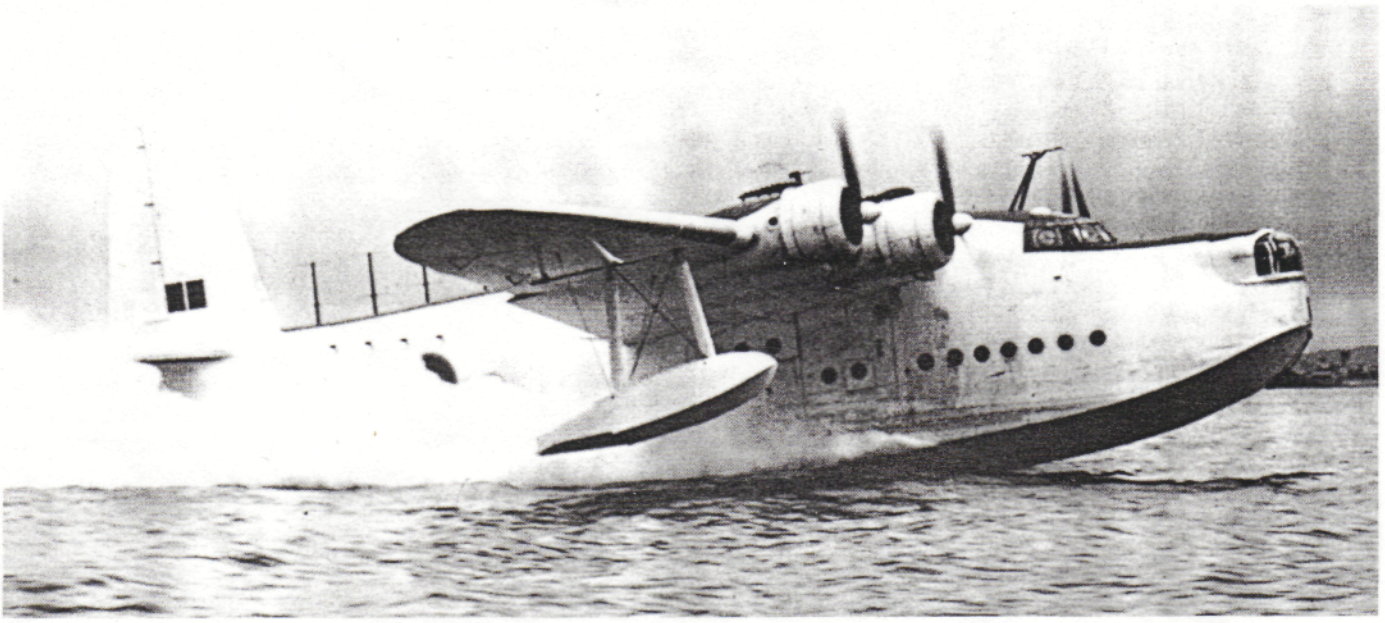

At full power, chariot-torpedo carrying trials aircraft Sunderland JM714/G starts a take-off at 61,000 lbs – 10,000 lbs overweight – which was successful after 83 seconds Harold Pipes

During their long and meritorious service Short Sunderlands were no strangers to unusual and demanding tasks. But to expect them to deliver human torpedoes was asking just a little too much

SUNDERLAND STRIKE FORCE

by Bill Mortimer

Fifty years on it is perhaps difficult to fully appreciate the dire situation in which Britain found itself in early 1942. For good reason the majority of the population were kept unaware of the rapidly dwindling stocks of food and essential materials on which the whole of the country depended; and of the havoc being wrought by Hitler's U-boats on the Atlantic convoys bringing in those vital supplies. Britain was within sight of collapse.

In this atmosphere of very grave concern the Chiefs of Staff under Prime Minister Winston Churchill were prepared to consider almost any scheme, however bizarre, that might contribute to the ultimate defeat of the Nazi regime.

It was at this time that the world's largest and most powerful battleship *Admiral von Tirpitz* lay deep inside Asenfjord near Trondheim in Norway. Its very presence demanded that a considerable British naval force, desperately needed elsewhere, was maintained in the North Sea. It was feared, with some justification at the time, that complete devastation of convoys could result should the monster break out into the Atlantic. It is not surprising that the destruction, or failing that disablement, of *Tirpitz* was a matter of very high priority in the Prime Minister's strategic agenda.

Between January and April 1942, 138 aircraft (12 Royal Navy and 116 Royal Air Force) had attacked *Tirpitz* without scoring a hit, due to continuous poor weather conditions and the sheer mountain sides which enclosed the target. 12 Halifaxes and two Royal Navy Albacores had been lost in these endeavours and clearly other methods had to be found.

CHARIOT TORPEDO

One unconventional weapon appeared to have the necessary potential. The human or 'chariot' torpedo. Since the salvage intact of one of these devices, used to great effect by the Italian navy in the harbours of Alexandria and Gibraltar in 1941, the Admiralty lost no time in building their own versions and training a small group of intrepid divers to operate them.

Similar in size and shape to a conventional torpedo, 25ft long and 21ins. in diameter, and carrying a detachable warhead containing 600 lbs of explosive, the device was driven by two battery-powered propellers and contained compressed-air tanks to regulate depth. Speed was restricted to three knots so that the two crewmen who sat astride it were not swept off.

Chariots were normally transported in containers on the forward deck plating of a submarine to within five miles of an enemy harbour. There they were floated off. Approaching their target with only their heads above water the crew submerged, cut their way through defensive anti-submarine nets, and steered on a compass course in the final stage of the approach. Once under the target ship the motor was stopped and air blown out of the diving tanks to bring the craft hard up against the bottom of the hull.

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. . . continued

Leaving their mount the 'charioteers' swam to the ship's bilge keels, and clamped on cables which were already secured to the warhead. The lethal load was then released to remain suspended beneath the ship armed to detonate within about two hours. The crew then remounted the 'chariot' to hopefully effect their escape and recovery by the parent submarine.

In October 1942 a daring attempt to attack *Tirpitz* using 'chariots' failed through sheer bad luck when heavy seas at the mouth of Trondheim fjord, fifty miles from the target, swept away two chariots which were being secretly towed beneath a 'borrowed' Norwegian fishing vessel – the only type of transport which afforded a chance of outwitting the patrolling German defence ships. The charioteers, with the help of the Norwegian resistance, swam ashore and walked across Norway into neutral Sweden.

Six months before this event, on 9 March 1942, the Director of Naval Air Division at the Admiralty convened a meeting to consider the possibility of transporting chariot torpedoes by aircraft or glider. It is not known how or by whom this germ of an idea originated but it was most likely the product of a shadowy organisation known as Inter-Services Research Bureau. There is a strong indication that submarine commanders were unhappy about the mis-use of their boats in the purely transportation role. Carrying chariots affected the boat's stability and inhibited the operational nature of submarines in that whilst doing so their conventional torpedoes could not be fired.

WIDE RANGE OF OPTIONS

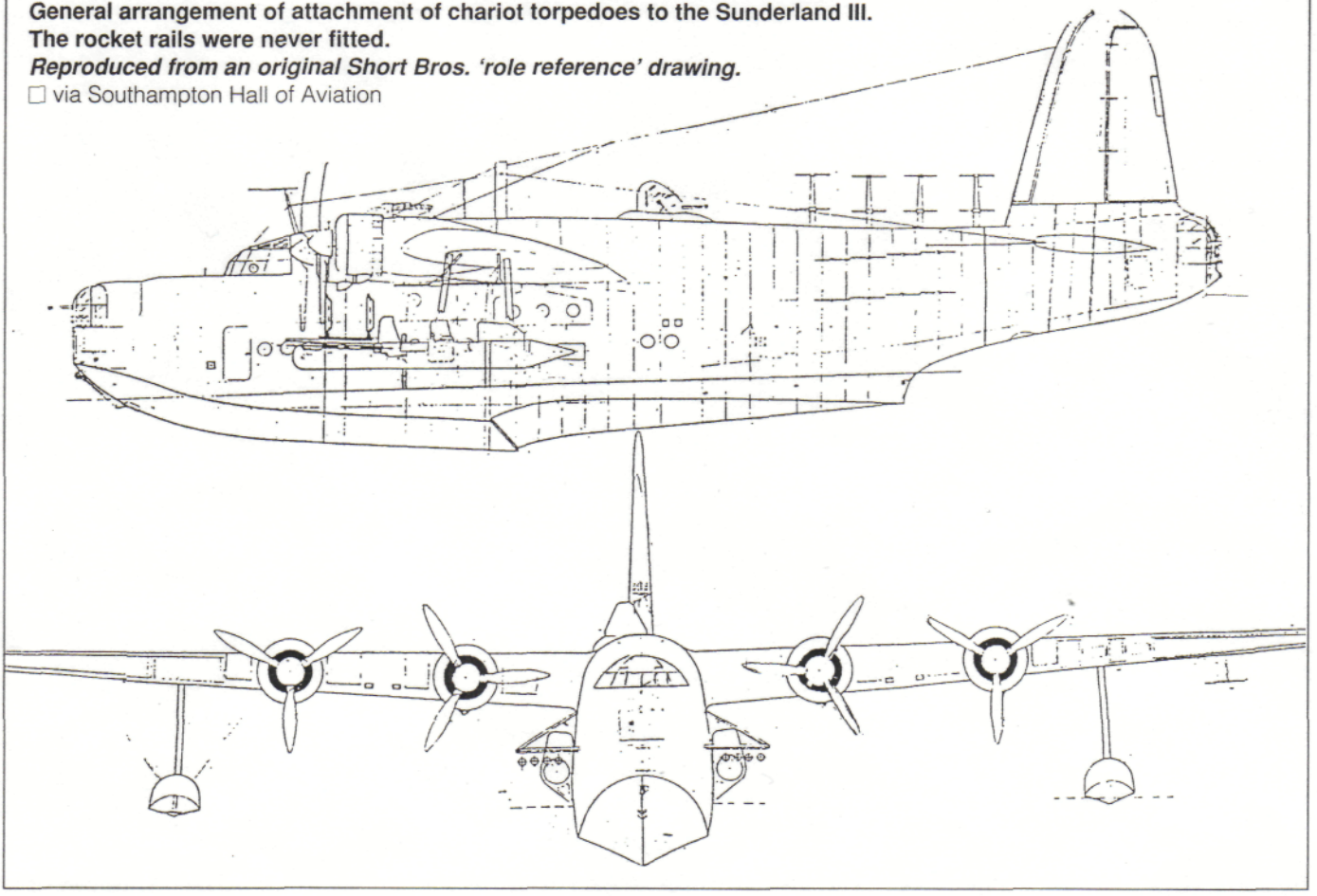
The meeting, and several that followed between Naval and Air Force representatives, discussed 'a wide range of options' in today's parlance. Some were bizarre to say the least and appear to have paid little regard to how the poor charioteers would feel about it. Serious consideration was given to dropping chariots by parachute from land-based aircraft, ... 'the torpedo crew will have to be landed by parachute and swim to their torpedo means being provided on the latter to enable it to be seen by the man when in the water. The question of what to do with the breathing apparatus presents difficulties'... This, one presumes, pre-supposes a highly accurate 'drop' undetected by the enemy in a strongly defended harbour, so by inference at night. How the parachuting charioteers were meant to find their steeds was not mentioned but it is interesting to note that the discussion prophesied developments which were to become possible twenty-five years later.

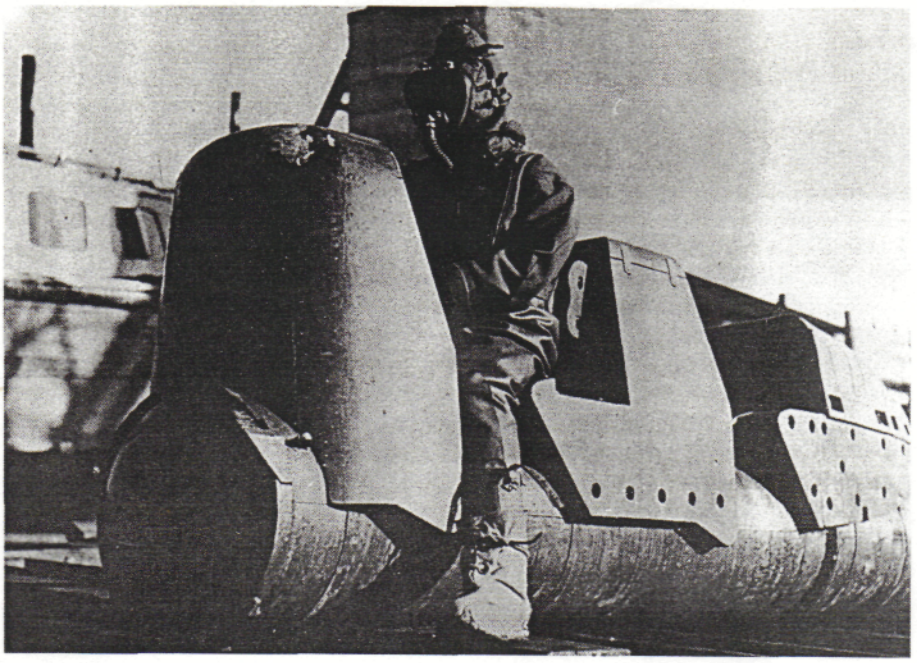
It was also considered that use of the Catalina would be practical after structural modifications to enable a chariot to be carried under each wing, but that not less than six months would be needed for modifications before trials could be initiated.

The meeting concluded that...'With regard to the operations of these weapons from flying boats the DNAD (Director Naval Air Division) considers the desirability of development up to the point of service trials should be taken up with the Air Ministry as the operations appear practicable'...and...'The delivery of human torpedoes to the vicinity of the targets by air has distinct tactical possibilities (e.g. attacks on advanced Japanese bases)'...

By June 1942 a report on a meeting between Admiral Sir Max Horton, (a noted WW1 submarine 'ace' and Flag Officer Submarines), RAF and RN officers and a senior civil servant, shows that detailed study of the whole concept was under consideration. The Catalina had been cut out due to ...'inferior qualities of take-off and smallness of range'. (The Catalina's range carrying two chariots had been estimated, for the benefit of the committee, at 1000 mls). It was decided to

General arrangement of attachment of chariot torpedoes to the Sunderland III. The rocket rails were never fitted.
Reproduced from an original Short Bros. 'role reference' drawing.
☐ via Southampton Hall of Aviation





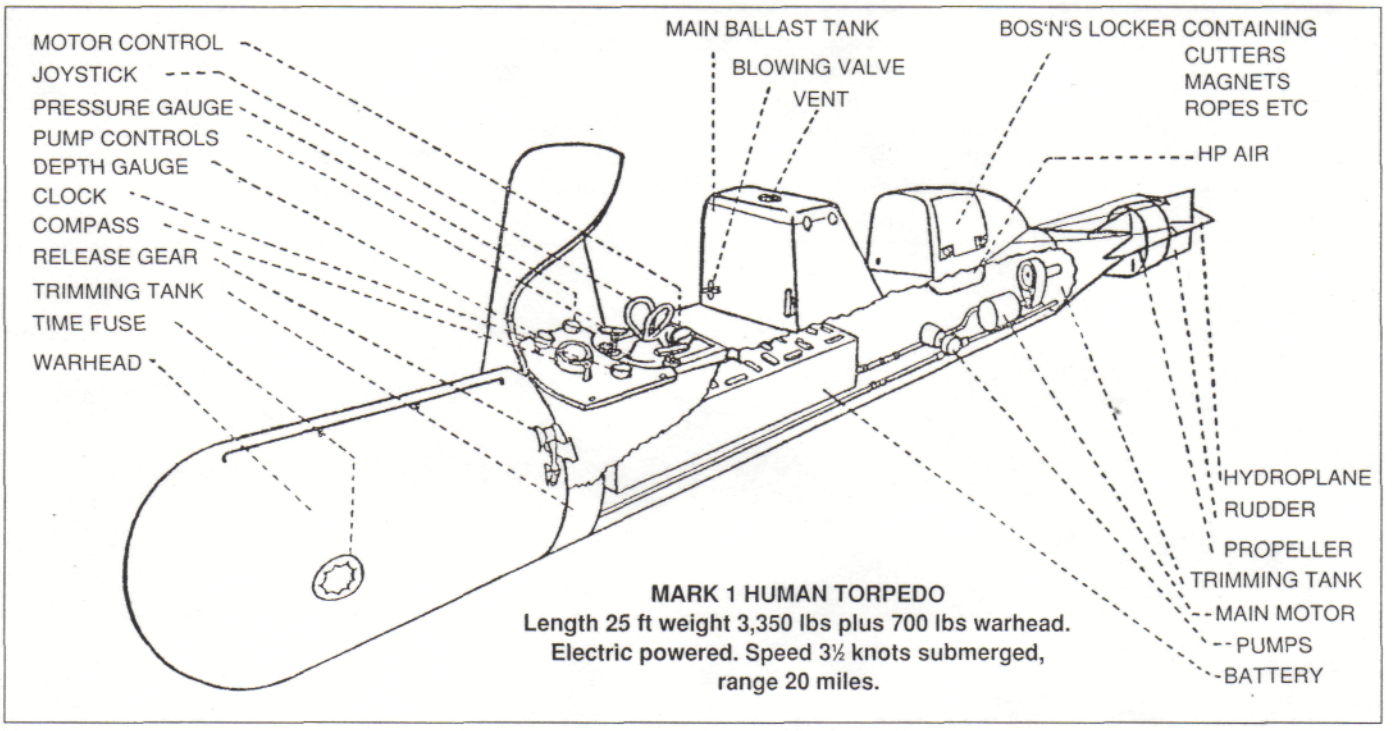
A Royal Navy 'charioteer' diver mounted on an unarmed Mark I human torpedo. The bulky suit and breathing apparatus at the small of the back may well have presented difficulties in making a rapid exit via the Sunderland hatches
□ RN Submarine Museum

air attack and preferred a moonlit night. It was agreed that the work would involve a special Sunderland III being allocated for trial purposes.

Later correspondence indicates that conversion of a single aircraft was felt inadequate due to the possibility of loss of the aircraft during trials, and by July 1942 it had been decided to modify three (later increased to five) aircraft currently under construction to avoid interfering with operations being undertaken by existing aircraft. Sunderlands were, and would continue to be, desperately needed.

LARGE LUMPS MOD

The contractual arrangements between Short Bros. and the Ministry of Aircraft Production and Air Ministry are not known but the following aircraft were selected. JM714 (trials aircraft), JM715, JM716, JM717 and JM718. Design detail was placed in the hands of Frank Robinson and Godfrey Smith and carried out in an atmosphere of considerable secrecy. Frank Robinson conscientiously covered and locked his drawing board



MARK 1 HUMAN TORPEDO
Length 25 ft weight 3,350 lbs plus 700 lbs warhead. Electric powered. Speed 3½ knots submerged, range 20 miles.

concentrate on the Sunderland III, whose performance was estimated at...'about 1360mls at 150 mph'. The latter figures were somewhat optimistic in view of the considerable load of two chariots each weighing 4050 lbs., and eight additional crew members (charioteers and 'dressers') – to say nothing of the considerable drag generated by the externally-slung protuberances.

At that meeting Admiral Horton demonstrated considerable knowledge of the finer technical problems which would need to be overcome. ...'He emphasised the need for a considerable strengthening of the Sunderland wings, the necessity of designing suitable steadying crutches, dropping gear, and loading on and off the aircraft'... Other points discussed were; the danger of damage to a chariot if dropped into the water from a height of four feet or more, the difficulty of the crew mounting the chariots from the Sunderland and the need for the aircraft to come to an almost complete halt to allow this. The danger of the chariots damaging the Sunderland hull was emphasised as was the necessity of the chariots not exceeding a longitudinal tilt in excess of 40 degrees to avoid battery spillage. ...'All agreed that such landings should be worked in conjunction with an

even when he left the room to answer a call of nature. Within the Rochester works the modification became known as the 'Large Lumps Mod' and it seems that the majority of the workforce remained ignorant of its true purpose.

The initial concept of carrying the 'objects' (as the chariots were now named for security reasons) underneath the mainplanes had been dropped in favour of attaching them to the sides of the hull. A sound decision in view of the extensive work involved in devising some form of pylon and fittings so that the chariot crew

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shields cleared the lower surface of the wing. From the only drawing known to exist, and from individuals recollections, it is reasonable to assume that the chariots were carried in a cradle, floated out to the aircraft, electrically hoisted by an internally fitted motor via davits fitted at the hull/mainplane joint, and the cradles secured to fittings on the hull sides. The normal bomb-hoisting gear was not suitably placed and the operation would only have been possible when the beaching legs were not fitted. (i.e with the aircraft on the water.) Some form of quick-release gear to separate chariots from cradle and cradle from aircraft was certainly necessary.

Designing and embodying the modifications for the 'Large Lumps' took time and it was not until 4 July 1943, a year after the idea took shape, that the trials aircraft, Sunderland III JM714/G was delivered to the Marine Aircraft Experimental Establishment at Helensburgh.

Ironically, and unbeknown to the War Cabinet until the previous month, *Tirpitz* had moved in March '43 to Altenfjord in the far north of Norway – over 1,000 miles from the nearest possible base in the UK and very much out of range for a chariot carrying Sunderland.

HANDLING TESTS

On 9 July Flt Lt Harold Pipes, an MAEE test pilot, accompanied by Sub Lt Lee RN, an experienced charioteer, together with a senior MAEE scientist, carried out the first handling tests of JM714 with the 'objects' fitted. With a minimal fuel load and no offensive armament the Sunderland behaved well, and five days later two unarmed chariots were uplifted and flown to the seclusion of Bowmore on the island of Islay where they were successfully lowered from the aircraft and dispatched with their crews.

To find out whether the Sunderland III was actually capable of lifting off with chariots, crew and full fuel, JM714 was loaded with lead ballast and full tanks to 61,000 lbs, 10,000 lbs over the auw permitted maximum. Take-off was achieved after a run lasting 83 seconds – over two miles.

Following the trials, which showed initial success, the Admiralty had second thoughts.

It was realised (somewhat belatedly) that as chariot operations depended entirely on total concealment to achieve success the noise of a Sunderland alighting, taxying and taking-off, would give the game away immediately. In addition, it was Admiralty policy to provide every means possible for the subsequent escape of the charioteers – they were never to be wilfully abandoned. Pick-up by Sunderland would not be possible as the aircraft could not loiter on the surface. It is also suspected that the technical problems of launching chariots from the aircraft in rapid time and without detection proved insurmountable.

The five expensively modified Sunderlands never entered Squadron service. Known as the *Strike Force*, they languished in storage at 57.M.U. Wig Bay until 1945 when most were converted to civil Sandringham configuration. One remains with us. JM715, now Short Sandringham *'Beachcomber'* rests in Southampton Hall of Aviation - with not a trace of her secret past remaining. ■

Acknowledgements

Thanks go to Ray Wilby ex-Short Bros, who first brought the subject to light, Flt Lt Harold Pipes RAF (Retd), George Phillips ex-Short Bros (Rochester), the Southampton Hall of Aviation, the RN Submarine Museum, Tony Eldridge DSC, and Mr Bob Hobson for their help in preparation of this article.

SUNDERLAND STRIKE FORCE – EPILOGUE

Sir,

Following the publication of 'Sunderland Strike Force' in *Wingspan* No 84 (February 1992), and in response to several enquiries, the following additional information which has come to light since the article was written may be of interest.

Despite much sleuthing no additional documented detail has emerged, what follows having been compiled from the fifty-year-old-memories of several people closely involved.

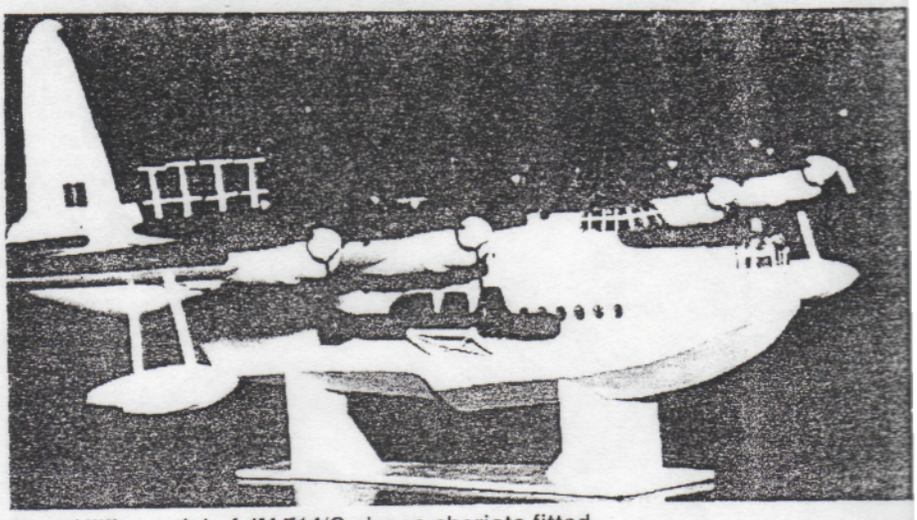
Much of the interest has centred on just how these very large objects, the chariot torpedoes, were lifted out of the water, attached to the Sunderland hull, and subsequently released. It should be mentioned that the chariots could not be fitted whilst the aircraft was ashore as the beaching legs interfered.

Support crutches

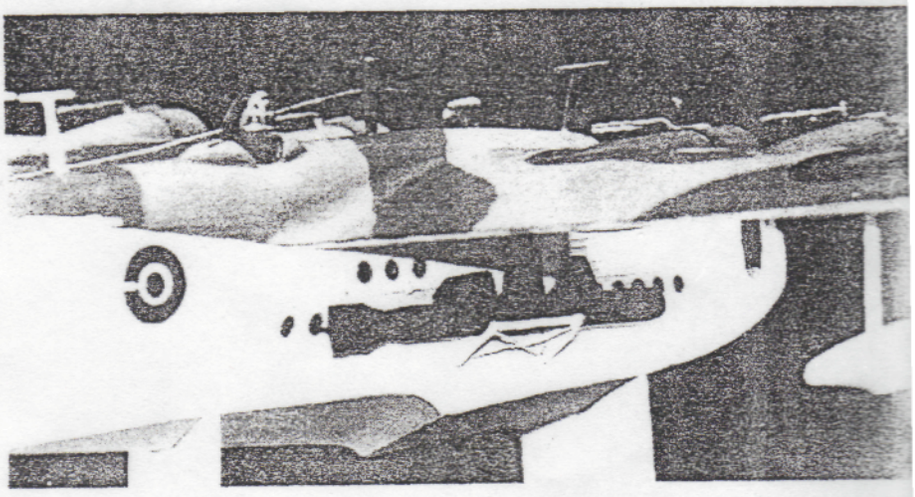
Two cast aluminium alloy 'Y' frames, shaped to accommodate a chariot torpedo were positioned at Frames 15/16 and 19/20 on each side of the Sunderland hull. The lower leg of the 'Y' was pivoted on a fitting at the waterline and an extension on the inner arm of the 'Y' entered the space between each pair of closely positioned Frames. The outer arms of the 'Y' frames were joined by a 2½-inch diameter tube and additional stiffening was provided by 20 cwt cables diagonally positioned between the 'Y' frames. Cables led from the upper 'Y' frame extensions to a winching mechanism situated within the hull.

This crutch device was lowered below the water surface, whilst the aircraft was moored, to enable a chariot to be floated on its side into position over the crutch. Raising the crutch lifted the chariot out of the water, when it was at a height sufficient to clear the aircraft bow wave. Securing straps were fitted via the galley hatches.

For anyone familiar with Sunderland water handling operations, such as fitting beaching legs or loading stores, the difficulties of manoeuvring 25 foot-long floating objects, on their sides and weighing over 4,000 lbs, into crutches protruding beneath the water, without damaging the aircraft or chariot, is best left to the imagination. Especially if the aircraft was tossing about in choppy conditions, or in a tideway or both. Handling a floating chariot torpedo, towed in to the slipway for recovery, resulted in a good soaking and injuries to several marine craft personnel before they were able to attach it to a crane.



Dave Hill's model of JM 714/G shows chariots fitted



Deployment

The primary object of the exercise was to drop the chariots within five miles of a target, with the minimum delay on the water to escape detection by enemy forces. The trials at MAEE were set up to see if that was possible.

On alighting the chariots were lowered into the water and released prior to the charioteer crews mounting; although exactly how this was accomplished in rapid time whilst the Sunderland was ploughing through the water is difficult to determine.

The memories of one of the charioteers engaged on this hazardous business extend to the recollection of being rather forcefully ejected from the rear door whilst the aircraft was moving at a rate of knots over a rough sea – only to discover that his chariot was out of sight. Another charioteer recounted that the aircrew were reluctant to stop the inboard engines in case they failed to re-start. In consequence forward way of about 5 knots was maintained whilst the chariots and their crews were jettisoned, resulting in wide separation of the essential components.

On one such occasion during the trials a charioteer was rescued after much strenuous effort by the crew of an attendant RAF marine craft. The fact that his boots were full of lead came as quite a surprise.

Royal Navy charioteers were the subject of some admiration by the RAF and civilian staff at MAEE Helensburgh. An invitation to Flt Lt Peter Knight, the unit Engineering Officer, from Sub Lt Lee, to accompany him on an evening submerged trip around the bay was, however, politely declined.

Interest in the whole saga has prompted Dave Hill of St Albans to model JM 714/G in ¼ scale complete with a pair of chariots fitted. His work, when exhibited, will no doubt raise a few interesting comments from unbelievers.

Thanks are due to: Henry Rolfe, J. Jackson, Norman Harry OBE, C Eng, and Peter Knight for their interest and valuable help.

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