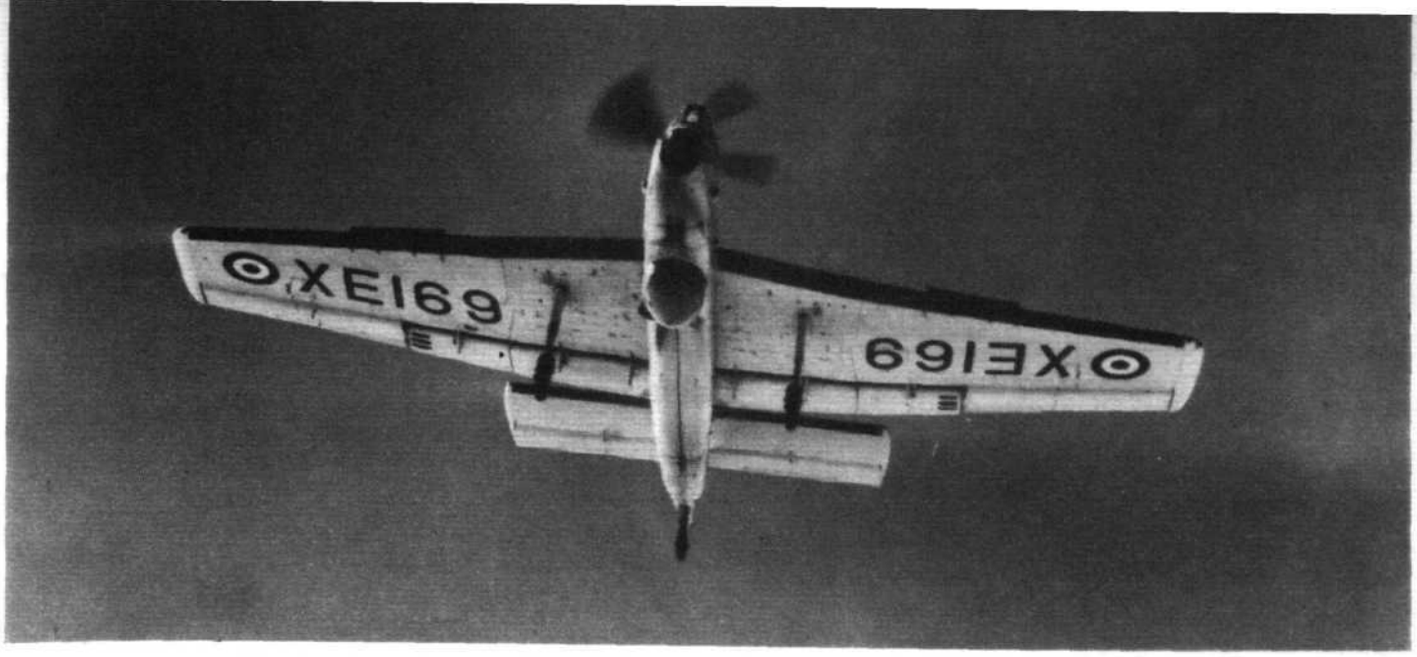

SHORT SEAMEW

1—*The Design Philosophy*

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IT was in 1951 that the Naval Staff, from considerations of the anti-submarine warfare of the late war, concluded that there was a need for a simple, yet fully effective, light aircraft for anti-submarine duties. An aircraft with proper search equipment which could be operated in almost any weather from small carriers would have been of very considerable advantage in the battle of the Atlantic and might have made a great difference to our losses. At the time of the Naval Staff's conclusion, development of radar equipment was tending to outstrip the development of aircraft capable of carrying it and yet of operating from small carriers.

Short Brothers and Harland soon became engaged in design studies of a simple and rugged anti-submarine aircraft, carrying a crew of two (a pilot and a navigator/radar operator), for all-weather operation from carriers of the smallest type. It was to be suitable for production and use in large quantities in time of emergency and therefore the general design-philosophy was one of simplicity, ease of maintenance and low first cost, yet without in any way compromising the military performance which was considered necessary. For example, it was decided that a large type of radar scanner should be fitted, that the bomb bay should be capable of carrying large stores, and that a long patrol performance should be provided.

This initial work eventually resulted in the formulation of a Ministry of Supply specification which was issued to the industry as the basis for a tender design competition. Shorts won the competition with the design which then carried the company's number S.B.6 and is now known as the Seamew.

An Armstrong Siddeley Mamba ASM.6 engine was chosen because the high efficiency of this propeller turbine gave the necessary speed, endurance and small diameter which suited the type of airframe Shorts wanted to design. The ability of the engine to operate on any fuel is a considerable advantage as it does not require the availability of high-octane petrol: and high-octane petrol is never popular on board ship.

Incidental advantages of the propeller turbine engine are that there is no ignition system to cause interference on the radar screen and that the low band of vibrations allows the pilot to be placed on top of the engine, where he gets the best possible view. Great attention was paid to the field of view of both pilot and navigator. All pilots who have flown the aircraft have commented on the remarkably fine view, which is so necessary both for search operations and also for deck landing.

To enable the Seamew to operate from the smaller carriers it was given very short take-off and landing runs. Indeed, it will take off in a 12 kt wind in about 500ft. The stalling speed is correspondingly low and the approach speed for deck landing is very reasonable. Pilots who have flown the aircraft are delighted with the way it flies on to the deck and with the way it can be landed at all speeds.

A fixed and simple landing gear was chosen, as it was thought that a retractable unit was not necessary at the operating speeds. A nosewheel was not used because it would interfere with the radar scanner, but Shorts evolved a system of extending the tail wheel for deck landing so that aircraft could land tail-up and would not have a tendency to "balloon" off again once the wire was contacted. The unit subsequently sinks down to its normal position. The undercarriage was given a very long travel, in order to accommodate a high landing velocity, and this enables landings to be made on the deck in the roughest of weathers. As the aircraft may possibly have to ditch in the sea in emergency, a main-undercarriage jettison system was evolved to avoid any danger of nosing over on contact with the water. It has the incidental advantage of enabling undercarriages to be changed easily.

Although originally it was proposed to have only manual wing-folding, power folding was eventually fitted because the complication and weight penalty was small, and because it is an operationally attractive feature, allowing aircraft to be struck down more quickly.

As mentioned above, the bomb bay is large. The internal length is 14ft and, for an aircraft of this size, very big stores can be fitted. Although no details can be given of the radar equipment it is obvious from the size of the radome that the scanner is of large proportions and obviously able to search with the greatest efficiency.

Short's philosophy of designing for simple maintenance has been used throughout the aircraft. An outstanding feature, made possible by the type of powerplant installation, is the speed with which an engine can be changed. During an official demonstration we have changed an engine and run it again in a total time of 1 hr 20 min, including inspection. There are many access panels and the standard of accessibility is high.

As a result of the programme of strength tests and the results obtained from the Seamew it has actually come out slightly under the original target weight of 14,000 lb with the originally specified stores load. Now, however, the Naval all-up-weight has been increased to 14,400 lb, which is still below the specification figure, to enable the stores capacity to be increased. The R.A.F. version has gone as high as 15,100 lb by eliminating the deck-landing requirement. This enables the aircraft to operate with the maximum of stores and fuel without restriction.

The target was a four-hour patrol at 120 kt, and this has been achieved. As mentioned above, the take-off performance in a 12 kt wind is 500ft and even in still air it is only 300 yd. The total stores load is in excess of 1,800 lb, with some stores carried on the wings, and several combinations are possible, including mines, sonobuoys and torpedoes.

The normal level speed of the aircraft is about 200 kt, but it is cleared to the relatively high diving speed of 325 kt; this is to enable attacks to be made from altitude by diving on the enemy. It is of interest to note that the speed range between stalling speed and diving speed is unusually large for an aircraft of this type. The forward position of the radar scanner ensures that, even in a steep dive, the target is always in the radar view and never blanked by the nose of the aircraft.

The first Seamew was flown 17 months after the order was placed with the company, and the production line is now in full swing. Ten aircraft are now flying. I would like to pay tribute to the staff concerned with the project at the Ministry of Supply. Their co-operation was a real factor in getting the Seamew designed and built in so short a time.

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