

Forgotten Wrecks
of the
First World War

SS Leon
Site Report



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FORGOTTEN WRECKS OF THE FIRST WORLD WAR

***SS LEON* SITE REPORT**



Table of Contents

i Acknowledgments 3

ii Copyright Statement 3

iii List of Figures..... 3

1. Project Background 4

2. Methodology..... 4

 2.1 Desk Based Historic Research 4

 2.2 Associated Artefacts 5

 2.3 Site Visit/Fieldwork 6

3. Vessel Biography: SS *Leon* 6

 3.1 Vessel Type and Build 7

 3.2 Pre-war Career 7

 3.3 First World War Use & Loss 7

 3.4 Associated Vessels 8

 3.5 People Associated with the *Leon* 9

 3.6 Post-loss activity 9

4. Seabed Remains 10

 4.1 Site Location and Environment 10

 4.2 Archaeological Methodology 10

 4.3 Description of Surviving Vessel Remains 11

5. Recovered Artefacts..... 19

6. Site Significance & Potential Further Research..... 21

7. Bibliography 22

8. Appendices..... 22

 8.1 Crew list from SS *Leon*..... 22

 8.2 Technical details of UC-75..... 24

 8.3 Details regarding the guns aboard SS *Leon*..... 24

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ii Copyright Statement

This report has been produced by the MAT with the assistance of funding provided by the Heritage Lottery Fund through their Heritage Grants Programme. Unless otherwise stated all images are copyright of the MAT.

iii List of Figures

FIGURE 1: SS <i>LEON</i> WHEN UNDER THE FORMER NAME OF <i>ARCACIA</i> (COPYRIGHT UNKNOWN)	6
FIGURE 2: DIAGRAM SUPPORTING THE MASTER'S TESTIMONY AT THE ENQUIRY (COURTESY OF DAVE WENDES, PRIVATE COLLECTION)	8
FIGURE 3: LOCATION OF SS <i>LEON</i>	10
FIGURE 4: MULTIBEAM IMAGE OF THE <i>LEON</i> (CONTAINS PUBLIC SECTOR INFORMATION UNDER THE OPEN GOVERNMENT LICENCE V3.0 FROM THE MARITIME AND COASTGUARD AGENCY)	11
FIGURE 5: A SHINGLE SEABED INTERSPERSED WITH SAND (SCATTERED WRECK MATERIAL ALSO SHOWN)	12
FIGURE 6: CLOSER ANNOTATED VIEW OF THE GEOPHYSICAL IMAGE	12
FIGURE 7: STARBOARD-MOST VERTICAL BOILER LYING NEXT TO THE HORIZONTAL BOILER	13
FIGURE 8: PORT SIDE BOILER, THIS FACE OF THE BOILER IS TOWARDS THE STERN	14
FIGURE 9: PORT SIDE BOILER, THIS FACE OF THE BOILER IS TOWARDS THE BOW	14
FIGURE 10: THE CONDENSER LYING WITHIN THE WRECKAGE	15
FIGURE 11: CLOSE UP OF THE CONDENSER	15
FIGURE 12: ANCHOR CHAIN WHICH IS LEADING OUT TO AN ANCHOR AT THE BOW	16
FIGURE 13: SIDE VIEW OF THE WINCH HOLDING THE ANCHOR CHAIN	16
FIGURE 14: WINCH HOLDING THE ANCHOR CHAIN (PLAN VIEW)	17
FIGURE 15: REMAINS OF WHAT APPEARS TO BE A STEAM PUMP	17
FIGURE 16: POSSIBLE GUN REINFORCEMENT	18
FIGURE 17: CIRCULAR PLATE THAT METAL BOX OF THE GUN REINFORCEMENT IS RIVETED TO	18
FIGURE 18: AMMUNITION BOX (LOWER LEFT OF PICTURE)	19
FIGURE 19: PIECES OF CERAMIC WATER FILTER	20
FIGURE 20: BRASS BRIDGE TELEGRAPH	20
FIGURE 21: TWO PIECES OF SHIPS BELL	20
FIGURE 22: REMAINS OF A STEERING WHEEL FROM THE <i>LEON</i> ON DISPLAY	21

1. Project Background

Forgotten Wrecks of the First World War is a Heritage Lottery Funded project which is dedicated to raising the profile of a currently under-represented aspect of the First World War. While attention is often focused on the Western Front and major naval battles like Jutland, historic remains from the war lie, largely forgotten, in and around our seas, rivers and estuaries.

With over 1,100 wartime wrecks along England's south coast alone, the conflict has left a rich heritage legacy and many associated stories of bravery and sacrifice. These underwater memorials represent the vestiges of a vital, yet little known, struggle that took place on a daily basis, just off our shores. The study and promotion of these archaeological sites presents a unique opportunity to better interpret them and improve physical and virtual access.

The project focuses on underwater and coastal sites between Kent and Cornwall, which include merchant and naval ships, passenger, troop and hospital ships, U-boats, ports, wharfs, buildings and foreshore hulks. These sites, under water and on the foreshore, have been degrading and deteriorating due to natural and human processes for approximately 100 years and, as a result, are extremely fragile. In many cases, this project represents a final opportunity to record what remains on the seabed and foreshore before it is lost forever.

The project aims to characterise the nature and extent of the maritime First World War archaeological resource surviving on the south coast's seabed and around the coast. This will enable an understanding of maritime activity just off our shores during the conflict and provide a window onto some of the surviving sites. While it will not be possible to visit and record all c.1,100 vessels dating to the First World War, lost off the south coast of England, a representative sample of sites have been selected for more detailed study, analysis and interpretation. This report collates information relating to one of these First World War wrecks, namely that of SS *Leon*.

2. Methodology

General detail on the methodologies employed during the project are outlined within *Forgotten Wrecks of the First World War: Project Methodology Report*, this report section concentrates on approaches and resources relating to the SS *Leon*.

2.1 Desk Based Historic Research

Online Information/Sources

On-line research consulted a range of sources to identify any primary and secondary information on the *Leon*. Key sources located included:

Pastscape:	http://www.pastscape.org.uk/hob.aspx?hob_id=804994
Wrecksite EU:	http://www.wrecksite.eu/wreck.aspx?1266
Uboat.net	http://www.uboaat.net/wwi/boats/index.html?boat=UC+75
Other URL:	https://en.wikipedia.org/wiki/List_of_shipwrecks_in_January_1918 https://en.wikipedia.org/wiki/List_of_shipwrecks_in_January_1917 http://www.heritagegateway.org.uk/Gateway/Results_Single.aspx?uid=804994&resourceID=2 http://www.tritonscuba.co.uk/portfolio/30m-wrecks/ http://www.searlecana.org/sunderland/images14/acacia1.jpg https://livesofthefirstworldwar.org/

Records at The National Archives

Research was further extended through visits to view relevant material held at The National Archives at Kew. The following documents were consulted:

Documents relating to SS *Leon*:

What	Ref.	Where	Date accessed
Registry of shipping and seamen: Transcripts and transactions, Series IV, closed registries	BT110-801	TNA	2017
Enemy Submarines: Particulars of attacks on merchant vessels in home waters	ADM 137/4008	TNA	2015

Documents relating to people connected with *Leon*:

What	Ref.	Where	Date accessed
English Channel: German Submarines, 1-20 January 1918 (list of survivors)	ADM 137/1473	TNA	2015

Records at Other Archives/Collections

Historian and dive skipper Dave Wendes kindly made his collection of material from the *Leon* available for scrutiny. The following documents were consulted:

What	Ref	Where	Date accessed
French Maritime Forum	Dave Wendes Collection	MAT	2015
HMT <i>Gozo</i> Log	Dave Wendes Collection	MAT	2015
Original French document containing details of the loss of the <i>Leon</i> (Translated)	Dave Wendes Collection	Dave Wendes	2015

Desktop research included studying bathymetric imagery of the wreck of the *Leon*. As the wreck lies within a 500m buffer zone around aggregate extraction area number 340, the licence holders Volker Dredging Ltd and CEMEX UK Marine Ltd kindly provided copies of geophysical survey of the site. This data helped with planning fieldwork undertaken on the site in 2017. Following fieldwork an additional geophysical survey dataset was kindly provided by the Maritime & Coastguard Agency through the UKHO: HII 499 Southern Approach to Eastern Solent 1m CUBE. This dataset was of a higher resolution than the aggregates survey, and allowed further interpretation of the site remains.

2.2 Associated Artefacts

While the Forgotten Wrecks project had a non-recovery policy, where possible, the project aimed to 'virtually reunite' artefacts historically recovered from the Forgotten Wrecks. The following artefacts were located through research:

- Receiver of Wreck (RoW) reports – Some objects (rifles) reported but seem to be related to another close by wreck the *Kurland*
- Museums and exhibitions – Martin Woodward has four objects all of which were subject to recording and photographing, they include two pieces of the ships bell (identified as being from *Leon*), brass bridge telegraph, two pieces of a ceramic water filter, and the remains of a steering wheel. They are held at the Shipwreck Centre and Maritime Museum at Arreton on the Isle of Wight.

2.3 Site Visit/Fieldwork

Forgotten Wrecks site visits and fieldwork aimed to:

- Provide opportunities for volunteers to access and take an active role in the recording and research of a range of different types of maritime First World War site.
- Record extant remains for heritage records.
- Record extant remains for public dissemination, enabling 'virtual' access for those not able to achieve physical access.

Forgotten Wrecks funded diving from the dive boat *Wight Spirit* took place on the wreck of the *Leon* on 5 July 2017. Initial dives aimed to assess the condition of the remains and obtain a sketch drawing, then to build on this information with a measured sketch/survey and photographic recording where possible.

Six divers undertook a total of 285 minutes diving on the wreck. The dive team used self-contained breathing apparatus (SCUBA) with a breathing gas of Enriched air nitrox (EANx) using accelerated decompression procedures. The visibility on the dive was quite poor at around two metres and there was very little light.

3. Vessel Biography: SS *Leon*

SS *Leon* was chosen as one of the Forgotten Wrecks as it is an example of a French armed merchant steam ship lost during the First World War (Figure 1). There was a need to positively identify the seabed remains as being those of the *Leon* as it lies within a cluster of three First World War losses off the south east of the Isle of Wight (the others being the *Camberwell* and the *Kurland*). The presence of several large First World War cargo ships close together has caused some confusion over the identity of the sites. The *Wapello* and *Highland Brigade* are other wrecks lying nearby from the First World War which have added to the confusion over identities.



Figure 1: SS *Leon* when under the former name of *Arcacia* (Copyright unknown)

3.1 Vessel Type and Build

SS *Leon* was built by William Pickersgill & Sons Ltd, in Southwick, Sunderland and completed in 1895. The *Leon* was initially named *Arcacia*, and was a steel steam powered cargo vessel having a gross tonnage of 2401 grt. The 295ft (c.90m) long ship had a beam of 42ft 3ins (c.13m) and was powered by a three cylinder triple expansion engine with two boilers, a single shaft and screw generating 220 nominal horse power. The ship had a speed of nine knots (Wrecksite EU, 2001-1016; The Steam ship).

3.2 Pre-war Career

Built for and operated initially by the Acacia steamship Co Ltd of West Hartlepool and managed by J Lilly & Co Ltd, the SS *Acacia* was sold in 1900 to the Greek shipping company Zarifi L. (Z Fitlis & Co.) of Piraeus and renamed *Leon*. Further changes of ownership occurred in 1916 (to Compagnie Nantaise de Navigation, A Vapeur of Nantes) and then again in 1917 to Delmas Freres – Delmas & Vieljeux of La Rochelle. A fairly typical cargo steamer, the SS *Leon* operated throughout the Channel and North Sea areas (Wrecksite EU, 2001-1016; The Steamship).

3.3 First World War Use & Loss

The *Leon* was a French vessel, owned and operated by Delmas Freres, Delmas & Vielieux of La Rochelle (official number 10273). At the time of the sinking the *Leon* was on route from Newcastle bound for Tunis and the North African coast and was carrying a cargo of coal and coke. The vessel was armed with two 90mm guns (TNA ADM 137/4008).

On 15 December 1917, the SS *Leon* left the port of Newcastle with a cargo of coal and coke (2250 and 600 tons respectively). The first leg of the voyage to Tunis took the *Leon* via Great Yarmouth where, as a result of bad weather an anchor was lost. The *Leon* then proceeded to Gravesend to assess the damage and await spares and repairs, which took three weeks to complete. The SS *Leon* left port to continue its voyage at 6.15hrs on 5 January 1918 in fine weather with a light breeze from the west under the navigation of a pilot. Orders were received to proceed to the Isle of Wight where new instructions for crossing the English Channel and proceeding to Tunis were received.

The *Leon* had a crew of 34, comprising 31 French sailors, one Haitian and two Sengalese and was under the command of Louis R Orchambeau. On the morning of the 7 January 1918, in overcast conditions, with visibility of about one mile, the SS *Leon* was steaming north-west at about seven knots in a calm sea with moderate swell and a moderate northerly wind. With watches and lookouts posted on the bridge and on the port and starboard sides at about 0500hrs, the ship was hit by a single torpedo fired from the German submarine UC-75, under the command of Oberleutnant Johannes Lohs. The torpedo struck the *Leon* on the starboard side and blew a large hole in number two hold with the blast throwing debris across the deck and bridge. The diagram below (Figure 2), taken from the master's testimony to a French enquiry highlights the areas of damage to the ship.

The blast also damaged or destroyed aerials and communications equipment making it impossible for distress signals to be sent. In the post incident enquiry this damage was a focal element of recommendations made to install emergency equipment or auxiliary radio positions.

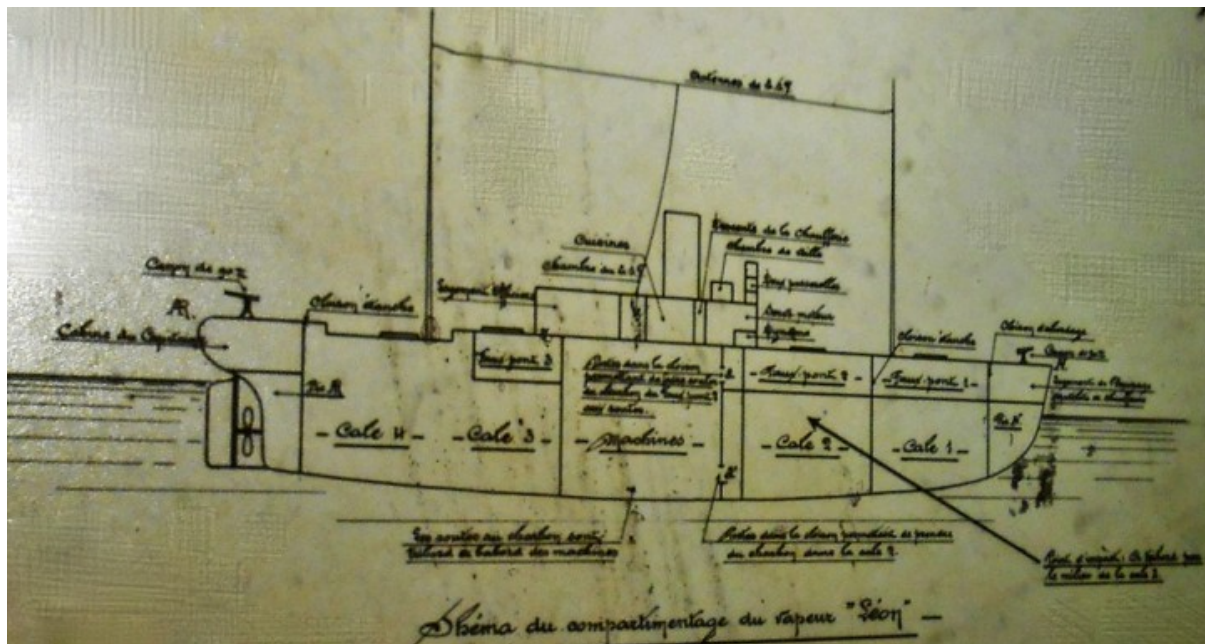


Figure 2: Diagram supporting the Master's testimony at the enquiry (courtesy of Dave Wendes, private collection)

Although taking on water steadily, the ship stayed afloat and made way for over an hour. The master ordered the crew to stand by the lifeboats and await his further orders. Four men decided that they couldn't wait and lowered a lifeboat while the ship was still moving, the boat capsized and the men were all lost. Despite the other crew members throwing lifebelts overboard and carrying out searches, the four men were the only casualties of the sinking. The *Leon* then made a course to the NW to seek the coast (of the Isle of Wight) or at least more sheltered waters.

Over the course of the next hour or so the ship's boats were launched in preparation for abandoning the vessel. These included a whaler, *Doris*, and a canoe as well as a lifeboat. Eventually at about 06:25hrs the water reached the starboard deck and the ship had 10 degrees of heel. At about 06:30hrs the master heard a loud noise in the number one hold and saw that the water had reached the first plate of the port bridge. At this point the master left the ship, joined the men in the canoe and all boats pulled clear of the *Leon*. The ship sank soon after at an estimated position 11 miles SE of St Catherine's Point. The patrol vessel, HMT *Gozo*, embarked the surviving crew at about 06:45hrs and took them to St Helens from where they were transferred to Portsmouth arriving at 11:00hrs.

The official reports and commentary at the investigation suggested that the master of the *Leon* was courting disaster by the way he was behaving. He had no flag flying, was not zig-zagging and had bow navigation lights on (albeit dimmed). The C-C Portsmouth noted that 'this is another case of a vessel being torpedoed burning dimmed bow lights'. Additional criticism was levelled at the 'inadequacy of the watch mainly at the front' but also of the Gunners who failed to comply with regulations associated with the gun charges (ADM 137/4008, and translated by Mark Hobbs from original French inquiry from D Wendes collection).

3.4 Associated Vessels

Two vessels are associated with the loss of the SS *Leon*, the German submarine UC-75 and the Allied Patrol craft HMT *Gozo*.

German Submarine UC-75

UC-75 was a coastal minelayer class submarine, built in Hamburg by Stettiner Maschinenbau AG Vulcan (work #80) under a January 1916 order. The boat was launched on 6 November 1916 and commissioned on 6 December 1916. The technical details of the boat can be found in Section 8.2.

In a career of three commanders and 13 patrols between 10 February 1917 and 31 May 1918, UC-75 sank 56 ships and damaged a further eight. UC-75 was lost on 31 May 1918 when it was rammed and sunk by HMS *Fairy* while attacking a convoy in the North Sea resulting in 17 dead and 14 survivors.

Oberleutnant Johannes Lohs was the 2nd commander of UC-75 and by far the most successful with 47 sinkings and damage to a further five allied vessels. The SS *Leon* was the last of his 'victims'. Born in June 1889, Lohs was a highly decorated submarine commander, holding the Iron Cross (1st and 2nd class), the Albert Order of Saxony, the Royal House Order of Hohenzollern and the Pour le Merite. In his career, he sank a total of ~165,000 tons of shipping (76 ships, one warship and a further 16 ships damaged). He was killed in August 1918 when it is believed his submarine (UB-57) hit a mine in the area of the Sandiette Bank, east of the Straits of Dover. His body washed up on shore a week later and he was buried initially in the military cemetery at Vlissingen before being later moved to Ysselsteyn (the only German military cemetery in the Netherlands) (Uboat net commanders, 1995-2016; Uboat net, 1995-2016).

His Majesty's Trawler *Gozo*

HMT *Gozo* was a requisitioned trawler built of steel in 1902 by Cook Welton & Gemmell Ltd of Beverley (Yard #308). The ship was 33m long with a beam of 6.5m, it had a gross tonnage of 172grt. Powered by a single boiler, single triple expansion engine of 45 nhp (from Amos & Smith Ltd of Hull) driving a single screw, the trawler made 10 knots. Registered originally in Hull (H545) the vessel was owned by the Hull Steam Fishing and Ice Co. Ltd until being requisitioned by the Admiralty and flying pennant #644. Armed with a single 6pdr AA gun the vessel was in service from October 1914 until 1919 and was deployed as a minesweeper.

The *Gozo* survived the First World War and was returned to the Hull Steam Fishing and Ice Co. Ltd. It went on to enjoy a successful commercial career with various owners / operators. In 1930 the ship was sold to Brand C H & Co of Hull, then in 1939 was sold again to Boston Deep Sea Fishing & Ice of Grimsby, then to Yolland Bros Ltd. of Milford Haven (UK) in 1941. Owned in 1945 by Milford Fisheries Ltd., Fleetwood, the *Gozo* was lost on the 24 July 1945 after hitting a mine 25 miles south south-west of The Old Head of Kinsale; all the crew were rescued (Wrecksite EU, 2001-2016).

3.5 People Associated with the *Leon*

The SS *Leon* sailed with a crew of 34, comprising 31 French sailors, one Haitian and two Senegalese. There is slight confusion in the records as to the correct names/spellings and titles of some of the crew when comparing the list in ADM 137/1473 and the original French inquiry from Dave Wendes collection. The list can be found in Section 8.1 below.

3.6 Post-loss activity

Martin Woodward discovered and identified the SS *Leon* in 1975. However, as there are a number of large First World War merchant vessels within close proximity sport diver reports have often confused the identity of the various sites. This has led to records for the sites held by the National Historic Environment Record having some confusion over which site is which.

Since the initial discovery, the wreck has apparently broken up considerably, particularly the centre section, perhaps this is partly as a result of salvage work (Pastscape, 2015). The wreck of the SS *Leon* continues to be a popular sports diving location.

In the 1990's a 90mm cannon was still to be found on the stern, this was another clue as to the wreck's identity as the 90mm had projectiles and bagged charges so did not have shells. The *Kurland* (which was a shipwreck the *South Western* had sometimes been confused with nearby) had a 75mm cannon with lots of shell cases near it (Andy Williams pers. comm). See Appendix 8.3 for more information about the gun.

The *Leon* lies within a 500m buffer zone around aggregate extraction area 340. Due to this proximity the site has been surveyed as part of aggregate licence assessment and monitoring work meaning that geophysical survey data sets have been available for study thanks to Volker Dredging Ltd and CEMEX UK Marine Ltd.

4. Seabed Remains

4.1 Site Location and Environment

The SS *Leon* lies in around 30m of water nine miles east of St Catherine's, Isle of Wight at position 50.59437 -1.0678 (WGS84, UKHO) (Figure 3).

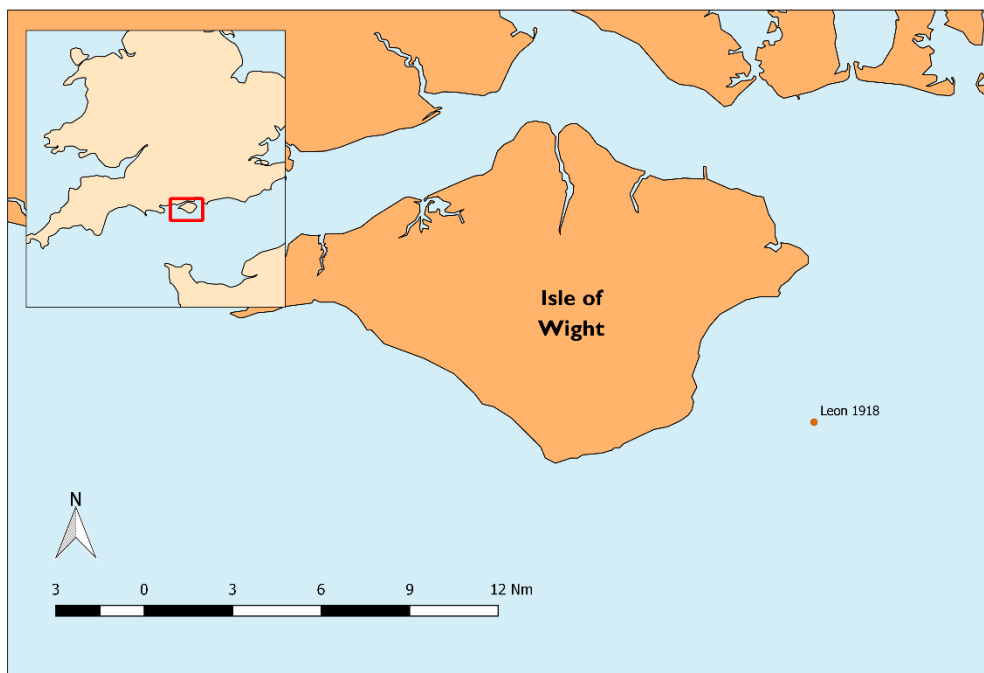


Figure 3: Location of SS *Leon*

4.2 Archaeological Methodology

Survey techniques applied to the site included:

Visual survey, aiming to:

- Identify key features of the vessel for more detailed recording through photography.
- Identify the cargo of coal.
- Identify boilers (*Leon* had 2).
- Locate the two guns (if still in place).
- Confirm the nature of the seabed around the wreck.

Photographic survey, aiming to:

- Gather general photographs of the wreck and divers on the wreck.
- Photograph key features with archaeological scale from multiple angles.

Measured survey, aiming to:

- Measure the width of the site if an area of remains survive to its original width.
- Measure the size of the boilers.

Photogrammetry was carried out by one diver around the boilers and amidships section of the wreck using a Nikon D700 DSLR camera in a Sealux CD7000 camera housing with one Orcalight Seawolf 1860 diving light in a rugged casing. Another pair of divers took measurements around the boilers and another pair concentrated on the engine area.

4.3 Description of Surviving Vessel Remains

The remains of the wreck of the *Leon* rest in around 30m of water. The geophysical image of the *Leon* (Figure 4) provides high resolution detail of the site, from which it is possible to see that the stern is broken and partly buried and there is an area of scour about one metre deep off the bow. Much of the rest of the wreck is visible, with the boilers being dominant features. The site lies on a flat seabed of shingle interspersed with a little sand (Figure 5).

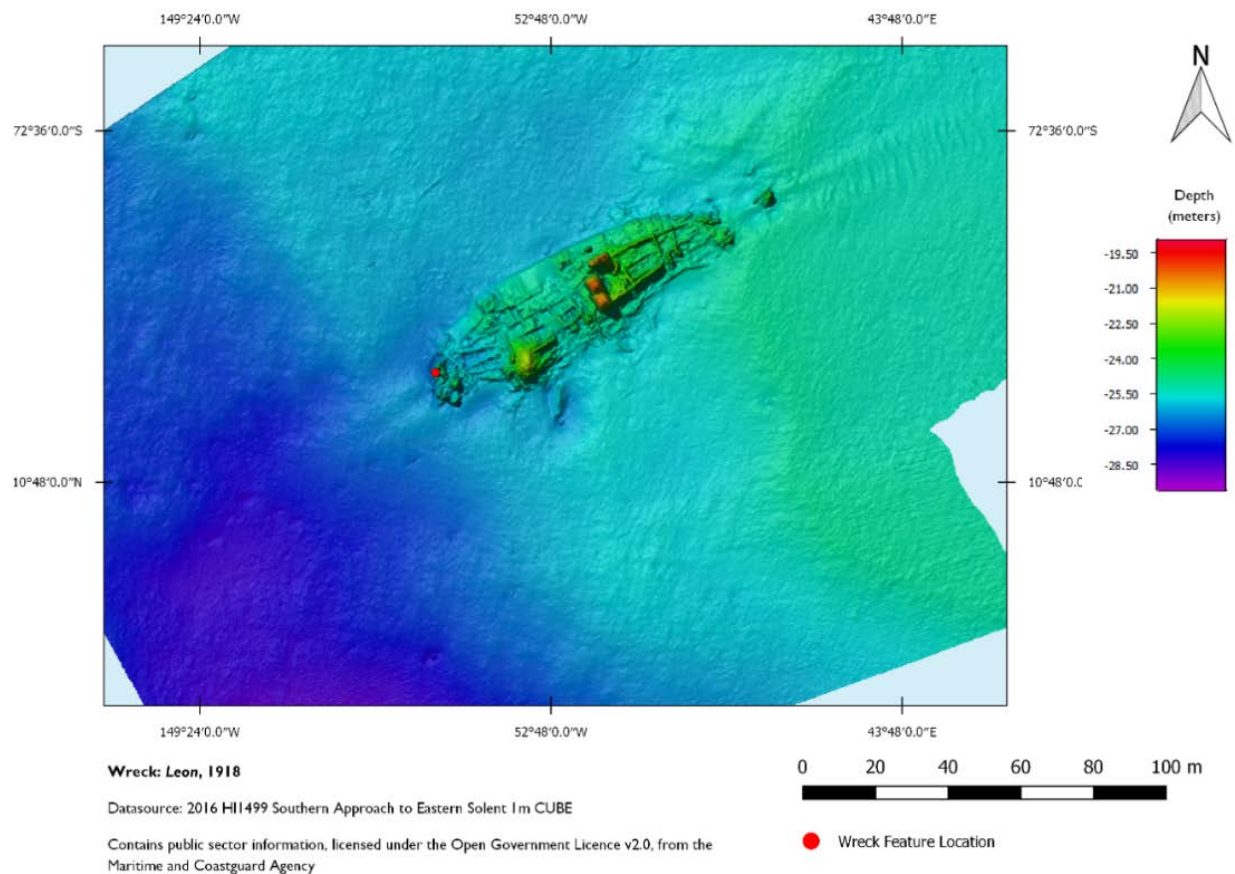


Figure 4: Multibeam image of the *Leon* (contains public sector information under the Open Government Licence v3.0 from the Maritime and Coastguard Agency)



Figure 5: A shingle seabed interspersed with sand (scattered wreck material also shown)

The geophysical image shows an object present in an area of scour just astern of the port bow, divers did not confirm the identity of this feature but it appears to be the correct size and shape as to be a gun barrel (Figure 6).

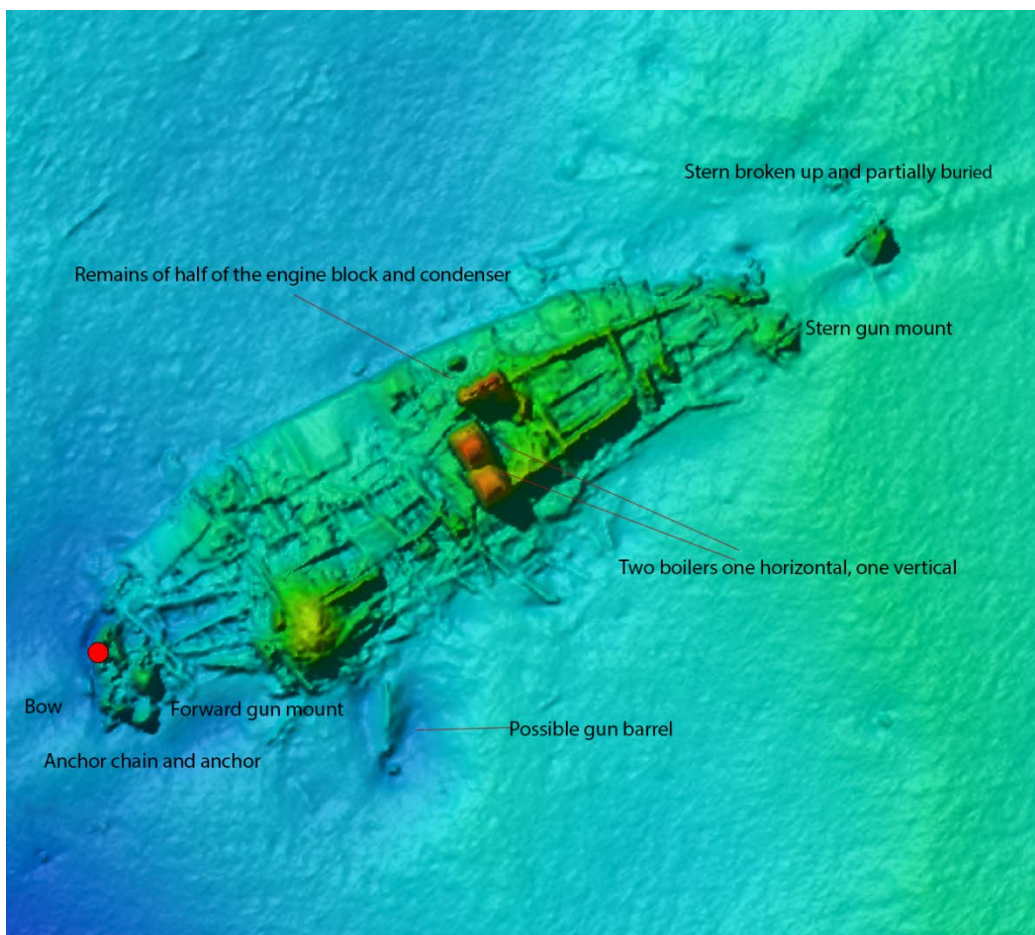


Figure 6: Closer annotated view of the geophysical image

The ship is leaning over towards its port side and is quite broken up in the amidships section. Two boilers were located, the boiler towards the starboard side is standing vertically and partly buried in the sand (Figure 7) while the other, towards the port side lies horizontal (Figures 8 and 9). The horizontal boiler face measures 4.3m in diameter and stands around five metres off the seabed. The furnace fronts and the ends of the fire tubes can be seen. Next to, and just behind the vertical boiler lies the condenser (Figures 10 and 11), and what appears to be half of the engine block, this feature measures 1.4 metres in length.

The stern section was not surveyed or photographed during the Forgotten Wrecks dive but the geophysical image clearly depicts two solid lumps, one at the bow and one at the stern, which are likely to be the gun mounts. Diver Andy Williams recalls a 90mm cannon on the stern in the 1990's so at least the substantial mounts should still be present.

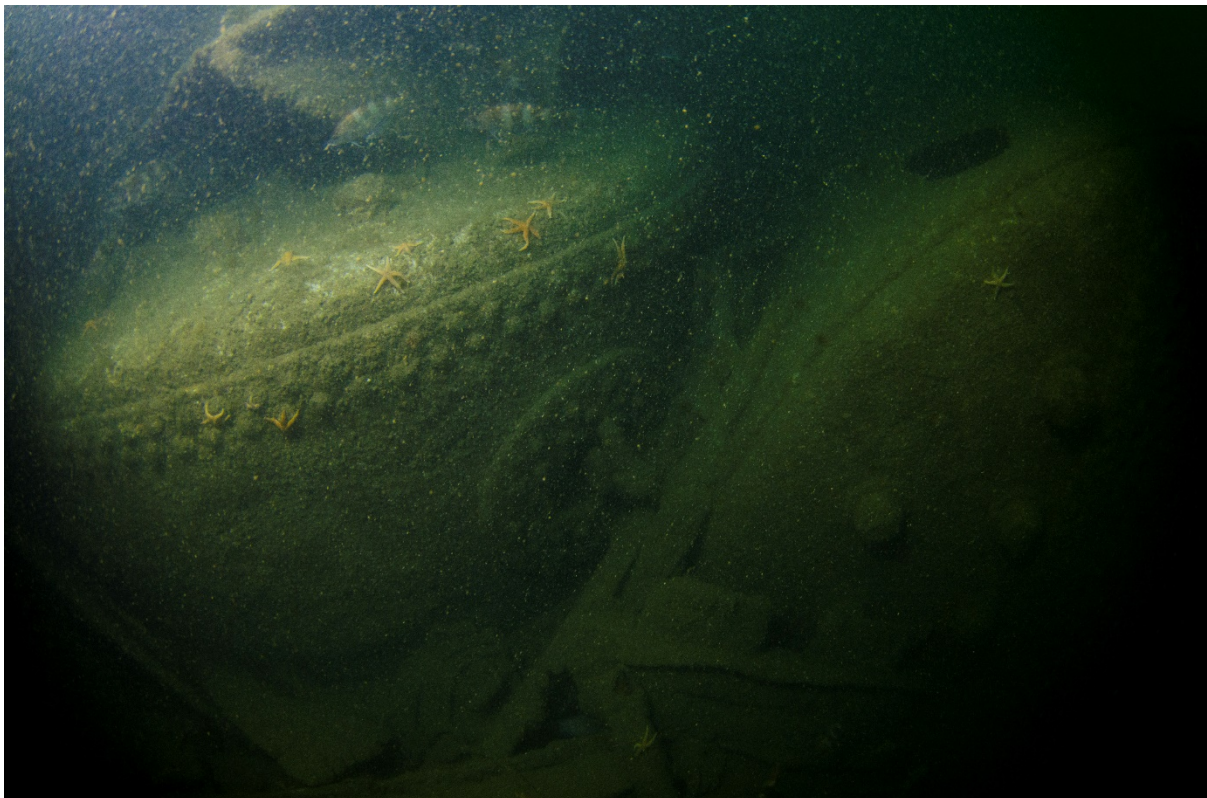


Figure 7: Starboard-most vertical boiler lying next to the horizontal boiler



Figure 8: Port side boiler, this face of the boiler is towards the stern



Figure 9: Port side boiler, this face of the boiler is towards the bow



Figure 10: The condenser lying within the wreckage



Figure 11: Close up of the condenser

Moving forward toward the bow the structure is more broken-up; there is an anchor chain running through a winch (Figures 12- 14) to a large anchor that is present at the bow. The bow stands up about 8m from the seabed. There has been no report of either of the guns the ship was carrying (identified

during research), conditions on the day of the MAT dive were not especially good, but no guns were reported as being observed by the divers on this occasion.



Figure 12: Anchor chain which is leading out to an anchor at the bow



Figure 13: Side view of the winch holding the anchor chain

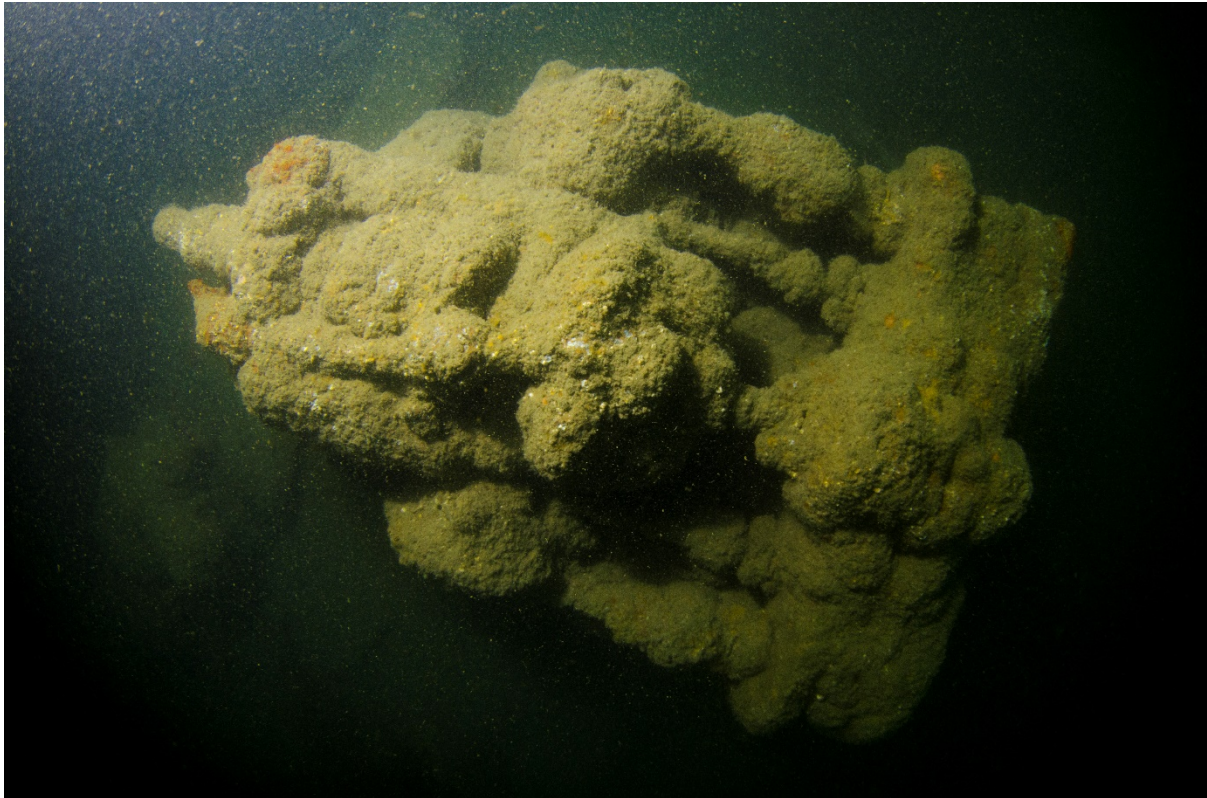


Figure 14: Winch holding the anchor chain (plan view)

Near to the anchor winch are the encrusted remains of what appears to have been a steam pump (Figure 15).



Figure 15: Remains of what appears to be a steam pump

There is signs that a piece of metal towards the bow section, with a 130 degree angle cut-out, could be a rough and ready reinforcement to accommodate the gun (Figure 16), this is supported by the plate that it is riveted to is circular (Andy Williams, pers.comm.) (Figure 17).



Figure 16: Possible gun reinforcement



Figure 17: Circular plate that metal box of the gun reinforcement is riveted to

Moving a little further aft lies an ammunition box that would fit the era of the ship (Figure 18). This is a further reinforcement as to the identity of this ship when in confusion with others nearby as the box

contains no shell cases. The Mod 77 gun which *Leon* carried would have used bagged propellant so shell cases would not have been carried (Andy Williams, pers.comm.)



Figure 18: Ammunition box (lower left of picture)

Amongst the cargo, bottles of ink have been reported, although there were no signs of the cargo observed by the divers during the Forgotten Wrecks dive.

The condition of the *Leon* is fairly broken, but as the wreck has been salvaged, and this could have contributed to some of the damage. Other damage such as broken down hull plates etc. is consistent with what might be expected of a wreck that has survived the natural processes within the area in which it lies for 100 years.

5. Recovered Artefacts

Dive Wight and Hampshire, which was initially published in 1991 (Pritchard and McDonald), states one of the cargo items from the *Leon* was rifles. However, Receiver of Wreck Amnesty reports for rifle recoveries appear under the *Kurland*, and subsequent information from Martin Woodward, and historical documents confirms that the cargo of the *Kurland* includes rifles but none were listed within the cargo of the *Leon*.

There are no reports of diver recoveries from the *Leon* during the RoW Amnesty or since this time. Although material was recovered during the 1970s by Martin Woodward, some of which is on display at the Isle of Wight Shipwreck Centre and Maritime Museum at Arreton Barns. These artefacts have been recorded as part of the Forgotten Wrecks project and include:

- Pieces of a ceramic water filter (Figure 19);
- A brass telegraph (Figure 20);
- Two pieces of ships bell (Figure 21), and
- The remains of a steering wheel (Figure 22).



Figure 19: Pieces of ceramic water filter



Figure 20: Brass bridge telegraph



Figure 21: Two pieces of ships bell



Figure 22: Remains of a steering wheel from the *Leon* on display

6. Site Significance & Potential Further Research

As the *Leon* lies in a cluster of wrecks that has led to confusion about which wreck is which, it is important that more research is concentrated around the *Leon* and other close wrecks to lead to positive identification for all of the sites. Further investigation in improved conditions would help understand the extent of the structural remains and features still extant on the seabed.

Although the *Leon* represents a ship of relatively common type, which was undertaking a relatively common trade as a collier, it does have a number of aspects of special significance which add to its archaeological importance. A number of factors of special interest which are identified within the publication 'Assessing Boats and Ships 1914-1939' (Wessex Archaeology 2011), are relevant for *Leon*, these include, being lost during the period of unrestricted submarine warfare 1917-18 and having an impact on seafaring safety.

"Vessels lost during the period of unrestricted warfare in 1917-18 may have special interest because they represent of a new form of warfare which not only came close to winning the war against Britain but also influenced the conduct of the Second World War" (Wessex Archaeology 2011: 24). The report recognises that the numbers of ships lost during unrestricted submarine warfare were large, so for a site to have a high degree of special interest it is likely to have additional significance factors associated with it. This is the case for the *Leon*, the loss of which contributed to recommendations for changes to seafaring safety (a factor recognised as particularly important in this period (Wessex Archaeology 2011: iii)). The enquiry into the loss of the *Leon* (See Section 3.3) recognised that the torpedo blast had damaged or destroyed aerials and communications equipment making it impossible for distress signals to be sent; this resulted in the recommendation that emergency equipment or auxiliary radio positions were installed on vessels.

The site is also of interest to France being owned and operated by a French company. Its final voyage taking coal from the North East of England to North Africa is a reminder of French interests in Tunisia.

The 90mm French model 77 gun fitted on the ship is significant as there are only five examples of these surviving, four in French Museums and one in Finland (See Appendix 8.3). Further investigation is required to establish the position of the gun mounts and whether the barrel of one of the guns survives within the scour off the port bow.

The site should also be considered within its group value of a cluster of First World War cargo vessels lost in an area south east of the Isle of Wight. As such they demonstrate the density of shipping on common sea routes during the war and the impact of submarines on shipping losses.

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8. Appendices

8.1 Crew list from SS *Leon*

There is slight confusion in the records as to the correct names/spellings and titles of some of the crew (marked*) when comparing the list in ADM 137/1473 and the original French inquiry from Dave Wendes collection. The list crew list is below (with permission from Dave Wendes).

Name (Surname)	Name (Forename)	Rank	Nationality	Comment
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Archambeau (or Orchambeau or Archambaud)	Louis	Captain	French	
Barrigrand (or Grand or Darrigrand)	Leon	2 nd Captain / 1 st officer	French	Personal tribute from Captain
Bourseul (or Boincuel)	Francois	Lieutenant / 2 nd Mate	French	
Petitot	Marius	2 nd Mecanicien / Chief Engineer	French	Personal tribute from Captain
*Brun	J	2 nd Engineer	French	
Bellanger	Francois (?) (or S)	3 rd Mecanicien / 3 rd Engineer	French	
Corellou (or Coulloure)	Emile	TSF / WT Operator	French	French Naval Rating Personal tribute from Captain
Le Bedeau (or Le Bideau)	Philippe	Maitre d'équipage / Boatswain	French	
Le Maigne (or Moigne)	Sylvain	Matelot	French	
Lalarme	Jean	Matelot	French	
Malledent	Joseph	Matelot	French	
Marchandeu	Claude (or G)	Matelot	French	Stayed with Captain for considerable time during incident
Moliere (or Molieri)	Salomon	Matelot	Haitian	
Menou (or Memon)	Yves	Matelot	French	
Le Chevanton (or Le Cherauton)	Auguste	Matelot	French	
*Dant	J N	Matelot	French	
*Salomon	J	Matelot	French	
Brient	Armand	Novice / Matelot	French	
Brand	Constant	Mousse / Boy	French	
Semitt (or Schmitt)	Julien	Mousse / Boy	French	
Breen	Julien	Mousse	French	
Le Brun	Henri	1 st Chauffeur / Fireman	French	Personal tribute from Captain
Voncolen (or Vancolin)	Victor	Chauffeur / Fireman	French	Personal tribute from Captain
Sylla (or Marcodi)	Macode (Sylla)	Chauffeur / Fireman	Senegalese	
Sidi (or Sidiniet)	N'daye (or V)	Chauffeur / Fireman	Senegalese	Personal tribute from Captain
Gustave	David	Naval Rating	French	Lost at sea

Lachuer (or Lacheur)	Alphonse	Naval Rating	French	Lost at sea
Abdul el Kader (or Kater)		Chauffeur	French	Lost at sea
Boujourn	Amadou	Chauffeur	French	Lost at sea
Gego (or Jego)	Emile	Soutier / Fireman	French	
Borence (or Barence)	Jean	Cannonier / Gunner	French	French Naval Rating
Ollivier (or Olliver)	Louis (or J)	Servant AMBC (or Gunner)	French	French Naval Rating
Rame Gabral (or Rame)	Can (or J)	Canonniere / Gunner	French	French Naval Rating
Carriere (or Carrieres)	Jacques	Canonniere / Gunner	French	French Naval Rating
Nedelle (or Le Delic)	Alain	Canonniere / Gunner	French	French Naval Rating
Delahaye	Rene	Canonniere / Gunner	French	French Naval Rating
Cavarec (or Cavarce)	Jean	Canonniere / Gunner	French	French Naval Rating

8.2 Technical details of UC-75

The technical details for submarine UC-75 as sourced from U-Boat.net are as follows:

Displacement (tons):	417 (sf)	493 (sm)	545 (total)
Length(m):	49,35 oa	39,30 ph	
Beam(m):	5,22 oa	3,65 ph	
Draught (m):	3,68 m		
Height (m):	7,46 m		
Power (hp):	500 (sf)	460 (sm)	
Speed (knots):	11,6 (sf)	7,0 (sm)	
Range (miles / knots):	9430/7 (sf)	55/4 (sm)	
Torpedoes:	7 2/1 (bow / stern tubes)		
Mines:	18 (Type UC200)		
Deck gun:	88mm - 133 rounds		
Crew:	26 men		
Max depth (m):	ca. 50 m (164 feet)		

[sf – Surface; sm – Submerged; oa – Overall; ph – Pressure Hull; hp – Horsepower]

8.3 Details regarding the guns aboard SS *Leon*

Volunteer diver Andy Williams provided some interesting information regarding the 90mm guns carried by SS *Leon*. Some of the information was taken from the book *Les canons de la Victoire 1914 - 1918 – Tome I – L'Artillerie de campagne*.

The 90mm Gun

This 90mm French Model 77 was a very important design in gunnery terms for its year (1877 was the first prototype, hence the model 77). These guns were obsolete in the army by 1914 and were fitted to armed merchantmen such as the SS *Leon*.

The details of the guns were as follows:

Complete description : 90mm M 1877 de Bange field gun

Design year : 1877

Calibre : 90.00 mm

Weight in firing position : 1200 kg

Tube length in calibres : 22.90 (18.2 calibres for the rifled part only)

Grooves : 28 progressive angle from 1.45 to 7 degrees

Projectile weight : 8 à 8.45 kg

Initial speed : 500 m/s with the FA high explosive shell Mle 1914 (8.2 kg)

Fire rate : 2 rounds / minute (more like a round every 2 minutes according to some sources)

Range : 7000 m, up to 9700 m with the FA Mle 1914 shell

Elevation range : -6 to +25 degrees

This gun was a huge development in its time, mainly because of the progressive rifling (which enables the projectile to spin up at max acceleration without the risk of stripping the rifling) and the innovative breech seal.

The Captain de Bange design not only perfectly met the government specification, with its rifled steel barrel and the interrupted screw breech, it also brought a brilliant solution to the complex problem of breech sealing, which had caused accidents and propulsive power losses in all the competing models. The de Bange quick action interrupted screw breech had an almost perfect sealing ability, thanks to a mushroom shaped profile on the lip that pressed against an asbestos based seal ring under the action of the propulsive gasses ('de Bange seal system). Present day breech sealing systems still owe a lot to Captain de Bange's design.

The 'Canon de campagne de 90mm Mle 1877' was adopted by the French Army in 1877 as their standard field gun. It was the first weapon of the System de Bange, that progressively extended to all calibres (80, 90, 120, 155, 220, 240 and 270 mm) of the field, siege, coastal and mountain artillery. Until the adoption of the 75mm Mle 1897, it was the standard gun of the French field artillery divisions.

In 1914, this old and obsolete weapon (having no recoil absorption system) was taken out of the depots and fortresses in order to equip numerous Reserve Artillery batteries, armed cargo vessels etc. The *Leon's* crew were probably terrified of firing it since the recoil would have shaken the whole ship massively! One could only speculate that the gun crew hesitated to bring it into action for this reason, although reports suggest that nobody saw UC-75 before the torpedo anyway.

The gun was known as "Jumping Henry" by the Finns who were given 100 by France after the First World War ended.

There are five of these guns still surviving, four in French museums and one in Finland. This is possibly the only one in UK waters (if it is found to still survive on the wreck).