

COPY.

Lloyd's Register of Shipping.

Port Halifax, N. S.January 25th, 1949.

This is to Certify that

W. NICHOLSON

the undersigned Surveyor to this Society did at the request of Messrs. St. Lawrence Metal & Marine Works Ltd., Quebec, attend on board the Steel Single Screw Motorship "CORUCHE" 1122.3 Tons Gross Register of Lisbon, on 1st Dec. 1948 and subsequent dates for the purpose of examining the shafting system of that vessel.

During full power light draft river trials, on the 1st Dec. 1948, some whipping (or whirling) of the intermediate shafting was observed when the engine was running ahead at 275 to 282 RPM, increasing when the engine ran astern at 300 RPM. The maximum whipping occurred in way of the forward SKF sleeve coupling, and was negligible at the after coupling. Later, using dial indicator gauges, and rotating the shaft with the turning gear, the shafts adjacent the forward, centre & after SKF couplings, were found to 'throw' or run out of truth, $26/1000''$, $10/1000''$ & $3/1000''$ respectively. Disconnecting the thrust aft bolted coupling, & suitably supporting the adjacent intermediate shaft, the corresponding readings were $28/1000''$, $8/1000''$ & $2/1000''$.

The faces of the flange couplings were found to be open $19/1000''$ towards the top of the coupling on a diameter about

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30° to starbd. of the vertical centre line. This opening varied 19/1000" to 22/1000" when the thrust shaft was rotated. These readings corresponded with zero opening on the lower end of the above diameter. 'Sights' were erected in the tunnel and a piano wire, made taut with a turn screw, was used to gauge the relative heights of the shaft bearings and it was found advisable to recommend lowering the 2 after bearings about 40/1000" each.

Prior to the vessel leaving Quebec for Halifax, Nova Scotia, the following facts were observed by the Society's Surveyor at Quebec, with the thrust coupling disconnected from the intermediate shaft the forward & centre, SKF couplings 'threw' respectively 16/1000", & 8/1000". The faces of the flanged couplings were open 17/1000" on the top, 4/1000" on the bottom, 17/1000" to starbd. & 6/1000" to Port.

With the thrust flanged coupling bolted tightly, the forward & centre couplings 'threw' 14/100" & 4/1000" respectively. The periphery of the thrust aft coupling threw 8½/1000". These figures suggested that the shaft condition had been improved by lowering the 2 after bearings.

The vessel proceeded to Halifax, N. S. at reduced engine revolutions and was docked at the Marine Railway Dry Dock (Slipway) Dartmouth. 'Sights' erected before docking were checked after docking, when it was found necessary to raise the forward sight, on the forward SKF bearing, 1/32" and to move it 3/32" to Port to bring the 'sights' in line again.

The shafting was disconnected & tested in a lathe for straightness. The screw shaft was straight.

The after length of shaft was found bent approx. 11/1000", and when supported in way of the bearing, & rotated with one end in the lathe chuck, the overhung end (5'-6½" overhang) ran out of truth 16/1000".

The centre shaft was found bent approx. 14/1000" & when supported in way of the bearing, the overhung end (9'-0" 15/16" overhang) ran out of truth 19/1000".

The line of shafting was carefully sighted on the ship, sights



Jan'y. 25/49.

being placed, 2 in sterntube, one on each bearing and one on the thrust bulkhead. The line of sight was projected onto the thrust shaft flange face, the centre of which was found to be about $3/16$ " to starbd.

The opening of the flanged coupling faces at the top and side suggests that the engine requires to be lifted at the forward end, also moved athwartships at the after end.

Using carefully machined sighting discs, the SKF roller bearing housings were 'sighted' and it was found necessary to lower the centre bearing about $1/32$ " (in addition to the previous $40/1000$ ") and the forward bearing about $1/64$ ", to bring the bearings in line with the sights.

It is considered the screw and intermediate shafts should be refitted in the ship, in the correctly aligned bearings, and with the vessel afloat, the thrust block, thrust shaft and engine brought in line with the intermediate shafting.

The exact amount of movement to be determined when the ship is afloat.

On completion the engines should be tested under full load working conditions, both ahead and astern, and the shafting proved to be free from whip, and to operate to the satisfaction of the Society's Surveyors.

Les - Nicholson.
Surveyor to Lloyd's Register.



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