SS Richard Montgomery

Surveys 2008 & 2009

Summary Report

September 2011

Maritime and Coastguard Agency

1. Executive Summary

1.1 The *SS Richard Montgomery* was a Liberty Ship built in the USA in 1943. In August 1944, the ship sailed from the USA to the UK with a cargo of munitions. Whilst anchored in the Thames Estuary, the ship's anchor dragged and the vessel grounded on a bank to the north of the Medway Approach Channel. Shortly after grounding, the ship broke in two. The cargo in the aft section of the ship was salvaged at the time, but approximately 1,400 tons Net Explosive Quantity (NEQ) remains in the forward section of the wreck. The wreck lies across the tide close to the Medway Approach Channel and her masts are clearly visible above the water at all states of the tide.

1.2 The wreck is designated under section 2 of the Protection of Wrecks Act 1973, there is a prohibited area around the wreck and it is an offence to enter within this area without the written permission of the Secretary of State. The wreck is under 24-hour surveillance by Medway Ports.

1.3 The wreck has been subject to periodic surveys and monitoring activities since it sank. In recent years, surveys and monitoring have been carried out by the Maritime and Coastguard Agency (MCA) using remote sensing equipment.

1.4 The munitions cargo is generally considered to be stable if left undisturbed. Previous surveys suggest that, despite its age, the wreck remains in a relatively stable condition and all of the cargo remains contained within the hull, although it is slowly deteriorating and eventual collapse is inevitable.

1.5 Survey results from both 2008 and 2009 have shown greater levels of deterioration than have been seen in previous surveys. This may suggest that the rate of deterioration has accelerated in some areas of the hull. Whilst it does not appear to be in imminent danger of collapse, these results point towards significant collapse and/or loss of munitions becoming a more realistic possibility in the medium term. One particular area of concern may result in a complete loss of structural integrity and some holes have appeared in the hull plating which are large enough to allow the escape of munitions. However, there is no evidence to suggest that this is occurring and initial results of the 2010 survey do not identify any significant changes or deterioration since 2009.

1.6 The following bullet points are an overview of key points noted in 2008 and 2009.

- The orientation, list and pitch of the two sections of the wreck remain unchanged since 2006.
- The wreck appeared to be fully supported by seabed sediment at both bow and stern in both surveys.
- The 2009 survey showed that the main crack in the hull at hold 2 has increased in length and width (width increase of approx 1/2m) since the 2008 survey.

- The 2008 survey showed a new aperture in the bulkhead aft of hold 3 measuring approximately 4m by 1.5m. This had not increased in size in the 2009 survey. Initial results of the 2010 survey do not indicate any further deterioration.
- 2008 data indicated that collapsed deck plating on the port side of hatch 2 had dropped a further 15cm since 2006. The 2009 survey showed a further drop of over half a metre.
- The 2009 survey also showed that the crack running along the deck from this collapsed deck plating now extends all the way along the deck and down the starboard side of the hull.

1.7 Both surveys also encompassed the seabed up to 400m around the wreck in order to identify any loose or isolated wreckage and to visualise the sediment build up adjacent to the wreck itself. Targets noted from previous surveys were relocated and no significant changes were apparent. There was no evidence to suggest that munitions had escaped from the hull.

2. Background

2.1 The *SS Richard Montgomery* was a Liberty Ship built by the St. John's River Shipbuilding Company, Jacksonville, USA in 1943. The ship sailed from the USA to the UK as part of a convoy in summer 1944 with a cargo of munitions. On arrival in the Thames Estuary, the vessel was directed to anchor in the Great Nore Anchorage, off Sheerness. On the next tide, however, the ship's anchor dragged and the vessel drifted on to a bank running east from the Isle of Grain north of the Medway Approach Channel. The ship grounded amidships on the crest of the bank and shortly afterwards broke in two. The aft section of the ship was salvaged at the time, but the salvage operation was abandoned when the wreck became completely submerged. Approximately 1,400 tons Net Explosive Quantity (NEQ) remains in the forward section of the wreck. The wreck lies across the tide close to the Medway Approach Channel and her masts are clearly visible above the water at all states of the tide.

2.2 The wreck is designated under section 2 of the Protection of Wrecks Act 1973, which means that there is a prohibited area around the wreck and it is an offence to enter within this area without the written permission of the Secretary of State. The wreck is clearly marked on the relevant Admiralty charts and the prohibited area around the wreck is ringed with four cardinal buoys and twelve red danger buoys. The wreck is under constant surveillance by Medway Ports on contract to the MCA.

2.3 The wreck is regularly monitored by the MCA. Although divers have been used on the site in the past (most recently in 2003), visibility on site is extremely limited and often no more than a few centimetres. For this reason, recent surveys have employed the latest remote sensing technology to assess the condition of the wreck and to monitor areas of deterioration. This enables the visualisation of

the entire wreck and its environment, is measurable and can be directly compared to both previous and future surveys in order to highlight any changes.

3. The Surveys

3.1 Both the 2008 and 2009 surveys were conducted by NetSurvey Ltd in conjunction with the Port of London Authority (under contract to the MCA).

3.2 Both surveys were conducted using a Reson Seabat 7125 multibeam sonar unit to provide geo-referenced, three dimensional images of the wreck. Both surveys also included laser scanning of those sections of the wreck that are visible above the water. The two sets of data were then knitted together to provide one seamless image of the entire wreck.

3.3 The 2009 survey also included an archaeological perspective which assessed the wreck and its environment, compared the wreck to other liberty ships of the same plan and suggested some steps for the future. This element of the survey was carried out by Wessex Archaeology.

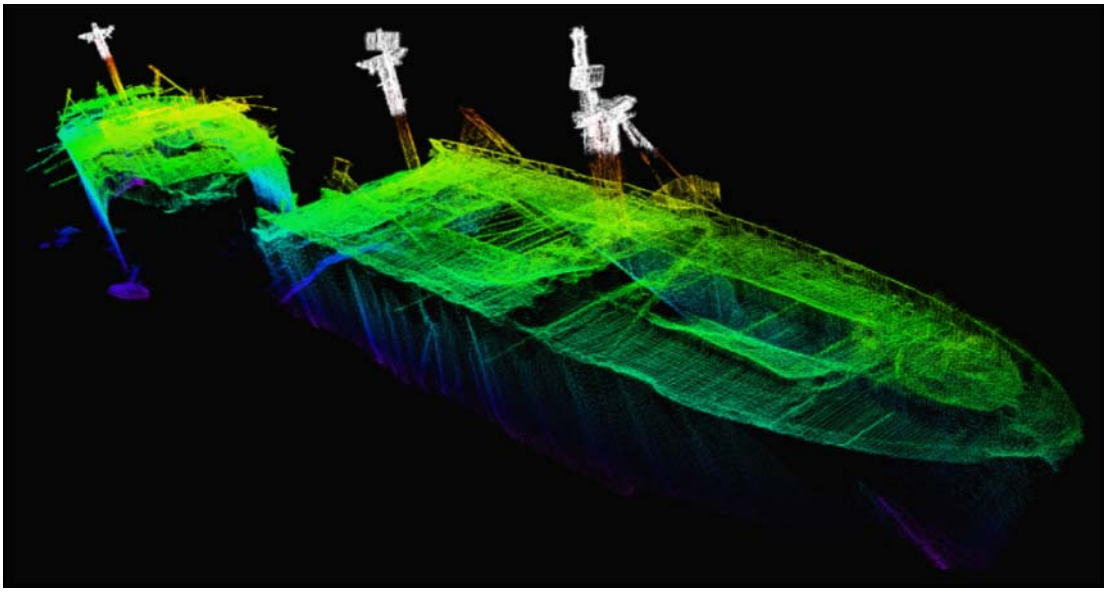


Figure 1 Multibeam & laser data, 2009

4. The Results

4.1 Both the 2008 and 2009 surveys noted that, in general, the wreck remains reasonably stable and the overall picture of the wreck was one of slow deterioration. However, there are areas of the hull where this deterioration is in a slightly more advanced state.

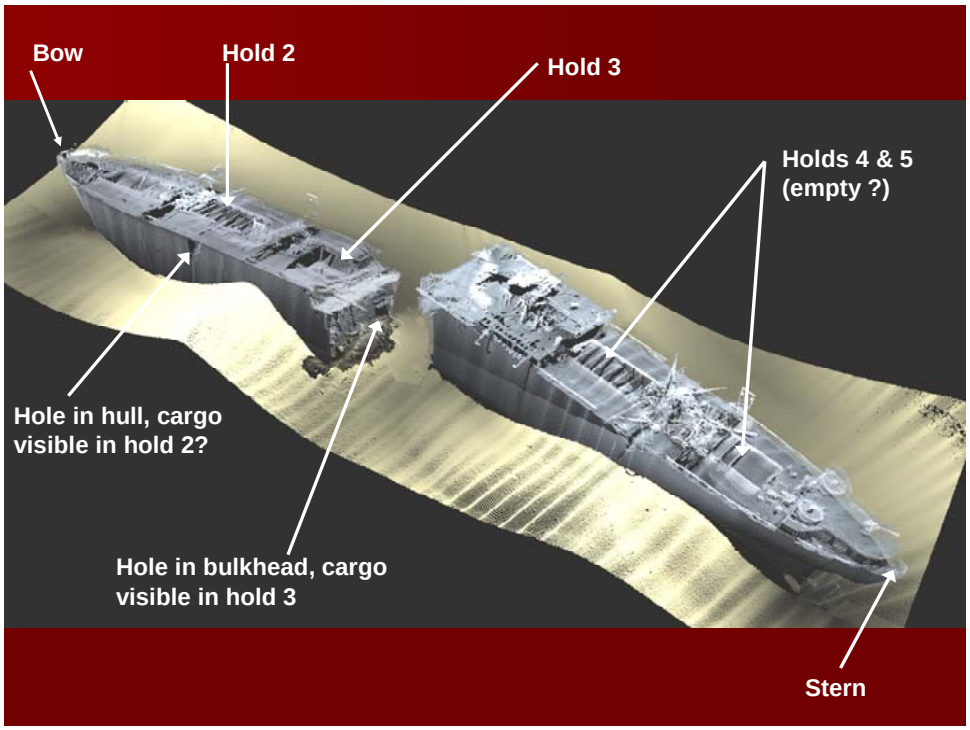


Figure 2 Orientation around the wreck

4.2 The crack at hold 2 is not a new development. It has been noted in surveys for many years. However, the 2009 survey suggests that there has been a greater increase in its size than has been noted between any previous sonar surveys.

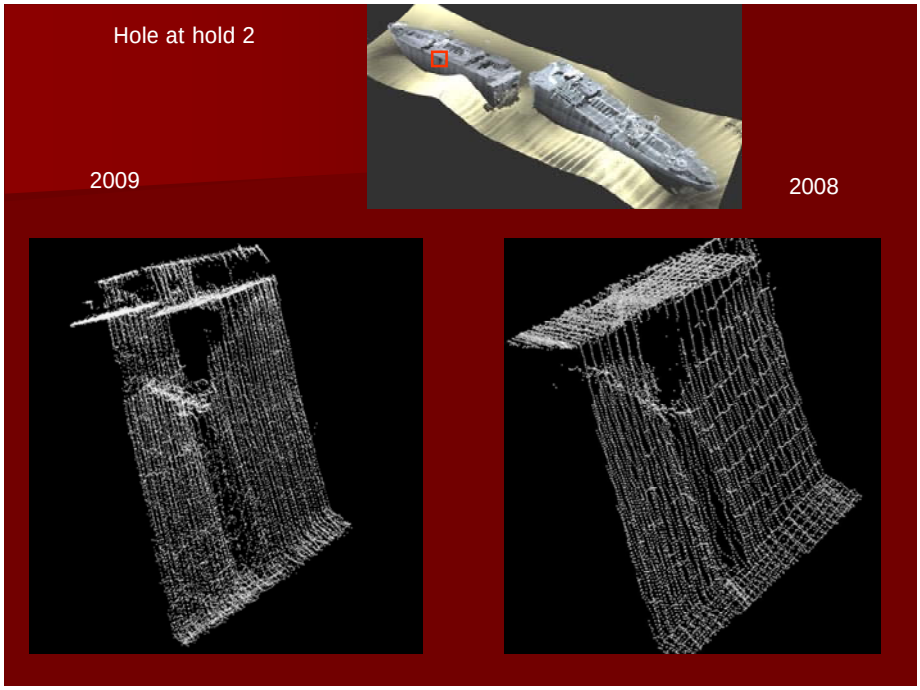


Figure 3 The crack at hold 2, 2009 & 2008

4.3 The 2009 survey also shows that the area of damage at hold 2 and hatch 2 appears to extend all the way across the deck and down both the port and starboard sides of the hull. This may suggest that, at some point in the future, there could be a complete loss of structural integrity in this area of the wreck, possibly leading to this section breaking into two.

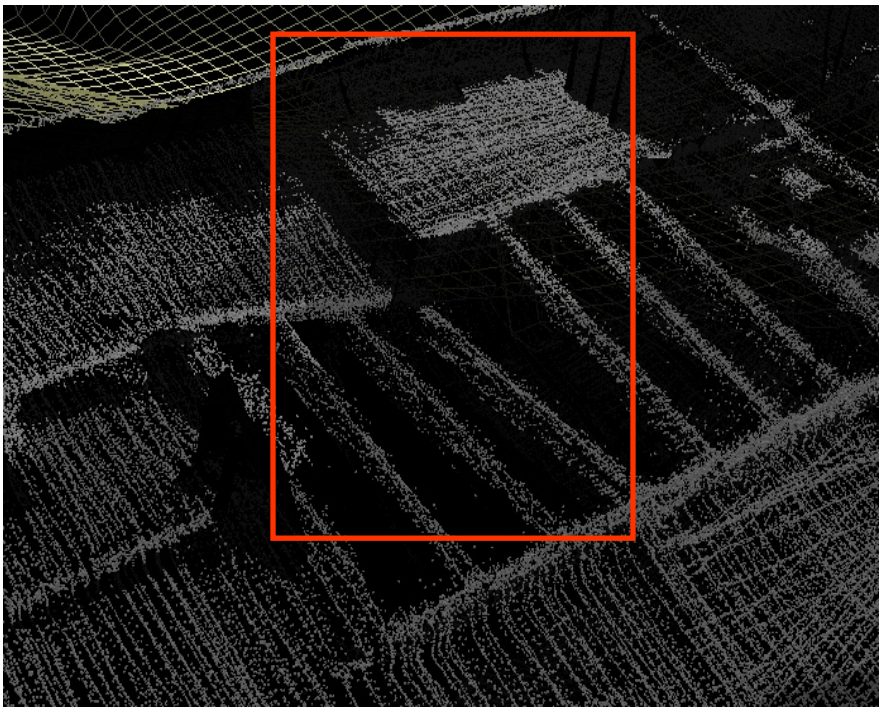
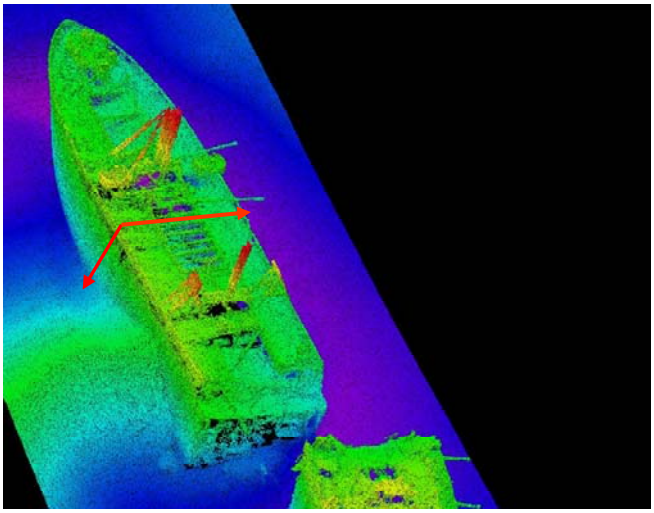


Figure 4 Collapsed deck plating at hold 2

4.4 The image below indicates the area of weakness at hold 2/hatch 2 in the bow section of the wreck where structural failure may occur.



4.5 The area of greatest change noted in the 2008 survey was the aperture at the aft of the forward section. This aperture had not been noted in previous surveys, however, it does not appear to have grown in size between the 2008 and 2009 surveys nor do the initial results of the 2010 survey show any obvious deterioration.

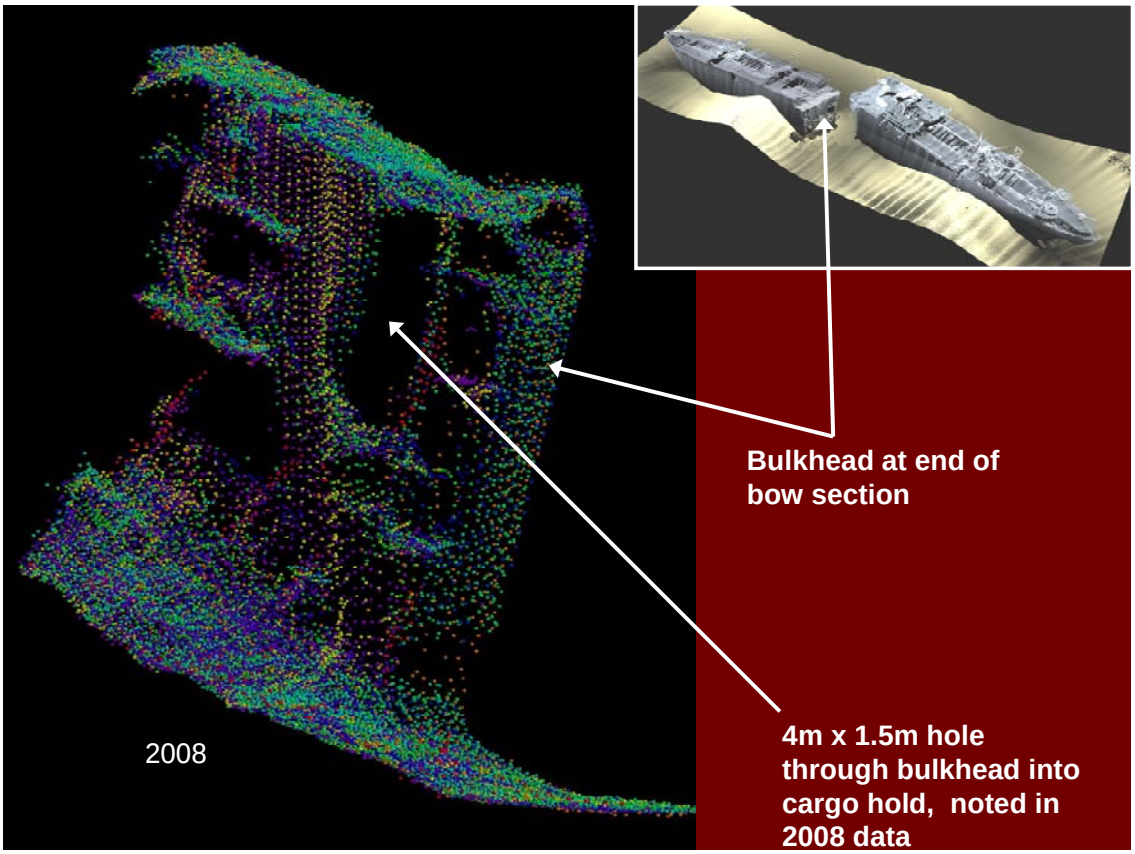


Figure 5 Aperture aft of the forward section

4.6 Other small changes, holes and cracks were noted in both surveys. However, across much of the wreck and the surrounding seabed no measurable changes have been noted in either the 2008 or 2009 survey. The masts for example, were a particular focus of the 2008 survey and, despite age, constant wind and tide action and heavy encrustation with marine growth, they still appeared to be upright and reasonably robust.

5. Conclusions

5.1 The overall conclusions drawn from the 2008 and 2009 surveys are that, in general, the hull appears to be reasonably stable. The overall picture is one of slow but continual deterioration, however, some areas of the hull appear to display evidence of a more accelerated rate of deterioration.

5.2 One of the main areas of concern highlighted by both surveys is the area across hold 2 in the forward section of the wreck. Tween deck and lower hold 2

contain a mixture of munitions, including more than 2000 cases of cluster fragmentation bombs (fuzed and unfuzed), nearly six hundred 500lb SAP bombs (TNT) and over one thousand 1000lb SAP bombs (TNT).

5.3 Whilst much of the hull appears to be deteriorating relatively slowly, one of the main concerns is that these specific areas of accelerated deterioration might lead to structural collapse or allow the escape of munitions. Although some munitions studies have been carried out, these are not sufficient to predict with any certainty what the effect of significant structural collapse would be on the munitions cargo.

5.4 The long-standing policy has been one of monitoring with non-intervention. This is for two main reasons: 1) regular surveys have shown the hull to be reasonably stable; 2) although there are many unknowns, expert opinion has suggested that the munitions cargo is likely to be stable if left undisturbed and the effect of more intrusive work is difficult to predict. Therefore, only limited intrusive work has been carried out (the most recent being 2003 ultrasonic hull thickness analysis and 1999 remedial work to remove loose sections of masts and derricks). However, it has always been noted that there may come a point when the risks associated with non-intervention will become greater than the risks associated with a carefully planned intervention operation (such as dealing with escaping cargo material, or imminent or actual significant structural collapse).

5.5 Whilst significant structural collapse does not appear to be imminent, surveys suggest that this prospect is getting closer.

MCA SEPTEMBER 2011