

C O P Y.

The British Corporation for the survey and registry of Shipping.

The Undersigned, Alfred Kitching, Surveyor to this Corporation did at the request of Messrs. Syme & Coy, on behalf of the London Salvage Association did on the 11th February and subsequent dates proceed on board of the British steamer "INDRASAMHA" of Liverpool, Registered Tonnage 3367, Captain A. Horsfall, whilst the vessel was lying on the blocks in the Tanjong Pagar Dock at this port to ascertain the cause of her leaking, and what means should be taken to effectually stop such leakage and put the vessel in a thoroughly seaworthy condition to enable her to proceed on her intended voyage.

On proceeding on board I found that the leakage occurred in the No.1 hold and commenced during stress of weather in the Atlantic and for what happened from then until the time the vessel put back to this port refer to the ship's Official log.

Upon examining the No.1 lower hold the surface of the shell plating and framing was very rusty from the main deck sheerstrake lower landing downwards to the turn of the bilge for about twenty six frame spaces on either side.

On making a close examination of the landings of plates and rivets and carefully testing same, the three landings from bottom of lower deck sheerstrake downwards were found sprung open so much that a feeler could easily be inserted through them, this springing of landings extended for about 55 ft. between the No.1 and 2 bulkheads or about 26 frame spaces on each side of hold, and in way of this space the riveting of the three landings above mentioned were found very slack, so much so that many of them could be turned round by the hand, this opening of landings and slackness of rivets is beyond doubt the cause of the leakage.

The question naturally arises are these defects and subsequent leakage due to bad workmanship or material, but in my opinion this is not so, as from the general appearance the shell plating is well put together the holes being fair, well countersunked, the rivets filling the holes thoroughly and also having full heads, the caulking is also everything to be desired and the material shows no signs of defects.

This being the case I can only attribute the leakage to panting of the ship's sides causing the springing of the landings and starting of rivets, this panting is no doubt due to structural transverse weakness of this particular part of the vessel.

It is therefore essential to strengthen transversely this part of the vessel, this can be done in several ways but as the vessel is built on the deep frame principle having four longitudinal side stringers only, the depth of hold from top of beam to top of tank at centre being more than 24 feet, I would recommend the placing of a few transverse steel beams placed below and connected to the second longitudinal side stringer, the number of beams recommended would be five, one at each end of the hatchway, one about midway between the forward end of hatchway and present after panting beam, and two between the after end of hatchway and bulkhead, these beams could be constructed of a bulb plate about 12 deep with 6" x 4" angle irons on top and bottom and also a rider plate above, connected direct to the deep framing, and gusset plate on top of beam fitted intercostally between two frame spaces connected to three frames with a stout angle iron together with a large knee at bottom of beam riveted to the frames, or the connection of beam ends to frames and shell plating to be according to Lloyds requirements, these extra beams to be also stiffened with quarter pillars fitted top and bottom of beam.

The fitting of these five beams will in my opinion effectually prevent further panting of the ship's side, and after all the slack rivets in the shell plating have been renewed and the landings thoroughly caulked no further trouble should be experienced with leakage hereafter.

It will be necessary to cut out and renew about 5000 rivets in the shell plating, and a length of about 60 feet on each side of the landings already mentioned to be thoroughly caulked and made tight.

The bulkhead between No.1 and 2 holds has also been leaking, allowing water to get into No.2 hold, this will require caulking and also a few doubtful rivets cut out and renewed.

Having regard to the serious cause of the vessel leaking I have only recommended permanent repairs to be carried out, as in my opinion temporary repairs are not to be considered in such a serious case as this, especially when there is every facility for executing permanent

repairs.

After all repairs have been completed it would be advisable to test all new riveting with a strong force of water from outside to ascertain that all is tight before floating the vessel, also all new work should be thoroughly coated with two coats of good paint.

I would also recommend giving the bottom of vessel one coat of patent composition paint, as it appears rusty in several places.

(Signed) Alfred Kitching.



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