

# REPORT ON OIL ENGINE MACHINERY.

No. 10,047  
10 OCT 1928

Received at London Office

Date of writing Report 19... When handed in at Local Office 8<sup>th</sup> Oct 1928 Port of Belfast  
No. in Survey held at Belfast Date, First Survey 16<sup>th</sup> Nov. 1927 Last Survey 2<sup>nd</sup> Oct 1928  
Reg. Book. Number of Visits 1044

3228 on the <sup>Single</sup> Twin <sup>Triple</sup> Screw vessel STEEL HIGHLAND MONARCH Tons { Gross 14450 Net  
Built at Belfast By whom built Harland + Wolffs Yard No. 751 When built 1928  
Engines made at Belfast By whom made Harland + Wolffs Engine No. 751 When made 1928  
Donkey Boilers made at Lincoln By whom made Babcock + Wilcox Ltd. Boiler No. 4549 When made 1928  
Brake Horse Power Owners Helms Stearns & Co. Ltd (N.M. Nelson Ltd. Mgrs) 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



II ENGINES, &c.—Type of Engines Harland + Wolff - B.M. Type diesel In. Sc. 2 or 4 stroke cycle of 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. 2.49 metres Weight 2.74 tons Means of ignition Compression Kind of fuel used diesel oil

Crank Shaft, dia. of journals as per Rule approved. Crank pin dia. 515 mm. Crank Webs Mid. length breadth 834 mm. Thickness parallel to axis 300 mm.  
as fitted 515 mm. Crank Webs Mid. length thickness 300 mm. Thickness around eye-hole 234.5 mm.  
Flywheel Shaft, diameter as per Rule 20.27" Intermediate Shafts, diameter as per Rule 16.4" Thrust Shaft, diameter at collars as per Rule 17.25"  
as fitted 20.16" as fitted 16.34" as fitted 18.2"

Tube Shaft, diameter as per Rule 27" Screw Shaft, diameter as per Rule 17.85" Is the tube shaft fitted with a continuous liner Yes  
as fitted 27" as fitted 18.2" as fitted 18.2"  
Bronze Liners, thickness in way of bushes as per Rule 37" Thickness between bushes as per rule 5" Is the after-end of the liner made watertight in the  
as fitted 15" as fitted 16" as fitted 25" as fitted 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  
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 83"

Propeller, dia. 17'-6" Pitch 17'-6" No. of blades 3 Material MANG. BR. whether Moveable Yes Total Developed Surface 84 sq. feet  
Method of reversing Engines DIRECT ACTION ENGINE Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication  
forces 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. 4 Vert. 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, No. — Diameter — Stroke — Can one be overhauled while the other is at work —  
Pumps connected to the Main Bilge Line No. and Size Three 120 tons/hr. How driven Electric motor

Ballast Pumps, No. and size One 250 tons/hr. Lubricating Oil Pumps, including Spare Pump, No. and size 4-160 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 2-3 1/2" 4-2 1/2" Forward Tunnel 3-2 1/2" After Tunnel 3-3 1/2"  
Holds, &c. No. 1 Hold 2-3 1/2" No. 2 Hold 2-3 1/2" No. 3 Hold 2-3 1/2" No. 4 Hold 2-3 1/2" No. 5 Hold 2-3 1/2" + 1-2 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  
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  
How are they protected

What pipes pass through the deep tanks Fuel Oil Suctions for Nos 2 & 4 P.S. pass thro' Nos 1 & 3 P.S. 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  
apartment to another Yes Is the Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper deck

On 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 Cyl. No. of stages Three Diameters 750 x 675 x 172 Stroke 550 mm Driven by Train Engines  
Auxiliary Air Compressors, No. Four No. of stages Three Diameters 455 x 408 x 92 Stroke 280 mm Driven by Aux. diesels  
Small Auxiliary Air Compressors, No. One No. of stages Two Diameters 106 mm - 34 mm Stroke 80 mm Driven by Steam

Revolving Air Pumps, No. — Diameter — Stroke — Driven by —  
Auxiliary Engines crank shafts, diameter as per Rule 194 mm  
as fitted 200 mm

RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve fusible plug and/or safety valve  
Are the internal surfaces of the receivers be examined Yes What means are provided for cleaning their inner surfaces open ends  
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 litres / 10.3 cu. ft. Internal diameter 6 1/4 16 mm 5 1/2 295 mm thickness 17.5 mm 5/16 mm  
Seamless, lap welded or riveted longitudinal joint Seamless Material Steel Range of tensile strength 26-30 tons Working pressure by Rules 1103 lbs.  
Low Pressure Air Receivers, No. Four Total cubic capacity 3200 cu. ft. Internal diameter 76 1/8" thickness 1/16"  
Seamless, lap welded or riveted longitudinal joint and a. b. s. Material Steel Range of tensile strength 28-32 tons Working pressure by Rules 357 lbs.

IS A DONKEY BOILER FITTED? Yes If so, is a report now forwarded? Yes

PLANS. Are approved plans forwarded herewith for Shafting 22. 2. 27 Receivers 11. 5. 27 Separate Tanks 26. 9. 27 9. 2. 28

Donkey Boilers (WASTE HEAT) 6. 2. 28 General Pumping Arrangements 3. 4. 28 Oil Fuel Burning Arrangements 14. 8. 28

SPARE GEAR See Attached list. In excess of rule requirements.

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

*F. E. Schbeck*

Manufacturer.

Dates of Survey while building  
 During progress of work in shops - 1927 Nov 16. 21. 29. 30 Dec 6. 7. 9. 14. 15. 19. 22 Jan 2. 3. 4. 6. 11. 16. 18. 23. 25. 26. 27. 30 Feb 2. 3. 6. 14. 15. 22. 23. 24 Mar 1. 2. 5. 6. 7. 8. 12. 13. 14. 16. 19. 21. 22. 23. 26. 27. 28. 29. 30  
 During erection on board vessel - 2. 4. 5. 6. 11. 12. 13. 16. 18. 19. 20. 23. 24. 25. 26. 27. 30 May 1. 2. 3. 4. 5. 7. 8. 9. 10. 11. 14. 17. 18. 21. 22. 23. 24. 25. 28. 29. 30. 31 June 1. 4. 5. 6. 8. 8. 12. 14. 16. 20. 26. 29. July 5. 5. 23. 24. 26. 27. 30 Aug 3. 7. 8. 10. 15. 16. 21. 22. 23. 27. 28. 31 Sept 5. 6. 10. 12. 13. 14. 17. 18. 21. 22. 24. 25. 26. 27. 28. Oct 2. 2. 1928

Dates of Examination of principal parts - Cylinders 14. 6. 28 Covers 6<sup>th</sup> Mar. 16. 6<sup>th</sup> June 1928 Pistons 29. 3. 28 & 15. 5. 28 Rods 20. 4. 16 & 14<sup>th</sup> May 1928 Connecting rods 14<sup>th</sup> Mar. 16. 4<sup>th</sup> Mar. 1928

Crank shaft 5. 3. 28 & 1. 5. 28 Flywheel shaft  Thrust shaft 4. 6. 28 & 9. 5. 28 Intermediate shafts 13. 4. 28 & 26. 4. 28 Tube shaft

Screw shaft 23. 4. 28 Propeller 11. 4. 28 Stern tube 23. 4. 28 Engine seatings 24. 5. 28 Engines holding down bolts 6. 9. 28

Completion of fitting sea connections 1. 5. 28 Completion of pumping arrangements 14. 9. 28 Engines tried under working conditions 14. 9. 28

Crank shaft, Material S.M. INGOT STEEL Identification Mark 231 & 223 R.L.A. Flywheel shaft, Material  Identification Mark 2206: 2078: 2078: 2068: R.L.A.

Thrust shaft, Material S.M. INGOT STEEL Identification Mark 2054 & 2068 R.L.A. Intermediate shafts, Material S.M. INGOT STEEL Identification Marks 2068: 2097: 2108: 12: 2215 R.L.A.

Tube shaft, Material  Identification Mark  Screw shaft, Material S.M. INGOT STEEL Identification Mark 2054: 1993: 2219

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

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 and materials are sound and good. The main and auxiliaries engines have been tried out under working conditions on land and sea trials with satisfactory results. In my opinion the vessel is now eligible for notation in the Society's Register book - L.M.C. 10. 28 C.L. waste heat boiler pressure 100 lbs.

FITTED FOR OIL FUEL 10. 28 F.P. ABOVE 150° F.

The amount of Entry Fee ... £ 6 : 0 : When applied for,  
 Special ... £ 154 : 15 : 18<sup>th</sup> Oct 1928  
 AIR RESERVOIRS Donkey Boiler Fee ... £ 16 : 16 : When received,  
 Travelling Expenses (if any) £ - : - : 12. 10. 28

Committee's Minute TUE. 16 OCT 1928  
 Assigned + L.M.C. 10. 28 C.L. Oil Engines

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



The Surveyors are requested not to write on or below the space for Committee's Minute.