

Lloyd's Register of British and Foreign Shipping

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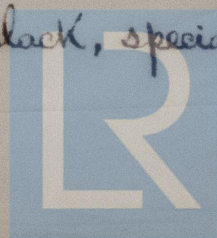
4 Commercial Buildings.

Calcutta, the 27th September 1892

This is to certify that

I, D. Mc Kellar _____ the
undersigned surveyor to this society did at the
request of Messrs Turner, Morrison & Co., and Captain of
Alkinson, on the 19th September 1892, proceed to the ship Osborne lying in the Port Commissioners new dry Dock at
Kidderpore to survey the bottom of that vessel and report on
the damages under water, and on other days subsequent to that
date, surveyed in conjunction with Captain Mc Gregor, Second
Surveyor, the damages in the lower hold of the vessel, the whole
of the Salt Cargo having been discharged, the sparring battens
removed and all the floor and bilge ceiling which is fitted
in Stitches except at the ends, and the planking adjoining
the Keelsons lifted, and the Hold washed down with fresh
water, and having made most careful surveys now report
as follows:—

The after butts of the third strake of plating from the
Keel (C Strake), on each side, are open and the rivets slack
and the butt straps started from the plating. The two butt
straps should be taken off, refitted and the rivet holes fairied
and reriveted and the butt puttied and caulked. Almost
all the butts of the Garboard strakes on each side are weeping
and many of the Keel rivets are slack, specially at the butts



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of the Garboard Strakes and the Keel rivets in the Fore foot, in the forward length of Garboard Strake, are quite slack from the butt up to the forward end of the plate and water leaking from between the Keel and plates on both sides. The Keel rivets from Stern to stern should be carefully examined and all slack rivets taken out and replaced with sound ones. A large number of butts under the bottom and on the bilges on each side are showing moisture, and there are many rivets in the bottom plating and butt rivets apparently slack. Many of the intercostal Keelson rivets on the port side aft under the after hatchway are slack and the plates appear to be very slightly set upwards at that place as if the vessel had rested or struck on something. The bottom should be scraped to the bare iron fore and aft on both sides, and all rivets which have the appearance of being slack or defective should be examined and those found slack or defective should be taken out and replaced with sound rivets, and the butts showing moisture should be puttied and caulked, and when the repairs are completed the bottom should be coated with three coats of white zinc paint up to the second strake of plating from the Gunwale and a coating of white zinc and tallow mixed up to the 24 feet mark.

On the Starboard side the forward end of the fifteenth or length of Garboard strake plating from the sternpost is fractured at the butt in the knuckle of the plate, the fracture is about seven inches long and is leaking, this should be covered with a piece of steel plate tacked on to the Garboard strake over the fracture, and a small hole drilled at the end of the fracture to prevent it from extending, and filled with a tapped bolt. Other two plates of the Garboard strake on the same side are fractured in the same way, viz., the forward ends of the 5th and 9th plates from aft, but these need not be patched but tapped bolts put in the ends of the fractures and the fractures puttied and caulked.

On the Port side on the third strake of plating from the Keel, about thirty feet from the stern the plate is bent between



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the frames to the extent of about an inch deep, and two or three of the Frame rivets started and the cement inside is broken as if the plate had received a blow or rested on something. The cement should be cut out and the slack and defective rivets changed.

A large number of Frame rivets in the Bilges on both sides, specially on the Starboard side, immediately above the close ceiling, from the Foremast to between the Mizzen and Jigger masts are very slack. All the Frame rivets fore and aft on each side from the cement up to the two-inch stringers must be carefully tested and all slack and defective rivets changed.

Finding on previous surveys that many of the rivets were slack and bulks leaking in the lower hold I recommended that the sparring battens should all be removed and the sides scraped to the bare iron from the two-inch stringers down to the bottom cement, and that all the floor ceiling should be lifted, being mostly all in patches, fore and aft, for examination of the cement, and that recommendation has been carried out. The centre and side keelsons and many of the floors and reverse angles of floors were much rusted apparently by the brine from the salt mixing with the leakage through the bottom and washing up against them. All should be scraped clean and recoated with paint and cement.

Some rivets in nearly all the bulk straps of the angle stringers in the lower hold are slack and the bulks of many of the angles are drawn. Many of the rivets connecting the two angles and intercostal plates of the stringers in the lower hold and some of rivets in the intercostal angles through the sides and the vertical rivets of the intercostal angles, and the rivets connecting the stringer angles to the reverse bars of Frame are slack. All the stringers should be carefully examined and any slack or defective rivets found should be taken out and replaced with sound rivets, and when the bulks of the angles are drawn they should be fitted up with liners. One bulk of the lower angle, middle stringer, on the Starboard side, about the Main mast, is drawn open about $\frac{3}{4}$ inch, and the Osborn angle bulk strap is started. The bulk strap should be taken off and the bulk fitted up with a liner, and a new angle bulk strap worked on long enough to turn three Frames and should be closely fitted and well riveted.

The after end of the vessel appears to have vibrated and parted very much. The rivets in the stringer angles and in the after end of the twendeck stringer plates are slack and the breast plate on the middle stringers is buckled and seven frame angles on each side, viz: from the third to the tenth frame forward of the after end of centre keelson are fractured on the vertical web of the frame at and below the top of floor plates and the reverse bars on the ninth frame on both sides are fractured. To compensate for those fractures the two after frames on each side, viz: the third and fourth frames forward of the after end of centre keelson, being straight frames, should have $\frac{5}{8}$ " Fish plates about 3' 6" long worked over the fractured parts and fitted close into the bosom of the frame angle and riveted through with six rivets. The other frames, of which are fractured in two places should have bracket plates worked over the floor plate well up on the frame above the floor plate, the edges of the plates well fitted against the bosom of the frame angle and riveted to the frame angle and to the floor plate, the cement in the chambers to be cut and to admit of the bracket plates and Fish plates being fitted well down on the frame angle, a similar bracket plate should also be fitted on the eleventh frame angle from the end of keelson, in order to repair this damage the close ceiling aft must be removed and refitted or renewed when the repairs are completed.

To counteract the panting in the after end of the vessel, after a careful survey in conjunction with Captain Mc Gregor and of consultation with Captain Atkinson and Mr. Clark of the Firm of Messrs John King & Co., Engineers and Contractors, I decided that six Panting Beams should be fitted immediately below the Bulb iron intercostal stringer, about half way between the keel and the twendeck, that is the continuation right aft, of the stringer above the Bilge. The Beams to be composed of two angle bars $5\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{16}$, riveted back to back and to have $\frac{5}{8}$ " bracket plates fitted between the angles at the ends to connect the Beams to the frame and to have stringer plate at the ends, 21 inches broad by $\frac{5}{8}$ " thick, extending from the breast plate at the after end to the fourth frame forward of the sixth beam, the projecting ends to be supported by bracket plates riveted to the frame angles



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angles and Stringers. The stringer plates to be riveted to the beams and connected to the sides with angle bars, fitted on top of stringer plates and to the reverse bars of Frames, and riveted to the reverse frames and lug pieces with two rivets in each frame and riveted to the stringer plates in the usual way. The four forward beams to be supported in the middle with pillars 3" diameter riveted to the beam and to the Keelson. The after ends of the stringer plates to be connected to a breast plate 2' 6" long x $\frac{7}{8}$ " thick, fitted between the double angle bars and joined with double riveted butt straps, the lower angle to be formed like a Breast hook to take two frames on each side and riveted thereto and to the Gussset plate of the Frame at the after end.

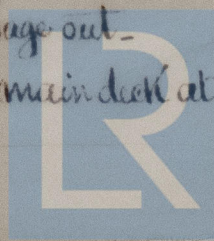
The first side Keelson extends right aft and is connected with a breast plate 2' 4" long, that breast plate to be extended further forward by riveting another plate four feet broad, lapped over the original breast plate and double riveted thereto.

The second side Keelson terminates, on the lower angle, two frames and on the upper angle six frames about the Jigger Mast, and is to be extended right aft with two angle bars $5\frac{1}{2} \times 3\frac{1}{2} \times \frac{7}{16}$ riveted back to back and to the reverse bars of the frames, to reverse bar lugs fitted on the frames for that purpose, having four rivets in each frame, the new lengths will be about 35 feet on each side. The ends to be connected with a breast plate 8 feet long fitted between the two angle bars of the stringers and through riveted.

The breast plate in line of two endbeams to be extended to the aftermost two endbeams and riveted to the Stringer plates on each side and to the beam, and all the slack rivets in the original breast plate and two endbeams Stringers, of which there are a large number, must be taken out and replaced with sound ones. To admit of this being done the two endbeams must be removed at the after end and re-laid or renewed as required after the repairs to stringers are completed.

In my opinion the above mentioned additional strength will efficiently counteract the extreme panting and vibrating at the after end of the vessel experienced on the passage out.

There is slight leakage in the main deck at the wings.



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under the forward part of poop, where the spaces between the frames are filled with cement, the cement appears to have started, probably, by the working of the Ship at sea, and should be cut out and the spaces either re-cemented or filled with wood and caulked.

Observe that many of the nuts of the deck fastening bolts under the iron deck and on the beams are slack and not up against the iron, they should be all examined and secured tight up to the iron deck.

In the spaces between the floors from the main mast to the collision bulkhead the cement is hollow and broken in many places, this is also the case from the Mizzen mast aft and should be cut out where defective and re-cemented.

As anticipated on my former survey I find that many of the floor ceiling Hatches and the girded ceiling adjoining the Keelsons have been split and damaged by being washed up by the water in the limber and will have to be repaired as already recommended for the first portion. A number of the Cap pieces of the ceiling on the ledges are also washed off and must be replaced and cemented over as before.

The three forward tween-deck scupper pipes on the Starboard side are bent buckled and fractured close up to the deck must be cut and new upper parts flanged and fitted and connected with plumbers joints.

The whole of the plates angles and Stringers in the lower hold from the ledge ceiling up to and inclusive of the tween-deck stringer, and the beam ends having been scraped to the bare iron will have to be re-coated with three coats of good zinc paint and also all the new beams, burst plates and all new iron work in the after end.

I also recommend that all the butt straps in the two strikes of plating above the ledge ceiling should be covered with cement about an inch thick, and that some (about ten butts) of the butts of the second strike of plating from the gunwale should be cemented over on the lower part by extending the cement between

the frames higher up to cover the lower parts of the bulks.
 The stay from the Starboard forward corner of the Fresh water
 tank to the beam, being broken must be taken down, repaired and
 refitted and riveted.

Survey Fee
 No 208/-

J. M. Fuller

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