

Point 1 — Wreck Identification: Confirmation that the Target Wreck Corresponds to the SS Ohio

SEATEC submits the following in response to MARA's request for confirmation, including investigations, visual evidence, and historical records, demonstrating that the wreck at position 51°N 52.720' / 014°W 16.880' corresponds to the SS Ohio.

1.1 Preliminary observation on the Wreck Inventory of Ireland Database

SEATEC notes MARA's reference to the location of the SS Ohio as recorded on the Wreck Inventory of Ireland Database (WIID) and the National Monuments Service Wreck Viewer. It is respectfully submitted that a discrepancy between the applicant's coordinates and those in the WIID does not, of itself, constitute grounds to question wreck identity. The WIID is compiled from historical records of variable precision — principally wartime survivor testimonies, naval reports, and dead-reckoning positions recorded under operational conditions in 1917. Such positions are acknowledged in the maritime archaeology literature to carry positional uncertainties of several nautical miles, particularly for vessels sunk in the open Atlantic beyond sight of land. The WIID entry for the SS Ohio (Wreck No. W09921) is a historical estimate, not a surveyed position.

SEATEC's position has been determined through direct multibeam sonar survey and physical investigation of the seabed, methods which were not available when the historical record was created. It is therefore not unexpected that the two positions differ.

1.2 Discovery and initial survey

The wreck was discovered on 17 June 2023 during a comprehensive scanning operation conducted at several suspected positions derived from a synthesis of primary historical sources, including Kriegsmarine operational records, U-44's war patrol log (Kriegstagebuch), Lloyd's of London contemporary records, and post-sinking Allied naval assessments. The candidate search area was developed through triangulation of the U-44 KTB-reported sinking position, standard drift modelling for a vessel of the SS Ohio's dimensions and displacement at the reported sea state, and bathymetric data indicating seabed topography consistent with a deep-water casualty event.

A multibeam echo sounder survey conducted from the N35 on 17 June 2023 identified a large anomaly on the seabed at 330 metres depth. The acoustic signature was consistent with a steel-hulled cargo vessel broken into two sections.

1.3 Physical characteristics matching the SS Ohio

Following the multibeam survey, the N35 deployed ROV camera systems on multiple occasions, subject to weather and visibility conditions at depth, to conduct visual identification of the wreck. The following physical characteristics were documented and cross-referenced against the construction records and specifications of the SS Ohio (built 1914, Chantiers de Normandie, Rouen; 135.6 m LOA × 18.7 m beam × 8.4 m draft; 8,719 GRT; single-screw triple-expansion steam engine):

- **Overall dimensions:** Acoustic profile of the wreck confirms a vessel length consistent with 135–136 metres, within the margin of error for multibeam measurement of a fragmented structure on a soft-sediment seabed.
- **Structural configuration:** The wreck is divided into two sections, consistent with catastrophic structural failure caused by torpedo detonation amidships. The separation occurred in the region of cargo hold number 2, consistent with the reported position of the torpedo impact.
- **Orientation:** The bow section bears 325° and the stern section approximately 115°, with a gap of approximately 50 metres between the two parts. This azimuthal relationship is consistent with a vessel that broke apart and settled without significant rotational displacement.
- **Propulsion system:** Camera footage of the stern section confirmed a single-screw configuration and structural evidence consistent with a triple-expansion steam engine installation, matching the SS Ohio's known propulsion.
- **Hull construction and material:** Steel construction confirmed by sonar returns and visual inspection. No evidence of diesel machinery, electrical systems, or post-WWI construction methods.
- **Cargo holds:** Holds 1, 3, and 4 remain structurally intact and open at the top. Hold 2 is destroyed; its cargo is dispersed on the seabed. This is consistent with the wreck's documented loss from a torpedo strike amidships.

1.4 Cargo identification

This is the most probative element of wreck identification submitted by SEATEC. The SS Ohio's documented cargo manifest, drawn from contemporary Lloyd's records and the Kriegsmarine's own intelligence documentation of the vessel's last voyage, included:

- 4,600 tons of steel
- 720 tons of brass
- 250 tons of zinc
- 250 tons of copper
- Truck components and general foodstuffs

During salvage operations conducted between 19 and 31 May 2024, SEATEC recovered cargo material from holds 1 and 3. The recovered material includes non-ferrous metals — specifically brass and copper — in forms consistent with a 1917 transatlantic war-materiel shipment: with patina and encrustation consistent with over a century of seawater immersion at depth. The physical characteristics, alloy composition, and presentation of the recovered material are consistent with the documented cargo of the SS Ohio and inconsistent with any other identified wreck in the area.

No other vessel carrying a comparable cargo of mixed non-ferrous metals is recorded as having been lost in the vicinity of position 51°N 52.720' / 014°W 16.880'. SEATEC has reviewed Lloyd's casualty records and available Kriegsmarine KTB documentation for the relevant operational area and time period, and no alternative candidate has been identified.

1.5 Cross-referencing with U-44 KTB

U-44 (Kapitänleutnant Paul Wagenführ) reported the sinking of the SS Ohio in its war patrol log with a position that, when corrected for the known systematic error in U-boat celestial and dead-reckoning navigation of this period — typically ± 15 – 25 nautical miles in Atlantic operations — places the sinking in a search ellipse that encompasses SEATEC's confirmed wreck position. The WIID-recorded position falls outside this corrected search ellipse; SEATEC's position falls within it. This further supports SEATEC's conclusion.

1.6 Conclusion on identity

The convergence of the following independent lines of evidence establishes to a high degree of certainty that the wreck at $51^{\circ}\text{N } 52.720' / 014^{\circ}\text{W } 16.880'$ is the SS Ohio:

1. Acoustic survey dimensions consistent with the vessel's known specifications
2. Two-part wreck structure with separation at the amidships cargo hold, consistent with torpedo detonation
3. Stern bearing and bow-stern gap consistent with known vessel length and breaking pattern
4. Single-screw steam propulsion confirmed visually
5. Intact cargo holds in the positions documented in the manifest
6. Physical recovery of brass and copper cargo from the documented hold positions, consistent in form, composition, and encrustation with a 1917 war-materiel cargo
7. Position consistent with the U-44 KTB reporting position when corrected for navigational error
8. No alternative candidate wreck identified in the area

SEATEC invites MARA to note that the discrepancy with the WIID reflects the limitation of historical position records, not a deficiency in SEATEC's identification. SEATEC considers the identification of this wreck as the SS Ohio to be established beyond reasonable professional doubt.