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# REPORT ON OIL ENGINE MACHINERY.

No. 13590  
27 SEP 1943

Received at London Office

Date of writing Report 19 When handed in at Local Office 24/9/1943 Port of Belfast

No. in Survey held at Reg. Book. Date, First Survey 22<sup>nd</sup> Spt, 1942 Last Survey 16 Spt. 1943 Number of Visits 142

on the ~~Single~~ ~~Triple~~ Screw vessel MV. EMPIRE INDUSTRY Tons Gross 8203 Net 4774.9

Built at Belfast By whom built Harland & Wolff Ltd Yard No. 1159 When built 1943

Engines made at Belfast By whom made Harland & Wolff Ltd Engine No. 1159 When made 1943

Boilers made at Belfast By whom made Harland & Wolff Ltd Boiler No. 1159 When made 1943

Indicated Horse Power 3850 Owners Ministry of War Transport. Port belonging to Belfast.

Net Horse Power as per Rule 602 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes.

Use for which vessel is intended Ocean going Carrying Petroleum in bulk.

MAIN ENGINES, &c. — Type of Engines Harland & Wolff B&W Diesel Injection 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 700 lbs/sq. in Diameter of cylinders 650 mm Length of stroke 1400 mm No. of cylinders 8 No. of cranks 8

Mean Indicated Pressure 135 lbs/sq. in Mean of bearings, adjacent to the crank, measured from inner edge to inner edge 8+4 mm Is there a bearing between each crank Yes

Revolutions per minute 120 Flywheel dia. 2218.5 mm Weight 2150 Kgs. Means of ignition Compression Kind of fuel used Diesel oil

Crankshaft, dia. of journals as per Rule 460 mm as fitted 460 mm Crank pin dia. 460 mm Crank webs Mid. length breadth 800 mm Thickness parallel to axis 290 mm

Intermediate Shafts, diameter as per Rule 19 mm as fitted 19 mm Thrust Shaft, diameter at collars as per Rule 18 mm as fitted 18 mm

Screw Shaft, diameter as per Rule 7/8 as fitted 7/8 Is the shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule 7/8 as fitted 7/8 Thickness between bushes as per Rule 3/4 as fitted 3/4 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 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

If two liners are fitted, is the shaft lapped or protected between the liners Yes Is an approved Oil Gland or other appliance fitted at the after end of tube shaft No

Propeller, dia. 15'-6" Pitch 12' No. of blades 4 Material Bronze whether moveable fixed Total developed surface 75 sq. feet

Method of reversing Engines Air Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication Forced Thickness of cylinder liners 1/8 mm Are the cylinders fitted with safety valves Yes

Are the exhaust pipes and silencers water cooled or lagged with non-conducting material lagged If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine Yes

Cooling Water Pumps, No. 2 M.E. 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. 2 M.E. Kolamy 4 Stroke Can one be overhauled while the other is at work Yes

Pumps connected to the Main Bilge Line (No. and size 2 @ 32 tons/hr 1 @ 30 tons/hr 1 @ 200 tons/hr. How driven main engine Steam driven

Is the cooling water led to the bilges No If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements

Ballast Pumps, No. and size 1 @ 200 tons/hr Power Driven Lubricating Oil Pumps, including spare pump, No. and size 2 @ 40 tons/hr independent

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 3 @ 3 1/2 dia 2 @ 2 1/2 dia In pump room 2 @ 4 dia

In holds, &c. Independent Power Pump Direct Suctions to the engine room bilges, No. and size 2 @ 6"

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes Yes Are the bilge suction pipes 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 valves & cocks 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 below 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 none How are they protected

What pipes pass through the deep tanks none 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 none Is it fitted with a watertight door worked from

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. 2 No. of stages 2 diameters 280/245 stroke 130 mm driven by Steam hg.

Auxiliary Air Compressors, No. No. of stages diameters stroke driven by

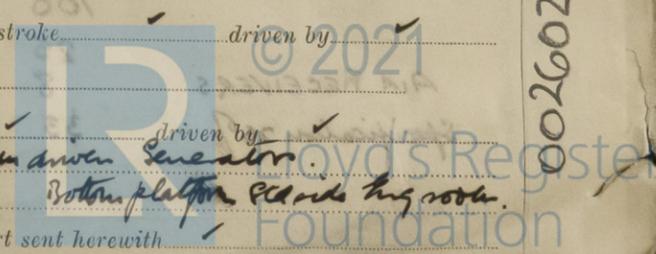
Small Auxiliary Air Compressors, No. No. of stages diameters stroke driven by

What provision is made for first charging the air receivers As above.

Scavenging Air Pumps, No. diameter stroke driven by

Auxiliary Engines crank shafts, diameter as per Rule as fitted All auxiliary machinery Steam driven Position Bottom platform & side hg. rods. Have the auxiliary engines been constructed under special survey Is a report sent herewith

002602-002610-0274



**AIR RECEIVERS:**—Have they been made under survey yes. State No. of report or certificate ✓  
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule yes.  
 Can the internal surfaces of the receivers be examined and cleaned yes. Is a drain fitted at the lowest part of each receiver yes.  
**Injection Air Receivers**, No. ✓ Cubic capacity of each ✓ Internal diameter ✓ thickness ✓  
 Seamless, lap welded or riveted longitudinal joint ✓ Material ✓ Range of tensile strength ✓ Working pressure by Rules  
**Starting Air Receivers**, No. 2 Total cubic capacity 2x 400 cu ft Internal diameter 5 1/2 23/32" thickness 5/16"  
 Seamless, lap welded or riveted longitudinal joint Riveted Material Steel Range of tensile strength 28/32 tons Working pressure as appn  
 Actual 356 lbs

**IS A DONKEY BOILER FITTED?** 2 yes. If so, is a report now forwarded ✓  
 Is the donkey boiler intended to be used for domestic purposes only Steam Auxiliaries Fire Extinguishing & Heating coils

**PLANS.** Are approved plans forwarded herewith for shafting 17.4.41, 22.9.42 Receivers 9.10.41 Separate fuel tanks ✓  
 (If not, state date of approval)  
 Donkey boilers 31.7.41 General pumping arrangements 18.7.42 Pumping arrangements in machinery space 22.4.42  
 Oil fuel burning arrangements 1.4.42

**SPARE GEAR.**

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

**FOR HARLAND AND WOLFE LIMITED**

The foregoing is a correct description,  
Harland Manufacturer.

Dates of Survey while building  
 During progress of work in shops - - 1941 Sept 22, Oct 9, Nov 2, 3, 4, 6, 9, 18 Dec 2, 7, 14, 15, 19, 22, 29, 30 1943 Jan 4, 6, 7, 9, 11, 12, 13, 19, 21, 26, 28 Feb 2, 3  
 During erection on board vessel - - 10, 11, 12, 17, 18, 19, 20, 22, 24, 26 Mar 1, 2, 4, 5, 6, 8, 10, 11, 13, 15, 16, 18, 19, 24, 25, 26, 27, 31 Apr 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 16, 17, 20 May 4, 5, 6, 7, 12, 14, 15, 17, 18, 19, 21, 24, 25, 26, 27, 28, 29, 31 Jun 1, 2, 3, 4, 5, 7, 9, 11, 15, 18, 19, 21, 22, 25, 30 July 2, 5, 6, 7, 20, 21, 28, 29, 30 Aug 2, 3, 4, 6, 7, 9, 10, 11, 17, 18, 19, 20, 21, 23, 24, 25, 26, 30 Sept 3, 7, 8, 9, 14  
 Total No. of visits 142

Dates of examination of principal parts—Cylinders 18.5.43 27.5.43 Covers 31.3.43 3.6.43 Pistons 15.5.43 15.6.43 Rods 28.5.43 Connecting rods 21.5.43  
 Crank shaft 7.4.43 Flywheel shaft ✓ Thrust shaft 19.3.43 Intermediate shafts 26.3.43 Tube shaft ✓  
 Screw shaft 26.3.43 Propeller 3.4.43 Stern tube 31.3.43 Engine seatings 9.3.43 Engine holding down bolts 17.8.43  
 Completion of fitting sea connections 4.5.43 Completion of pumping arrangements 14.9.43 Engines tried under working conditions 16.9.43  
 Crank shaft, material Steel Identification mark LLOYD'S No 1060 R.L.A. Flywheel shaft, material ✓ Identification mark ✓  
 Thrust shaft, material Steel Identification mark LLOYD'S No 1060 R.L.A. Intermediate shafts, material Steel Identification marks LLOYD'S No 110 R.S.  
 Tube shaft, material ✓ Identification mark ✓ Screw shaft, material Steel Identification mark LLOYD'S No 110 R.S.

Identification marks on air receivers  
 No 245  
 LLOYD'S TEST 556/140  
 W.P. 356 lbs  
 18.7.43 J.M.C.A.  
 No 246  
 LLOYD'S TEST 556/140  
 W.P. 356 lbs  
 20.2.43 K.S.

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.  
 Description of fire extinguishing apparatus fitted Steam and Chemical Extinguishers  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo ✓ 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 yes. If so, state name of vessel EMPIRE BOMBARDIER (yard No 1158) 1345

**General Remarks** (State quality of workmanship, opinions as to class, &c.) This machinery has been constructed under Special Survey in accordance with the Society's Rules and the approved plans. The materials and workmanship are good. The machinery has been efficiently installed on board the vessel and tried under full working conditions with satisfactory results and is eligible in our opinion to have notation in the Register Book of + LMC.9.43 2DB 150/1650 T.S.C.L. oil engine.

The amount of Entry Fee ... £ 6 : -  
 Special ... £ 100 : 2  
 Donkey Boiler Fee... £ 25 : 10  
 AIA RECEIVERS 8 : 8  
 Travelling Expenses (if any) £ 33 : 10  
 Specification 25%  
 Committee's Minute  
 When applied for 24/9/1943  
 When received 19  
 OCT 1943

L. Shaw & R. Lee-Jones  
 Engineer Surveyors to Lloyd's Register of Shipping.



Lloyd's Register Foundation

Certificate (if required) to be sent to  
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)

Assigned + LMC 943  
2DB-150 lbs.