

## REPORT ON OIL ENGINE MACHINERY.

No. 15361.

FEB 1953

Date of writing Report 28th January, 1953. When handed in at Local Office 4th February, 1953. Received at London Office  
No. in Survey held at Manchester. Date, First Survey 19th September, 1952 Last Survey 20th January, 1953.  
Reg. Book. M. COASTER "ILOSINGI" Number of Visits 9.  
Single on the Twin Triple Quadruple Screw vessel 250 Ton Coaster Classed Vessel. Contract No. 10002. Tons Gross..... Net.....  
Built at Trieste By whom built Cantieri Navale Giuliano Yard No. 33 When built.....  
Engines made at Openshaw, Manchester By whom made Messrs. Crossley Bros. Engine No. 146640 When made 1952.  
Donkey Boilers made at..... By whom made..... Boiler No. .... When made.....  
Brake Horse Power 300 Owners Indonesian Republic Port belonging to.....  
M.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 HRN.4 Vertical Heavy Oil or 4 stroke cycle 2 Single or double acting Single  
Maximum pressure in cylinders 95.0 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" Lead 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 Moment of inertia of flywheel (lbs. in<sup>2</sup> in<sup>2</sup> in<sup>2</sup>) 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 1/4" Crank webs Mid. length breadth 9 1/4" Thickness parallel to axis.....  
Flywheel Shaft, diameter as per Rule..... Intermediate Shafts, diameter as per Rule..... Thrust Shaft, diameter at collars as fitted 4 3/4" 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. in<sup>2</sup> or Kg. cm.<sup>2</sup>)..... Kind of damper, if fitted.....  
Method of reversing Engines Is a governor or other arrangement fitted to prevent racing of the engine when declutched..... 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 or 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..... One - 4 1/4" dia. x 3" 2520 G.P.H.  
Cooling Water Pumps, No. .... 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 4 1/2" Stroke 3" Can one be overhauled while the other is at work.....  
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.....  
In 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.....

What pipes pass through the bunkers..... 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.....  
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.....  
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. One No. of stages Two diameters 5 3/4" x 2 1/2" stroke 4" driven by Main Engine  
Auxiliary Air Compressors, No. .... No. of stages..... diameters..... stroke..... driven by.....  
Small Auxiliary Air Compressors, No. .... No. of stages..... diameters..... stroke..... driven by.....  
What provision is made for first charging the air receivers.....

Scavenging Air Pumps, No. One - D.A. Tandem. diameter 20 1/2" stroke 6 1/2" 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.....



4B 15361. Yes State No. of report or certificate Not yet supplied.

**AIR RECEIVERS:**—Have they been made under survey.....

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 2 1/8" thickness 13/15" SHELL 15/32" by Rules.....

Seamless, welded or riveted longitudinal joint Welded. Material Steel. Range of tensile strength..... Working pressure Actual 350 lbs. SHELL 7/8".

**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.....

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.....

The foregoing is a correct description, and the particulars of the Engine, as supplied, are as approved for the Torsional Vibration Characteristic

**CROSSLEY BROTHERS LIMITED** Manufacturer.

Dates of Survey while building During progress of work in shops - 1952. Sept. 19th, 26th, 30th, Oct. 3rd, 7th, 13th, 23rd, 30th. 1953. Jan. 20th.

Dates of examination of principal parts—Cylinders 23.9.52. Covers 23.9.52. Pistons 30.10.52. Rods 17.9.52. Connecting rods 12.9.51.

Crank shaft 23.9.52. Flywheel shaft..... Thrust shaft 19.9.52. 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 3508 NWT. 23.9.52. 51LF 104. Flywheel shaft, material..... Identification mark.....

Thrust shaft, material O.H. Steel. Identification mark LLOYD'S 4602. NWT. 19.9.52. 51EBT22. Intermediate shafts, material..... Identification marks.....

Tube shaft, material..... Identification mark..... Screw shaft, material..... Identification mark.....

Identification marks on air receivers.....

Welded receivers, state Makers' Name.....

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, &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 to 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, as 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.

**ATTACHED HERETO:-**

The amount of Entry Fee ... £ 22 : 0 : 0 : Manchester Certificate No. F.7790 - covering the Thrust Shaft.

Special ... £ : : : Birmingham Certificate No. F.3820 - covering the Crankshaft.

Donkey Boiler Fee... £ 2 : 16 : 0 : Certificates for Air Receivers will be forwarded when received.

Travelling Expenses (if any) £ : : : When applied for 5/2/53 19 54

When received 19

Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute

Assigned

TUESDAY - 1 DEC 1953

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