

REPORT ON OIL ENGINE MACHINERY.

No. 55326

Date of writing Report 8th Feb 1935 When handed in at Local Office 11th Feb 1935 Port of Glasgow
 Date, First Survey 9th Feb 1934 Last Survey 8th Feb 1935
 No. in Survey held at Glasgow Number of Visits 126

Reg. Book. 87477 on the Single Twin Triple Quadruple Screw vessel Wairangi
 Tons { Gross 10779
 Net 6538

Built at Glasgow By whom built Harland & Wolff Ltd. Yard No. 9246 When built 1935-2
 Engines made at Do. By whom made Do. Engine No. 9246 When made 1935-2
 Donkey Boilers made at Belfast By whom made Do. Boiler No. 9246 When made 1934
 Brake Horse Power 12,000 Owners Shaw, Savill & Albion Co. Ltd. Port belonging to Southampton
 Nom. Horse Power as per Rule 1631 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes
 Trade for which vessel is intended Foreign.

OIL ENGINES, &c. Type of Engines Harland B. & W. — Airless injection 2 or 4 stroke cycle 4 Single or double acting Single
 Maximum pressure in cylinders 700 lb./sq. in. Diameter of cylinders 740 mm. Length of stroke 597.5 mm. No. of cylinders 20 No. of cranks 20

Mean Indicated Pressure 128 lb./sq. in. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 106.2 mm. Is there a bearing between each crank Yes
 Revolutions per minute 119 Flywheel dia. 2483 mm. Weight 2 1/2 tons Means of ignition Compression Kind of fuel used Heavy oil

Crank Shaft, dia. of journals 523 mm. Crank pin dia. 530 mm. Crank Webs 880 mm. Thickness parallel to axis 326 mm.
 as fitted 530 mm. Mid. length breadth 326 mm. Thickness around eye-hole 248 mm.

Flywheel Shaft, diameter 523 mm. Intermediate Shafts, diameter 15 1/2" Thrust Shaft, diameter at collars 15 3/4"
 as fitted 530 mm. as fitted 15 1/2" as fitted 16 1/4"

Tube Shaft, diameter 13 1/16" Screw Shaft, diameter 17 3/4" Is the { tube } shaft fitted with a continuous liner { Yes }
 as fitted 13 1/16" as fitted 17 3/4" as fitted 39 1/4"

Bronze Liners, thickness in way of bushes 7/8" Thickness between bushes 23/32" Is the after end of the liner made watertight in the
 as fitted 7/8" as fitted 23/32"

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 Yes
 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 Yes

If two liners are fitted, is the shaft lapped or protected between the liners Yes Is an approved Oil Gland or other appliance fitted at the after end of the tube
 shaft No If so, state type Yes Length of Bearing in Stern Bush next to and supporting propeller 5' 11"

Propellers dia. 17' 0" Pitch 16' 6" No. of blades 3 each Material High Speed Steel whether Moveable Yes Total Developed Surface 70 sq. feet
 Method of reversing Engines Reversed pin Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication Oil

Thickness of cylinder liners 53.5 mm. Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with
 non-conducting material Yes If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine Yes

Cooling Water Pumps, No. Two Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes
 Bilge Pumps worked from the Main Engines, No. None Diameter 100 mm. Stroke 200 mm. Can one be overhauled while the other is at work Yes

Pumps connected to the Main Bilge Line { No. and Size 1 @ 200 mm. h. & 2 @ 60 mm. h. each. }
 How driven Electric Motors.

Is the cooling water led to the bilges No If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping
 arrangements No

Ballast Pumps, No. and size 1 @ 200 mm. h. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 3 @ 70 mm. h. each.
 Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

Pumps, No. and size:—In Machinery Spaces 6 @ 3 1/2", 1 @ 3", 2 @ 2 1/2", 7 @ 2", 2 @ 5", 1 @ 6" In Pump Room Yes
 In Holds, &c. 8 @ 3 1/2" & 3 @ 3"

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 @ 6" & 2 @ 5"
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces Yes

led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes Are they fitted with Valves or Cocks Both
 Are all Sea Connections fitted direct on the skin of the ship Yes Are the Overboard Discharges above or below the deep water line Both

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes How are they protected Yes

What pipes pass through the bunkers Yes Have they been tested as per Rule Yes
 What pipes pass through the deep tanks Yes

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 Yes Is it fitted with a watertight door Yes worked from Deck of upper deck

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork Yes
 Main Air Compressors, No. Two No. of stages Two Diameters 400 & 350 mm. Stroke 260 mm. Driven by Electric Motors

Auxiliary Air Compressors, No. One No. of stages Two Diameters 100 & 50 mm. Stroke 115 mm. Driven by Steam
 Small Auxiliary Air Compressors, No. None No. of stages — Diameters — Stroke — Driven by —

Scavenging Air Pumps, No. None Diameter — Stroke — Driven by —
 Auxiliary Engines crank shafts, diameter 158 mm. as per Rule 160 mm. as fitted

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AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule

Cap the internal surfaces of the receivers be examined and cleaned *Yes* Is a drain fitted at the lowest part of each receiver *Yes*
High Pressure Air Receivers, No. *2* Cubic capacity of each *7 ft. 3* Internal diameter *15 3/4"* thickness *1/2"*
Seamless, lap welded or riveted longitudinal joint *Lap welded* Material *Steel* Range of tensile strength *24 x 28 tons* Working pressure by Rules *512 lb/in.²* Actual *356 lb/in.²*
Main 4 psi: Starting Air Receivers, No. *Three* Total cubic capacity *2250 ft.³* Internal diameter *Bel. Rpt.* thickness *Bel. Rpt.*
Seamless, lap welded or riveted longitudinal joint *Riveted* Material *Steel* Range of tensile strength *Bel. Rpt.* Working pressure by Rules *Bel. Rpt.* Actual *356 lb/in.²*

IS A DONKEY BOILER FITTED? *Yes* If so, is a report now forwarded? *Yes* *Bel. Rpt. 11.35*

Is the donkey boiler intended to be used for domestic purposes only? *No*

PLANS. Are approved plans forwarded herewith for Shafting *Yes* Receivers *Bel. Rpt.* Separate Tanks *Yes*
(If not, state date of approval)

Donkey Boilers *Bel. Rpt. 11.353* General Pumping Arrangements *Yes* Oil Fuel Burning Arrangements *Yes*

SPARE GEAR.

Has the spare gear required by the Rules been supplied? *Yes*

State the principal additional spare gear supplied *As per attached list.*

The foregoing is a correct description,
For HARLAND AND WOLFF, LIMITED.

Wm. J. Wright

Manufacturer.

Dates of Survey while building
During progress of work in shops: 1934 July 9 Mar. 8. 10. 13. 16. 19. 21. 22. 23. 29 Apr. 4. 6. 10. 12. 17. 18. 19. 24. 26. 27. 30 May. 1. 2. 4. 8
During erection on board vessel: 10. 11. 15. 16. 18. 22. 24. 30 June. 4. 5. 12. 14. 15. 21. 25. 26. 28 July. 2. 4. 5. 10. 11. 25. 31 Aug. 2. 6. 7. 8. 10. 13. 15. 16
Total No. of visits: 120-20. 22. 24. 30 Dec. 5. 6. 7. 10. 11. 12. 14. 18. 19. 20. 26. 27 (1935) Jan. 7. 8. 9. 10. 11. 14. 16. 17. 24 Feb. 8

Dates of Examination of principal parts—Cylinders 5-9-34 Covers 5-9-34 Pistons 29-8-34 Rods 29-8-34 Connecting rods 19-9-34
Crank shafts 5-31-8-34 Flywheel shaft Thrust shafts 5-18-10-34 Intermediate shafts 23-8-34 Tube shaft 10-12-34

Screw shafts 1-10-34 Propellers 15-11-34 Stern tube 23-8-34 Engine seatings 24-8-34 Engines holding down bolts 11-7-12-34
Completion of fitting sea connections 9-10-34 Completion of pumping arrangements 8-1-35 Engines tried under working conditions 24-1-35

Crank shafts Material *Steel* Identification Mark *1052, 1057, 1058* Flywheel shaft, Material Identification Mark *1052, 1057, 1058*
Thrust shafts Material *Steel* Identification Mark *1052, 1057, 1058* Intermediate shafts, Material Identification Marks *1052, 1057, 1058*
Tube shaft, Material Identification Mark *1052, 1057, 1058* Screw shafts Material *Steel* Identification Mark *1052, 1057, 1058*

Is the flash point of the oil to be used over 150° F. *Yes*

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with *Yes*

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *No* If so, have the requirements of the Rules been complied with *Yes*

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

Is this machinery duplicate of a previous case *Yes* If so, state name of vessel *M.V. "WAINERA" & "WAIPAWA"*

General Remarks (State quality of workmanship, opinions as to class, &c.) *These engines have been built under*

Special Survey in accordance with the Rules & the approved plans. The materials & workmanship are good. They have been efficiently fitted on board, tried under full power at sea & found satisfactory.

This machinery is eligible, in my opinion, to be classed in the Register Book with records:— & LMC—2.35: Oil Exp: C.L.

12/2/35

The amount of Entry Fee .. £ 6 : — : When applied for, 12 FEB 1935
Special £ 140 : 15/6 :
Donkey Boiler Fee £ — : — :
Travelling Expenses (if any) £ — : — :
Committee's Minute GLASGOW 12 FEB 1935
Assigned + LMC 2.35
Engineer Surveyor to Lloyd's Register of Shipping.
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