

ATC # 743
(6-3-41)
STEARMAN-BOEING, A75L3 (A75N1).



A75L3 was basis for PT-13 "Kaydet."

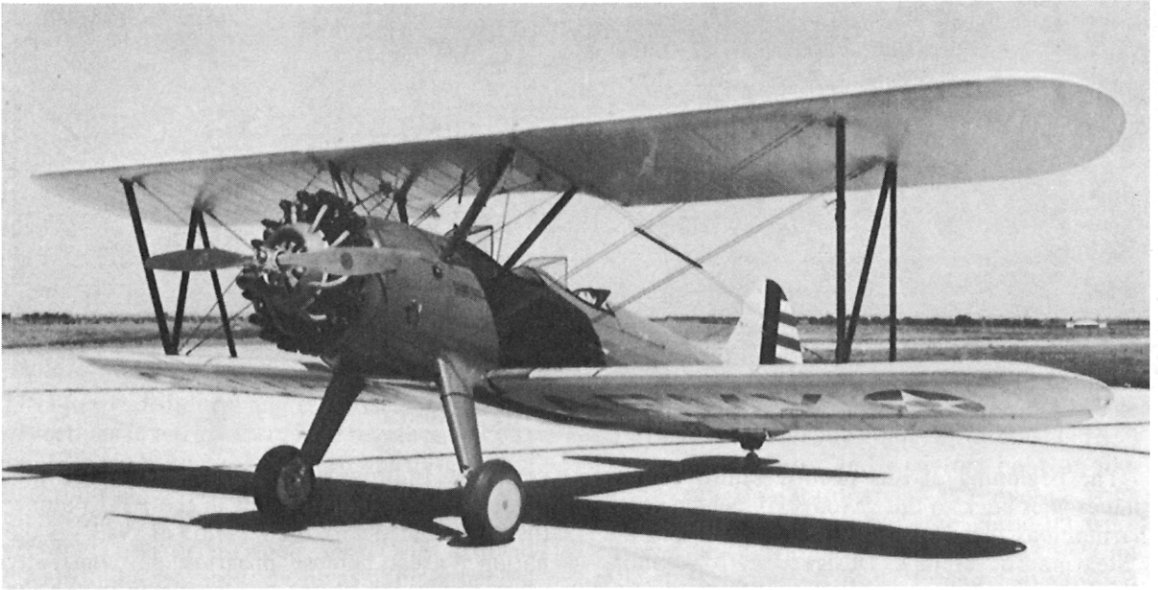
The beginning of this prolific family of airplanes goes back to the "Model 70" which was a harmonious blend of the "Boeing 203" and the "Stearman 6" biplane. Designed by Mac Short and Lloyd Stearman primarily as a training airplane for the U.S. Army Air Corps (USAAC), the Model 70 became the prototype for a long series of biplane trainers; the one and only example of the "70" as powered with a 200 h.p. Lycoming engine was tested by the USAAC in 1933. Flight tests of the "70" were then conducted by the U.S. Navy air-arm in 1934, and a contract was given for 61 of the airplanes as the NS-1, a slightly modified version which became the "Model 73." An "X75" was sent to the Army for test in 1934, but the Air Corps was not yet ready for procurement. Meanwhile, several of the "73" (the last design by Lloyd Stearman) were produced for the Philippines as the 73L3 and the A73L3; other versions were delivered to Cuba. The "X75" tests finally convinced the USAAC to place an order in 1936 for 26 of the trainers as the PT-13; these were powered with 215 h.p. Lycoming engines. The PT-13A was similar, but had a full electrical system and other improvements; the PT-13B had added power and

yet more improvements. More than 1000 airplanes were eventually built in the PT-13 alone; the series ended with the PT-13D of 1943. As the nation's great defense program got underway more and more orders were pouring in for the "Stearman-Boeing (Kaydet) trainer; in answer the PT-17 was introduced with the 220 h.p. Continental engine, and nearly 3000 of these were delivered to the USAAC during 1940-43. This version was also known as the N2S-1 and N2S-4 in the U.S. Navy. By late 1940 "Stearman-Boeing" had a 5 million dollar contract, and they were building one airplane every 3 hours! Because certain engines were being used up faster than they could be made, it was necessary to select alternate engine installations for the "Kaydet"; as powered with the 225 h.p. Jacobs engine some 150 were built as the PT-18. As requirements for training airplanes became greater and greater the Stearman-Boeing "Kaydet" was the first trainer to be completely standardized for both the Army and the Navy; well over 10,000 of the "Kaydet" were built in all. While this approval (ATC # 743) is mainly concerned with the "Model A75L3" and the "Model A75N1," it seemed necessary to touch on the eventual

development of all these related airplanes. The A75L3 was practically identical to the PT-13; as powered with a 225 h.p. Lycoming engine some 43 examples were built in 1940-41. Many were delivered to Parks Air College which was operating under the CPTP program. As for the A75N1 this version was identical to the PT-17; as powered with the 220 h.p. Continental engine some 18 airplanes were delivered to Peru in 1942. Production of the "Kaydet" finally ended in 1944.

All the airplanes in this series were open cockpit biplanes with seating arranged for 2 in tandem; an airplane that trained more than 60,000 pilots. The basic airframe was more or less the same for all, but the various engines installed did impart a slight difference in personalities. As to the airplane itself, it was a com-

bination of outstanding qualities from 2 different airplane designs of previous years; this blend would sometimes lift a man to heights of happiness, and at other times it would scare the hell out of him! The "Stearman 75" was designed to train pilots, and it did that without question; these were the "Jenny" airplanes of World War 2. As powered with either the Lycoming or the Continental engine the so-called "Stearman" in its various versions, be it the A75L3 (PT-13) or the A75N1 (PT-17), was a big demanding brute that wouldn't stand for bald-faced ignorance, or repeated indifference. But, if you paid attention it was on your side all the way. Its performance as a trainer was more than adequate, and it was tough enough to absorb an awful lot of punishment; it was red-lined (never exceed) at 186 m.p.h.! It was not all that easy to fly, and it took



PT-13A in U.S. Army Air Corps.



Navy N2S-4 same as PT-17.

a little doing to get onto it, but if the student learned to fly it well it was a rewarding experience for both plane and pilot. Because so many of these airplanes were built in all the various Army, Navy, and export versions, there are still quite a few flying. For a time the "Stearman" was just about the best machine one could get for crop-dusting, a 20-year career proved that, but now they are just about retired from all this; those you do see are either thundering across the skies with a trail of smoke in aerobatics, or in the lavish care of some young sportsman-pilot. The "Stearman" two-holer still holds an eminent place in civil aviation; a fitting retirement for such an outstanding airplane. The type certificate for the A75L3 (A75N1) series was first issued 6-3-41 and some 60 or more of these were mfgd. for civil and export use by the Stearman Aircraft Div. of the Boeing Airplane Co. at Wichita, Kan. In all the various versions that stemmed from the classic "Model 75" there must have been well over 10,000 airplanes built. J. E. Schaefer was V.P. & gen. mgr.; Harold W. Zipp was chf. engr. after Mac Short had left for Lockheed; H. F. Brown was plant mgr.; and David P. Levy was chf. pilot. Stearman Aircraft became the Boeing-Wichita Div. in 1939.

Listed below are specifications and performance data for the Stearman-Boeing "Kaydet" model A75L3 as powered with 9 cyl. Lycoming R-680-B4C or -B4D engine rated 225 h.p. at 2100 r.p.m. at SL; length overall 24'10"; height overall 9'4"; wingspan upper 32'2"; wingspan

lower 31'2"; wing chord upper & lower 60"; total wing area 297.6 sq. ft.; airfoil NACA-2213; wt. empty 1997 lbs.; useful load 689 lbs.; payload with 46 gal. fuel 210 lbs. (2 occupants at 170 lbs. each & 2 parachutes); bag. allow. to 60 lbs.; gross wt. 2686 lbs.; max. speed 124 at SL; cruising speed (.75 power) 103 at SL; landing (stall) speed 50; takeoff run 475 ft.; landing run (with brakes) 435 ft.; climb 825 ft. first min. at SL; ser. ceiling 13,200 ft.; gas cap. 46 gal.; oil cap. 4.4 gal.; cruising range (.75 power) at 14 gal. per hour 360 miles; price from \$8750 at factory; prices for the "75" varied from \$7713 to \$10,412 depending on engine and equipment. The E75 (similar to A75N1) was 2098 lbs. empty, useful load was 712 lbs., and gross wt. was 2810 lbs. for slightly less performance.

The heavy duty fuselage framework was built up of welded chrome-moly steel tubing, faired to a rounded shape with dural metal fairing strips, then fabric covered. The open cockpits were rather large to accommodate pilots with heavy clothing and parachutes, and were fairly well protected by large built-up windshields. The bucket-type seats were adjustable, and dual stick-type controls were provided; cockpit and engine covers were standard equipment. There were just about 2 of everything in each cockpit, or placed as to be accessible to either occupant. The robust wing panels were built up of solid spruce spar beams and spruce & plywood truss-type wing ribs; the leading edges were covered with dural metal sheet and the completed



PT-17 was "Kaydet" with Continental engine.



Navy N2S-5 same as PT-13D.



PT-27 with winter enclosure—300 to Canada.

framework was covered in fabric. As spruce became scarce, other woods including fir were being used for spar beams. Interplane struts (17ST) & interplane bracing was all of heavy-gauge material for extra strength. A “stall strip” was on leading edge of the upper wing (to make it stall first), and ailerons were on the bottom panels. The center-section panel was fitted with 2 gravity-feed fuel tanks; fuel gauges were visible from either cockpit. The cantilever landing gear of 77 in. tread used “Aerol” or Bendix shock struts, and 24” wheels were fitted with hydraulic brakes; a parking brake was also provided. The full-swivel tail wheel had fore-and-aft lock, and was also steerable. The fabric-covered tail group was built up of welded chrome-moly steel tubing with leading edges formed of dural metal sheet; the elevators were fitted with adjustable trim tabs. One aileron and the rudder had fixed trim tabs adj. on the ground only. In most cases, the

airplane could be flown solo from either seat. The basic airframe was the same for all models, but there was slight variation in minor structure and the equipment included. A Hamilton-Standard metal prop, exhaust collector ring, carburetor heater, air cleaner, normal set of engine & flight instruments, hand-crank inertia-type engine starter, battery, clock, airspeed ind., compass, fuel gauges, fire extinguisher bottle, map cases, shoulder harness, seat belts, and first aid kit were also standard equipment. A full electrical system and military gear were optional.

A Group 2 approval was issued 6-24-39 for the A75L3; the Model 75 was a PT-13; the A75 was the PT-13A, B, C; B75 was the N2S-2; the E75 was a PT-13D & N2S-5; A75J1 was the PT-18; A75N1 was PT-17, PT-17A, N2S-1 & N2S-4; B75N1 was the N2S-3, and D75N1 was the PT-27; various Lycoming, Continental, and Jacobs engines were used.