

REPORT ON OIL ENGINE MACHINERY.

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 No. in Survey held at Belfast Date, First Survey 5th March 1931 Last Survey 16th May 1932
 Reg. Book. Number of Visits 193

40630 on the ^{Single} Twin ^{Triple} Screw vessel **HIGHLAND PATRIOT** Tons { Gross 14130 Net 8730
 Built at Belfast By whom built Harland & Wolff Ltd. Yard No. 916 When built 1932
 Engines made at Belfast By whom made Harland & Wolff Ltd. Engine No. 916 When made 1932
 Donkey Boilers made at Sheffield By whom made Davy Bros. Ltd. Boiler No. 4646 When made 1931
 Brake Horse Power Owners Nelson Lin. Nav. Co. Ltd. (Mr. Nelson Ltd. Mgr) 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 26 3/4 63

IL ENGINES, &c.—Type of Engines Harland & Wolff - 13 + 11 Diesel 2 or 4 stroke cycle 4 Single or double acting double
 Maximum pressure in cylinders 500 lbs/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 3.16 tons Means of ignition Compression Kind of fuel used Diesel
 Crank Shaft, dia. of journals as per Rule approved Crank pin dia. 5.15 in. 134 mm. Crank Webs Mid. length breadth 844 mm. Thickness parallel to axis 300 mm.
 as fitted 5.15 in. 134 mm. Mid. length thickness 300 mm. shrunk Thickness around eye-hole 234.5 mm.
 Flywheel Shaft, diameter as per Rule approved Intermediate Shafts, diameter as per Rule approved Thrust Shaft, diameter at collars as per Rule approved
 as fitted see thrust as fitted 16 3/4" as fitted 18 3/4" as fitted 18 3/4"
 Tube Shaft, diameter as per Rule approved Is the screw shaft fitted with a continuous liner Yes
 as fitted 55.5" as fitted 18 3/4" as fitted 18 3/4"
 Bronze Liners, thickness in way of bushes as per Rule 15.64 Thickness between bushes as per rule 25.32 Is the after end of the liner made watertight in the
 as fitted 16" 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. If so, state type Length of Bearing in Stern Bush next to and supporting propeller 83"

Propeller, dia. 17'-6" Pitch 17'-6" No. of blades three Material Mang. Br. whether Moveable Yes Total Developed Surface ca. 84 sq. feet
Method of reversing Engines direct acting 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 vert. cent. 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. none Diameter Stroke Can one be overhauled while the other is at work
Pumps connected to the Main Bilge Line { No. and Size three vert. cent. 6" bore / 120 tons/hr.
 How driven electric motor
Ballast Pumps, No. and size one vert. cent. 7" bore 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 for tunnel - three 3 1/2" + two 2 1/2" in after tunnel two 2" tunnel recess in Pump Room
 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" + 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 fuel oil suction for Nos. 2 + 4 pass through No. 1 + 3 How are they protected steel pipes
 What pipes pass through the deep tanks 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 No. of stages three Diameters 750-675-172 mm. Stroke 550 mm. Driven by main engines
Auxiliary Air Compressors, No. four No. of stages three Diameters 455-408-92 mm. Stroke 280 mm. Driven by aux. diesel.
Small Auxiliary Air Compressors, No. one No. of stages two Diameters 106-34 mm. Stroke 80 mm. Driven by steam
Scavenging Air Pumps, No. Diameter Stroke Driven by
Auxiliary Engines crank shafts, diameter as per Rule 198 mm. as fitted 200 mm. 4 off. See sep. Report

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule Yes and/or fusible plugs
 Can the internal surfaces of the receivers be examined and cleaned open-ends Is a drain fitted at the lowest part of each receiver Yes
High Pressure Air Receivers, No. eleven Cubic capacity of each 6-290 litres 4-88 " Internal diameter 6-416 mm. thickness 6-175 mm. 5-295 mm. 5-15 mm.
 Seamless, lap welded or riveted longitudinal joint seamless Material Steel Range of tensile strength 28/32 Tens Working pressure by Rules 1103 lbs/sq. in. Actual 1000 lbs/sq. in.
Starting Air Receivers, No. four Total cubic capacity 3200 cub. ft. Internal diameter 6'-4 1/8" thickness 1 1/2" by Rules 357 lbs/sq. in. Actual 355.5 lbs/sq. in.
 Seamless, lap welded or riveted longitudinal joint yes Material Steel Range of tensile strength 28/32 Tens Working pressure



