Training Command Aircraft

The Aeromaine 39B was used extensively as a training aircraft during WW I. It also contributed to the advancement of Naval Aviation as a result of the landing experiments it was involved in on USS Langley (CV-1) in 1922.

By Roy Grossnick

The age-old controversy about which came first, the chicken or the egg, might also raise the question, "Did the Navy have airplanes first or pilots?" The answer is easy. The Navy had a pilot before it accepted its first airplane.

On December 23, 1910, Lieutenant T. G. Ellyson was ordered to report to the Glenn Curtiss Aviation Camp for flight training. On May 8, 1911, the Navy ordered its first aircraft, a Curtiss pusher. Designated the A-1 *Triad,* the aircraft was flown by Lt. Ellyson on July 1, 1911. The A-1 *Triad* was a general purpose aircraft that performed a variety of missions/functions, including training. It was the Navy's first trainer — an experimental and general purpose aircraft — in a long line of training aircraft.

During Naval Aviation's infancy, many of the planes served both as training and experimental aircraft, in addition to performing the mission for which they were designed and built. Perhaps one of the better known early planes used as a trainer was the Curtiss F-boat. It evolved from an early Curtiss pusher flying boat and was the first flying boat received by the Navy. The Curtiss F-boat, also known as the C-1 through C-5, or AB-1 through AB-5, had many variations within its model designation. The aircraft had a wood hull with wood and fabric wings supported by a 100-hp OXX Curtiss engine. The student and the instructor sat side by side in a single cockpit.

The F-boat was tested at Hammondsport, N.Y., by Lt. Ellyson on November 30, 1912. It was put to immediate use as a trainer and also in experimental testing. On December 17, 1912, Lt. Ellyson, flying the F-boat, made a successful catapult launch at the Washington Navy Yard. This was followed by operational experiments at Guantanamo Bay, Cuba, during fleet maneuvers in the early part of 1913...including fleet scouting, exercises in spotting mines and submerged submarines, bombing, aerial photography and wireless transmission.

The F-boat became one of the early training planes at Pensacola, Fla., when the first aviation flying school was established there on January 20, 1914. Shortly after, two aviation detachments were ordered to sail from Pensacola in response to the crisis in Mexico. On April 25, 1914, Lieutenant Junior Grade P. N. L. Bellinger flew the first U.S. naval aircraft against another country — the AB-3, a Curtiss F-boat. The flight was an observation mission to reconnoiter the city of Veracruz, Mexico, and to search for mines in the harbor. Bellinger made another flight in the AB-3 on April 28 to photograph the harbor. After the action at Veracruz, the aviation detachments, which included not only qualified pilots and aviation support personnel but also student pilots, returned to Pensacola to resume training.

In the early days when the number of planes was limited, student pilots and training planes played an active role in operational commitments for the fleet. The triple role of the F-boat in training, operational missions and experimental flying continued after the historic mission in Veracruz. After a series of successful launchings of the AB-2 flying boat from a barge in Pensacola in April 1915, the decision was made to install catapults aboard ship.

On November 5, 1915, Lieutenant Commander H. C. Mustin, in an AB-2, made the first catapult launch from a ship, flying off the stern of USS *North Carolina* in Pensacola Bay.

Further catapult tests were conducted on *North Carolina,* culminating in the final calibration flight by Lieutenant G. deC. Chevalier on July 12, 1916, in the AB-3 when the ship was underway in Pensacola Bay. Thus, *North Carolina* became the first U.S. ship equipped to carry and operate aircraft, opening up a new frontier for Naval Aviation and naval warfare.

The Curtiss F-boat continued to demonstrate the adaptability and practical use of the early training aircraft until it began to be replaced by the Curtiss MF models towards the close of WW I.

In 1916, the Navy issued specifications for a training aircraft capable of land or sea operations. The Aeromarine Plane and Motor Company submitted a twin-pontoon design which could be converted to a landplane — the Aeromarine 39A, the first of which were received by the Navy in 1917. The 39A was a wood and fabric biplane powered by a 100-hp Hall-Scott A-7A engine. To meet Navy specifications, the wing span was enlarged to increase the lifting power necessary for water takeoffs. The upper wing span was 47 feet and the lower wing span 36 feet.

Other modifications were made and the aircraft was designated Aeromarine 39B. It was similar to the 39A except that it was fitted with a 100-hp Curtiss OXX-6 engine, used a single-pontoon design with two supporting wing floats and had the vertical tail enlarged with a fixed fin. The additions made the Aeromarine 39B a stable and reliable platform. It was used extensively as a training plane during WW I but its most significant contribution lay in the experiments it was involved with in 1922.

Slow speed control and landing characteristics made the Aeromarine 39B an excellent plane for the first carrier landing trials. It was fitted with a device similar to a modern tail hook, designed to catch the cross-deck arresting cables and bring the plane to a stop. Alignment hooks attached to the undercarriage assisted the plane in its alignment with longitudinal wires on the deck, and kept it from veering to the right or left when it landed.

On October 26, 1922, Lt.Cdr. G. deC. Chevalier, flying an Aeromarine 39B, made the first landing aboard USS *Langley* while she was underway. Carrier landing experiments with the Aeromarine 39B continued through the remainder of 1922 and into 1923. In February 1923, a squadron of Aeromarine 39Bs completed a series of tests showing that successive carrier landings could be accomplished in a short period of time and that squadrons could successfully operate aboard a carrier. This was one of the first steps in the development of the modern carrier air wing.

In 1922, flight deck trials in carrier takeoffs were also going on, using VE-7s built by Lewis and Vought Corporation, which had originally been developed for use in WW I as advanced trainers. However the Curtiss JN-4H, a modified JN-4D primary trainer with a 150-hp Wright-Hispano engine, became the advanced trainer instead of the VE-7 which was not produced until after the war.

The VE-7, consequently, did not go into production until after WW I ended. While it was procured as a two-seat trainer, it was used primarily as a single-seat fighter and observation plane. On October 17, 1922, Lieutenant V.C. Griffin, in a Vought VE-7SF, completed the first takeoff from the flight deck of a U.S. carrier, *Langley.* The VE-7 was also used later in carrier landing experiments

along with the Aeromarine 39B. Thus, the first flight operations from a U.S. carrier were conducted by training aircraft.

The Curtiss JN aircraft series probably represented the best known American aircraft from the WW I era. They were used as trainers by the U.S. Navy, U.S. Army and Royal Canadian Air Force during the war. However, their fame does not rest on their use as military training aircraft. The Curtiss JN series is known throughout the world as the *Jenny.* They became famous after the war when they were placed on the market as cheap, war-surplus planes and were purchased by avid aviators. They were flown by early barnstorming groups that toured the country, exposing the public to the thrills of flying. Many a budding aviator received his or her first flight in a *Jenny.*

The *Jenny* was a structure of wood and cloth held together by a maze of wire. Without the wire, the *Jenny* would never have gotten off the ground. It was initially powered by a 90-hp Curtiss engine but the later series carried the 150-hp Wright-Hispano engine.

On December 12, 1918, an Army JN-4 operated by Lieutenant A.W. Redfield, USA, was used in an experiment to determine the feasibility of carrying an aircraft aboard airships. The JN-4 was lifted by the C-1 airship, piloted by Lieutenant George Crompton, USN, to an altitude of 2,500 feet and released for a free flight back to the ground.

Procurement of the JN series continued after WW I for use as landplane trainers by the Navy and Marine Corps. It is estimated that 6,759 of the JN series were produced.

The Curtiss N-9, evolved from the JN series, and was probably the most famous Navy plane of its era. It was developed as a seaplane trainer during WW I and was used well beyond the postwar years. During its lifespan, the N-9 achieved many firsts and was involved in a variety of experiments.

The N-9 was the Navy's first truly satisfactory training plane — the first naval aircraft developed on the basis of wind tunnel data, accumulated in tests on the JN-2 conducted by Naval Constructor/Aerodynamicist J. C. Hunsaker.

The Navy received its first N-9 in the latter part of 1916 and during WW I N-9s comprised roughly 40 percent of all Navy trainers. As the major training plane, it was undoubtedly involved in training the more than 2,500 aviators who received their Navy wings during the war.

The N-9 was employed in experiments in 1916-17 to put Naval Aviation aboard ships. Aircraft catapults were installed on several cruisers, and the N-9 was used to develop operating techniques for launching aircraft from ships. The tests were designed to show the reliability of the equipment involved in operating aircraft from ships. It was not until after WW I that Naval Constructor/Aerodynamicist Holden C. Richardson developed the compressed air turntable catapult and successfully tested it with an N-9 on October 26, 1921, which led to the permanent installation of catapults aboard battleships.

On February 13, 1917, Captain Francis T. Evans, USMC, performed the first loop and spin recovery with an N-9 seaplane. An earlier experiment with the N-9 did not fare as well. One of the N-9s had been delivered to the Washington Navy Yard for use in bomb tests at Indian Head, Md. During a test on November 6, 1916, Lieutenants C. K. Bronson and Luther Welch were killed when a bomb, being launched by hand, exploded prematurely.

Several N-9s were used as test vehicles by the Bureau of Ordnance. On October 17, 1916, a pilotless N-9, converted to an automatic flying machine, was successfully launched. The plane flew the prescribed course but failed to land at a preset range. The last entry in this experiment states, "The plane was last seen over the Bay Shore Air Station at an altitude of 4,000 feet, flying straight to eastward."

Eleven years later, on September 15, 1929, a pilotless N-9 equipped with radio control was successfully launched on a 40-minute flight and brought back for a landing. It sustained damage on landing and sank offshore. However, this test with the N-9 proved the capability of radio-controlled aircraft and was the beginning of a significant Naval Aviation component, the guided missile.

The Navy acquired 560 N-9s the largest number of production model aircraft built for the Navy, with the exception of the Curtiss HS-2L flying boat. It was not until the buildup before WW II that the Navy procured a larger number of an aircraft model, the N3N, another trainer. N-9s continued to be used as trainers in the postwar period until they began to be slowly replaced by the Boeing NB-1s and 2s, and were finally phased out between 1927 and 1926. The N-9 marked the spirit of development in the Navy and contributed to the major mission for which it was designed, the training of Naval Aviators.

A variety of training aircraft followed the phaseout of the WW I-era planes.

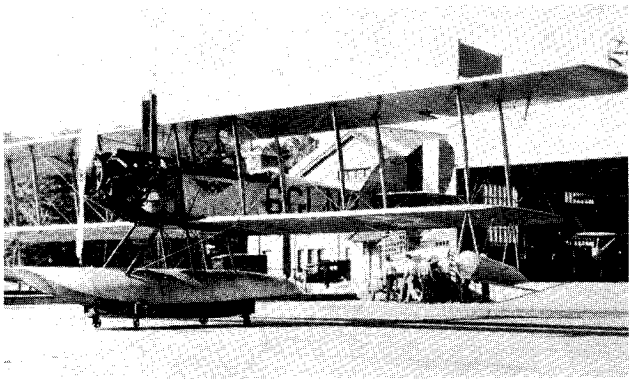
On December 16, 1925, competitive trials for land, sea gunnery and training planes were completed at NAS Anacostia, leading to the procurement of the Consolidated NY series aircraft. The NY was a variant of an aircraft designed for the Army as a trainer, and the arrival of the NY-1 in 1926 was the Navy's first use of aircraft built by Consolidated.

The NYs were used as the standard primary trainers and also as gunnery trainers. They were large biplanes capable of being converted for either land or seaplane service. During the late 1920s and early 1930s the NY was the major aircraft used for the primary training of regular Navy and Marine Corps pilots, as well as the reserves. They remained the primary trainers until replaced by the N3N and N2S series in the mid-1930s. The last NY left naval service in 1939.

The development of the N3N *Yellow Peril* series in 1935 was the beginning of one of the Navy's most famous training aircraft. The Bureau of Aeronautics submitted a request to the Naval Aircraft Factory (NAF) at Philadelphia on February 9, 1935, for a training plane, specifying that it be a biplane with a tractor engine-driven propeller. The XN3N-1 was the preliminary design developed by NAF's engineering division and during tests it was found to have some stability and control problems which led to changes in the tail surfaces and the fuselage. The engine was moved forward and the tail surfaces moved aft to help correct the flight characteristics. Flight tests of the modified version were concluded at NAS Pensacola on March 16, 1936, and, that summer, testing of the first production N3N-1 was successfully completed at NAS Anacostia. The first production model N3Ns were equipped with floats and replaced the Consolidated NY *Yellow Perils.*

The N3N-1 was an all-metal structure with fabric covering, powered by a Wright Whirlwind R-790 engine, rated at 220 hp. The plane was designed to be operated with wheel landing gear or as a

The NY was the major aircraft used for primary training in the late 1920s and early 1930s. The NY shown here is carrying Great Lakes markings.



The N-9 was used in a variety of roles and made major contributions to the advancement of Naval Aviation.

The JN was used as a trainer during WW I. It gained world wide recognition during the post-WW I era as a barnstorming aircraft.