

## REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Date of writing Report 6.4.39 When handed in at Local Office 13 APR 1939 Port of LIVERPOOL APR 26 1939  
 No. in Survey held at Northwich S.H.D. Date, First Survey Sept 7<sup>th</sup> /38 Last Survey March 28 1939  
 Reg. Book. on the steam tender "TREFOIL" (Number of Visits 12) Gross 167 Tons Net 47  
 Built at Northwich By whom built W.J. Yarwood & Sons Ltd Yard No. 627 When built 1939  
 Engines made at Northwich, Cheshire By whom made W.J. Yarwood & Sons Ltd Engine No. 627 When made 1939  
 Boiler made at Burslem By whom made Cammell Laird & Co Ltd Boiler No. 2205 When made 1938  
 Registered Horse Power 58 5/6 Owners Mersey Docks & Harbour Board Port belonging to Liverpool  
 Nom. Horse Power as per Rule 58 5/6 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes  
 Trade for which Vessel is intended For Towing & Towing services

Engines, &c.—Description of Engines Inverted Triple Expansion Reciprocating Revs. per minute 200  
 Dia. of Cylinders 11 x 18 x 30 Length of Stroke 18 No. of Cylinders 3 No. of Cranks 3  
 Crank shaft, dia. of journals as per Rule 5.62 as fitted 5 3/4 Crank pin dia. 5 3/4 Crank webs Mid. length breadth 12 Thickness parallel to axis 4  
 Intermediate Shafts, diameter as per Rule 5.36 as fitted 5 1/2 Thrust shaft, diameter at collars as per Rule 5.62 as fitted 5 9/8 (5 3/4 jambs) Michell  
 Tube Shafts, diameter as per Rule 5.9 as fitted 6 1/4 Is the shaft fitted with a continuous liner yes  
 Screw Shaft, diameter as per Rule 4.75 as fitted 9/16 Thickness between bushes as per Rule 3.55 as fitted 9/16 Is the after end of the liner made watertight in the  
 propeller boss yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner  
 If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive  
 If two liners are fitted, is the shaft lapped or protected between the liners Is an approved Oil Gland or other appliance fitted at the after end of the tube  
 Shaft No If so, state type Length of Bearing in Stern Bush next to and supporting propeller 2'-8 1/2"  
 Propeller, dia. 7'-8" Pitch 6'-4" No. of Blades 4 Material C.I. whether Moveable No Total Developed Surface 17 sq. ft  
 Feed Pumps worked from the Main Engines, No. None Diameter Stroke Can one be overhauled while the other is at work  
 Bilge Pumps worked from the Main Engines, No. None Diameter Stroke Can one be overhauled while the other is at work  
 Feed Pumps No. and size 2-4' x 6' x 12' How driven Steam Independent Pumps connected to the Main Bilge Line No. and size 2-4' x 4' x 5' duplex How driven Steam  
 Ballast Pumps, No. and size 2-4' x 4' x 5' Lubricating Oil Pumps, including Spare Pump, No. and size  
 Are two independent means arranged for circulating water through the Oil Cooler none Suctions, connected to both Main Bilge Pumps and Auxiliary  
 Bilge Pumps;—In Engine and Boiler Room 1-Bilge Room, 2-Eng Room 1-2 1/2" in Bilge Room, 1-2 1/2" in Eng Room  
 In Pump Room In Holds, &c. 1-Ford, 1-Forward B.R. Bulkhead, 1-Aft all 2 1/2"

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-3 1/2" Independent Power Pump Direct Suctions to the Engine Room Bilges,  
 No. and size 1-2-2 1/4" Are all the Bilge Suction Pipes in holds and tanks well fitted with strum-boxes yes  
 Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges yes  
 Are all Sea Connections fitted direct on the skin of the ship Yes (except where on "Kington" chest) Are they fitted with Valves or Cocks Valves, except blowdown  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the Overboard Discharges above or below the deep water line just above  
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel yes Are the Blow Off Cocks fitted with a spigot and brass covering plate yes  
 That Pipes pass through the bunkers None How are they protected  
 That pipes pass through the deep tanks Have they been tested as per Rule Yes (blowdown extensions up to deck)  
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes  
 Is the arrangement of Valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one  
 compartment to another Yes Is the Shaft Tunnel watertight None Is it fitted with a watertight door worked from

MAIN BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 1020 sq. ft  
 Is Forced Draft fitted No No. and Description of Boilers One cylindrical multitubular Working Pressure 200 lb./sq. in.  
 IS A REPORT ON MAIN BOILERS NOW FORWARDED? Yes L in rpt 111942.  
 IS A DONKEY BOILER FITTED? No If so, is a report now forwarded?

Are the donkey boiler intended to be used for domestic purposes only  
 PLANS. Are approved plans forwarded herewith for Shafting 1-11-38  
 (If not state date of approval) Main Boilers Yes Auxiliary Boilers Donkey Boilers  
 Superheaters General Pumping Arrangements Oil fuel Burning Piping Arrangements

SPARE GEAR.  
 Has the spare gear required by the Rules been supplied Yes  
 State the principal additional spare gear supplied

- 1 Spare propeller
- 2 Conn rod bolts & nuts
- 2 Main Bg bolts & nuts
- 2 Ecc strap bolts & nuts
- 1 set coupling bolts & nuts
- Complete set of piston rings for all engines of Aux & Deck machinery.
- 6 boiler tubes
- 12 Condenser tubes, & journals

Spare springs for safety valves, reducing valves, relief valves &c.  
 2 spare valve chests for air & fuel pumps.

The foregoing is a correct description.  
 W. J. YARWOOD & SONS, (1938) LTD.

Manufacturer.



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Laund 15.12.38

Dates of Survey while building

During progress of work in shops - - - 1938

During erection on board vessel - - - 1939

Sept 7. 30. Oct 20. 31. Nov 21. Dec 13. Jan 4. 18. 21. Mar 13. 21. 28.

Total No. of visits 12.

Dates of Examination of principal parts—Cylinders 31.10.38 Slides 31.10.38 Covers 31.10.38

Pistons 20.10.38 Piston Rods 3748 24.5.38 & 20.10.38 Connecting rods 3747 29.4.38 & 20.10.38

Crank shaft 7.9.38 Thrust shaft 21.11.38 Intermediate shafts 31.10.38

Tube shaft ✓ Screw shaft 13.12.38 Propeller 13.12.38

Stern tube 21.11.38 Engine and boiler seatings 30.9.38 Engines holding down bolts 21.11.38 & 18.1.39

Completion of fitting sea connections 13.12.38

Completion of pumping arrangements 13.3.39 Boilers fixed 21.11.38 Engines tried under steam 28.3.39

Main boiler safety valves adjusted 21.3.39 Thickness of adjusting washers Pat & Studd 3/8" full.

Crank shaft material S.M. Steel Identification Mark 3755 3-S-36-JFC Thrust shaft material SM Steel Identification Mark 3051 22.9.38 AS

Intermediate shafts, material Steel Identification Marks 2132 + 2133 22.9.38 CNS Tube shaft, material ✓ Identification Mark ✓

Screw shaft, material Steel Identification Mark 2134 22.9.38 CNS Steam Pipes, material Copper Test pressure 400 lbs Date of Test 20.1.39 (51/20)

Is an installation fitted for burning oil fuel No Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of the Rules for the use of oil as fuel been complied with ✓

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo ✓ If so, have the requirements of the Rules been complied with ✓

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with ✓

Is this machinery duplicate of a previous case No If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been built under special survey, the materials and workmanship are good. After erection in the shop the boiler and machinery have been fitted on board together with the auxiliaries, in an efficient manner. The safety valves have been adjusted under steam, the pumps & auxiliaries tried on the various suction, the spare gear checked, and on completion a satisfactory sea trial witnessed.

The vessel's machinery is now eligible, in our opinion, to be classed with record of + LMC 3.39.

T.S. CL.

The amount of Entry Fee ... £ 2 : 0 0

Balance Special ... £ 8 : 4 0

Donkey Boiler Fee ... £ :

Travelling Expenses (if any) £ 4 : 17/3

When applied for, 24 APR 1939

When received, 6.4.19

Committee's Minute LIVERPOOL 25 APR 1939

Assigned + LMC 3.39 C.L.

Rpt. 5a.

Date of writing Report

No. in Survey held Reg. Book.

on the

Master

Engines made at

Boilers made at

Nominal Horse Power

MULTITUBULAR

Manufacturers of Steam

Total Heating Surface

No. and Description

Tested by hydraulic

Area of Firegrate in

Area of each set of

In case of donkey boiler

Smallest distance betw

Smallest distance betw

Largest internal dia.

Thickness 1"

long. seams double

Percentage of strength

Percentage of strength

Thickness of butt stre

Material steel

Length of plain part

Dimensions of stiffen

End plates in steam

How are stays secure

Tube plates: Material

Mean pitch of stay to

Girders to combusti

at centre 200 plates

in each 200. 8

Tensile strength 2

Pitch of stays to ditto

Working pressure by

Thickness 15/16"

Pitch of stays at wid

Working Pressure

Diameter { At body of st or Over threads

Working pressure by

Diameter { At turned off p or Over threads



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