named Association, recognized by the Fédération Aéronautique Internationale, as the governing authority for the United States of America, certifies that

Igor I. Sikorsky

born 25th day of May, 1889, having fulfilled all the conditions required by the Fédération Aéronautique Internationale, is hereby brevetted as a Helicopter Pilot.

Dated December 10, 1940.

CONTEST BOARD

Chairman

Secretary

Signature of pilot:

National Aeronautics Association Helicopter Certificate Number One.

But the VS-300C could not meet the demands of the Army contract which called for the carriage of both a pilot and an observer. More changes!

The new model, the VS-300C-1 and its successor, the -2 had more powerful engines, improved controls and beefed-up structures and rotor systems. In mid-June, Lt. Col H. Franklin Gregory in charge of military helicopter development came to Bridgeport and stood close to Sikorsky as he slowly maneuvered the -2 a few inches above the ground. His assistant, a Lt. Haugen, also took the "course." Ground school completed, both the colonel and the lieutenant flew short flights and performed simple maneuvers. On October 9th, Lindbergh received Sikorsky's helicopter flight lessons and flew the aircraft. He commented that it was the first time in his life that he received flight instruction from an airborne aircraft while he was standing on the ground next to it.

The XR-4

Sikorsky submitted an upgraded design proposal to the Army, VS-316, and received the designation XR-4. (The XR-2 and XR-3 were autogyros produced by Kellett Autogiro Corporation.) Concurrent with the work on the government contract, Sikorsky lost engineering staff and floor space to the Vought operation. Vought was increasing production of its magnificent F4U Corsair and the OS2U Kingfisher and the Sikorsky helicopter staff were relocated to the end of the sheet metal department and you can imagine the distracting noise produced by the tin-bangers. The Sikorsky group moved out and leased a new factory building on South Avenue in Bridgeport.


The new factory in Bridgeport

The two seat XR-4 was rolled out on March 31, 1942. Flight testing followed and on April 20th, the Army demonstration flight occurred. The whole gamut of helicopter maneuvering was accomplished, including retrieval of people on the ground and autorotation landings in case of engine failure. The results satisfied the Army. Flight and speed, cross-county and altitude records were repeatedly set. On May 30th, the Army Material Command officially accepted the

XR-4 and a production contract followed.

The XR-4 made a five day delivery flight from Bridgeport to Dayton. Sikorsky is third from left. Orville Wright is immediately to his left. Pilot Les Morris is second from right.

Twenty-nine prototypes, the YR-4, were built, two going to the British as Hoverflys. The British experimented with their aircraft, landing them on improvised platforms on merchant ships.

At Wright Field in Dayton, Sikorsky shakes the hand of Lt Col Gregory as Orville Wright looks on.

The first mercy mission flown by a helicopter occurred on January 3rd, 1944. The *USS Turner's* magazines exploded, burned, and sank while she was anchored in the roadstead of New York harbor. Over 150 men were picked up by the Coast Guard and taken to Sandy Hook Hospital in New Jersey. The hospital supply system was overwhelmed and it ran out of blood plasma. Lt Comdr. Frank Erickson, a Coast Guard Academy graduate and Coast Guard Helicopter Pilot No. 1, picked up two cases of plasma from New York and, in foul weather which had grounded all other aircraft, delivered them to Sandy Hook. He flew an HSN-1, the Navy designation for the YR-4B and the flight was accomplished in 14 minutes, saving two hours of time and who knows how many Navy men's lives.

Frank Erickson and the pontoon equipped HSN-1

Erickson was a pioneer in the development of power hoists. On August 11th, 1944 Erickson demonstrated the device and on August 14th, used it to pick up a man from the water. Then on September 25th, Erickson made the first pick-up from a life raft. He continued to spearhead helicopter rescue methodology and worked with the Coast Guard and the Sikorsky and Brantley helicopter firms to extend the utility of the "whirly bird."

Erickson give Igor a lift.

The first combat rescue by a helicopter was carried out on 22-23 April, 1944. The U.S. First Air Commandos were in Burma supporting Orde Wingate's Chindit columns operating behind the

Japanese lines. Two helicopters were part of the Air Commando inventory. Lt Carter Harman, the 7th Army Air Force pilot to earn an helicopter rating, flew from his base in India so a site where an Army L-1 Vigilant carrying three wounded soldiers had crashed. This required a 500 mile trip, refueling as necessary, over a 5,000 foot mountain range and a landing in Japanese controlled territory in Burma.

Harman left rear with his crew and the YR-4B in Burma.

Harman then picked up one of the wounded Chindits and flew him to a sandbar about 10 miles away. A Stinson L-5 had landed there, bringing in fuel. The wounded soldier was transferred and flown out. Harman then repeated the trip and brought out a second soldier. The engine of the helicopter overheated so he stayed on the sandbar overnight to allow it to cool. In the morning Harman evacuated the remaining soldier and then the pilot of the Vigilant.

On November 29th, 1945, a violent storm broke the mooring lines holding Texaco Barge 397 from tanker which it had been servicing. The barge was driven onto Penfield Reef off Fairfield, Connecticut. Attempts to rescue the crew by boat failed. The weather was so bad that all aircraft were grounded. Flares fired by the crew were seen by shore dwellers someone thought to call the Sikorsky plant, about 10 miles away, and Jimmy Viner was notified.

Dmitri “Jimmy” Viner was Sikorsky's chief test pilot and had trained Lt. Harman to fly helicopters. He was Igor Sikorsky's nephew and as a teenager, was one of the original team which worked in the chicken house on Long Island from which Sikorsky launched his “New World” aviation career.

Viner and Capt. Jackson Beighle, the Army Air Force representative at the company, flew to the barge, hovered, and lowered a message bag. The barge captain informed them that the vessel was *in extremis* and likely to break up.

Viner and Beighle flew back to the plant where they grabbed an R-5 which had been used for experimental rescue work and was equipped with a powered hoist and harness. Returning to the barge, the dropped a note instructing the crew men to loop the harness under their arms and hold on to the overhead rope.

The first man was lifted aloft but there there was no way to get him into the cabin, even if there had been room. So they flew him to the beach and returned to get the captain. As they hoisted him up, the winch jammed and he was left dangling 30 feet below the helicopter. Nevertheless, they got him back to shore.

The R-5 lifts one of the crewmen off Texaco Barge 397.

After the war, Igor Sikorsky's design and flying duties were much reduced but he continued to serve as an advisor and provided visionary leadership. In 1955, Sikorsky conceived of a very large helicopter, a throw-back to his leadership in the creation of very large fixed wing aircraft. He imagined that the aircraft would be optimized to carry heavy and/or outsized loads, relatively simple to maintain, and with low production cost. The conceptual layout was a “stick-like” fuselage

with no cabin but with a configuration allowing large loads to fit underneath. The loads would be attached or suspended from or in a "recess" between the widely spread main landing gear, the crew stations and the tail rotor. The aircraft could be piloted from two positions, the normal forward station and an aft-facing cockpit fitted with a large transparent canopy from which the pilot could observe cargo and precisely position the aircraft for loading and discharging it. Finally, cowlings were eliminated which allowed easy access for maintenance and reduced weight and cost.

The prototype, the S-60, was piston powered. One example was built and it served well to improve the design and develop techniques for the handling of what was not normal cargo.

The single S-60 prototype for the S-64

The follow-up design, the S-64, incorporated nose mounted landing gear and most importantly, powerful turbine engines. The company dubbed her the "Skycrane." The US Army accepted the Skycrane and called her the CH-54 Tarhe. Over 100 were manufactured.

Igor Sikorsky with a model of the S-64

The Tarhe saw action in the Vietnam conflict. It retrieved downed aircraft, moved heavy artillery pieces, and transported troops in a specially designed cargo pod. It also served as a heavy bomber. The Tarhe would drop 15,000 pound "Daisy Cutter" bombs fitted with proximity fuses. With a blast radius of 5,000 feet, most of the surrounding trees were knocked down and a cleared landing zone for assault helicopters created.

CTNG Tarhe and its unique pod on outdoor storage at the New England Air Museum.

The restored Tarhe now on indoor display.

Tarhe hauling to Hueys in Vietnam

Tarhe bearing a BLU-82 "Daisy Cutter" The extension on the nose of the weapon is the "Daisy Cutter" fuse which makes the bomb detonate just above the ground.

Eventually, the type certificate, tooling and production rights were purchased by an Oregon company, Erickson Aircrane which renamed the

aircraft "Skycrane." Erickson not only operates the aircraft but manufactures needed parts and evolves upgrades to meet the needs of the timber harvesting and heavy construction industries. One option allows the Skycrane to fight forest fires. Erickson designed a tank to hold 2,600 gallons of fire retardant. The tank is equipped with a "snorkel" which can fill the tank in 45 seconds while hovering over a suitable body of water. Currently, Erickson has ten of the 14 S-64s on the U.S. registry and store about a dozen airframes.

Erickson S-64 and Snorkel

Erickson S-64 dropping five tons of fire retardant.

On October 25th, 1972, Igor Sikorsky penned his last letter which is a testament to his character. The letter responded to a report from the Flight Safety Foundation about the rescue of 400 people who had been trapped on the roof of a blazing 26 story building in Sao Paulo, Brazil. Twenty helicopters performed the rescues. Sikorsky wrote that

> *I have always believed that the helicopter would be an outstanding vehicle for the greatest variety of life-saving missions and now, near the close of my life, I have the satisfaction of knowing that this proved to be true.*

The next morning, Igor Sikorsky, inventor, engineer, test pilot, entrepreneur, and humanitarian went West.

Photo Sources: Sikorsky Archives, USAF, USCG
The official Sikorsky Archives:
http://www.sikorskyarchives.com/
is an excellent source of follow-up reading.

THE SIKORSKY FEDORA

No hard hat and flight suit for Sikorsky. He flew the test flights in sartorial elegance outfitted in vest, tie and fedora.

Now at Henry Ford's Museum in Dearborn, Michigan, the fedora was considered a lucky charm by helicopter pilots. Just touching the fedora would guarantee that the pilot would not be hurt flying a helicopter. Marine Corps pilots have been credited with starting this tradition. If they could wangle a trip to Bridgeport, they would ask if they might wear the fedora for a moment. Igor Sikorsky made certain that the hat was always available.

AVIATION CHRONOLOGY

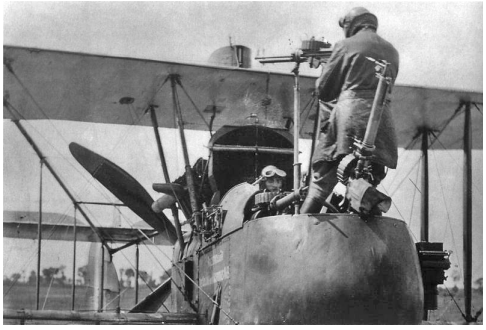
01 June, 1925-A car dealer covers himself in stamps worth $718 in a bid to be sent airmail from San Francisco to New York; the United States Post Office refuses to accept him.

1923 Air Mail Stamps

718 dollars will buy 17,232 twenty-four cent air mail stamps. The average skin area of a man is 2 square meters. How much of a man's body will

these stamps cover? The proof is left as an exercise for the student!

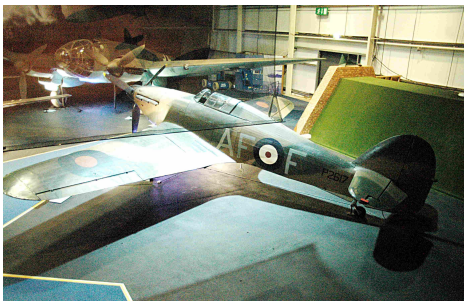
2 June 1912-The Lewis Gun is first tested on an aircraft by the US Army.



Nose, Overwing , and forward firing Lewis Guns on a Royal Aircraft Factory F.E.2d.

3 June 1936-The British Air Ministry awards a contract to Hawker for 600 "Hurricane Mk. I" fighters, the first of a new breed of high-speed, eight-gun interceptors for the RAF. This is the biggest peacetime order placed in Britain to date.

Mk 1 Hurricane at the RAF Museum, Hendon.

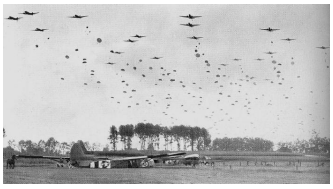


4 June 1942-Battle of Midway-Turning Point of the War in the Pacific. Douglas SBD Dauntless dive bombers off the USS carriers *Hornet, Yorktown, and Enterprise* sink the Imperial Japanese Navy carriers S*oryu, Hiryu, Akagi, and Kaga*.

SBD-3 at the Museum of Naval Aviation.

5 June 1989-The Antonov An-225 "Mriya" flies in to Le Bourget for the 1989 Paris Air Show, carrying the Soviet Shuttle "Buran." The All-Up take-off weight is a record 1,234,600 pounds!

6 June 1944-D Day. A fleet of aircraft, nine planes wide and 200 miles long, carries American and British paratrooper and glider troops across the English Channel to Normandy.



07 June, 1936 - USAAC Maj. Ira C. Eaker flies a Boeing P-12 from New York to Los Angeles completing the first transcontinental blind flight.

P-12E Diorama at the Museum of the USAF

08 June, 1989-During a demonstration at the Paris Air Show, a MiG-29 takes a bird strike. The pilot, Anatoli Kvochur, gets the aircraft clear of the crowd and ejects at 400 feet