

of Quebec

August 9th. 1920.

William R.M. Aspinall

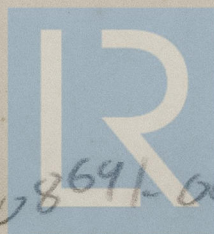
Mr Henry Black of Salvage Association examine the S.S. MANOA of Duluth, 4708 tons gross register, while lying in drydock at Lauzon, Levis P.Q. on August 2nd. 1920 and on subsequent dates in order to ascertain the nature and extent of the damage alleged to have been sustained to the tail shaft and cause of the frequent breaking of the coupling bolts of this shaft.

A copy of the Master's protest also copies of the officers and engineer's log extracts are attached hereto.

The undersigned recommended that the tail shaft be drawn for examination and be placed in the lathe for testing for truth.

When tried in the lathe the shaft was found to be straight. This shaft appears to have been originally 15 and  $\frac{3}{4}$  inches in dia. and to have been skimmed up at some time to 15 and  $\frac{5}{8}$  dia. a groove was found 15 and  $\frac{1}{2}$  inches dia. before taking out the coupling bolts to remove the shaft the coupling flange was observed to be  $\frac{3}{16}$  of an inch open at the top.

The shaft is fitted with a Cedervall gland and the white metal bearings in the stern tube were found to be hard worn down to the bottom of the oil grooves also the after



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S.S. MANOA  
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tunnel bearing was found to be hard worn and to require remettaling.

The tail shaft is badly pitted and scored and appears to have been partly running in water. To again skim up the shaft would reduce its diameter to 15 and 1/4 inches or less, which would be below the necessary diameter for a tail shaft for this vessel. Further three fatigue cracks were found one of which was 10 inches long.

The owners representative stated that there was a spare tail shaft in New York, which to the best of his belief was in good condition. The undersigned recommended without prejudice to any claim that might be made upon underwriters, that this spare shaft be brought from New York and be fitted in the ship. This necessitated the undocking of the vessel to undock another vessel which was in dock with her and again drydocking to fit the spare tail shaft.

The bronze propeller is gapped on the leading edge in several places, the largest being triangular 5 and 3/4 inches by 2 and 3/4 inches also the tip of one blade is bent 1 inch over a length of 15 inches.

*W. H. M. Aspinall*



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