

Flying-boat comeback?

Japan's Shin Meiwa UF-XS

by John W. R. Taylor

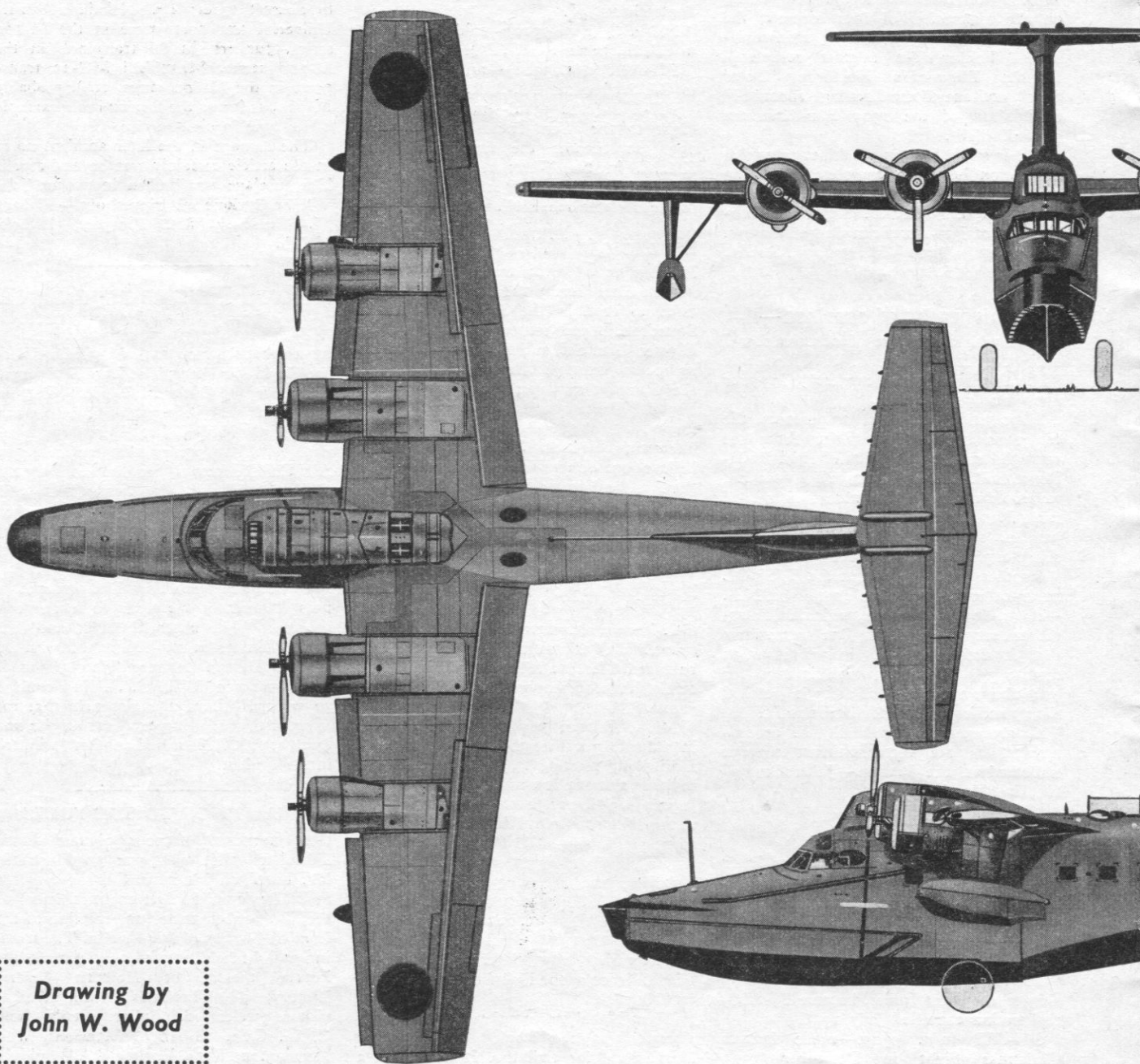


IN THE AIR FORCES of the West the maritime reconnaissance flying-boat has been superseded by landplanes almost to the point of extinction. In the East it is undergoing a rebirth.

Already, Soviet naval air units have in service the huge, fast and formidable twin-jet Beriev M-10, credited with an official speed record of 566.69 m.p.h. and the ability to lift a payload of nearly 15 tons to a height of 39,000 ft. Still further east, the Japanese Maritime Self-Defence Force has under way a development programme for a turboprop flying-boat that will make use of the most up-to-date aerodynamic and hydrodynamic advances to combine good open-ocean capability with STOL and high in-flight performance.

The manufacturer entrusted with the development of this aircraft is Shin Meiwa Industry Co. Ltd. The name probably means little to the average air historian and enthusiast, for Shin Meiwa has devoted most of its effort in recent years to aircraft overhaul and the production of components for Japanese-built P-2H Neptunes and the YS-11 turboprop transport. However, its earlier name was Kawanishi Aircraft Company and as such it was responsible for the well-remembered H6K ("Mavis") and H8K2 ("Emily") four-engined flying-boats of World War II.

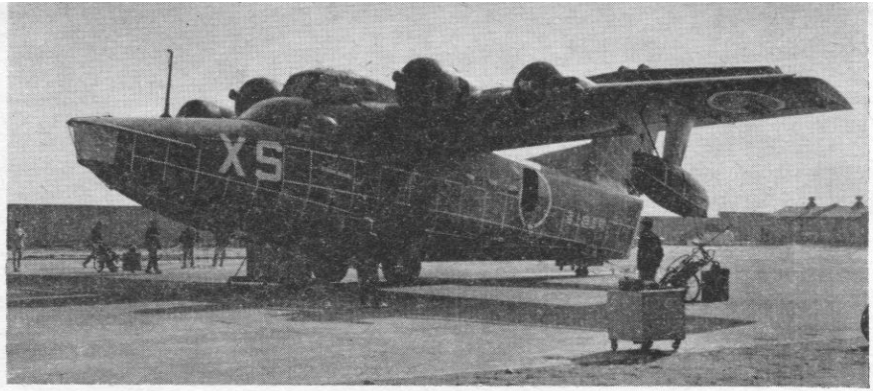
"Emily" was one of the outstanding creations of Japan's aircraft industry. Her hydrodynamic qualities were unrivalled among her contemporaries, as was her



Drawing by
John W. Wood

maximum speed of 290 m.p.h. With a defensive armament of five 20-mm. cannon and four machine-guns, and a payload of bombs or torpedoes, she was not a lady to be trifled with. As a transport she could carry up to sixty-four passengers.

With such a background, Shin Meiwa can be expected to produce a fine flying-boat to meet the new requirements of the JMSDF. At the moment we know very little about the aircraft except that it will be powered by four 2,850-s.h.p. General Electric T64 turboprops and will have a pair of T58 shaft-turbines to operate a boundary-layer control system. Detail design is said to be nearing completion, with construction of four prototypes planned to begin next year.



We can gain a general impression of what the new flying-boat may be like by studying a remarkable little research aircraft that Shin Meiwa has built to solve some of the aerodynamic and hydrodynamic problems associated with the project.

Known as the UF-XS, this research flying-boat began life as a Grumman UF-1 Albatross amphibian. A glance at John Wood's drawings will be sufficient to show that little of the former outline remains, although the original basic structure is still there.

The intention was to produce a dynamically similar flying scale "model" of the projected four-turboprop military boat. As a first step, therefore, a pair of 600-h.p. Pratt & Whitney R-1340 radial engines were added outboard of the standard 1,425-h.p. Wright R-1820s. The structure was already stressed to take large underwing drop tanks at these points, so installation of the additional engines necessitated only minor modifications to the wings, which retain their normal span of 80 ft. 0½ in. The standard wingtip floats are also retained, but now have a bracing strut inboard to cater for rough-water operation.

Unlike the wings, the hull has been completely restyled on more modern lines, with an increased length-to-beam ratio, deeper afterbody, single step, anti-spray strakes on the nose and other changes. The original tail surfaces have given way to a new T-structure, with the tail at the top of a large swept fin and rudder.

As a result of these changes, the overall length is increased by 23 ft. to 83 ft. 8 in. Height is increased by 8½ in., to 24 ft. 11½ in.—but this figure is slightly mis-

leading as the UF-XS does not have the retractable wheels of the UF-1 and the height is therefore measured from the bottom of the keel.

A conspicuous innovation is the construction of a humped fairing above the fuselage aft of the flight deck. This houses two 1,000-s.h.p. General Electric T58 shaft-turbines to operate the aircraft's boundary-layer control system. A further contribution to shortened take-off and landing runs is made by the large full-span leading-edge slats which have replaced the original outer wing fixed slots.

To permit fuller visual observation during tests on the water and in flight, a blister window has been added on each side of the fuselage aft of the normal flight deck windows, together with two astro-domes above the hull immediately aft of the wing.

In its present form, the UF-XS has a basic operating weight of 29,540 lb. and maximum take-off weight of 35,495 lb., compared with 27,025 lb. for the original UF-1. No details of its performance have been released, but an extensive test programme has been under way since 20th December 1962, when the UF-XS made its first flight.

The first phase of testing was done from Shin Meiwa's Konan works, on the calm waters of the Inland Sea, and was completed on 5th December 1963. Later that month, the aircraft was flown to the Omura base of the JMSDF for high-sea trials. The results may well lend weight to the arguments of those dedicated flying-boat protagonists who claim that the land-based maritime patrol aircraft is a poor device by comparison with its versatile web-footed counterpart.

