

REPORT ON OIL ENGINE MACHINERY

No. 10,302

Received at London Office

27 JAN 1930

Date of writing Report 19 When handed in at Local Office 24 1 19 30 Port of Belfast
No. in Survey held at Belfast Date, First Survey 8 March 1928 Last Survey 21 Jan. 19 30
Reg. Book. Number of Visits 14

23260 on the ^{Single} Twin ^{Triple} Screw vessel HIGHLAND HOPE Tons { Gross _____ Net _____

Built at Glasgow By whom built Harland & Wolff Ltd. Yard No. 8139 When built 1930
Engines made at Belfast By whom made Harland & Wolff Ltd. Engine No. 8139 When made 1930
Donkey Boilers made at Lincoln By whom made Babcock & Wilcox Ltd. Boiler No. 74552 When made 1930
Brake Horse Power Owners Nelson, Str. & Co. Ltd (Str. & Co. Ltd. mgs) 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—B.M. 2 or 4 stroke cycle 4 Single or double acting double
Maximum pressure in cylinders 500 lb/sq. in. 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 metres Weight 3.1 tons Means of ignition Compression Kind of fuel used diesel oil

Crank Shaft, dia. of journals as per Rule as fitted 515 mm. 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 as fitted Thrust Shaft Intermediate Shafts, diameter as per Rule as fitted 16 1/4" Thrust Shaft, diameter at collars as per Rule as fitted 18 1/4"

Tube Shaft, diameter as per Rule as fitted Screw Shaft, diameter as per Rule as fitted 27 1/2" Is the shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule as fitted 15 1/16" Thickness between bushes as per Rule as fitted 25 1/32" 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 Mang. Br. whether Moveable Yes Total Developed Surface each 84 sq. feet

Method of reversing Engines direct engine Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication forced 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 15 funnel

Cooling Water Pumps, No. Four radial 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 6" bore vertical centrifugal 120 tons/hr. How driven electric motor

Ballast Pumps, No. and size One 7" radial centrif. 250 tons/hr. Lubricating Oil Pumps, including Spare Pump, No. and size Four 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" Four - 2 1/2" Three 2 1/2" in forward tunnel, Three - 3 1/2" & two - 2 1/2" in After tunnel.

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" & one 2 1/2" No. 5 Hold two 3 1/2" and 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

ed 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

That pipes pass through the bunkers How are they protected

That 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 under 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 Cylinders) No. of stages three Diameters 740 x 675 x 172 Stroke 550 mm. Driven by main 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 x 34 Stroke 80 mm. Driven by Steam.

Exhausting Air Pumps, No. Diameter Stroke Driven by

Auxiliary Engines crank shafts, diameter as per Rule 194 mm. as fitted 200 mm.

R RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule and/or fusible plug.

Are 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 lit. 150 lit. 4 1/2 lit. Internal diameter 416 mm. 299 mm. 295 mm. Thickness 17 mm. 15 mm. 15 mm.

Unless, lap welded or riveted longitudinal joint Seamless Material Steel Range of tensile strength 26-30 tons Working pressure by Rules 1103 lb/sq. in.

Working Air Receivers, No. Four Total cubic capacity 3200 cu. ft. Internal diameter 6'-4 1/2" Thickness 1 1/2" Working pressure by Rules 357 lb/sq. in.

Unless, lap welded or riveted longitudinal joint Seamless Material Steel Range of tensile strength 28-32 tons Working pressure by Rules 357 lb/sq. in.

W610 - 0174

IS A DONKEY BOILER FITTED? *Yes* *Clarkson Waste-Heat type* 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 *9.2.28*
(If not, state date of approval)
Donkey Boilers *6.2.28* General Pumping Arrangements *30.3.28* Oil Fuel Burning Arrangements *30.3.28*

SPARE GEAR *In excess of rule requirements - see separate list.*

The foregoing is a correct description.

FOR HARLAND AND WOLFE, LIMITED.

Fe. Tebbeck

Manufacturer.

1928
Dates of Survey while building
During progress of work in shops - *Mar 8. 19. Apr 13. May 9. July 9. 23. 31. Aug 7. 13. 24. 29. 31. Sept 5. 11. 14. 19. 23. 27. 29. Oct 2. 3. 4. 5. 8.*
During erection on board vessel - *11. 12. 15. 17. 18. 19. 22. 23. 24. 25. 26. 29. 30. Nov 2. 5. 8. 9. 12. 13. 14. 15. 16. 19. 20. 21. 22. 23. 26. 27. 28.*
Total No. of visits *24. 27. 28. 29. 30. 31. Dec 4. 10. 13. 18. 19. 20. 21. 22. 23. 26. 27. 28. 29. 30. 31. Jan 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Feb 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Mar 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Apr 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. May 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Jun 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Jul 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Aug 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Sep 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Oct 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Nov 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31. Dec 3. 4. 8. 7. 9. 13. 14. 16. 17. 21. 26. 27. 28. 29. 30. 31.*

Dates of Examination of principal parts—Cylinders *8.1.29.* Covers *8.1.29.* Pistons *26.11.28.* Rods *26.11.28.* Connecting rods *26.11.28.*

Crank shaft *26.11.28.* Flywheel shaft *17.12.28.* Thrust shaft *26.11.28.* Intermediate shafts *6.11.28.* Tube shaft *28.1.29.*

Screw shaft *15.10.28.* Propeller *15.10.28.* Stern tube *25.10.28.* Engine seatings *15.2.29.* Engines holding down bolts *14.6.29.*

Completion of fitting sea connections. *See Gls. Rpt. 21.1.29.* Completion of pumping arrangements. *See Gls. Rpt. 29.1.29.* Engines tried under working conditions *16.17.1.30.*

Crank shaft, Material *S.M. Ingot Steel* Identification Mark *No. 25+77 R.L.A.* Flywheel shaft, Material *✓* Identification Mark *705-750-839-691-691-9.*

Thrust shaft, Material *S.M. Ingot Steel* Identification Mark *No. 136+614 R.L.A.* Intermediate shafts, Material *S.M. Ingot Steel* Identification Marks *775-727-716-900.*

Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *S.M. Ingot Steel* Identification Mark *106 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 Monarch "Co."*

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

The machinery of this vessel has been constructed under special survey. The materials and workmanship are sound and good. The main and auxiliary engines have been tried under working conditions at moored and sea trials with satisfactory results. The main engines developed 9700 h.p. at 90 r.p.m. In my opinion the vessel is now eligible for notation in the Society's Register Book at L.M.C. 1.30. C.L. made heat boiler pressure 100 lbs. fitted for oil fuel 1.30 F.P. above 150° F.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 1.30

*oil engines 45 C.D.A.
1604 26 3/4 - 63. NTP 219.
DB 100 lb. CL.*

The amount of Entry Fee ... £ 6 : - : When applied for, *25.1.1930*
Special ... £ 154 : 15 :
Donkey Boiler Fee ... £ 16 : 16 :
AIR RESERVOIRS
Travelling Expenses (if any) £ : : When received, *17.2.30*

Committee's Minute *31 JAN 1930*

Assigned *+ L.M.C. 1.30*

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