

REPORT ON OIL ENGINE MACHINERY.

No. 14917.
1 OMAR 1952

Date of writing Report 13th February, 1952. When landed in at Local Office 5th March, 1952. Received at London Office 19 Port of MANCHESTER.

No. in Survey held at MANCHESTER. Date, First Survey 6th March, 1950. Last Survey 23rd November, 1951.

Reg. Book. Single Screw vessel M.V. BUNGA. Tons Gross 1512 Net 143491.

Built at Openshaw Works. By whom built Singapore Harbour Board Yard No. 1512 When built 1951.

Engines made at Openshaw Works. By whom made Crossley Bros. Ltd., Contract 12001. Engine No. 143491. When made 1951.

Donkey Boilers made at 300. By whom made Client: - W. Hammer & Co. Ltd., Boiler No. 90. When made 60.

Brake Horse Power 300. Client: - W. Hammer & Co. Ltd., Port belonging to Singapore.

M.N. Power as per Rule 90. 60 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted.

Trade for which vessel is intended Is Refrigerating Machinery fitted for cargo purposes.

OIL ENGINES, &c. — Type of Engines Vertical Solid Injection Heavy Oil HRN 4. 2 or 4 stroke cycle 2. Single or double acting Single.

Maximum pressure in cylinders 950 lbs/sq. inch. Diameter of cylinders 10 1/2" Length of stroke 13 1/2" No. of cylinders 4. No. of cranks 4.

Mean Indicated Pressure 99 lbs/sq. inch. Ahead Firing Order in Cylinders 1. 4. 2. 3. Span of bearings, adjacent to the crank, measured from inner edge to inner edge 14.11/16" Is there a bearing between each crank Yes. Revolutions per minute 300.

Flywheel dia. 37 1/2" Weight 2166 lbs. Moment of inertia of flywheel (lbs. in²) 500,000. Means of ignition Compression. Kind of fuel used Diesel Oil.

Crank Shaft, Solid forged dia. of journals 7 1/2" as per Rule Approved. Crank pin dia. 7 1/4" Crank webs Mid. length breadth 9 1/4" Thickness parallel to axis 3.23/32" shrunk Thickness around cyclo. 4 1/2"

Flywheel Shaft, Mounted on end of Crankshaft. Intermediate Shafts, diameter as fitted. Thrust Shaft, diameter at collars as fitted.

Tube Shaft, diameter as fitted. Screw Shaft, diameter as fitted. Is the tube shaft fitted with a continuous liner Is the screw

Bronze Liners, thickness in way of bushes as per Rule. Thickness between bushes as fitted. Is the after end of the liner made watertight in the propeller boss as fitted. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner as fitted.

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 as fitted. If two liners are fitted, is the shaft lapped or protected between the liners as fitted. Is an approved Oil Gland or other appliance fitted at the after end of tube shaft as fitted. If so, state type as fitted. Length of bearing in Stern Bush next to and supporting propeller as fitted.

Propeller, dia. as fitted. Pitch as fitted. No. of blades as fitted. Material as fitted. whether moveable as fitted. Total developed surface as fitted. sq. feet

Moment of inertia of propeller (lbs. in² or Kg. cm.²) as fitted. Kind of damper, if fitted as fitted.

Method of reversing Engines Direct. Is a governor or other arrangement fitted to prevent racing of the engine as fitted. Yes as fitted. Means of lubrication Forced. Thickness of cylinder liners 7/8" Are the cylinders fitted with safety valves Yes. Exhaust Manifold Watercooled 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 as fitted.

Cooling Water Pumps, No. 1 - 4 1/4" dia. x 3" Stroke. Is the sea suction provided with an efficient strainer which can be cleared within the vessel as fitted.

Bilge Pumps worked from the Main Engines, No. 1. Diameter 4 1/4" Stroke 3" Can one be overhauled while the other is at work Yes.

Pumps connected to the Main Bilge Line (No. and size) as fitted. How driven as fitted.

Is the cooling water led to the bilges as fitted. If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements as fitted.

Ballast Pumps, No. and size as fitted. Gear Type Chain Driven from Main Engine 1 - 882 G.P.H. Power Driven Lubricating Oil Pumps, including spare pump, No. and size 1 - 1440 G.P.H.

Are two independent means arranged for circulating water through the Oil Cooler as fitted. Suctions, connected to both main bilge pumps and auxiliary bilge pumps, No. and size:—In machinery spaces as fitted. In pump room as fitted.

In holds, &c. as fitted.

Independent Power Pump Direct Suctions to the engine room bilges, No. and size as fitted.

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes as fitted. Are the bilge suction 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 as fitted.

Are all Sea Connections fitted direct on the skin of the Ship as fitted. Are they fitted with valves or cocks as fitted. Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates as fitted. Are the overboard discharges above or below the deep water line as fitted.

Are they each fitted with a discharge valve always accessible on the plating of the vessel as fitted. Are the blow off cocks fitted with a spigot and brass covering plate as fitted.

What pipes pass through the bunkers as fitted. How are they protected as fitted.

What pipes pass through the deep tanks as fitted. Have they been tested as per Rule as fitted.

Are all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times as fitted.

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 as fitted. Is the shaft tunnel watertight as fitted. Is it fitted with a watertight door as fitted. worked from as fitted.

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork as fitted.

Main Air Compressors, No. 1. No. of stages 2. diameters 5 5/8" & 2 1/2" stroke 4" driven by Main Engine.

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

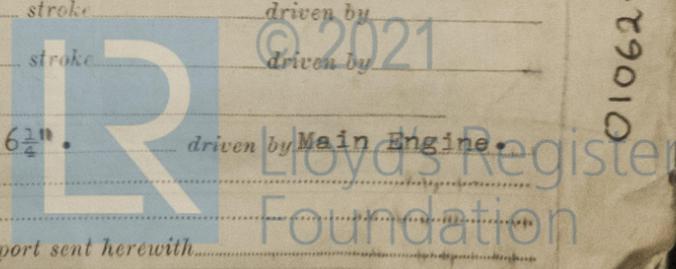
Small Auxiliary Air Compressors, No. as fitted. No. of stages as fitted. diameters as fitted. stroke as fitted. driven by as fitted.

What provision is made for first charging the air receivers as fitted.

Scavenging Air Pumps, No. 1 - Double Acting Tandem. diameter 20 1/2" stroke 6 1/2" driven by Main Engine.

Auxiliary Engines crank shafts, diameter as per Rule. No. as fitted. Position as fitted.

Have the auxiliary engines been constructed under special survey as fitted. Is a report sent herewith as fitted.



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Nottingham C.12811 and C.13451.

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... Fusible plug on Air Receiver - Safety Valve on Air Compressor.
 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, welded or riveted longitudinal joint.....Material.....Range of tensile strength.....Working pressure.....
Starting Air Receivers, No. 2. Total cubic capacity 30 cu. ft. Internal diameter 2'-0¹/₈". thickness 3/8" & 15/32".
 Seamless, welded ~~XXXXXXXXXXXXXXXXXXXX~~ Material O.H. Steel. Range of tensile strength 26/30. Working pressure 350 lbs/sq. inch.
 Approved by Rules Actual

IS A DONKEY BOILER FITTED.....If so, is a report now forwarded.....
 Is the donkey boiler intended to be used for domestic purposes only.....

PLANS. Are approved plans forwarded herewith for shafting 31st August, 1951. Receivers..... Separate fuel tanks.....
 (If not, state date of approval)
 Donkey boilers..... General pumping arrangements..... Pumping arrangements in machinery space.....
 Oil fuel burning arrangements.....
 Have Torsional Vibration characteristics been approved... Yes. Date of approval 28th November, 1951.

SPARE GEAR.

AS PER RULE REQUIREMENTS.
 Has the spare gear required by the Rules been supplied.....
 State the principal additional spare gear supplied.....

Fixed for

The foregoing is a correct description, and the particulars of the installation as fitted are as approved for Torsional Vibration Characteristics, Manufacturer. **CROSSLEY BROTHERS LIMITED.**

Dates of Survey while building
 During progress of work in shops - - 1950. March 6, 8. 1951. April 25. July 3. Aug. 20, 29. Sept. 7, 20, 26. Oct. 9, 10, 19. Nov. 2, 22, 23.
 During erection on board vessel - - -
 Total No. of visits.....
 Dates of examination of principal parts—Cylinders 9.10.51. Covers 26.9.51. Pistons 19.10.51. Liners 6 & 8.3.50.
 Crank shaft 20.9.51. Flywheel shaft..... Thrust shaft 10.10.51. Intermediate shafts..... Tube shaft 20.8.51.
 Screw shaft..... Propeller..... Stern tube..... Engine seatings..... Engine holding down bolts.....
 Completion of fitting sea connections..... Completion of pumping arrangements..... Engines tried under working conditions.....
 Crank shaft, material O.H. Steel. Identification mark LLOYD'S 4344 50.EB.24. 20.9.51. G.A. Flywheel shaft, material..... Identification mark.....
 Thrust shaft, material O.H. Steel. Identification mark LLOYD'S 3238 EB.346. 10.10.51. R.J.Y. Intermediate shafts, material..... Identification marks.....
 Tube shaft, material..... Identification mark..... Screw shaft, material..... Identification mark.....
 Identification marks on air receivers 81/500055 LLOYD'S H.T. 700 lbs. W.P. 350 lbs. T.D.S. 7.5.51. T.204.
 " " " " " " " T.D.S. 29.8.51. T.206.

Welded receivers, state Makers' Name Messrs. Ruston & Hornsby Ltd., Lincoln.
 Is the flash point of the oil to be used over 150°F.....
 Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with.....
 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... No. If so, state name of vessel.....

General Remarks (State quality of workmanship, opinions as to class, &c. This engine has been constructed under special survey of...)
 tested materials in accordance with the Secretary's letters, approved plans and Requirements of the Rules. The material and workmanship are good and the engine when tested in the shop under full load conditions, coupled direct to an hydraulic dynamometer, showed satisfactory results.

In our opinion, this engine is suitable for installation on board a vessel to be classed with this Society for the purpose intended.
 Attached hereto Mch. Rpt. 6 Nos. F.7241 & F.7557, together with Nottingham Air Receiver Certs. Nos. C.12811 & C.13451

The amount of Entry Fee... £ 24 0 0.
 Special £ : :
 Donkey Boiler Fee... .. £ : :
 Travelling Expenses (if any) £ 3 15 0.
 When applied for 6/3/52 1952
 When received 19

John for T. Asher
 G. S. Atkins.
 Engineer Surveyor to Lloyd's Register of Shipping.



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Committee's Minute
 Assigned See F.E. mch. rpt. Eng. 9317.
 FRI. 21 NOV 1952

Certificate (if required) to be sent to