

REPORT ON OIL ENGINE MACHINERY.

No. 15440

Received at London Office

24 APR 1953

Date of writing Report 7th April 1953. When handed in at Local Office 21st April, 1953.

Port of MANCHESTER.

No. in Survey held at Manchester. Date, First Survey 17th September 52 Last Survey 2nd April, 1953. Number of Visits 15.

on the Twin Triple Quadruple Screw vessel INDARA. 250 Ton Coaster (Classed Vessel). Contract No. 10004.

Built at Trieste. By whom built Cantieri Navale, Guiliano. Yard No. 35. When built.

Engines made at Openshaw. By whom made Messrs. Crossley Bros. Ltd. Engine No. 146642. When made.

Monkey Boilers made at. By whom made. Boiler No. When made.

Brake Horse Power 300. Owners Indonesian Republic. Port belonging to.

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

Trade for which vessel is intended.

OIL ENGINES, &c. — Type of Engines Crossley HRN4 - Vertical Heavy / 2 or 4 stroke cycle 2 Single or double acting Single

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

Mean Indicated Pressure 100 lbs/sq" 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"

Flywheel dia. 37 1/2" Weight 2166 Moment of inertia of flywheel (lbs. in² ft²) 500,000. Means of ignition Compression. Kind of fuel used Diesel.

Crank shaft, Solid forged dia. of journals as per Rule Approved as fitted 7 1/2" Crank pin dia. 7 1/2" Crank webs Mid. length breadth 9 1/4" Thickness parallel to axis - Mid. length thickness 3.23/32" Thickness around eyehole -

Flywheel Shaft, diameter as per Rule Intermediate Shafts, diameter as per Rule Thrust Shaft, diameter at collars as fitted 4.5/8" as per Rule Approved

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

Bronze Liners, thickness in way of bushes as per Rule Thickness between bushes as per Rule 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 tube shaft.

If so, state type. Length of bearing in Stern Bush next to and supporting propeller.

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

Moment of inertia of propeller (lbs. in² or Kg.cm²) Kind of damper, if fitted.

Method of reversing Engines Direct. Is a governor or other arrangement fitted to prevent racing of the engine when declutched. Yes. Means of lubrication Forced. Thickness of cylinder liners 7/8". Are the cylinders fitted with safety valves. Yes. Are the exhaust pipes and silencers water cooled.

Lagged with non-conducting material. 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. 1. 4 1/2 x 3" 2520 G.P.H. Is the sea suction provided with an efficient strainer which can be cleared within the vessel.

Bilge Pumps worked from the Main Engines, No. 1. Diameter 4 1/2" Stroke 3". Can one be overhauled while the other is at work. Yes.

Pumps connected to the Main Bilge Line { No. and size. How driven.

Is the cooling water led to the bilges. 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. Power Driven Lubricating Oil Pumps, including spare pump, No. and size 1 - 882 G.P.H. 1 - 1440 G.P.H.

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

holds, &c.

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

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

Are all Sea Connections fitted direct on the skin of the Ship. Are they fitted with valves or cocks. Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates.

Are the overboard discharges above or below the deep water line.

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

Are pipes pass through the bunkers. How are they protected.

Are 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.

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

Is 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 Two. diameters 5 3/4" & 2 1/2" stroke 4" driven by Main Engine.

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

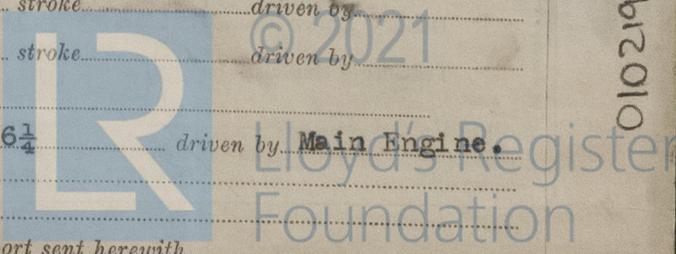
All Auxiliary Air Compressors, No. No. of stages. diameters. stroke. driven by.

Is provision is made for first charging the air receivers. Revolving Air Pumps, No. 1 - D.A. Tandem. diameter 20 1/2" stroke 6 1/4" driven by Main Engine.

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

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

dm
8/5/53



010219-010210-0190

4B. 15440.

AIR RECEIVERS:—Have they been made under survey Yes State No. of report or certificate C.15647
C.15649
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule.
 Can the internal surfaces of the receivers be examined and cleaned. Is a drain fitted at the lowest part of each receiver.
 Injection Air Receivers, No. Cubic capacity of each. Internal diameter. thickness.
 Seamless, welded or riveted longitudinal joint. Material. Range of tensile strength. Working pressure by Rules.
 Starting Air Receivers, No. Two Total cubic capacity 30 Ft. 3 Internal diameter 24 1/8" thickness Shell 15/32" Ends 26/30 Working pressure Actual 350 lb
 Seamless, welded or riveted longitudinal joint Welded Material Steel Range of tensile strength Shell 28/32

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 28th August, 1952. 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 26th September, 1952.

SPARE GEAR.

Has the spare gear required by the Rules been supplied.
 State the principal additional spare gear supplied.

See

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

Dates of Survey while building
 During progress of work in shops - Sept. 17th, 26th, 28th, 1952. / Nov. 13th, Dec. 8th, 1953. Feb. 23rd, March 11th, 13th, (2) April 1st, 2nd.
 During erection on board vessel - - -

Total No. of visits
 Dates of examination of principal parts—Cylinders Block 26.9.52. Covers 23.12.52. Pistons 20.3.53. Rods 13.11.52. Connecting rods 17.9.52.
 Crank shaft 3.2.53. Flywheel shaft - Thrust shaft 18.2.53. Intermediate shafts. Tube shaft.
 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 3725 RJY. 3.2.53. LF.510. Flywheel shaft, material. Identification mark.
 Thrust shaft, material. Identification mark LLOYD'S 4729. NWT. 18.2.53. 51. BBT. 52A. Intermediate shafts, material. Identification marks.
 Tube shaft, material. Identification mark. Screw shaft, material. Identification mark.
 Identification marks on air receivers 95.01/45 LLOYD'S TEST. 575 lbs. W.P. 350 JBL.EW. 16.9.52.
95.01/47 " " " " " " " " " "

Welded receivers, state Makers' Name Messrs. Whiteley-Read Eng. Ltd.
 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. If so, state name of vessel.

General Remarks (State quality of workmanship, opinions as to class, Speed restrictions, &c. This engine has been constructed under
 Special Survey in accordance with the Society's Rules and the approved plans. The materials and
 workmanship are good, and the engine when tested under working conditions on the test bed, coupled
 a dynamometer and developing full load for 6 hours followed by 1 hour at 10% overload, was found
 satisfactory. The torsional vibration characteristics of the shafting installation have been
 approved for a Service Speed of 300 R.P.M., provided a Notice Board be fitted at the Control Station
 stating that engine is not to be operated continuously between 220 and 255 R.P.M. and the engine
 tachometer be marked accordingly, or alternatively, provided torsionograph records taken from the
 completed installation indicate that stresses in the straight shafting arising from the 1 - node
 4th order, critical speed calculated to occur at 236 R.P.M. are satisfactory for continuous operation.
 The engine, is in my opinion, suitable for installation in a vessel classed with this Society.

The amount of Entry Fee ... £22 :- :- Attached hereto: Birmingham Report No. F.4160 and
 Special ... £ : : Mch. Report F.8198. C.15647, C.15649
 Donkey Boiler Fee... £ 2 :16 :- When applied for APR 22 19 Air Receiver Certificate
 Travelling Expenses (if any) £ : : When received 19 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUESDAY - 1 DEC 1953
 Assigned See Rpt. 4B

