

REPORT ON OIL ENGINE MACHINERY.

No. 32235

NOV 13 1937

Received at London Office

Date of writing Report 19... When handed in at Local Office 12 NOV. 1937 Port of Sunderland.

No. in Survey held at Sunderland Date, First Survey 8 June Last Survey 11 Nov 1937
Reg. Book. Number of Visits 79

on the ETTRICK BANK Tons { Gross 5138. Net 3040.

Built at Sunderland By whom built Wm. Beard & Sons Ltd. Yard No. 634 When built 1934.

Engines made at Sunderland By whom made Wm. Beard & Sons Ltd. Engine No. 634 When made 1934.

Donkey Boilers made at Stockton By whom made Stockton Chem. Eng'g & Riley Bhd. Ltd. Boiler No. 6232 When made 1934.

Brake Horse Power 3000 Owners Imperial Transport Co. Ltd. Port belonging to Glasgow.

Nom. Horse Power as per Rule 684. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

Trade for which vessel is intended 238 combined 915

IL ENGINES, &c. Type of Engines Opposed piston airless injection 2 or 4 stroke cycle 2 Single or double acting Single

Maximum pressure in cylinders 3 1/2 lbs/sq. in. Diameter of cylinders 600 mm. Length of stroke Upper 980 mm. Lower 1340 mm. No. of cylinders 4. No. of cranks 4 (3 throws)

Mean Indicated Pressure 88 lbs/sq. in. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 940 mm. Is there a bearing between each crank 3 throws.

Revolutions per minute 95. Flywheel dia. 2300 mm. Weight 2.9 tons. Means of ignition Compression. Kind of fuel used oil.

Crank Shaft, dia. of journals as fitted 425 mm. Crank pin dia. 450 mm. Crank Webs as fitted 335 mm. Mid. length breadth 650 mm. Thickness parallel to axis 255 mm.

Flywheel Shaft, diameter as fitted 425 mm. Intermediate Shafts, diameter as fitted 350 mm. Thrust Shaft, diameter at collars as fitted 425 mm.

Stern Tube Shaft, diameter as per Rule 34 mm. as fitted 390 mm. Is the tube screw shaft fitted with a continuous liner Yes.

Bronze Liners, thickness in way of bushes as per Rule 19 mm. as fitted 20 mm. Thickness between bushes as per Rule 14.25 mm. as fitted 16 mm. 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 One length.

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 the tube Yes.

Length of Bearing in Stern Bush next to and supporting propeller 5'-6"

Propeller, dia. 16'-9" Pitch 14'-0" No. of blades 4 Material Bronze whether Moveable No. Total Developed Surface 98. sq. feet

Method of reversing Engines Hand lever Is a governor or other arrangement fitted to prevent racing of the engine when disengaged Yes. Means of lubrication oil.

Thickness of cylinder liners 25 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 Yes.

Cooling Water Pumps, No. one engine driven one steam driven 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 8" x 4" x 18" Stroke 18" Can one be overhauled while the other is at work Yes.

Pumps connected to the Main Bilge Line No. and Size Two 8" x 4" x 18" How driven Steam.

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 None.

Waste Pumps, No. and size 2 @ 12" x 10 1/2" x 24" Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size one engine driven 100 mm x 610 mm. one 8" x 4" x 18" Simplex

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 4 at 3" in E.R. 1 @ 3 1/2" Dunnel well In Pump Room Yes.

Holds, &c. N°1. 3 1/2" pr. N°2. 3 1/2" pr. N°3. 3 1/2" pr. N°4. 3" pr. N°5. 3 1/2" in Hold well. Cup Danks 5 1/2" pr.

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Two @ 8"

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 Both

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 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.

Do all pipes pass through the bunkers None. How are they protected None.

Do all 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 Yes. Is it fitted with a watertight door Yes. worked from E.R. Cap Breasting.

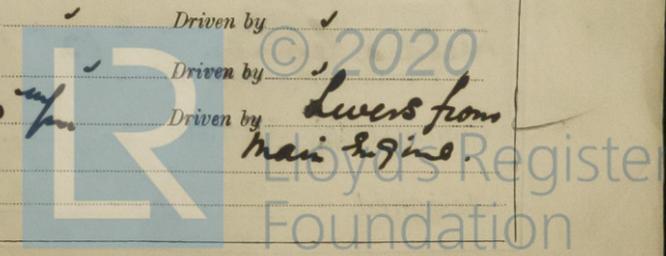
On a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork None.

Auxiliary Air Compressors, No. Two. No. of stages 3. Diameters 1 1/2" 9 1/4" 2 3/4" Stroke 6 1/2" Driven by Steam

Auxiliary Air Compressors, No. None. No. of stages None. Diameters None. Stroke None. Driven by None.

Reversing Air Pumps, No. One Diameter 1960 mm. Stroke 610 mm. Driven by Lever from main engine.

Auxiliary Engines crank shafts, diameter as per Rule No. None. Position None.



AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule *Yes* (on discharge from Compressor) *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*.
High Pressure 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 *✓* Actual *✓*
Starting Air Receivers, No. *Two* Total cubic capacity *220 cuft.* Internal diameter *3'-6"* thickness *1"*
 Seamless, lap welded or riveted longitudinal joint *Limited* Material *M. Steel* Range of tensile strength *28/32* Working pressure by Rules *600 lbs/* Actual *600 lbs/*
IS A DONKEY BOILER FITTED? *Yes*. 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 *Yes*. Separate Fuel Tanks *Yes*.
 Donkey Boilers *(Embo.)* General Pumping Arrangements *✓* Pumping Arrangements in Machinery Space *Yes*.
 Oil Fuel Burning Arrangements *Yes*.

SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*. (To latest requirements).
 State the principal additional spare gear supplied *1 cast iron Propeller, 1 propeller shaft, 1 Cylinder liner & jacket
 3 main piston heads, 1 upper & 1 lower piston rod & skirt, 12 main piston rings, 4 fuel valves
 Complete, 8 fuel valve Spray plugs, 2 centre Conn. rod top end bolts & nuts, 2 ditto bottom
 end bolts & nuts, 2 Side Conn. rod top & bottom end bolts & nuts, 1 Starting air valve
 Complete, 1 Cyl. relief valve Complete, 4 Scavenge pump discs, 4 fuel pump heads & valves
 1 main inlet & outlet Crosshead for fuel pump with full crank lever & sect. taper. 1 roller
 Chain for camshaft drive*

The foregoing is a correct description,
WILLIAM DOXFORD & SONS, Limited.
W. H. F. 21/ Manufacturer.
J. H. Miller Director.

Dates of Survey while building
 During progress of work in shops-- 37. June 8, 11, 22, 25, 28, 29, 30. July 1, 2, 5, 6, 7, 8, 9, 12, 13, 15, 16, 19, 20, 23, 26, 27, 28, 29. Aug 4, 10, 12, 16, 17, 18.
 During erection on board vessel--- 25, 26, 27, 30, 31. Sep. 1, 2, 3, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 22, 23, 24, 27, 29, 30. Oct. 1, 3, 4, 5, 6, 8, 11, 12, 13, 14, 15, 18, 19, 20.
 Total No. of visits *79*
 Dates of Examination of principal parts—Cylinders *8/7/37, 12/7/37* Covers *✓* Pistons *13/9/37, 14/9/37* Rods *13/9/37, 14/9/37* Connecting rods *13/9/37*
 Crank shaft *29/9/37* Flywheel shaft *as crank* Thrust shaft *as crank* Intermediate shafts *14/9/37, 17/9/37* Tube shaft *✓*
 Screw shaft *15/10/37* Propeller *14/10/37* Stern tube *27/7/37, 19/8/37* Engine seatings *(Bank top)* Engines holding down bolts *19/10/37*
 Completion of fitting sea connections *19/8/37* Completion of pumping arrangements *4/11/37* Engines tried under working conditions *11/11/37*
 Crank shaft, Material *Ingot Steel* Identification Mark *Nos 952, 953, 954* Flywheel shaft, Material *as crank* Identification Mark *as crank*
 Thrust shaft, Material *as crank* Identification Mark *as crank* Intermediate shafts, Material *Ingot Steel* Identification Marks *Nos. 2737, 2744, 2748*
 Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *Ingot Steel* Identification Mark *2738, 2739, 2745, 2748*
 W.H.F. 21/

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*.
 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 *Not desired*.
 Is this machinery duplicate of a previous case *Yes*. If so, state name of vessel *M/V "ESKBANK"*.

General Remarks (State quality of workmanship, opinions as to class, &c.)
The machinery of this vessel has been built under Special Survey in accordance with the Rules of the Socy & the Secretary's letter E 25/4/34. The materials & workmanship are found to be satisfactory. The machinery has been securely fitted on board the vessel & tried under full working conditions at sea, including rule requirements for starting, with satisfactory results. The two donkey boilers have also been securely fixed on board & fitted to burn oil fuel (F.P. above 150° F) Section 20 of the Rules has been complied with, Safety valves of boilers all up to working pressure & accumulation test carried out satisfactorily. The machinery is reliable in my opinion to have not a ton of L.M.C. 11.34 oil eng. T.S. (CL.) 2 D.B. 120 lbs/

The amount of Entry Fee .. £ 6 : : When applied for,
 Special £ 109 : 4 : 12 NOV 1937
 Donkey Boiler Fee £ 12 : 12 : : When received,
 Travelling Expenses (if any) £ 13 : 11 : 15/11
 Committee's Minute
 Assigned *Handb. 11.37 oil Eng*
2 D.B. - 120 lbs

J. H. Miller
 Engineer Surveyor to Lloyd's Register of Shipping.
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Certificate (if required) to be sent to SUNDERLAND.