



SUPER FRELON

Western Europe's Most Powerful Helicopter

By JAMES HAY STEVENS, AFRAeS

FRANCE'S largest aircraft company, Sud-Aviation, has built and exported more helicopters than any other European manufacturer. Their rotary-wing activities go back to the period immediately after the war with the SE.3000 (the Aéro Sud-Est adaptation of the Focke-Wulf monster) and the Sud-Ouest Ariel. During the following years numerous layouts were tried before the SE.3130 Alouette II and SO.1221 Djinn hit the jackpot. Combined sales of these pioneer turbine-engined machines now total something over a thousand. During recent years Sud-Aviation have also built a large number of Sikorsky S-58/H-34 helicopters under licence for the French forces, and have designed and flown the H-34 Bi-Bastan fitted with twin 950 s.h.p. Turboméca Bastan VI turbines. Largest of the Sud range of helicopters is the SA.3210 Super Frelon, of which the first preproduction example flew last January 31—two months ahead of schedule. Now in the design stage is the SA.330, a multi-purpose military helicopter in the S-61 or Wessex class.

Sud Aviation's helicopter activities, which have for several years been at the La Courneuve factory near Paris, are now being concentrated at Marignane, near Marseilles. This division numbers 5,400 under the commercial direction of Gérard Pértica, with Francois L. Legrand as engineering director responsible directly to Pierre Satre. There are two chief engineers: on the design side René Mouillé, who still works at La Courneuve; and for production Jean Poitou, who is well known to visitors to Marignane, where he has designed and produced many types.

This team's most ambitious programme, the SA.3210 was derived from the SA.3200 Frelon (Hornet), of which there were two prototypes, the first flying on June 10, 1959. This aircraft was designed to meet the heavy-helicopter needs of the French and Federal German navies. It was a smaller and lighter machine than the present one, being powered by three 750/800 s.h.p. Turmo IIIB engines driving four-bladed main and tail rotors. The fuselage was stumper and there were large fuel bulges along each side intended to serve also as floats.

In the usual way of military specifications, the customer requirements were revised and the Super Frelon of today is significantly larger and more powerful. The distinctive three-engine layout—two in front and one behind the main rotor—has been retained; but the engines are the Turmo IIIC, of 1,320 s.h.p. and due to be upgraded to 1,500 s.h.p. in the production model, driving a 62ft six-bladed rotor, instead of a 50ft four-bladed one, and a five- instead of four-bladed tail rotor. These changes allow the gross weight to be raised from 17,650lb to 26,450lb, whilst improving aerodynamic efficiency and handling qualities. The original stubby tail boom has given place to a more conventional one with a crank in it to raise the tail rotor clear of vehicles approaching the fuselage rear loading ramp. Following the success of American trials with amphibious helicopters, the fuselage has been made into a hull with a bow, planing bottom and watertight bilge compartments.

The first prototype Super Frelon, F-ZWWE, flew on December 7, 1962, and the second, F-ZWWF, on May 28, 1963. The first was