

Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

W1133-0184

No. 11.351

-3 SEP 1934

Received at London Office

Date of writing Report 19 When handed in at Local Office 31/8/1934 Port of Belfast
No. in Survey held at Belfast Date, First Survey 10th August 1933 Last Survey 28th August 1934
Reg. Book. 87481 on the Single Triple Quadruple Screw vessel "WAIWERA"
Built at Belfast By whom built Harland & Wolff Ltd. Yard No. 922 When built 1934
Engines made at Belfast By whom made Harland & Wolff Ltd. Engine No. 922 When made 1934
Donkey Boilers made at Belfast By whom made Harland & Wolff Ltd. Boiler No. 922 When made 1934
Brake Horse Power 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 Ocean-going 29-8 59-10

L ENGINES, &c.—Type of Engines Harland & Wolff—3 cr. 2 type Heavy Oil AIRLESS INJECTION PRESSURE INDUCANCE
Maximum pressure in cylinders 650 lbs. Diameter of cylinders 740 mm. Length of stroke 1500 mm. No. of cylinders 20 No. of cranks 20
Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1062 mm. Is there a bearing between each crank Yes
Revolutions per minute max 119 Flywheel dia. 2482.8 mm Weight 2650 Kms. Means of ignition compression Kind of fuel used diesel oil.
Crank Shaft, dia. of journals as per Rule 519 mm. Crank pin dia. 530 mm. Crank Webs Mid. length breadth 888 mm. Thickness parallel to axis 326 mm.
as fitted 530 mm. 190 mm. Mid. length thickness 326 mm. Thickness around eye-hole 248 mm.
Flywheel Shaft, diameter as per Rule Intermediate Shafts, diameter as per Rule 14.23" 15 Thrust Shaft, diameter at collars as per Rule 14.95" 15
as fitted Crank shaft as fitted 15.5" 16.42" Is the tube screw shaft fitted with a continuous liner Yes
Tube Shaft, diameter as per Rule as fitted 15.64" 16.42" Is the tube screw shaft fitted with a continuous liner Yes
as fitted 17.4" 19.32" Is the after end of the liner made watertight in the
Bronze Liners, thickness in way of bushes as per Rule 25" 28" Thickness between bushes as per rule 19.32" 23" Is the after end of the liner made watertight in the
as fitted 25" 28" If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner Yes
Propeller boss 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
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
aft No If so, state type Length of Bearing in Stern Bush next to and supporting propeller 5'-11"
Propeller, dia. 17'-0" Pitch 16'-6" No. of blades Three Material mang. B. whether Moveable Yes Total Developed Surface ca. 70 sq. feet
Method of reversing Engines Air Cylinders Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication
used Thickness of cylinder liners 53 mm. Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with
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 Is pumped
Cooling Water Pumps, No. Three each 240 Tons/hr. Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes, duplex
Bilge Pumps worked from the Main Engines, No. Diameter Stroke Can one be overhauled while the other is at work
Pumps connected to the Main Bilge Line No. and Size Two at 110 Tons/hr. One at 200 Tons/hr.
How driven Electric motor
Ballast Pumps, No. and size One 200 Tons/hr. Lubricating Oil Pumps, including Spare Pump, No. and size Three - 100 Tons/hr.
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 Two of 3" (Flywheel mells) One of 2" (E.R. Cdam aft) Two of 2" (E.R. Cdam fwd) in Pump Room
Holds, &c. No. 1 - Two of 3" Cdam - one of 2"; No. 2 - Two of 3"; No. 3 - Two of 3"; No. 5 - Two of 3"; Cdam - Two of 2"; No. 6 - Two of 3"; Tunnel Well One of 3"
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size One 6" Two 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
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 Are they fitted with Valves or Cocks Yes
Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes Are the Overboard Discharges above or below the deep water line 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
At pipes pass through the bunkers How are they protected
At pipes pass through the deep tanks Have they been tested as per Rule

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
apartment to another Yes Is the Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Bridge deck.
Is the wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork
Air Compressors, No. No. of stages Diameters Stroke Driven by
Auxiliary Air Compressors, No. Two No. of stages 2 Diameters 350-440 mm Stroke 260 mm. Driven by Electric Motors
All Auxiliary Air Compressors, No. One No. of stages 2 Diameters 54-180 mm Stroke 115 mm. Driven by Steam
Suctioning Air Pumps, No. Diameter Stroke Driven by
Auxiliary Engines crank shafts, diameter as per Rule 201.5 mm. 54-531 Position - rings of main motor room
as fitted 280 mm.

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

Are the internal surfaces of the receivers be examined and cleaned Yes Is a drain fitted at the lowest part of each receiver Yes
Pressure Air Receivers, No. Cubic capacity of each Internal diameter thickness
Are they lap welded or riveted longitudinal joint Material Range of tensile strength Working pressure by Rules
Starting Air Receivers, No. 3 Two of 900 \$ Total cubic capacity 2250 \$ Internal diameter 5'-10 5/16" x 6'-4 1/8" thickness 1"-1 1/8"
Are they lap welded or riveted longitudinal joint T.R.D.B.S. Material Steel Range of tensile strength 28/32 Working pressure by Rules
Actual 356 LBS/sq. in.
Actual 369

IS A DONKEY BOILER FITTED? Two make steel If so, is a report now forwarded? Yes
Is the donkey boiler intended to be used for domestic purposes only No.
PLANS. Are approved plans forwarded herewith for Shafting 6th + 8th July 1933 Receivers 16. 8. 33 Separate Tanks 22. 8. 33 16. 4. 34
(If not, state date of approval)
Donkey Boilers 16. 8. 33 General Pumping Arrangements 28. 12. 33 Oil Fuel Burning Arrangements 22. 3. 33

SPARE GEAR.

Has the spare gear required by the Rules been supplied? Yes
State the principal additional spare gear supplied See attached list.

The foregoing is a correct description.
For HARLAND AND WOLFF, LIMITED.
A. J. Marshall
Manufacturer.
Assistant Secretary.

Dates of Survey while building
During progress of work in shops - Aug. 10. 22. 24. Sept. 4. 6. 7. 12. 14. 15. 18. 19. 25. 26. 27. 29. Oct. 2. 4. 5. 6. 10. 11. 12. 14. 19. 24. 25. 27. 30. Nov. 2. 6. 7. 9. 10. 11. 13. 16. 17. 20. 21. 22. 24. 29. Dec. 1. 4. 5. 6. 7. 8. 11. 12. 14. 15. 18. 19. 1934 Jan. 5. 8. 10. 11. 12. 15. 16. 17. 18. 19. 22. 23. 24. 25. 26. 29. 30.
During erection on board vessel - Apr. 1. 2. 5. 6. 9. 12. 13. 14. 15. 16. 19. 20. 21. 22. 23. 26. 27. 28. May 2. 5. 6. 7. 9. 12. 13. 14. 15. 16. 19. 20. 21. 23. 26. 27. 28. 29. 30. June 1. 6. 13. 14. 15. 16. 17. 18. 20. 23. 24. 25. 26. 27. 28. 29. 30. July 4. 6. 20. 23. 25. 27. 30. Aug. 1. 8. 14. 17. 20. 23. 24. 25. 26. 27. 28. = 171
Total No. of visits 18. 19. 21. 22. 25. 26. 28. 29. Sept. 25th 1933
Dates of Examination of principal parts - Cylinders 25th Sept. 1933
Crank shaft 14. 2. 34 Flywheel shaft Thrust shaft 2. 11. 33 Intermediate shafts 6. 10. 33 14. 3. 34 Tube shaft
Screw shaft 13. 3. 34 Propeller 16. 3. 34 Stern tube 16. 3. 34 Engine seatings 5. 4. 34 Engines holding down bolts 4. 7. 34
Completion of fitting sea connections 6. 5. 34 Completion of pumping arrangements 15. 8. 34 Engines tried under working conditions 18. 8. 34

Crank shaft, Material Ingot Steel Identification Mark 100. 197. 198 R.L.A. Flywheel shaft, Material Identification Mark 805 - 812 - 814
Thrust shaft, Material Identification Mark 819 R.L.A. Intermediate shafts, Material Ingot Steel Identification Marks 816 - 819 - 829 - 831
Tube shaft, Material Identification Mark Screw shaft, Material Identification Mark 794 - 800 - 834 R.L.A.

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
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 constructed under special survey. The workmanship & materials are sound and good. The main and auxiliary machinery has been efficiently installed and tried out at moored & sea trials with satisfactory results. In my opinion the vessel is eligible for record in the Society's Register Book - L.M.C. 8. 34 C.L. 2 D.B. 100 lbs.
Electric light. OIL ENGINES.

The amount of Entry Fee .. £ 6 : - : When applied for, 31. 8. 19. 34
Special ... £ 140 : 15 : 16 :
Donkey Boiler Fee ... £ 8 : 8 : When received, 12. 9. 19. 34
Air Reservoirs
Travelling Expenses (if any) £ 12 : 12 : - :
Committee's Minute FRI. 14 SEP 1934
Assigned + L.M.C. 8. 34 C.L.
25B. 100 lb.

R. Lee Amess.
Engineer Surveyor to Lloyd's Register of Shipping.



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Foundation