

ed and a List of Rpt. 4b. 1288P

REPORT ON OIL ENGINE MACHINERY.

No 69670.

Received at London Office

Date of writing Report 20. 7. 1943 When handed in at Local Office 20. 7. 1943 Port of Glasgow
No. in Survey held at Glasgow Date, First Survey 24. 8. 43. Last Survey 19. 6. 1945
Reg. Book. Number of Visits 39.

on the Triple Screw vessel M.V. 4 EMPIRE BELGRAVE Tons Gross 890 Net 382

Built at Glasgow By whom built A. J. Inglis Ltd. Yard No. 1299. When built 1945.
Engines made at Glasgow By whom made British Auxiliaries Ltd. Engine No. 478 When made 1943.
Donkey Boilers made at Barfin By whom made Alex Anderson & Sons Ltd. Boiler No. 3867-8 When made 1945.
Brake Horse Power 640 Owners Ministry of War Transport. Port belonging to Glasgow.
Nom. Horse Power as per Rule 125. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

Trade for which vessel is intended
L ENGINES, &c. Type of Engines Heavy Oil M.H.M. Type. 2 or 4 stroke cycle 2 Single or double acting Single

Maximum pressure in cylinders 782 lb/sq. in. Diameter of cylinders 340 7/8 Length of stroke 570 7/8 No. of cylinders 4 No. of cranks 4
Mean Indicated Pressure 96

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 484 7/8 Is there a bearing between each crank Yes
Revolutions per minute 250 Flywheel dia. 1550 7/8 Weight 4400 lb. Means of ignition Compression Kind of fuel used Diesel

Crank Shaft, Solid forged dia. of journals as per Rule 211 7/8 as fitted 220 7/8 Crank pin dia. 220 7/8 Crank Webs Mid. length breadth 308 7/8 Thickness parallel to axis
Flywheel Shaft, diameter as per Rule 211 7/8 as fitted 260 7/8 Intermediate Shafts, diameter as per Rule 137 7/8 as fitted 228 7/8 Thrust Shaft, diameter at collar as per Rule 144 7/8 as fitted 260 7/8

Screw Shaft, diameter as per Rule as fitted 8 3/4 Is the tube screw shaft fitted with a continuous liner No

Bronze Liners, thickness in way of bushes as per Rule as fitted Thickness between bushes as per Rule as fitted Is the after end of the liner made watertight in the propeller boss

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

Propeller, dia. 7'6" Pitch 4'4 3/4 No. of blades 4 Material M.B.R. whether Moveable No Total Developed Surface 20.2 sq. feet
Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when de-stitched Yes Means of lubrication

Thickness of cylinder liners 25.5 7/8 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

Cooling Water Pumps, No. One 90 7/8 x 140 7/8 Is the sea suction provided with an efficient strainer which can be cleared within the vessel
Bilge Pumps worked from the Main Engines, No. One Diameter 90 7/8 Stroke 140 7/8 Can one be overhauled while the other is at work

Pumps connected to the Main Bilge Line No. and Size 1 - 90 7/8 x 140. 1 - G.S. 22T/hr. 1 - Ballast. 40T/hr.
How driven M.E. P. Aux engine Electric
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 - 40T/hr 1 - 20T/hr. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 1 off 3100 gallons per hour.
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 - 2 1/2 In Pump Room 1 - 3

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 - 3 1 - 2 1/2
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces

Are they placed 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 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

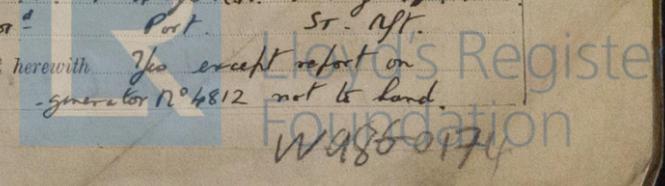
On a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork
Main Air Compressors, No. One No. of stages 2 Diameters 175 7/8 70 7/8 Stroke 350 7/8 Driven by Main engines
Auxiliary Air Compressors, No. No. of stages Diameters Driven by

Small Auxiliary Air Compressors, No. 1 No. of stages Diameters 26 cuft/min Stroke Driven by St. Aux.
What provision is made for first Charging the Air Receivers

Revolving Air Pumps, No. One Diameter 770 7/8 Stroke 350 7/8 Driven by Main engine
Auxiliary Engines crank shafts, diameter as per Rule as fitted R.N. - 2 1/2 No. 1 - 2 cyl R.N. 1 - 4 cyl R.N. 1 - 4 cyl Paxman Position ST. Fore Port ST. Aft

Have the Auxiliary Engines been constructed under special survey Yes Is a report sent herewith Yes except report on generator No. 4812 not to hand.

43 5.1
2.10.19.31
7.11.19.27
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AIR RECEIVERS: — Have they been made under survey *Yes.* State No. of Report or Certificate *C. 51182 & C. 51183*

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. *none* 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 *1600 litres* Internal diameter *650 7/8* thickness *14 7/8*

Seamless, lap welded or riveted longitudinal joint *riveted* Material *Steel* Range of tensile strength *Shell 28/32 tons* Working pressure *by Rules 355 lbs*
Actual 355 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 Shifting *Thrust 12-2-37* Receivers *25-6-34* Separate Fuel Tanks *22-6-45*
(If not, state date of approval) *Crank 2-12-35* *20-7-34*

Donkey Boilers *app^d 5-8-44* General Pumping Arrangements *app^d 31-10-45* Pumping Arrangements in Machinery Space *app^d 22-6-45*

Oil Fuel Burning Arrangements *app^d 22-6-45*

SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*

State the principal additional spare gear supplied *as per attached list*

The foregoing is a correct description.



Dates of Survey while building

During progress of work in shops --	1943 Aug 24, Sep 10, 20, 30 Nov 14, 8, 15, 19 Dec 13, 14, 1944 Jan 14, 18, 24 May 10 Jun 16 1945 Jan 9 Mar 6, 12, 14, 19, 29 Apr
During erection on board vessel --	18 May 3, 10, 16, 23, 28, 31 Jun 3, 4, 6, 8, 11, 13, 15, 18, 19
Total No. of visits	39

Dates of Examination of principal parts—Cylinders *15-11-43*, Covers *30-9-43*, Pistons *8-11-43*, Rods *20-9-43*, Connecting rods *20-9-43*

Crank shaft *20-9-43*, Flywheel shaft *20-9-43*, Thrust shaft *24-8-43*, Intermediate shafts *12-3-45*, Tube shaft *✓*

Screw shaft *12-3-45*, Propeller *12-3-45*, Stern tube *12-3-45*, Engine seatings *14-3-45*, Engines holding down bolts *10-5-45*

Completion of fitting sea connections *14-3-45*, Completion of pumping arrangements *18-6-45*, Engines tried under working conditions *18-6-45*

Crank shaft, Material *Steel* Identification Mark *LR. No. 1456 F.H. 10-12-42*

Thrust shaft, Material *Steel* Identification Mark *No. 3089 T.T.* Intermediate shafts, Material *Steel* Identification Marks *LR 9304*

Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *Steel* Identification Mark *LR 9303*

Identification Marks on Air Receivers

<i>No. 51182.</i>	<i>No. 51183.</i>
<i>LLOYDS TEST</i>	<i>LLOYDS TEST.</i>
<i>555 LBS.</i>	<i>555 LBS.</i>
<i>W.P. 355 "</i>	<i>W.P. 355 LBS.</i>
<i>J.S. 28-12-43.</i>	<i>J.S. 28-12-43.</i>

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 *✓*

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 *M/V. Kopara. Gls. reg. No. 59834*

General Remarks (State quality of workmanship, opinions as to class, &c. *These engines have been built under Special Survey in accordance with the Rules and approved plans. The materials and workmanship are good. On completion they have been tried on the bench at full power with satisfactory results.*

The machinery has been securely fitted on board the vessel and tried under working conditions. Owing to the arrangement of pipes it was not possible to fit a torsionograph for the full power trial. It is recommended that vessel is eligible to have a record + LMC 6-45. with notation TS, OS on fitted for oil fuel 6-45. F.P. above 150° F. subject to the torsional vibration characteristics of the machinery of the sister vessel proving satisfactory.

The amount of Entry Fee .. £ 3 :-

Special *Specⁿ* ... £ 31-5-0

Donkey Boiler Fee ... £ 7-16-3

Travelling Expenses (if any) £ :-

When applied for, *24 JUL 1945*

When received, *5th*

Committee's Minute *GLASGOW 24 JUL 1945*

Assigned *-1- LMC 6-45 subject 2 NB 180 lb.*

G. E. Murdoch, J.R.D.
Engineer Surveyor to Lloyd's Register of Shipping.

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