

Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 32937

Received at London Office

AUG -6 1940

Date of writing Report

When handed in at London Office

26 July 1940 Port of

Sunderland.

No. in Survey held at
Reg. Book.

Sunderland

Date, First Survey 29 Jan '39 Last Survey 24 July 1940

Number of Visits 64

Single
on the Twin
Triple
Quadruple
Screw vessel

"TOWER GRANGE"

Tons Gross 5226
Net 30 1/2.

Built at Sunderland

By whom built Wm. Leiford & Sons Ltd.

Yard No. 660 When built 1940.

Engines made at Sunderland

By whom made Wm. Leiford & Sons Ltd.

Engine No. 660 When made 1940.

Donkey Boilers made at Stockton

By whom made Stockton Chem. Eng. & Riley Bros Ltd.

Boiler No. 6347 When made 1940.

Brake Horse Power 2500

Owners The Tower Steamship Co. Ltd.

Port belonging to London.

Nom. Horse Power as per Rule 516

Is Refrigerating Machinery fitted for cargo purposes No.

Is Electric Light fitted Yes.

Trade for which vessel is intended

IL ENGINES, &c. Type of Engines Opposed piston airless injection or 4 stroke cycle 2 Single or double acting Single
 Maximum pressure in cylinders 540 lbs/sq. in. upper 980 lbs/sq. in. No. of cylinders 3 No. of cranks 3 (3 throats)
 Mean Indicated Pressure 88 lbs/sq. in. Diameter of cylinders 600 mm Length of stroke Lower 1340 mm Between each crank 3 throat
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 940 mm Is there a bearing between each crank 3 throat
 Revolutions per minute 108 Flywheel dia. F. 2300 mm Weight F. 5 3/4 tons Means of ignition Compression Kind of fuel used
 Crank Shaft, dia. of journals as per Rule 418 mm Crank pin dia. 450 mm Crank Webs Mid. length breadth 650 mm Thickness parallel to axis 255 mm
 as fitted 450 mm Mid. length thickness 255 mm Thickness around eye hole 200 mm
 Flywheel Shaft, diameter as per Rule 418 mm Intermediate Shafts, diameter as fitted 365 mm Thrust Shaft, diameter at collars as fitted 450 mm
 as fitted 450 mm Is the tube screw shaft fitted with a continuous liner Yes.
 Tube Shaft, diameter as per Rule 18 mm Screw Shaft, diameter as fitted 392 mm Is the after end of the liner made watertight in the
 as fitted 21 1/2 mm Thickness between bushes as per rule 13 1/2 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
 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
 Propeller, dia. 15' 9" Pitch 11' 9" No. of blades 4 Material Bronze whether Movable No. Total Developed Surface 90 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
 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 No.
 Cooling Water Pumps, No. one Engine driven Is the sea suction provided with an efficient strainer which can be cleared within the vessel (F.W. Cooling)
 one Steam driven
 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 1 @ 14" x 14" x 15" (Ballast) + 2 @ 5 1/2" x 6" x 15" (Simplex) (Bilge & Sea)
 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
 Ballast Pumps, No. and size 1 14" x 14" x 15" Duplex. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size one Engine driven 8 5/8" x 6 1/8" x 10"
 Are two independent means arranged for circulating water through the Oil Cooler Yes. one Steam driven 5 1/2" x 6" x 15"
 Pumps, No. and size:—In Machinery Spaces 4 @ 3" in E.R. 1 @ 3" Tunnel Well In Pump Room
 Holds, &c. No. 1. 3 φrs. No. 2. 3 1/2 φrs. Deep Tank 3 1/2 φrs. No. 4. 3 φrs. No. 5 1 @ 3" (Hold well)
 Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 @ 8" (Ballast pump) 1 @ 5" (Sea Ser.)
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes. Are the Bilge Suctions in the Machinery Spaces
 and 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 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 For Bilge Suctions 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. top
 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 No. of stages Three Diameters 11 1/2" 9 1/2" 2 3/4" Stroke 6 1/2" Driven by Steam Engine
 Auxiliary Air Compressors, No. No. of stages Diameters Stroke Driven by
 Small Auxiliary Air Compressors, No. No. of stages Diameters Stroke Driven by
 Scavenging Air Pumps, No. One Diameter 1400 mm Stroke 610 mm Driven by levers from Main Engine.
 Auxiliary Engines crank shafts, diameter as per Rule No. Position
 as fitted

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule *Yes* (on discharge from compressed Rpt.
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 *✓*
Starting Air Receivers, No. *Two* Total cubic capacity *220 cu ft.* Internal diameter *3'-6"* thickness *1"*
Seamless, lap welded or riveted longitudinal joint *Welded* Material *M. Steel* Range of tensile strength *28/32* Working pressure by Rules *60.3*
Actual *60.0*

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 *✓* 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, with the exception of the Cam. rod top & bottom ends.*
State the principal additional spare gear supplied *1 C.I. Propeller, one cylinder liner & jacket complete, 1 main
Piston head & 5 rings, 4 fuel valves complete, 8 spray plugs, 1 N.R. Starting air valve,
1 C.I. relief valve, 4 scavenge pump half-discs, 1 fuel pump body complete, one set
of valves for each side of engine down & up pumps, 1 set pads for Michell block
1 set coupling bolts, 1 roller chain for camshaft drive.*

The foregoing is a correct description,
WILLIAM DOXFORD & SONS, Limited. Manufacturer.
W. H. Jones Director.

Dates of Survey while building
During progress of work in shops: 29/ Jan. 29, Dec. 5, 7, 11, 12, 14, 18, 19, 28 40/ Jan. 3, 11, 31, Feb. 1, 2, 5, 6, 8, 12, 14, 15, 19, 17, 21, 24, 19, 27, 29, Apr. 2, 2, 5, 8, 17, 19, 22
During erection on board vessel: 22/ May 1, 2, 7, 13, 16, 17, 20, 21, 23, 24, 29, 30 June 7, 10, 11, 13, 17, 19, 21, 24, 26, 28, July 1, 9, 12, 15, 16, 17, 18, 19, 22
Total No. of visits *67*
Dates of Examination of principal parts—Cylinders *24/3/40* Covers *✓* Pistons *30/5/40* Rods *30/5/40* Connecting rods *23/5/40*
Crank shaft—(G.I.S.) Flywheel shaft *as crank* Thrust shaft *as crank* Intermediate shafts *24/6/40* Tube shaft *✓*
Screw shaft *11/6/40* Propeller *11/6/40* Stern tube *13/5/40* Engine seatings (Crank top) Engines holding down bolts *10/4/40*
Completion of fitting sea connections *16/5/40* Completion of pumping arrangements *22/4/40* Engines tried under working conditions *19/4/40*
Crank shaft, Material *Ingot Steel* Identification Mark *N° 9824 L.C.D.* Flywheel shaft, Material *as crank* Identification Mark *as crank*
Thrust shaft, Material *as crank* Identification Mark *✓* Intermediate shafts, Material *Ingot Steel* Identification Marks *N° 3861, 3839, 3803*
Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *Ingot Steel* Identification Mark *3836, 3831, 3822, 1, R.N.*

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 *No*. If so, have the requirements of the Rules been complied with *Not desired*.
If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with *No*.
Is this machinery duplicate of a previous case *Yes*. If so, state name of vessel *N° "PUTNEY HILL"*.

General Remarks (State quality of workmanship, opinions as to class, &c.) *This machinery has been built and
Special Survey is accordance with the rules of the Society & the approved
Plans. The materials & workmanship are good. It has been securely
fitted on board the vessel & tried under working conditions along side
Quay with Satisfactory results. The two donkey boilers have also
been securely fixed on board, fitted to burn oil fuel (F.P. above 150°
Section 20 of the Rules has been complied with, Safety valves of
boilers adjusted to working pressure in accordance with rule
requirements
The machinery is eligible in my opinion to have notation
as L.M.C. 7.40 (oil Eng.), T.S. (C.I.) 2 D.B. 120 lb/sq"*

The amount of Entry Fee .. £ *6* : When applied for, *2 AUG 1940*
Special ... £ *100* : 16 :
Donkey Boiler Fee £ *12* : 12 : When received, *8th August 1940*
Travelling Expenses (if any) £ : :
Committee's Minute
Assigned
Engineer Surveyor to Lloyd's Register of Shipping.
D. H. Fraser
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