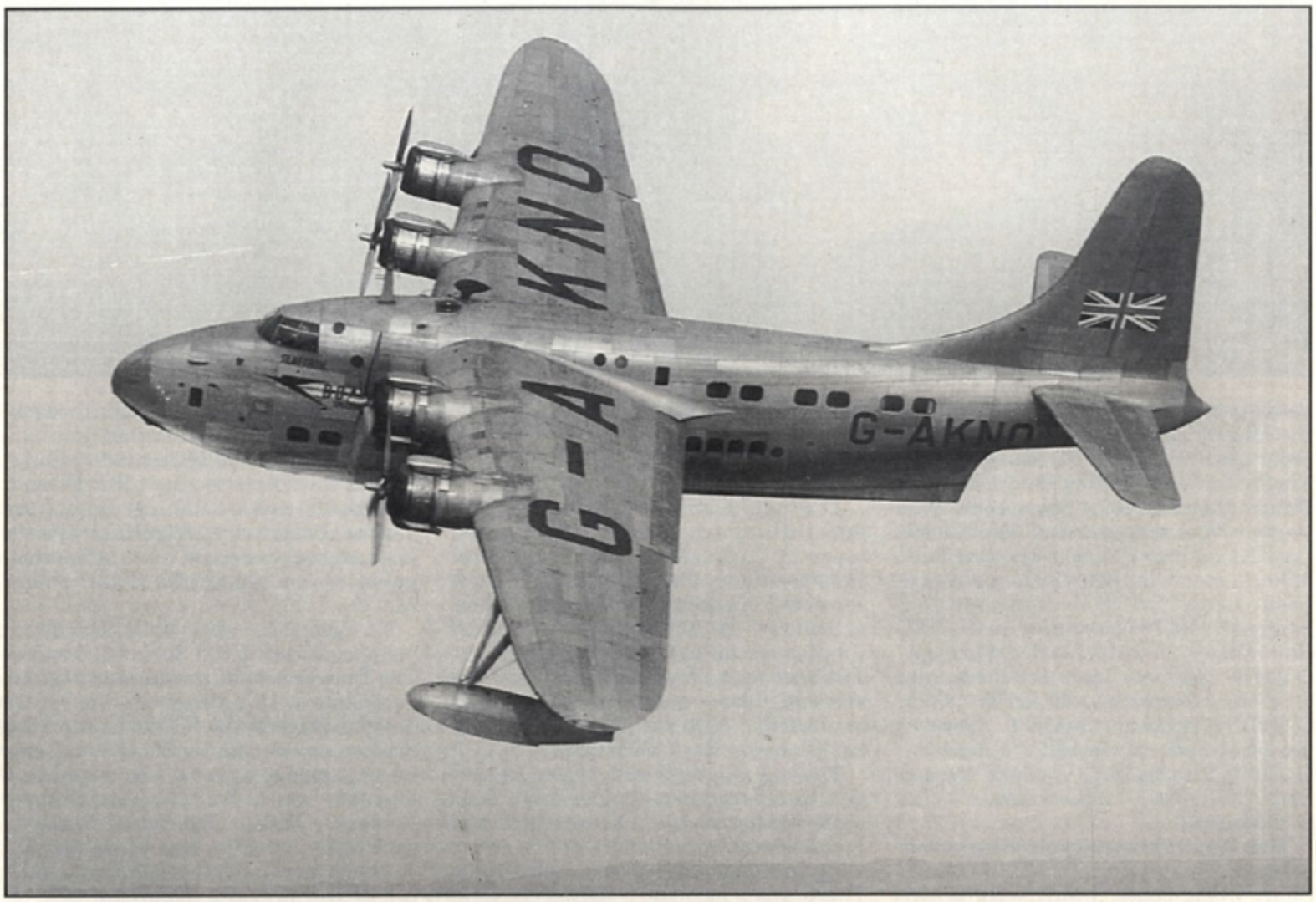

G-AKNU
AQUILA AIRWAYS LIMITED
SYDNEY
KNU
Keith Woodcock



SHORT SOLENT

Recently I dealt at length with the civil version of the Short Sunderland and the Sandringham development. It is now the turn of the Solent to complete this history of the large Short flying-boats and, there being fewer Solents, I have space for a fuller description of the structure of these 'boats, which varied only in detail.

In the Sunderland article I made brief mention of the Sunderland Mk IV and stated that only two were built. This was really true but needs some further explanation.

The Sunderland IV was designed to Specification R.8/42 as a much heavier version powered by four Bristol Hercules 14-cylinder two-row sleeve-valve air-cooled radial engines. All-up weight was to be 75,000lb compared with the 58,000lb of the Sunderland Mk III. To accommodate the increase in take-off weight the Sunderland IV was given a larger planing bottom with a 1ft increase in beam and about 6ft 6in increase in the length, with this divided equally fore and aft of the main step. The wing structure was strengthened and the tail surfaces modified, possibly only after flight trials began.

The two Sunderland Mk IVs were MZ269 and MZ271 and the first of these was first flown, by John Lankester Parker, at Rochester, on August 30, 1944. John Parker found that with two engines shut down on one side the vertical tail surfaces were inadequate to control yaw; the fin was heightened by 33in and a new tailplane of 20 per cent greater area was fitted. It is no longer clear whether this was the first tailplane to have slight dihedral, although photographic evidence suggests that the original tailplane had this feature. A further modification was a dorsal extension to the fin leading edge.

Both Sunderland Mk IVs went to the Marine Aircraft Experimental Establishment where they underwent extensive trials and were used for experimental work until they were scrapped in July 1947.

Heading photograph, *BOAC's Solent 3 G-AKNO, still named* Seaforth, *on test at Belfast with repositioned stabilising floats attached by four struts. KEITH WOODCOCK's* **painting** *shows Aquila Airways' Solent 3* RMA Sydney.

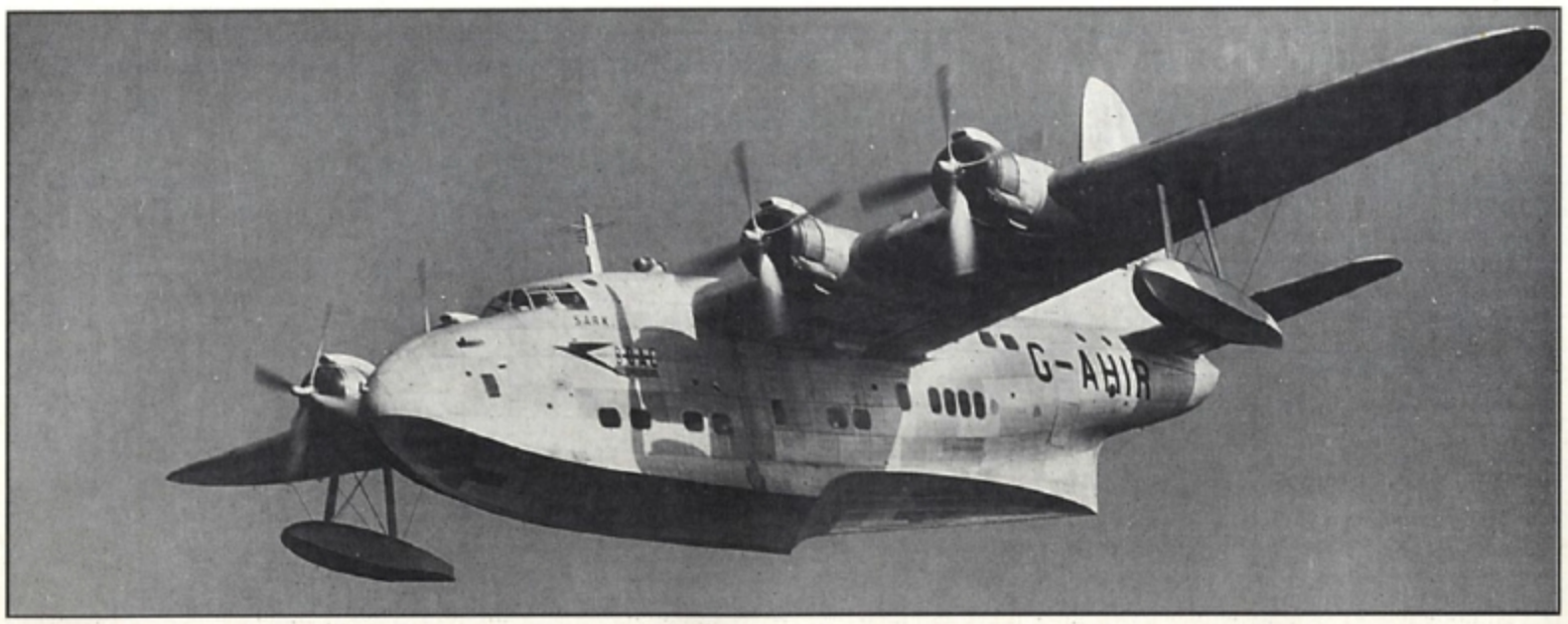
As I said earlier, only the two were built; but as the S.45 Seaford, eight were completed, and they went to No 201 Squadron for operational trials. These 'boats were NJ200–207, c/ns S.1292–1299. The performance at maximum weight was not sufficiently above that of the Pratt & Whitney-powered Sunderland Mk V to justify quantity production and entry into service.

The second Seaford, NJ201, was delivered for evaluation by Transport Command as an unarmed transport and trainer and bore the code letters OZZA.

The Seafords proved to have good performance and seaworthiness but were inclined to skip after alighting under some conditions.

After its time with Transport Command NJ201 was modified to have streamlined bows and rear hull and it was, as G-AGWU, lent to BOAC for evaluation. NJ202–207 were, in 1948, sent to Short & Harland at Belfast for conversion to Solents and will be mentioned again later.

Short Brothers offered a civil version of the Seaford as the Solent 1 with two decks, five cabins and accommodation for 30 day passengers or 20 at night. This



Above, *G-AHIR, BOAC's Solent 2* Sark. *It was withdrawn from use in May 1950 and was scrapped at Belfast two years later.*

version was not put into production but the Ministry of Civil Aviation placed an order for 12 Solent 2s for use by BOAC. These were powered by four 1,690 h.p. Bristol Hercules 637s, had accommodation for 34 passengers and bore Short's type designation S.45A. They were built at Rochester in the jigs which would have been used for the then-cancelled Seafords. The 12 Solent 2s were G-AHIL *Salisbury*, G-AHIM *Scarborough*, G-AHIN *Seaforth* later *Southampton*, G-AHIO *Somerset*, G-AHIR *Sark*, G-AHIS *Scapa*, G-AHIT *Severn*, G-AHIU *Solway*, G-AHIV *Salcombe*, G-AHIW *Stornoway*, G-AHIX *Sussex* and G-AHIY *Southsea*, c/ns S.1300–1311.

This is an appropriate place to provide a detailed description of the four-engined Short flying-boats, which were essentially similar structurally. The development was remarkable because the last variant of the Solent had double the all-up weight of the original S.23 C-class — 81,000lb against 40,500lb, and yet there was only 187ft^2 increase in wing area, from 1,500 to 1,687, taking the wing loading from 27lb/ft^2 to 48lb/ft^2. All versions of the Solent had greater maximum weights than the much bigger S.26 G-class 'boats.

The high-mounted wing had leading- and trailing-edge taper and marked taper in thickness as well as dihedral from the roots. The all-metal structure consisted of a box spar formed by four extruded T-section members braced by tubular struts and built-up members. The fuel tanks were inserted into the spars and there were separate leading- and trailing-edge sections. Gouge camber-changing flaps were fitted.

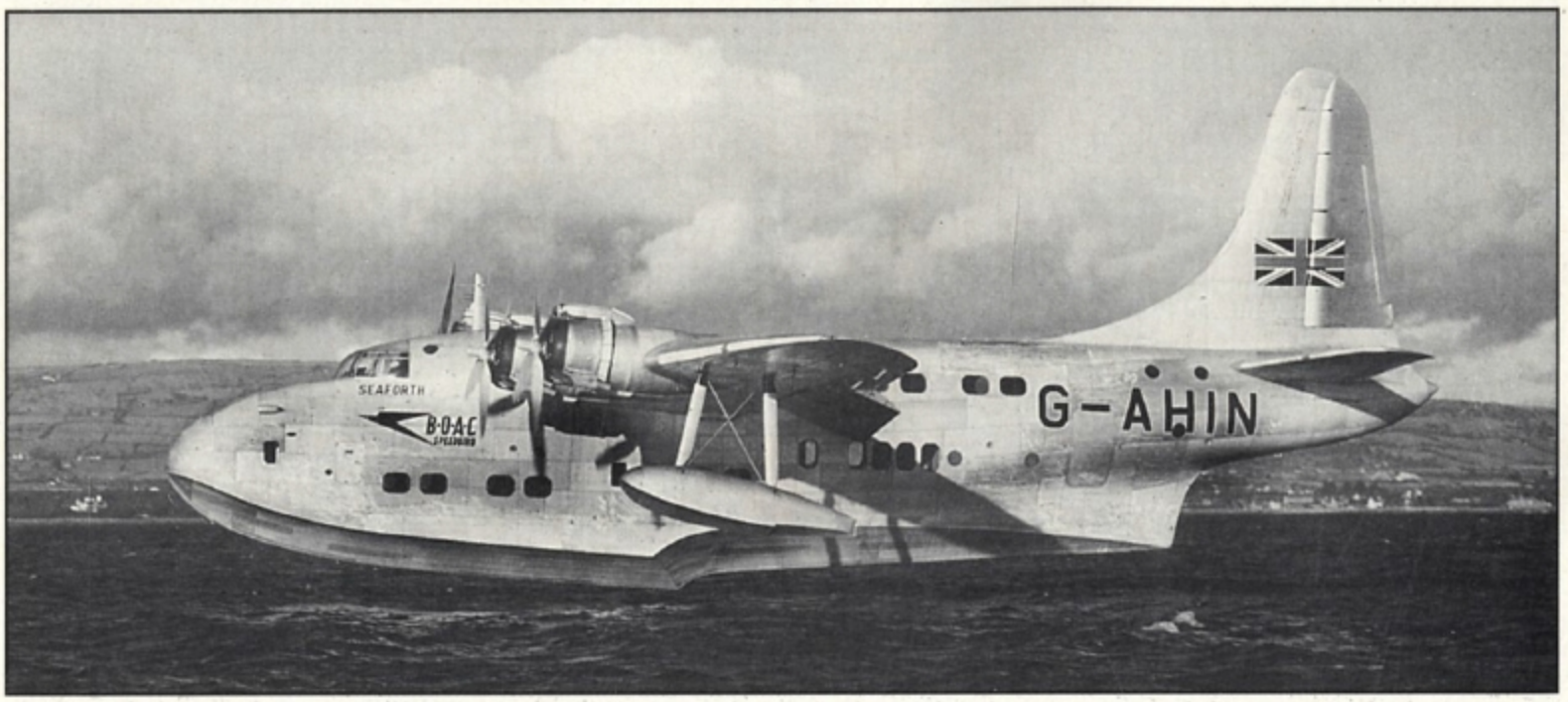
The two-step hull was of near-rectangular section and was divided into watertight compartments by bulkheads and doors. There were double frames at the wing and tailplane pick-up positions. There was a mooring hatch in the bow. Internally the hull was divided into two decks except aft in the military versions.

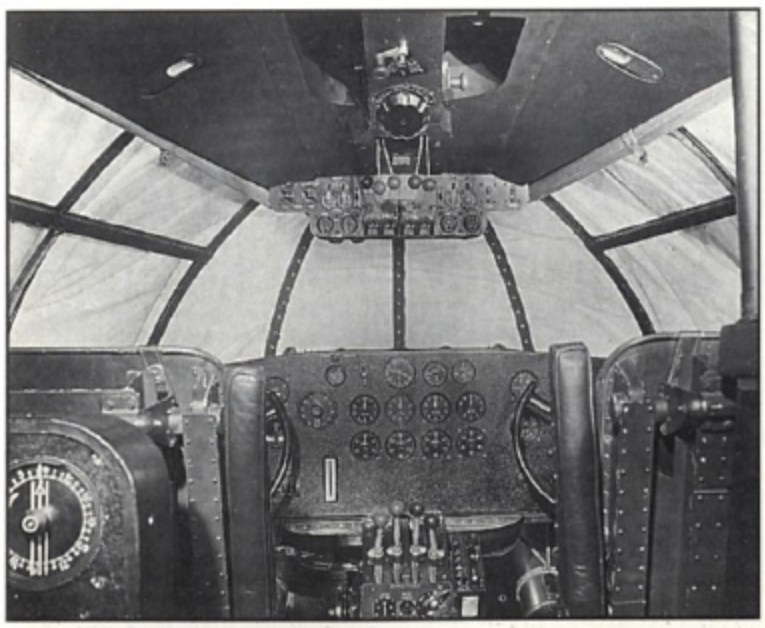
The engines in the Solents were 1,690 h.p. Bristol Hercules 637s except in the heavier Tasman Solent 4s which had Hercules 733s of 1,860 h.p. Four-bladed de Havilland constant-speed fully-feathering propellers were fitted and the engine cowlings incorporated trailing-edge controllable cooling gills. Normal fuel capacity was 1,400 Imp gal but the Tasman 'boats had 2,540gal fuel capacity giving a range of some 3,000 miles compared with 1,990 for the BOAC Solent 2s.

No Solent 1s were built, the types being confined to the Solent 2, 3 and 4. The Solent 2 was the standard BOAC aeroplane with accommodation for 34 day passengers; the Solent 3s were the Seaford conversions for BOAC with seats for 39 passengers; and the Solent 4s were 42-seat 'boats for Tasman Empire Airways (TEAL). The Solent 2 and 3, with Hercules 637s, had all-up weights of 78,000 and 78,600lb respectively while the Solent 4s had a maximum take-off weight of 81,000lb.

It was claimed that Solents could carry up to 80 passengers but this never happened. The BOAC Solent 2s had three lower-deck cabins each with six seats facing across tables with double seats on the starboard side. Two of these cabins were beneath the flight deck and one amidships. Then came a promenade area with steps up to the starboard side entrance door and a flight of stairs to the

Below, *the third Solent 2, G-AHIN* Seaforth, *later* Southampton, *alighting on Belfast Lough. This view shows particularly well the planing bottom and steps.*





Above left, *the flight deck of BOAC Solent G-AHIT. The pitch and throttle levers are located at the pedestal position — engine starting and propeller feathering are in the roof.* **Above right,** *the upper deck cabin of a BOAC Solent 3.*

upper deck. Aft of this were lavatories and a baggage and cargo hold. On the upper deck was a small lounge and a 12-seat cabin with facing seats and tables. These details were gleaned from a BOAC cutaway poster but are in conflict with the stated 34 (and 39) seat layouts. It would seem that the poster was based on the latter version and that in one cabin there was a single seat facing one of the pairs. None of the works of reference I have studied are precise about the accommodation. *Jane's all the world's aircraft* for 1947 and 1949–50 both stated "On the upper deck are the crew compartment, galley, cocktail bar, and two passenger cabins, while three passenger cabins, dressing rooms, lavatories and a promenade cabin are on the lower deck". Thus there is fairly close agreement although the number of seats per cabin must have varied in the different versions. The windows were rectangular horizontally in most cases but vertically in the promenade area.

Further confusion comes from a Short brochure — they always seem to be undated. Under the heading "Solent 3 as operated by the British Overseas Airways Corporation on routes to South Africa" are range/payload figures and I quote: "Payload 18,162lb. Equivalent 80 passengers, plus baggage and 2,562lb freight [or] 100 Natives, plus 15lb baggage each and 3,162lb freight"; "1,400 miles". To confuse the issue even more, seating plans show a lower deck forward cabin with five rows of four-abreast seats and one of three-abreast, a midships cabin for nine and two aft cabins, one with eight and one with six seats. The upper deck is shown with 29 seats — 80 seats in all.

For the Solent 4, described as a "30–44 seater long-range civil flying-boat", the plans show three lower-deck cabins each with six seats and one with four, and an upper-deck cabin with 16 seats. There are four lower-deck lavatories and an upper deck galley.

In this brochure are take-off figures. For the Solent 3 the weight is given as 78,000lb with take-off speed as 98kt and time 51sec. The run is given as 1,400yd and distance to 50ft 1,870yd. The figures for the Solent 4 are: 79,000lb, 80kt, 36sec, 850yd and 1,400yd (normal), 2,000yd (ICAO). Maximum alighting weight in both cases is quoted as the same as take-off weight.

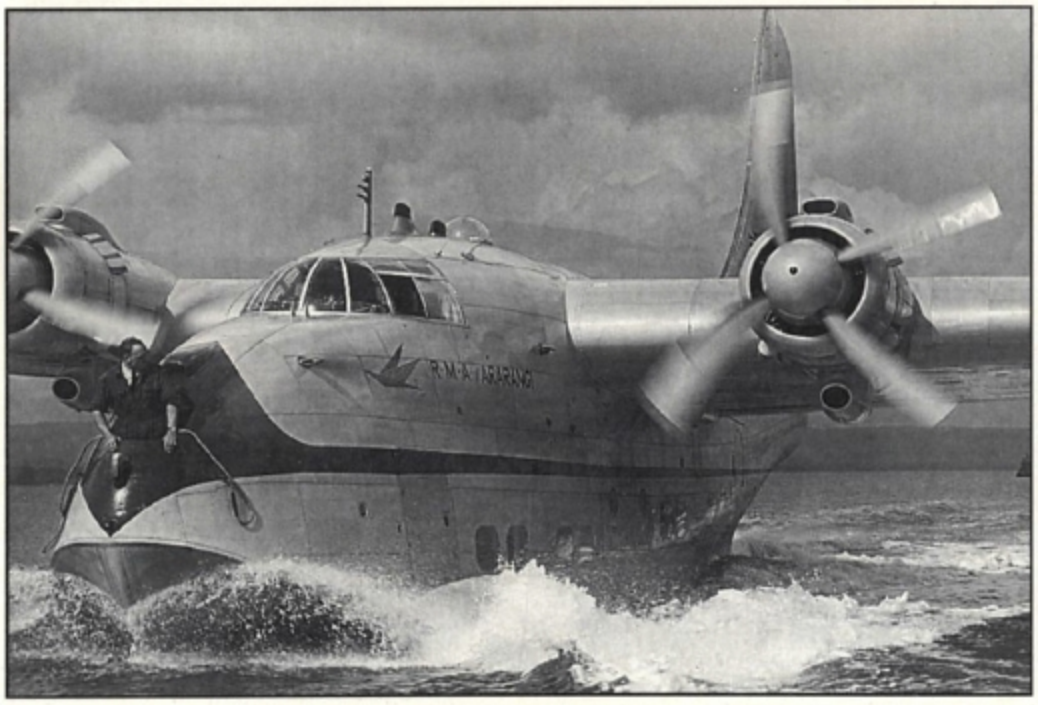
The first of the 12 BOAC Solent 2s, G-AHIL, was launched on November 11, 1946, and first flown, by Geoffrey Tyson, on December 1. The last, G-AHIY, was launched on April 8, 1948, and was the last aircraft to be built at the riverside Seaplane Works at Rochester. The type C of A was awarded on November 10, 1947, and Solents were introduced on the Southampton — Vaaldam (for Johannesburg) service on May 4, 1948.

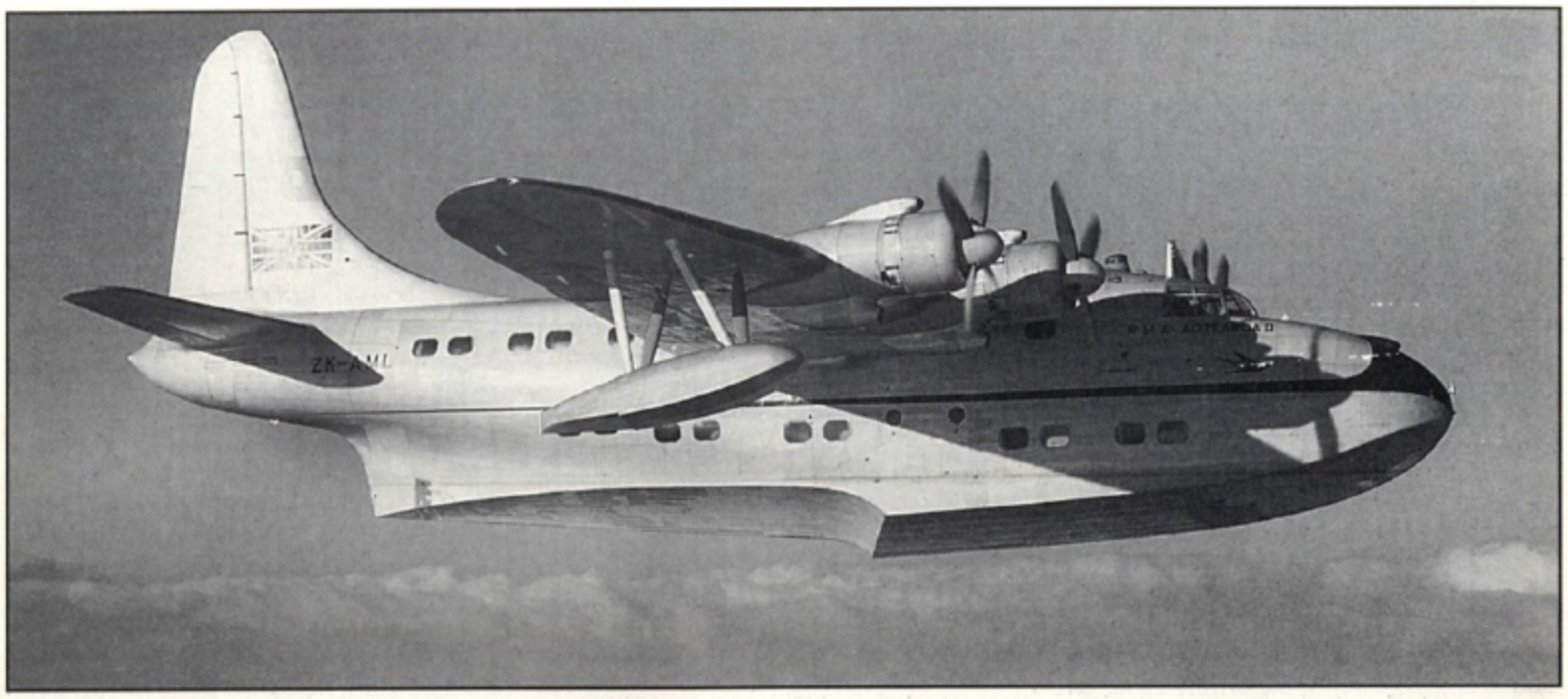
The South Africa route was via Augusta, Cairo, Luxor, Khartoum, Port Bell and Victoria Falls. The first service was operated by G-AHIT *Severn* and followed a pre-inaugural flight for the press in April by G-AHIN *Southampton*.

Unfortunately at their high take-off weight the Solents encountered problems, their wingtip float water clearance being insufficient, and all those already in service were withdrawn in June or July to have their stabilising floats repositioned 18in forward and 87in outboard. They were also carried by two pairs of inclined struts without bracing instead of the previously-used braced two-strut attachment. The modifications were not approved until September.

On February 23, 1949, Solents were introduced on Southampton—Dar-es-Salaam services in place of Avro Yorks, and on May 15 that year a thrice-weekly Solent service was opened between Southampton and Lake Naivasha (for Nairobi), again replacing Yorks. On May 26 Solents replaced Plymouth-class Sandringhams on the Southampton-Karachi services but on September 7 Yorks replaced the flying-boats. On November 7, 1950, BOAC replaced its Solent services to South Africa with thrice-weekly Handley Page Hermes 4 services to Johannesburg and the corporation ceased all flying-boat operation after it and its predecessors had maintained marine aircraft services for more than 26 years.

Below, *TEAL's Solent 4 ZK-AMM* RMA Ararangi *taxying to its moorings at Belfast before delivery.*





However, BOAC had earlier made the decision to take six of the Seafords, converted to Solent 3s, but only four were in fact delivered to the airline: G-AKNO (NJ202) *Seaforth*, G-AKNP (NJ203) *Sutherland*, G-AKNR (NJ204) *Selkirk* and G-AKNS (NJ205) *Sheerness*. G-AKNT (NJ206) and G-AKNU (NJ207) were allocated the names *Singapore* and *Sydney* but never went to BOAC.

Several of BOAC's Solents were renamed, sometimes at ceremonies such as that at the Tower of London when G-AKNO was renamed *City of London*. Other changes were *Salisbury* to *City of Salisbury*, *Southampton* to *City of Southampton*, *Scapa* to *City of York*, *Sussex* to *City of Edinburgh*, *Sutherland* to *City of Cardiff*, *Selkirk* to *City of Belfast*, and *Sheerness* to *City of Liverpool*.

Of the 12 Solent 2s, G-AHIX crashed while alighting on Southampton Water in a gale in February 1950, and two were sold to Trans Oceanic Airways, G-AHIO becoming VH-TOD *Star of Australia* and G-AHIV became VH-TOC *Star of Hobart*. The other nine were scrapped. Two of BOAC's Solent 3s went to Trans Oceanic, G-AKNO to VH-TOA and G-AKNP as VH-TOB *Star of Papua*; but

Above, *ZK-AML, TEAL's Solent 4* RMA Aotearoa II. *After it was launched at Belfast, 'ML was named by HRH Princess Elizabeth on May 26, 1949.*

VH-TOA never got to Australia, it having been wrecked at Malta on its delivery flight on January 28, 1951. G-AKNR went to TEAL as ZK-AMQ *Aparima* and G-AKNS went to the MAEE in 1951 as WM759 and was scrapped in 1954.

G-AKNT went to the Ministry of Transport and Civil Aviation before passing to South Pacific Air Lines in California as N9947F; G-AKNU was acquired by Aquila Airways and crashed at Chessell Down in the Isle of Wight on November 15, 1957, with 46 fatalities; and G-ANAJ (ex-NJ201 and temporarily G-AGWU) was acquired by Aquila, named *City of Funchal* and wrecked by a gale at Santa Margherita on September 26, 1956.

To complete the British part of the Solent history it must be recorded that on June 3, 1954, Aquila began a fortnightly Southampton—Capri service via Marseilles, the first service being operated by G-AKNU RMA *Sydney* and in June 1955 began Solent services from Southampton to Santa Margherita and Southampton to Genoa. Then in January 1956 a fortnightly service was introduced between Southampton and Las Palmas (Canary Islands) with a fuelling stop at Lisbon.

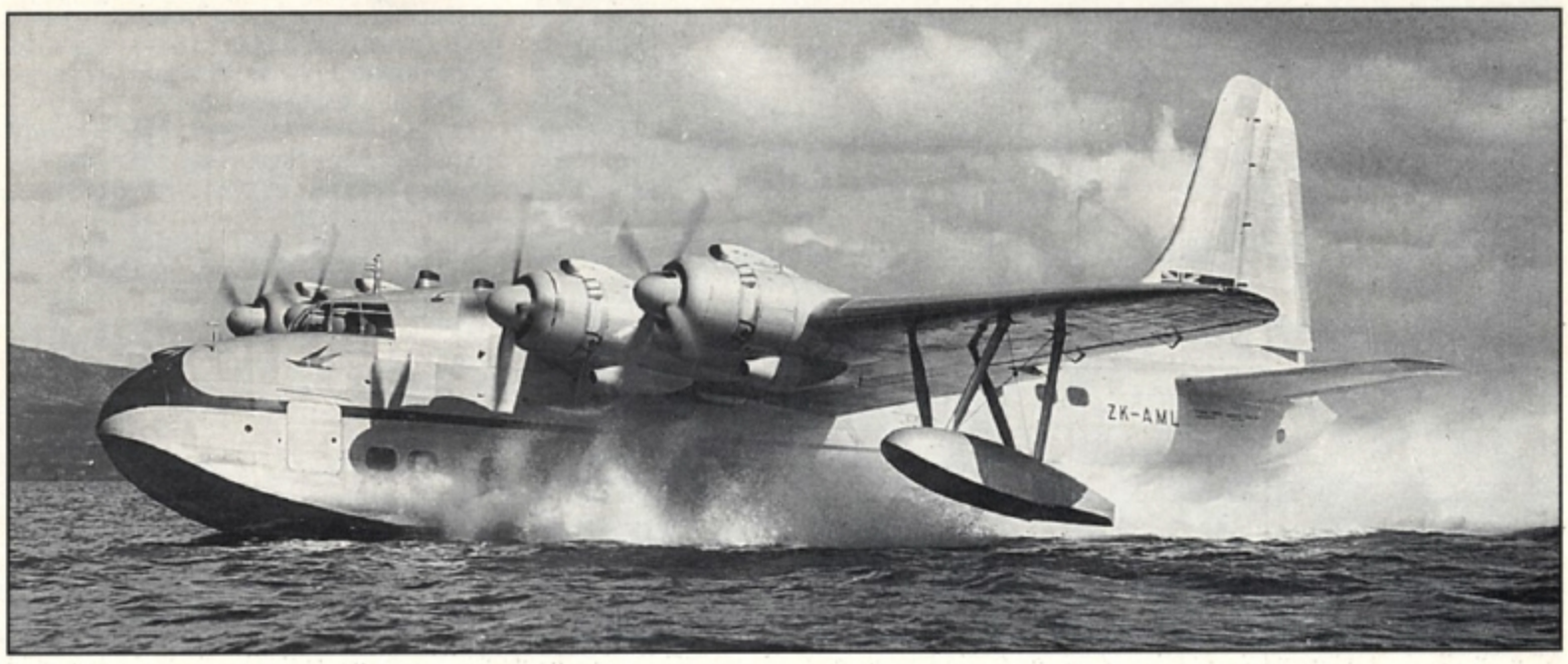
Aquila also acquired two of the Tasman 'boats and had them converted to Solent 3s. These were ZK-AML and ZK-AMN which became G-AOBL and G-ANYI. Both were sold to Artop in Portugal but they were not used and were abandoned on the Tagus.

British commercial flying-boat operations ended when Aquila Airways ceased flying on September 30, 1958.

My only experience of the Solent was on Aquila's inaugural flight to Capri and back. We left Southampton at 0906hr and arrived at Marseilles 3hr 24min later, having flown across France at 7,500ft. It was quite an odd sensation to spend about 3hr over land in a large flying-boat.

It was rather exciting to alight on Étang de Berre with its very long association with marine aircraft. Its surface was regularly used by Imperial Airways Empire

Below, *another view of TEAL's Solent 4 ZK-AML.*



Flying-boats and, of course, Air France's 'boats. Another 3hr 6min at 7,500ft took us over Elba, Ostia (once the base of Ala Littoria's Savoia twin-hulled 'boats) and Anzio to Capri, where we were met by Gracie Fields who asked a small group of us home and sang to us.

Taking off from Capri we suddenly encountered a cross-swell as we passed out of the shelter of the island and the Solent leapt into the air. I travelled back on the top deck, and most of the 3hr 10min flight to Marseilles was made in cloud and marked turbulence. The Marseilles—Southampton sector took 3hr 33min and the entire homeward flight was made at 8,500ft.

Solent 4s in service

Tasman Empire Airways ordered four of the heavier and more powerful Solent 4s. These were ZK-AML RMA *Aotearoa II*, ZK-AMM RMA *Ararangi*, ZK-AMN RMA *Awatere* and ZK-AMO RMA *Aranui*, c/ns SH.1556–1559. ZK-AML was launched at Belfast and on May 26, 1949, was named by HRH Princess Elizabeth, but the first delivered was ZK-AMM which reached Auckland on September 29. In September 1951, as already mentioned, TEAL acquired the Solent 3 which became ZK-AMQ RMA *Aparima*.

TEAL's first Solent service was operated on November 14, 1949, over the Auckland—Sydney route and on June 6, 1950, TEAL took over the Auckland—Suva route and began Suva—Lambasa services. On October 3 ZK-AMM flew the first Wellington—Sydney service and on December 15 a four-times-a-year Auckland—Wellington—Chatham Island service began.

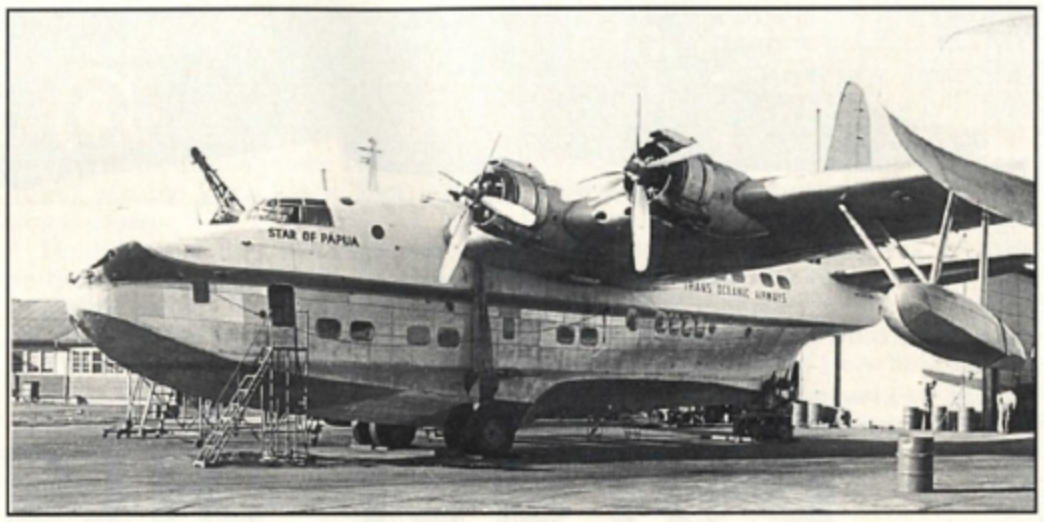
On December 27, 1951, the monthly Coral Route service was inaugurated from Auckland to Suva, Aitutaki (Cook Islands) and Papeete (Tahiti), later operated fortnightly and with a call at Apia (Samoa) from October 16, 1952. The next August a Fiji—Tonga extension was opened to a monthly schedule.

But on June 27, 1954, TEAL operated its last trans-Tasman flying-boat service, from Sydney to Auckland, by ZK-AML and all Solents were withdrawn except ZK-AMO which was retained to operate between Suva and Papeete. This remained in service until September 15, 1960, when it returned to Auckland after making a farewell flight over the Coral Route — ending more than 20 years of TEAL flying-boat operations. ZK-AMO was then passed to the Museum of Transport and Technology at Auckland.

In 1951 Trans Oceanic Airways bought four BOAC Solents for Sydney—Hobart and Sydney—Port Moresby services. VH-TOA (G-AKNO) never reached Australia but G-AKNP, G-AHIV and G-AHIO became respectively VH-TOB *Star of Papua*, VH-TOC *Star of Hobart* and VH-TOD *Star of Australia*. Plans for services to Tokyo were blocked by licensing authorities and in 1956 VH-TOB and VH-TOC were acquired by South Pacific Air Lines in California as N9946F *Isle of Tahiti* and N9945F to join G-AKNT which had become N9947F. Transpacific route licences were refused and none of the Solents flew Pacific services. One of the 'boats, VH-TOB, has been painstakingly restored and still exists carrying the markings NJ203 (see *Aeroplane*, July 1990).

Short S.45A Solent data

	Solent 2	Solent 3	Solent 4
Dimensions			
Span	112ft 9½in	112ft 9½in	112ft 9½in
Length	87ft 8in	87ft 8in	88ft 6¾in
Wing area	1,687ft²	1,687ft²	1,687ft²
Weights			
Empty	47,760lb	48,210lb	49,150lb
Loaded	78,000lb	78,600lb	81,000lb
Performance			
Maximum speed	267 m.p.h.	267 m.p.h.	279 m.p.h.
Cruising speed	236 m.p.h.	236 m.p.h.	244 m.p.h.
Service ceiling	15,500ft	15,500ft	17,100ft
Range	1,990 miles	2,200 miles	3,000 miles



Above, *Trans Oceanic Airways Solent 3 VH-TOB* Star of Papua *had been BOAC's G-AKNP* Sutherland. *It is seen at Rose Bay, Sydney.*

Below, *Aquila Airways' Solent 3 G-AKNU* RMA Sydney *at Capri on June 3, 1954, after inaugurating the airline's service from Southampton via Marseilles.*

Next month: The Bristol 170 Freighter