

# Lloyd's Register of British & Foreign Shipping,

Ocean Chambers, Lowgate,

Hull, 24th January 1913.



*11 Encl*

**LOYDS REGISTER,  
LONDON.  
REC'D 25 JAN 1913  
ANBP**

*Actd.*

*Built by Northumberland  
S. Blo 1910-8*

*reference  
of plans  
tracing  
of structure*

Sir,

In accordance with your letter of the 16th instant instructing us to hold a survey on the S.S. "MARENGO" of Hull, No.413 in the R.B. with a view to reporting on the alleged weakness of the vessel's structure in the vicinity of the Fore Peak and No.1 Hold due to panting, also to the statement that the shell in way of No.1 ballast tank is weak and leaks and in addition that the rivets in the No.1 tank top are found slack and leaking, we beg to report as follows.

This vessel was surveyed by the undersigned on the 17th instant as she lay in the Alexandra Dry Dock, Hull.

The Captain reported that the vessel had struck some submerged object on the 6th December 1912 whilst on a voyage from Hull to New York, also that the vessel made 24 feet of water in the After Peak (capacity 25 tons) in 24 hours and 12 feet of water in the Fore Peak during the usual voyage.

We examined and sighted the bottom and the only damage found was in way of the No.1 tank where keel plate No.3 (all plates numbered from stem) and the adjacent garboard plates No.2 were found to be set up. It was arranged that the keel

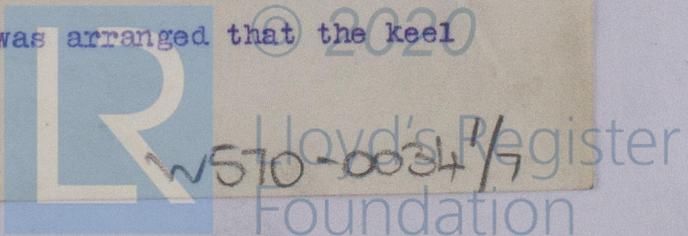


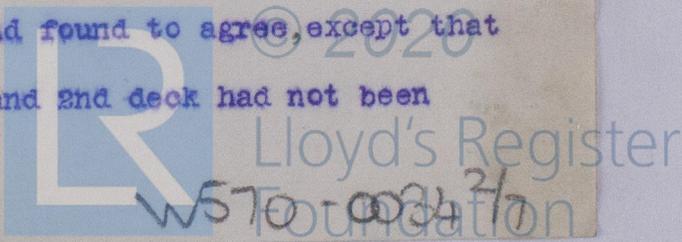
plate should be renewed and the 2 Garboard plates should be removed, faired and refitted. Evidence of panting was apparent in way of the No.1 hold, the second plate from the stem in E Strake in way of the lower panting stringer being fractured at the heel of the shell chock in the 2nd, 4th and 6th spaces abaft the collision Bulkhead on the Port side, and in the 5th space abaft the collision Bulkhead on the Starboard Side.

In addition to this it was apparent that some of the riveting in the shell chocks of this stringer and in the frames in the vicinity of these fractured plates had been renewed at previous dockings, see Hull Reports Nos. 24773 and 24991.

Some minor damage in the waist of the vessel due to colliding and scrubbing with quay walls not being pertinent to this inquiry are omitted from this report. In the No.1 hold evidence of leakage from the vicinity of the panting stringer was apparent, and the top rivets in the tank side lugs were found slack throughout No.1 hold.

The No.1 hold, No.1 ballast tank and Peaks not having been prepared for survey, it was arranged that this should be done during the progress of the other repairs, and that the survey should be proceeded with on Tuesday the 21st instant.

The vessel was further surveyed on the 21st, 22nd and 23rd instants. The arrangements of the Fore Peak were carefully compared with the approved plan and found to agree, except that the breasthook between the upper and 2nd deck had not been



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fitted. It was found however, that two additional beams had been fitted at the 3rd and 7th frame forward of the Collision Bulkhead between the second deck and the upper stringer, formed of  $10 \times 5/8$  bulb plate and double  $4 \times 4 \times 1/2$  angles with  $34" \times .58$  knees. A  $29" \times .46$  stringer was fitted on these beams, with a  $4 \times 4 \times 1/2$  stringer bar and  $3\frac{1}{2} \times 3\frac{1}{2}$  shell lugs, the stringer being supported at the 5th frame with a large bracket knee. An additional beam of the same section and scantlings had also been fitted at the 3rd frame forward of the Collision Bulkhead, between the original upper and lower stringer, with a large gusset .52 thick attached to the shell for 2 frame spaces and  $34"$  knee to frame and beam; at the 7th frame forward of the Collision Bulkhead a  $24"$  tie plate  $\frac{3}{4}"$  thick fitted with a  $\frac{3}{4}"$  doubling and having  $4 \times 4 \times \frac{1}{2}"$  angles at top and bottom had been fitted between the original upper and lower stringers. See plan forwarded herewith. These additions to the vessel's structure had been made in March last at Hull, see Report No. 24773. The riveting in the fore peak was carefully overhauled and found to be good and efficient. Arrangements have been made to have the whole of the caulking carefully tested.

The Superintendent having stated that the only part of the Fore Peak which gave any trouble now, was the rivet connection of the shell lugs to the 2nd deck stringer. It was suggested to him ( in view of the height of the Tween Decks) that a  $20"$  web should be fitted at the 5th frame forward of the Collision Bulkhead extending from the additional stringer (fitted in

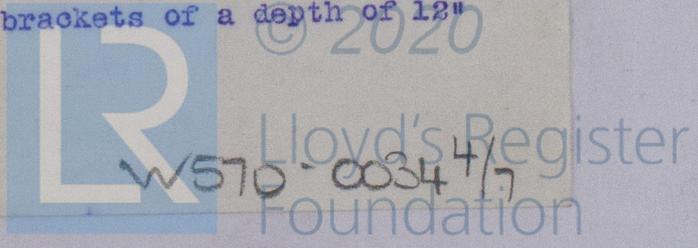
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Foundation

(4)

March last) to the upper deck, and this is now being done.

The principal weakness apparent in the vessel's structure was confined to the area indicated by chalk marked on the approved Profile, extending from frame 162 to the Collision Bulkhead and below the 2nd Deck. In this region the rivets at the upper part of the tank side lugs, also the rivets attaching the floor ends to margin lugs and a number of rivets attaching the intercostal girders to the floors in No.1 tank were found slack. The riveting in the shell chocks of the side stringers and in the beam knees of the 2nd deck and panting beams were found started in places, in addition to the frame riveting in the vicinity of same. It may be remarked that the tank side gussets are fitted on the face of the flanged tank side brackets in the No.1 hold and the rivet connections of these gussets were started. In view of the foregoing it has been arranged with the Owners Superintendent to renew the two fractured shell plates E No.2 Port and Starboard, and Rubbings showing the extent and position of fractures in these plates are forwarded for reference; also to fit  $4 \times 4 \times \frac{1}{2}$ " reverse frames on the 3rd, 5th, 7th, 9th, 11th, 13th and 15th frames abaft collision Bulkhead extending from 24" scarp on floor bracket to the 2nd deck.

In addition it has been arranged to fit additional tankside gussets to back up the existing gussets and to fit an additional lug to the intermediate tank side brackets of a depth of 12" (see sketch).



(5)

With regard to the statement that the No.1 hold on the bottom is weak and leaks, and also that the tank top rivets are found slack and leaking in the vicinity, we beg to report that after a careful examination of the structure no evidence could be found to support this statement, the only started rivets found in tank top and bottom being in the vicinity of the damaged keel and garboard plates referred to at the beginning of this report.

In the after peak it was found that only one intercostal had been fitted between the floors in the space immediately abaft the Peak Bulkhead, and the rivet connections of the three floors abaft the Peak Bulkhead were slack. It has been arranged to renew the rivets in these floors and to fit intercostals between them as deep as practicable. The rivet connections of the two forward floors above the stern tube were also slack. It has been arranged to renew these rivets and to fit an 18" bracket to the lower part of these floors so as to increase the riveted connection to frame, also to stiffen the floors by fitting a horizontal bulb angle at the middle of their depth. Several rivets in the 3rd floor above stern tube and in the stringer in this vicinity were slack and will be renewed. Four beam knees to tank top on Starboard side were found to be started at frame connection and these rivets are being renewed. The space above the Peak Tank top has a length of 14 feet on the run of the frame from deck to deck or 9'-6"

between the bracket knees at the fourth frame abaft the peak bulkhead, and it has been arranged to fit three diagonal channel struts on each side to beams Nos.3,5 and 7 in this space. The caulking of the shell in way of the after Peak tank was slightly started and leaking in several places in way of boss and heel of stern frame, and the same has now been made good. A number of rivets in shell in way of this tank have now been renewed. Arrangements have been made to test the After Peak tank, No.1 double bottom tank and Fore Peak under pressure on completion of the repairs at present in hand.

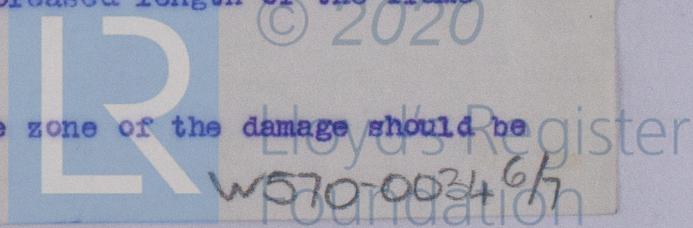
The arrangements of the vessel generally have been examined and found to agree with the approved plans.

The result of our examination of this vessel leads us to the following conclusion.

- (1) That the vessel, especially in way of the Fore hold and Fore peak was not stiff enough to resist the effects of panting. It may here be remarked that the frames in the fore hold in the region of the damage were practically straight between the top of the tank bracket and beam knee of the 2nd deck, and therefore derived no stiffening effect from any curvature of the frame section.

It would seem desirable that in vessels of this form the frames forward of the 3/5 length should either be spaced 24" apart or the section of the frame should be increased in view of the increased length of the frame leg due to the sheer.

- (2) The panting stringers in the zone of the damage should be



attached to the shell by double lugs and the taper of the stringer plates should extend for a length of 6 or 7 spaces abaft the after panting beams.

- (3) The gusset attachments at this part should be fitted so as to have a direct pull on the frame knee, instead of being returned along the face of the tankside bracket flanges. It would also be advantageous to fit a double lug to the floors where gussets were not fitted, attaching the tankside brackets to the margin plate for half the depth of the margin plate at the upper portion of same.
- (4) In view of the height of the lower tween decks it would appear necessary that a panting stringer should have been fitted in the forward and after Peaks.
- (5) With regard to the suggestion that an engine suction should be fitted in the Fore peak in lieu of the usual hand pump, we beg to remark that we concur with this suggestion.

The approved plans are forwarded herewith together with rubbings of the fractures in shell plates and sketch of arrangement of beams and stringers etc, at the fore end of the vessel.

We beg to submit the above remarks for the consideration of the Committee.

We are, Sir,

The Secretary,

LONDON.

Your obedient Servants,

*Wm L. Gilman*

*Allison B. Wilson*

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Registered in the Great Seal of the United States

CJA

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Mr. Redman  
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