



The prototype F.5 of 1918. It was put into production with a number of F.3 features to facilitate manufacture and its performance suffered in consequence.

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THE FELIXSTOWE FLYING-BOATS

THE last of John Porte's twin-engined flying boats was the F.5. No doubt it was intended to be an improvement upon the F.3; and, indeed, the hull of the prototype F.5 was regarded as being second in quality only to that of the larger Felixstowe Fury. Structurally it was identical with its predecessors, and the hull was of characteristic Porte form, with side fins running along two-thirds of its length. The top decking of the hull was deeper than on any of the earlier Felixstowe boats; and the pilots sat side-by-side in an open cockpit. The usual double-diagonal planking was used, and behind the wings the hull sides were fabric-covered, with a mahogany washboard covering the lower portions.

A new wing structure was designed for the F.5: the span was slightly greater than that of the F.3 and a completely new section was used. The ailerons were of constant chord, projected behind the trailing edge of the mainplane, and had horn balances, whereas those of the F.2A and F.3 had been of the inversely-tapered shape originated on the Curtiss boats. The tail unit looked similar to that of the F.2A and F.3, but the broad-chord tailplane projected some way in front of the leading edge of the fin, and the rudder had a balance area forward of its axis and inset into the fin. The engines were two Rolls-Royce Eagle VIII's; and the aircraft bore the official serial number N.90.

On test, N.90 performed well. When it underwent its official trials in May 1918 it was tested at four different loaded weights: even in the overload condition (a.u.w. 13,306 lb) its speed was 102 m.p.h. at 2,000ft and its ceiling 9,200ft. The F.3's speed at a comparable weight was only 90 m.p.h. and its service ceiling 6,000ft.

In view of Porte's own misgivings about the F.3 and the obvious superiority of the F.5, it might have been natural for the F.3 to be superseded in production by the later type. Unfortunately, that did not happen. The F.3 was in production on a relatively wide scale, and the Ministry of Munitions was opposed to the introduction of a completely new type with the inevitable need for new drawings, jigs and templates. The F.5 design was therefore extensively modified to incorporate as many F.3 components as possible.

The modification resulted in an aircraft which was not wholly satisfactory. The hull was an attempt to approximate closely to that of N.90 while using as many F.3 parts as possible. It was covered completely with plywood, with the exception of the top decking: this covering, although structurally and operationally desirable, added considerably to the weight of the hull. The basic structure had also been made heavier by the modifications necessitated by the use of F.3 fittings.

The wing structure was that of the F.3, with R.A.F.14 aerofoil section. The wings were modified to facilitate production; adapters were fitted to enable the interplane bracing to be made by either cables or Rafwires; and permanent slinging gear was incorporated. The ailerons, of constant chord and horn-balanced, were similar in appearance to those of N.90; and the tail unit had the broad-chord tailplane and balanced rudder which had appeared on the true F.5. Later F.5s had horn-balanced elevators.

The designation F.5 was retained for the production aircraft, which, thanks to all the modifications, weighed over 1,000 lb more than N.90. Official test figures show that the performance of the production F.5 was somewhat inferior to that of the F.3.

The F.5s came too late to see operational use during the war, but the type was adopted as the R.A.F.'s standard flying-boat in the years immediately following the Armistice. When the

war ended, contracts for flying-boats were either cancelled or substantially reduced; many F.5s were put into store, later to be withdrawn and reconditioned for Service use; but the numbers needed by the post-war R.A.F. were few.

Production of the F.5 was undertaken in Canada by Canadian Aeroplanes, Ltd., of Toronto, a Government-sponsored undertaking which had been organized late in 1916 as a source of aircraft supply for the Allies. These F.5s were ordered by the U.S. Air Board, and 30 were delivered in seven months. By the time of the Armistice the Canadian firm were building F.5s at the rate of eight per month. These machines were fitted with Liberty 12 engines in place of the Rolls-Royce Eagles of the standard F.5.

A version of the F.5 was also produced in America under the designation F-5L. There could have been few finer tributes to John Porte's admirable work than the fact that the type of hull construction which he had devised was adopted in the country whence he had obtained the aircraft that had been the starting point of his experiments. The Curtiss company were quick to appreciate the value of the Porte hull, for their H.16 flying-boat had a hull built in accordance with Porte's principles. The H.16 was supplied in some numbers to Britain in 1918.

The F-5L was built by the U.S. Naval Aircraft Factory at Philadelphia, and differed in detail from the British-built F.5. In the hull, the cross-members abaft the wings were made of steel tubing; the longerons were of ash, and the double planking consisted of an inner ply of Port Orford cedar under a skin of Spanish cedar. Liberty engines were, of course, fitted. The armament of the F-5L could consist of a Davis quick-firing gun and as many as eleven Lewis guns; up to 1,000 lb of bombs could be carried; and normal maximum endurance was ten hours. A contemporary American description of the F-5L gave these statistics:—

"Six thousand distinct pieces of wood go into the making of this machine, and to hold these in place requires 50,000 wood screws and 46,000 nails, braces and tacks. In the hull 600 sq ft of veneer and 4,500 sq ft of cotton fabric are used. The 250 pieces of tubing aggregate 1,000ft in length and to adjust the tension on the 5,000ft of wire and cable, 500 turnbuckles are required; about 1,500 each of bolts, nuts and washers are needed to hold in place the 1,000 metal fittings."

Like the F.5 in Britain, the F-5L arrived too late to be used operationally; but it was adopted by the U.S. Navy as its standard flying-boat and gave years of good service, latterly with a greatly enlarged fin and horn-balanced rudder. It was used by both the Atlantic and Pacific fleets for detection duty.

Before the war ended, John Porte produced another flying-boat at Felixstowe. This was a vast triplane, the largest British aeroplane of its day, powered by five Rolls-Royce Eagle engines. To all at Felixstowe this aircraft was known as the Porte Super Baby, but, having arrived in time to benefit from the official scheme of aircraft nomenclature which was introduced in 1918, it was officially named the Felixstowe Fury.

The Fury was not the first triplane flying-boat to appear at Felixstowe: a large Curtiss triplane had been assembled and flown there some time before. The big Curtiss was originally powered by four 250 h.p. Curtiss engines, but at Felixstowe