

REPORT ON OIL ENGINE MACHINERY.

No. 10,103

28 JAN 1929

Received at London Office

Date of writing Report 19. When handed in at Local Office 26th Jan 1929 Port of Belfast
No. in Survey held at Belfast Date, First Survey 6th Dec 1927 Last Survey 25th Jan. 1929
Reg. Book. Number of Visits 130
Gross Tons
Net Tons
Built at Belfast By whom built Harland & Wolff Ltd. Yard No. 806 When built 1929
Engines made at Belfast By whom made Harland & Wolff Ltd. Engine No. 806 When made 1929
Donkey Boilers made at Lincoln By whom made Babcock & Wilcox Ltd. Boiler No. 14552 When made 1929
Brake Horse Power Owners Nelson & Co. Ltd. (H. W. Nelson & Co. Ltd.) Port belonging to Belfast
Nom. Horse Power as per Rule 2190 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes
Trade for which vessel is intended Ocean going

IL ENGINES, &c.—Type of Engines Harland & Wolff - 1900 diesel type 2 or 4 stroke cycle 4 Single or double acting double
Maximum pressure in cylinders 500 lb. Diameter of cylinders 680 mm Length of stroke 1600 mm No. of cylinders 16 No. of cranks 16
Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 950 mm Is there a bearing between each crank Yes
Revolutions per minute 105 Flywheel dia. 2.8 m Weight 3.1 tons Means of ignition Compression Kind of fuel used diesel oil
Crank Shaft, dia. of journals as per Rule approved Crank pin dia. 110 mm Crank Webs Mid. length breadth 831 mm Thickness parallel to axis 300 mm
as fitted 515 mm bush 134 mm Mid. length thickness 300 mm Thickness around eye hole 231.5 mm
Flywheel Shaft, diameter as per Rule approved Intermediate Shafts, diameter as fitted 16 3/4" Thrust Shaft, diameter at collars as per Rule approved
as fitted 20 1/4" Thrust Shaft end as fitted 18 1/2"
Tube Shaft, diameter as per Rule approved Screw Shaft, diameter as per Rule approved Is the tube screw shaft fitted with a continuous liner Yes
as fitted 27" as fitted 18 1/2" as per rule 635"
Bronze Liners, thickness in way of bushes as per Rule 32" Thickness between bushes as fitted 25/32" 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 Length of Bearing in Stern Bush next to and supporting propeller 6' 11"
Propeller, dia. 17' 6" Pitch 17' 6" No. of blades 3 Material Man. Bronze whether Moveable Yes Total Developed Surface 84 sq. feet
Method of reversing Engines D. A. Engine Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication
faced Thickness of cylinder liners 48 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 & funnel
Cooling Water Pumps, No. Two Vertical Centrif. 8" bore Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes
Bilge Pumps worked from the Main Engines, None Diameter Stroke Can one be overhauled while the other is at work
Pumps connected to the Main Bilge Line No. and Size Three 6" bore Vertical Centrifugal 120 tons/hr.
How driven Electric motor
Ballast Pumps, No. and size One 7" Vert. Centrif. 250 tons/hr. Lubricating Oil Pumps, including Spare Pump, No. and size Two 160 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 3 1/2" Two 2 1/2" Three 2 1/2" in forward tunnel Three 3 1/2" in after tunnel 82-2 1/2"
In Holds, &c. No. 1 Hold Two 3 1/2" No. 2 Hold Two 3 1/2" No. 3 Hold Two 3 1/2" No. 4 Hold Two 3 1/2" No. 5 Hold Two 3 1/2" One 2 1/2"
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Three 6" One 7"
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces
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 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 both
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
What pipes pass through the bunkers How are they protected
What pipes pass through the deep tanks Fuel oil Suctions for Nos. 2 & 4 pass through No. 1 & 3 Have they been tested as per Rule 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 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
Main Air Compressors, No. Two (Twin Cylinders) No. of stages three Diameters 50 x 675 x 172 Stroke 550 mm Driven by main engines
Auxiliary Air Compressors, No. Two No. of stages three Diameters 455 x 108 x 92 Stroke 280 mm Driven by aux. diesels
Small Auxiliary Air Compressors, No. One No. of stages two Diameters 106 x 314 Stroke 80 mm Driven by steam
Scavenging Air Pumps, No. None Diameter Stroke Driven by
Auxiliary Engines crank shafts, diameter as per Rule 1918 mm
as fitted 200 mm

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule safety valves & for possible plugs
Can the internal surfaces of the receivers be examined Yes What means are provided for cleaning their inner surfaces open ended
Is there a drain arrangement fitted at the lowest part of each receiver Yes
High Pressure Air Receivers, No. Eleven Cubic capacity of each 290 cu. ft. 150 cu. ft. 88 cu. ft. Internal diameter 416 mm 295 mm thickness 17.5 mm 15 mm
Seamless, lap welded or riveted longitudinal joint seamless Material Steel Range of tensile strength 26-30 tons Working pressure by Rules 110.3 lb/sq. in.
Starting Air Receivers, No. Two Total cubic capacity 3200 cu. feet Internal diameter 6' 4 3/8" thickness 1 1/8"
Seamless, lap welded or riveted longitudinal joint & butt straps Material Steel Range of tensile strength 28-32 tons Working pressure by Rules 35.7 lb/sq. in.

4B 10103.

IS A DONKEY BOILER FITTED? *Yes Clarkson Trade Seal* If so, is a report now forwarded? *Yes*
PLANS. Are approved plans forwarded herewith for Shafting No. *22.2.27* Receivers *11.5.27* Separate Tanks *26.9.27*
(If not, state date of approval)
Donkey Boilers *6.2.28* General Pumping Arrangements *30.3.28* Oil Fuel Burning Arrangements *14.8.28*
SPARE GEAR *In excess of rule requirements - see enclosed list*

The foregoing is a correct description,
For HARLAND AND WOLFF, LIMITED.
F. E. Lebeck Manufacturer.

Dates of Survey while building
During progress of work in shops - *1927 Dec 6.15 1928 Jan 4.16.18.24.28 Feb 6.14.20 Mar 8.19.21.23.28.29 Apr 5.11.13.18.20.26*
During erection on board vessel - *27.30 May 8.9.10.14.15.16.17.22.23.24.25.30 June 1.4.6.7.8.9.11.14.15.16.18.19.20.21.23.25*
26.27.29 July 2.3.4.5.6.9.10.11.16.17.18.19.23.24.28.30.31 Aug 1.2.3.4.6.7.8.9.10.11.13.14.15.16.21
21.22.31 Sept 4.5.7.25 Oct 2.9.10.11.12.18.23.24 Nov 2.7.12.20.21.23.28.29 Dec 4.5.6.7.10
Total No. of visits *130*

Dates of Examination of principal parts - Cylinders *3.10.28* Covers *6.6.28 10.10.28* Pistons *7.8.28* Rods *30.5.28 3.8.28* Connecting rods *30.5.28 15.7.28*
Crank shaft *25.6.28 5.9.7.28* Flywheel shaft *✓* Thrust shaft *3.6.28* Intermediate shafts *6.9.28 16.10.28* Tube shaft *✓*
Screw shaft *6.6.28* Propeller *4.6.28* Stern tube *7.6.28* Engine seatings *20.6.28* Engines holding down bolts *31.10.28*
Completion of fitting sea connections *20.6.28* Completion of pumping arrangements *3.1.29* Engines tried under working conditions *15.1.29*
Crank shaft, Material *S.M. INGOT STEEL* Identification Mark *261 R.L.A. 1986 R.L.A.* Flywheel shaft, Material *✓* Identification Mark *312 343 328 349 340 230*
Thrust shaft, Material *S.M. INGOT STEEL* Identification Mark *296 R.L.A. 312 R.L.A.* Intermediate shafts, Material *S.M. INGOT STEEL* Identification Marks *349 392 406 340 429 312 R.L.A.*
Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *S.M. INGOT STEEL* Identification Mark *191 260 136 R.L.A.*
Is the flash point of the oil to be used over 150° F. *YES.*

Is this machinery duplicate of a previous case *YES* If so, state name of vessel *HIGHLAND "HIGHLAND MONARCH"*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The machinery of this vessel has been constructed under special survey. The workmanship and materials are sound and good. The main and auxiliary engines have been tried out under working conditions at moored and sea trials with satisfactory results. In my opinion the vessel is now eligible for notation in the Lloyds Register Book - L.M.C. 1 29 C.L. waste heat boiler pressure 100 lbs. Fitted for oil fuel 129 F.P. above 150° F.

The amount of Entry Fee *✓* £ *6* : - : When applied for, *26 Jan 1929*
Special ... £ *154* : *15* :
AIR RESERVOIRS. Donkey Boiler Fee ... £ *16* : *16* : When received, *5-2-29*
Travelling Expenses (if any) £ - : - :
Committee's Minute *FRI. 1 FEB 1929*

Assigned *+ L.M.C. 1.29 Oil Engines*
DB. 100 lb. C.L. CERTIFICATE WRITTEN.

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

