Survey Report of Submarine HMS A1

Presented
By

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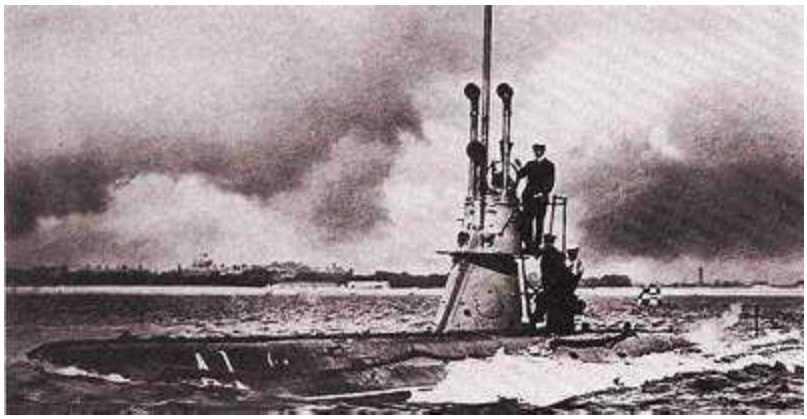
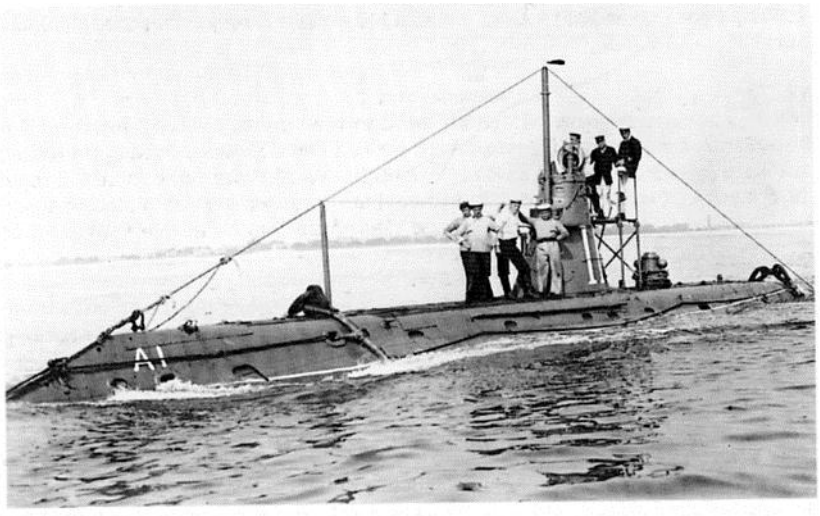




Introduction

Southsea sub-aqua has a long history of diving in and around the Solent area, their members found the Mary Rose. The club visits many wrecks in the Solent area each year and prides itself in its approach to safe wreck diving. Although the wreck site of A1 has been known to a lot of divers and the marks published in many a book, the site has been off bounds since its designation as a protected wreck in 1998. A1 was the first British designed & built submarine, the combination of a new wreck to visit and the sheer importance of visiting such a historic wreck has generated a lot of interest from within the club. The club is 70 members strong now and has a sufficient number of members to carry out survey work, some are NAS trained while others hold the Marine Conservation Society's "Seasearch" survey qualifications. It is on the back of this that we have carried out a survey of the wreck. The survey has been divided it two main areas, a survey of the hull structure and a survey of the marine life that has been found on the hull. Pictures have been included to help identify and confirm condition of the wreck.

A total of 5 dives have been completed, before weather and sea conditions have forced early termination of the project for the 2006 season.

The area in which A1 is lying is effected by 2 local tidal streams, this makes diving the wreck not as straight forward as would be hoped. In the five dives that have been performed only one of them actually had a slack water and that was only for a short duration. The site is being monitored to try to find the best time to dive the wreck, it may well be that there is never a long slack period on the wreck. Tidal stream data suggests a time of 2hours before slack water to dive the wreck but this figure seems inconsistent. The water seems constantly moving; its just that at some point it slackens off sufficiently enough to have a reasonable dive. The High water slack appears to be better than the low water slack, when visibility is reduced due to the emptying of the two local harbours, along with all of the debris and sediment that resides in them. Diving times have been varied in order to optimize the best slack water and this varies depending on whether spring or neap tides are present.

Visibility varies enormously in this area; the best we saw was 6 metres and the worst 1 metre.

Photograph 1 - HMS A1 as she is today

History and background

Information source – Gosport Submarine Museum

A1 was laid down on the 19th February 1902 at Vickers sons and Maxim Ltd, Barrow-in-Furness. She was launched on the 9th July 1902 and completed 23rd July 1903, weighing 190 tons surfaced, 207 tons submerged, overall length 103 ft 3 in, Beam 11 ft 10 in, mean draught 10 ft 1 in.

After her commissioning at Barrow she sailed down to Portsmouth to join the Holland class boats in the Portsmouth Submarine section with her tender ship HMS Hazard, she arrived on the 1st August 1903 and moored along side her tender in Fareham creek among the old powder and Quarantine hulks.

22nd September 1903 she carried out torpedo practice in Stokes Bay on Friday 14th March 1904 the A1, whilst carrying out simulated attacks on HMS Juno 1.5 miles off of Nab light, the captain, Lt Mansergh failed to see the SS Berwick Castle bearing down on him, the two vessels collided holing the A1's conning tower sinking her almost immediately with the loss of all 11 crew.

Monday 18th April 1904 the A1 was raised, the county coroner, Mr Edgar Noble, held the inquest into the accident so the bodies of the crew could be buried with out delay; they laid the crew to rest in Haslar cemetery with full military honours that evening.

15th June A1 is towed by HMS Hazard to Barrow for a refit, another water tight hatch is added at the point where the conning tower meets the pressure hull, this is done to all A class and subsequent submarines, to prevent a breach of the conning tower flooding the entire Submarine.

April 1907 HMS Hazard replaced by HMS Mercury
April 1908 HMS Mercury replaced by HMS Dolphin as depot ship for Home Ports section

7th August 1910 A1 suffered a violent explosion which shook the Submarine, leaving seven men injured. Petty Officer Drury was blown through the conning tower and into the sea, all seven men were taken to Royal Navel Hospital at Haslar were they recovered. The explosion was due to a build up of petrol fumes being ignited by a spark from an electrical system.

Dec 1910 A1 is condemned for further service.

August 1911 A1 was lost off Selsey Bill while running on automatic during sea trials.

A1 Structure

For 95 years A1 has been resting in the murky waters of the Solent and has been subjected to strong tides that flow around that area. Despite this the wreck today is in remarkable condition when you compare it to other submarines in the area. It is intact and upright on the bottom in 14 metres of water. It actually still looks like a submarine. The pressure hull being the strongest part of the vessel is complete, however the outer casing has long gone and no longer visible, and this would have formed a walk way along the length of the submarine also shielding some mechanical drive gear such as the front opening torpedo hatch drive shaft, see photograph 2. The wreck appears to be laying roughly North South and its bow slightly proud of the seabed, whilst the stern has slowly sunk into the mud of the seabed. A scour is present around the bow area and has become a collection point for empty shell fish cases.

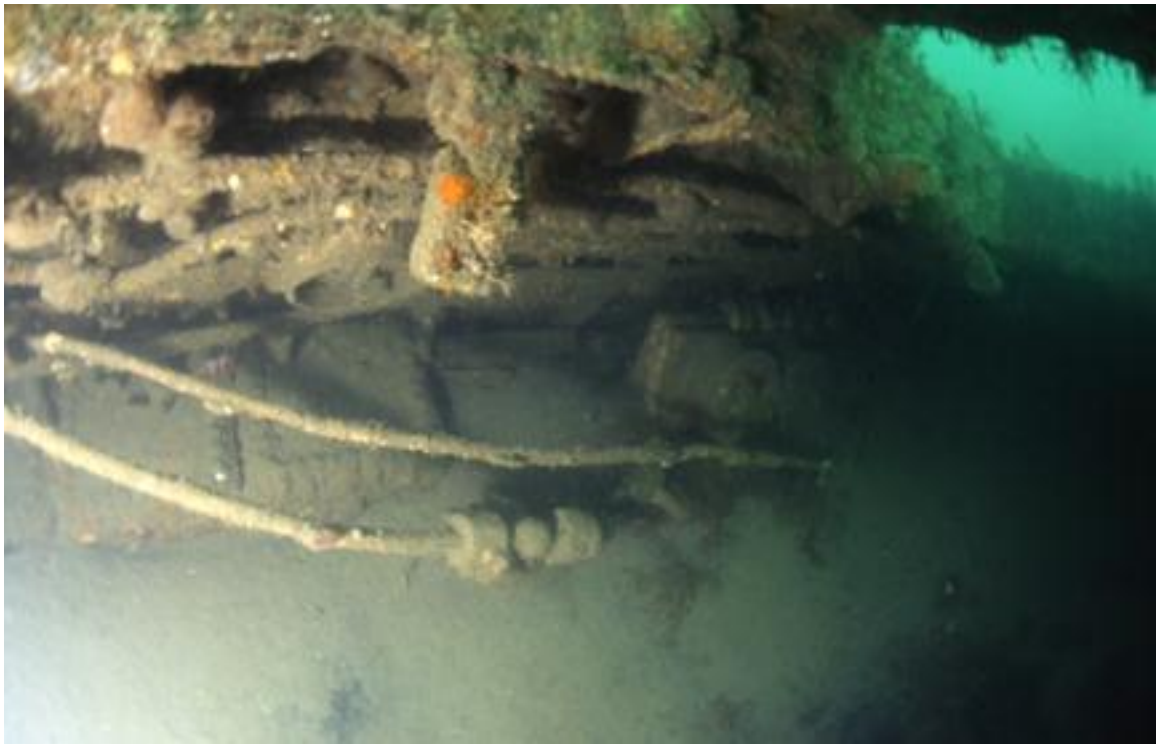
This picture taken at the bow of HMS A1 shows the missing outer casing that has dissolved, a triangle is visible in the top right hand corner where the outer casing once connected, and this missing casing has exposed the drive gear for the forward torpedo tube.

A line is also visible that has been used in the past as part of a buoy system to mark the position of the wreck.

Photograph 2

Moving further along the pressure hull at the top of the wreck there are two open hatches, (see photograph 4). The three torpedo's would have been loaded through these hatches, their openness is evidence of human interference, whilst there is little to steal from inside the submarine it is an example of the curiosity that exists from some of the sports diving community. The hatches can be found on the seabed either side of the wreck (see photograph 4). Whilst the hatches have been off for many years this has allowed the vessel to slowly fill with mud and sediment from the

surrounding seabed, looking into the abyss you cannot distinguish much and even a torch beam does little penetrate into the darkness. Photograph 3 taken from inside gives some indication of the amount of sediment that has now filled in this area and also shows some of the mechanics of the submarine.



Photograph 3

Photograph 4

It can be clearly seen in photograph 4 the open hatches where the torpedos were once loaded

Photograph 5

Photograph 5 clearly showing one of the hatches that has been removed and now resides on the starboard side of the vessel. It is not clear how these have been removed from the outside as they would normally closed and sealed from the inside. There are no obvious signs of force.

In the amidships area the conning tower is still very much an identifiable part of the boat and can clearly be seen on an echo sounder trace as the proudest point of the site. There is a large crack that runs the height of the tower on the forward face and a smaller one on the rear see photographs 6 and 7.

Photograph 6

The conning tower although easy recognizable still, is now showing signs of deterioration and fatigue, this will probably be the next thing to drop off in coming years.

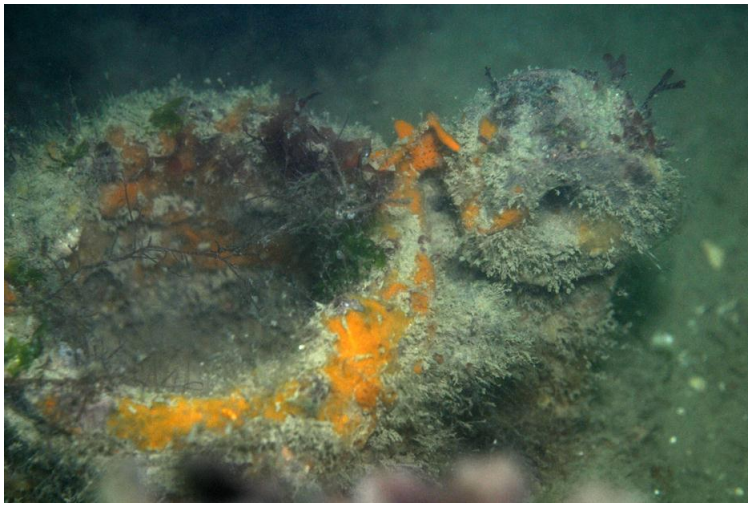
Photograph 7

Looking at the upper part of the conning tower there appears to be only two out of the four tubes showing in one of the original photographs, it's difficult to ascertain what is left and what is missing. Photograph 8 shows what is left of the upper part of the tower, further investigation will be done over the following year to find out exactly what is left and what has disappeared. As you can see from the image below there is a lot of growth on the submarine and this makes identifying parts of the boat very difficult. A basic line drawing has been obtained from Gosport Submarine museum which was part of the original plans but no real detail can be ascertained from them.

Photograph 8

Heading further towards the stern, again the outer casing is missing from the top of the boat; this has exposed a variety of fixtures and fittings. Some objects appear clearer than others, there are several intakes showing, photograph 9 shows one of the fuel filler or water filler intakes.

Here it can be clearly seen that one of the intakes to the boat has lost its cap, although they could have rotted away, it is more likely that they have been salvaged at some point in the wrecks history.



Photograph 9

In photograph 10 two long tubes can be clearly identified, these are almost certainly part of the exhaust system for the Wolseley 350Hp petrol engine, they are very similar to the ones that can be seen on Holland 1, what is missing or burred is the exhaust box. At this point the submarine starts to disappear into the seabed.

The two pipes that can be seen in the picture are about 10feet long running along the length of the wreck. In the middle the upright may have been a small bollard. The exterior compass is missing too. An alternative theory is that this upright was used to support periscope guide wires as used on Holland 1 but this is less likely as the conning tower on A1 did most of the structural supporting for the periscope. And the guide wires that appear in one of the original pictures of the submarine appear to secure further back beyond the lifting strops.

Photograph 10

At the rear of the boat things are not so clear, photograph 11 shows how the boat comes to an abrupt end, the last recognizable feature is the lifting strop which for some reason were never taken off the boat when it went into service or they were an integral part of the design of boats of that era, either way they are substantial pieces of ferrous material. In the middle of the image a rectangle can be made out, this possibly was where the exhaust box was fitted and again requires some further investigation next season.

Photograph 11

Beyond this lifting strop there is nothing but muddy seabed, the boat comes to abrupt end, you expect to see a rudder, hydroplanes and a propeller, but there is no evidence of their existence, it is a little odd considering the completeness of the rest of the wreck. Photograph 12 shown how the stern of the boat disappears into the muddy depths of the seabed and so it is not possible to establish what, if any thing is remaining of the stern section, where the rudder and propeller should be. Detailed measurements need to be taken next season to get an idea of just how much of the wreck is buried and also how deeply it is buried.

The bulges on the side of the hull could give some indication of what is remaining in the seabed though they are not shown on the scale drawing.

Photograph 12

The last visible remains of the boat can be seen in this picture.

Photograph 13

Debris Field

A number of items have been observed on the seabed that have either fell off or been forced from the wreck, they can be seen in photographs 14 and 15 along with photograph 5.

Photograph 14

In the middle of the picture here is seen a straight piece of metal near the stern area on the Port side. Its origins are unknown at this point in time.

Near the bow is this large lump of material, it looks a bit like a bollard but this is unlikely as submarines of that era were not fitted with such fittings. Further investigation will be required to fully establish what it is.

Photograph 15

Marine Life

One of the aims of the survey was to establish what marine life was on the wreck and also if there were any notable different species identified. This element of the Survey was done by using the Marine Conservation Society "SeaSearch" survey as a vehicle for identifying and recording species and their environment. SeaSearch has well established methodology and programs that are specifically used for mapping the seabed around the U.K. coast. Divers are trained in identification and recording techniques and complete standard forms which are then loaded onto a central database and the information is used by many agencies around the U.K to identify changes in the marine environment and identify the causes of such change. There are 2 levels of SeaSearch survey, depending on the training and experience of the diver, i.e. SeaSearch 'Observer' which provides a basic report of the seabed/environment and marine life and the more comprehensive 'Surveyor' which provides a much more in depth report Divers of both qualifications took part in the A1 survey.

Discussion

Like all wrecks around the Solent area, A1 has a lot of the usual species associated with a structure of this type and in the depth range that it is. The main observations are;

Fish

- The biggest observation that was made by most was the high percentage of Tompot Blennies (Parablennius gattorugine) on the site; whole families could be seen on almost every inch of the wreck. Whilst they are seen around the area on some dives (Mixon hole and Far Mulberry) being a good comparisons, not in such densities and above all they seemed move friendly and inquisitive than other sites. One Tom Pot in particular actually allowed itself to be stroked and seemed to enjoy the experience! This happened on several of the dives. This could be explained by the lack of diving visitors and so a no fear of the diver even though we must appear to be the equivalent size of a Blue whale to them.
- There were only three conger eels (Conger conger) seen which is a low count for a submarine in the area; this could be explained by the wrecks intactness. Congers love pipes to hide in and Submarines generally have lots of them. They also seem to like darker areas; A1

tends to be fairly light in comparison to some of the other deeper wrecks in the area.

- A small shoal of Bib (Trisopterus luscus) swam around the Conning tower which is fairly typical. An occasional Sea Bass (Dicentrarchus labrax) was also seen on one dive, though they are timid fish and often keep their distance even though they are one of the predators of the reef.
- A long spined sea scorpion (Taurulus bubalis) was also seen, this is a common species for the area too but only single numbers are ever seen on any given dive.

Crustacians

- Only one edible crab (Cancer pagurus) was seen which is low, Velvet swimming crabs (Necora puber) were seen though and again quite usual. One medium size Lobster (Homarus gammarus) was seen and this Lobster proved to be another surprise as it came out of its hole to investigate a diver who was stirring up the seabed area nearby with their finger. This behavior again indicates a lack of fear for divers which are probably down to the control measures in place for diving. I operate a "no take policy" on the A1 dives in order maintain the most natural environment for the species on the wreck. So the lobster was left in peace. There were also some prawns which lived happily alongside the lobsters, crabs, tom pots and even the congers, Sponges and sea squirts
- There were a number of different species of sponges and sea squirts, all of which seemed to be those you would normally find in the area/depth. There was a small colony of pretty lightbuld sea squirts (Clavelina lepadiformis) by the bow and lots of brightly coloured shredded carrot sponge (Esperiopsis fucorum). These animals feed by filtering the sea water for particles of food.

Bryzoan and Cnidaria

- The wreck had lots of 'Hornwrack' (Flustra foliacea) along its length which looks like seaweed but is in fact a colony of small animals. Small groups of white Anenomes (Actinothoe sphyrodeta)\and also dead mans fingers (Alcyonium digitatum) were also present. These were feeding in the current and capture prey with their stinging cells.

Algae and seaweed

- Every inch of the A1 appeared to be covered in seaweed; however much of this is actually animal rather than vegetation. Feathery hydroids look like ferns but are stinging animals. There was some algae and weed attached to the wreck, particularly on the conning tower. Both red and green seaweed due to the relatively shallow depth and the fact we were diving in the summer too.

Molluscs

- Slipper limpets (Crepidula fornicata), which are prevalent in the Solent were present on the seabed around the wreck. Many of the empty shells had been collected in the scour around the bow by the strong currents.

Summary

A1 is in good condition when you take into account her position and duration under the water. Her checkered past and lack of action during the war has probably saved her from damage and destruction. However this wreck is deteriorating all be at a slow rate. The Outer casing is completely dissolved now; the pressure hull is covered in marine life and mud from the surrounding seabed which almost certainly has slowed down the rate of decline. There is no doubt that some items have been pilfered from the site and this is as good a reason to restrict diving activities on the site for now and the future.