

REPORT ON OIL ENGINE MACHINERY.

Lloyd F.E. No. 115811.

No 12816

31 MAR 1941

Received at London Office

DEC 11 1940

LIVERPOOL

Date of writing Report

When handed in at Local Office

9. 12. 1940 Port of

Belfast.

No. in Survey held at
Reg. Book.

08
Belfast

Date, First Survey 7th May 1940 Last Survey 28 Nov. 1940.
15/4/40 Number of Visits 5067 21/3/41

Single
on the Twin
Triple Screw vessel
Quadruple

EMPIRE STEEL

Tons Gross 8138
Net 4774

Built at Birkenhead By whom built Cammell Laird & Co. Ltd. Yard No. 1053 When built 1941
Engines made at Belfast By whom made Harland Wolff Ltd. Engine No. 2086 When made 1940
Donkey Boilers made at BIRKENHEAD By whom made CAMMELL LAIRD & CO. LTD. Boiler No. 1053 When made 1941
Brake Horse Power 3850 Owners HIS MAJESTY - REPRESENTED BY "MINISTRY OF SHIPPING." Port belonging to LONDON.
Nom. Horse Power as per Rule 502 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted YES.
Trade for which vessel is intended

II. ENGINES, &c.—Type of Engines Harland Wolff - B.M. Airless Injection 2 or 4 stroke cycle 4 Single or double acting Single
Maximum pressure in cylinders 700 lbs. Diameter of cylinders 650 mm. Length of stroke 14.00 mm. No. of cylinders 8 No. of cranks 8
Mean Indicated Pressure 135 lbs. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 8.44 mm. Is there a bearing between each crank Yes
Revolutions per minute 120 Flywheel dia. 2218 mm. Weight 2150 Kgs. Means of ignition compression Kind of fuel used diesel oil
Crank Shaft, { as per Rule approved (lined 134 mm.) Mid. length breadth 750 mm. Thickness parallel to axis 267 mm. at pin shrunk
All built as fitted 460 mm. (lined 134 mm.) Crank Webs 267 mm. at pin shrunk Thickness around eyehole 205 mm.
Flywheel Shaft, diameter as per Rule Intermediate Shafts, diameter as per Rule Thrust Shaft, diameter at collars as per Rule
13.05 24" body 18" diameter 13.71
14.34 18" 18.25"
Tube Shaft, diameter as per Rule Screw Shaft, diameter as per Rule Is the Tube shaft fitted with a continuous liner YES
18" 18"
Bronze Liners, thickness in way of bushes as per Rule 3/4" Thickness between bushes as per Rule 9/16" Is the after end of the liner made watertight in the
7/8" 3/4" 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 5'-0"
Propeller, dia. 15'-6" Pitch 12'-0" No. of blades 4 Material M. BR. whether Moveable No Total Developed Surface 75 sq. feet
Method of reversing Engines Brake type gear 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 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
ONE MAIN ENGINE DRIVEN
Cooling Water Pumps, No. ONE STAND BY (STEAM) 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. Two Diameter — Stroke — Can one be overhauled while the other is at work No
Pumps connected to the Main Bilge Line { No. and Size ONE BILGE & SANITARY, 8" x 8" x 10" DUPLEX, ONE BALLAST 10" x 11" x 10" DUPLEX,
How driven STEAM (ALSO 2 MAIN ENGINE BILGE PUMPS ON BILGE MAIN)
Is the cooling water led to the bilges Plummer Block If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping
arrangements NOTHING ADDITIONAL TO ORDINARY BILGE SUCTION.
Ballast Pumps, No. and size ONE, 10" x 11" x 10". Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size ONE MAIN ENGINE DRIVEN
40 TONS/H.R.
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" EACH In Pump Room 2 - 4"
In Holds, &c. FOREHOLD - 2 - 2" TO BALLAST PUMP IN FOREHOLD PUMP ROOM.
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size ONE - 5" & ONE - 7" EMERGENCY.
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 VALVES.
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 MAIN CIRC. BELOW BILGE ABOVE
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 AFT. COFFERDAM SUCTION. How are they protected
What pipes pass through the deep tanks Have they been tested as per Rule
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 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. — No. of stages — Diameters 1st STAGE 8 7/8" Stroke — Driven by —
Auxiliary Air Compressors, No. 2 No. of stages 2 Diameters 2nd 4 1/8" Stroke 6 1/4" Driven by STEAM.
Small Auxiliary Air Compressors, No. — No. of stages — Diameters — Stroke — Driven by —
What provision is made for first Charging the Air Receivers
Scavenging Air Pumps, No. — Diameter — Stroke — Driven by —
Auxiliary Engines crank shafts, diameter as per Rule No. — Position —
Have the Auxiliary Engines been constructed under special survey Is a report sent herewith

Tons.
138
86
271
19
86
25.29
6.9.13
11.12.18
7.18.18
165.

B710-1811M
W181-0179

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 —
Starting Air Receivers, No. **2** Total cubic capacity **800 cu. Ft.** Internal diameter **4'-10 7/8"** thickness **2 1/2"**
Seamless, lap welded or riveted longitudinal joint **TR-DBS.** Material **STEEL** Range of tensile strength **28-32 Tons** Working pressure **371 lbs/sq. in.**
by Rules **350 lbs/sq. in.**

IS A DONKEY BOILER FITTED? **YES (Two)** If so, is a report now forwarded? **YES**
Is the donkey boiler intended to be used for domestic purposes only **No**
PLANS. Are approved plans forwarded herewith for Shafting **Yes** Receivers **31-1-40** Separate Fuel Tanks **LPL RPT 112620, MU DKOMA.**
(If not, state date of approval)

Donkey Boilers — General Pumping Arrangements **14-3-40** Pumping Arrangements in Machinery Space —
Oil Fuel Burning Arrangements —

SPARE GEAR.

Has the spare gear required by the Rules been supplied **In accordance with the Emergency Arrangements**
State the principal additional spare gear supplied **See attached lists**

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

FOR AND ON BEHALF OF
CAMMELL LAIRD & CO, LIMITED

Manufacturer.

669
1940
Dates of Survey while building
During progress of work in shops—
May 7, 9 June 5, 10 July 15, 19, 20, 22, 23, 26, 27 Aug 15, 16. Sept 11, 13, 14, 16, 18, 19, 25, 27, 28
Oct 1, 2, 4, 5, 9, 11, 14, 15, 16, 19, 18, 19, 21, 22, 23, 24, 25, 28, 29, 30, 31 Nov 5, 6, 14, 22, 25, 26, 28
During erection on board vessel—
1940. Apr 15, May 9, 14, 22, June 6, 14, 26, July 2, 3, 11, 16, 17, 18, 19, 23, Aug 5, 6, 13, 14, 20, 24, Sept 9, 12, 20, 22, Oct 4, 8, 11, 16, 17, 23, 24, 25, 29, Nov 4, 18, 19.
Dec 2, 4, 12, 16, 17, 18, 19, 20, Jan 6, 8, 10, 13, 15, 20, 23, Feb 7, 11, 17, 19, 21, 25, Mar 3, 6, 9, 10, 12, 13, 18, 21.
Total No. of visits **50 + 67**

Dates of Examination of principal parts—Cylinders 14, 10, 40 H Covers 25, 9, 40 H Pistons 18, 10, 40 H Rods 28, 10, 40 Connecting rods 17, 10, 40

Crank shaft 16, 8, 40 Flywheel shaft Thrust shaft 28, 11, 40 Intermediate shafts 12, 8, 40 Tube shaft

Screw shaft 12, 9, 40 Propeller 12, 9, 40 Stern tube 8, 10, 40 Engine seatings 4, 10, 40 Engines holding down bolts 13, 2, 41

Completion of fitting sea connections 4, 10, 40 Completion of pumping arrangements 13, 3, 41 Engines tried under working conditions 18, 3, 41

Crank shaft, Material S.M. Steel Identification Mark LLOYD'S No 1009 Flywheel shaft, Material Identification Mark

Thrust shaft, Material S.M. Steel Identification Mark LLOYD'S No 1009 Intermediate shafts, Material Steel Identification Marks 9727 ERH.

Tube shaft, Material Identification Mark Screw shaft, Material 9727 HS Identification Mark 9727 ERH.

Identification Marks on Air Receivers

NO 3442.
LLOYD'S TEST
550 lbs.
W.P. 350 lbs.
H.S. 16-10-40.

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 **CHEMICAL**

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo **Yes** If so, have the requirements of the Rules been complied with **Yes**

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with **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.)

This machinery has been constructed under special survey. The materials and workmanship are sound & good. Test bed runs at full power were satisfactory. In my opinion the machinery is eligible for a classed vessel. It has been shipped to Birkenhead for installation.

The above mentioned machinery has been properly fitted on board the Empire Steel, tried under working conditions and found satisfactory. It is eligible for record + LMC. 3.41. C.L. OIL ENGINES.

The amount of Entry Fee £ 6
2/3 for Breakfast £ 66. 14. 8
1/3 for Liverpool 33-4-4
Donkey Boiler Fee £
Travelling Expenses (if any) £
When applied for, 31 MAR 1941
When received, 19

Committee's Minute LIVERPOOL 8 APR 1941
Assigned + LMC. 3.41 C.L. OIL ENGINES.
2 D.B. 150 lb.