

FIVED  
1949

# REPORT ON OIL ENGINE MACHINERY.

No. 13751.

15 AUG 1949

Received at London Office  
MANCHESTER.  
28th June, 1949. When handed in at Local Office 11th August, 1949. Port of  
HAZELGROVE, STOCKPORT. Date, First Survey 4th April, 1949. Last Survey 27th June, 1949.  
No. in Survey held at HAZELGROVE, STOCKPORT. Number of Visits 10.

Single on the Twin Triple Quadruple Screw vessel. Trawler (Yard No. 629). **BONNY BRIDGE** Tons Gross. Net.  
Built at Hazelgrove. By whom built Henry Scarr Ltd. (Richard Dunstons). Yard No. 629. When built 1949.  
Engines made at Hazelgrove. By whom made Mirrlees, Bickerton & Day Ltd.. Engine No. 33401. When made 1949.  
Donkey Boilers made at - By whom made - Boiler No. - When made -  
Brake Horse Power 630. Owners St. Andrews Steam Trawling Co. Port belonging to Fleetwood.  
M.N. Power as per Rule 178. Is Refrigerating Machinery fitted for cargo purposes. Is Electric Light fitted. Yes.  
Trade for which vessel is intended Trawling.

IL ENGINES, &c. — Type of Engines. Vertical Airless Injection Heavy Oil. 2 or 4 stroke cycle 4. Single or double acting Single.  
Maximum pressure in cylinders 750 lbs/sq. inch. Diameter of cylinders 13.75". Length of stroke 21". No. of cylinders 7. No. of cranks 7.  
Mean Indicated Pressure 125 lbs/sq. inch. Cont. rating. Ahead Firing Order in Cylinders 1, 2, 4, 6, 7, 5, 3. Span of bearings, adjacent to the crank, measured from inner edge to inner edge 15.25". Is there a bearing between each crank. Yes. Revolutions per minute 200.  
Flywheel dia. 5' - 9 1/2". Weight 6.25 T. Moment of inertia of flywheel 23,900 lbs in/sec<sup>2</sup>. Compression. Diesel.

Crank Shaft. Solid forged. As approved. 8 3/4". Crank webs. Mid. length breadth 11 1/2". Thickness parallel to axis. -  
Semi built dia. of journals as fitted 9 1/2". Crank pin dia. 4 1/2". Mid. length thickness. -  
All built. Fitted to the end. as per Rule. Thrust Shaft, diameter at collars as fitted. 9 1/2".  
Flywheel Shaft, diameter of crankshaft. Intermediate Shafts, diameter as fitted. 7 1/2".  
Tube Shaft, diameter as per Rule. - Screw Shaft, diameter as fitted. 9 3/8". Is the tube screw shaft fitted with a continuous liner. No.

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. -  
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. Newark No. 3. Length of bearing in Stern Bush next to and supporting propeller 3' - 2".

Propeller, dia. 8' - 0". Pitch. - No. of blades 4. Material C.I. whether moveable. - Total developed surface. - sq. feet  
Moment of inertia of propeller 3010 lbs in/sec<sup>2</sup>. Kind of damper, if fitted. None.

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 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. -

Ram Type: Engine Driven. Cooling Water Pumps, No. One. 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 3/4". Stroke 5 1/2". Can one be overhauled while the other is at work. No.

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. - Engine Power Driven Lubricating Oil Pumps, including spare pump, No. and size. Two 3" dia. x 3 1/2" stroke. 880 galls/hr.  
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. - Have they been tested as per Rule. -

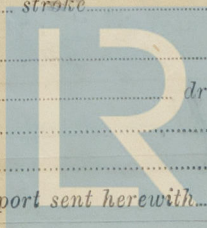
What pipes pass through the deep tanks. - Are all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times. -  
Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks 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. Ref. No. 104980. No. of stages 2. diameters 5" & 5.5/8" stroke 5 1/2" 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. Auxiliary Compressor. -  
Scavenging Air Pumps, No. - diameter - stroke - driven by -

Auxiliary Engines crank shafts, diameter as per Rule. - No. - Position. -  
Have the auxiliary engines been constructed under special survey. - Is a report sent herewith. -



© 2020

Lloyd's Register Foundation

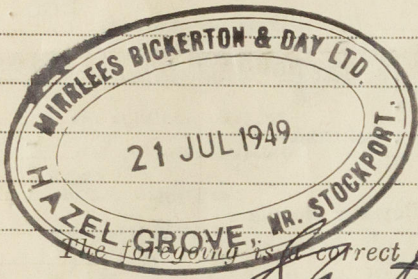
21/10-91200-11720



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..... 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..... Cubic capacity of each..... Internal diameter..... thickness.....  
Seamless, welded or riveted longitudinal joint..... Material..... Range of tensile strength..... Working pressure.....  
Starting Air Receivers, No. Two . Total cubic capacity 46 cu. ft. Internal diameter 21.5" thickness 1" .  
Circumferentially welded. Material M.S. Range of tensile strength 26-30 tons/sq. inch. Working pressure 300 lbs./sq. inch.

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..... Receivers..... Approved Standard Type  
Donkey boilers..... General pumping arrangements..... Pumping arrangements in machinery space.....  
Oil fuel burning arrangements.....  
Have Torsional Vibration characteristics been approved..... Yes: For Service speed of 200 R.P.M. Date of approval 23.5.49.

SPARE GEAR.  
AS PER RULE REQUIREMENTS .  
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 installation as fitted are as approved for Torsional Vibration Characteristics.

Dates of Survey while building: During progress of work in shops - - 1949. April 4. May 5. June 1, 2, 3, 7, 17, 23, 26, 27.  
During erection on board vessel - -  
Total No. of visits 11.4.49. 2.6.49.  
Dates of examination of principal parts: Cylinders 20.5.49. Covers 3.6.49. Pistons 27.6.49. Rods - Connecting rods 1.6.49.  
Crank shaft 27.5.49. Flywheel shaft - Thrust shaft - Intermediate shafts - Tube shaft -  
Screw shaft - Propeller - Stern tube - Engine seatings - Engine holding down bolts 26/6/49.  
Completion of fitting sea connections - Completion of pumping arrangements - Engines tried under working conditions Test Bed  
Crank shaft, material Identification mark S.3229 Flywheel shaft, material Identification mark  
Thrust shaft, material Identification mark F.B. Intermediate shafts, material Identification marks  
Tube shaft, material Identification mark Screw shaft, material Identification mark  
Identification marks on air receivers: A.J.R. 9238 M.B. & D. 4409 Lloyd's Test W.P. 300 lbs  
Welded receivers, state Makers' Name: T.P. 600 lbs W.J.I. 16.3.49 H.V.C.  
Is the flash point of the oil to be used over 150°F H.V.C.  
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 built under special survey of tested materials and in accordance with the Secretary's letters, approved plans and Rule requirements. The materials and workmanship are good. The engine, direct coupled to a Heenan & Froude Dynamometer, was found satisfactory when tested at the Builders Works, under the following conditions of loading:- 6 Hours 100% Load, 1 Hour 110% Load, Astern running 1/2 hour Light Load, Starting and manoeuvring ahead and astern.  
Torsional Vibration Characteristics have been approved for an engine service speed of 200 R.P.M.  
This engine is, in our opinion, suitable to be installed in a vessel classed with the Society, for the purpose intended.

Attached herewith are copies of the following certificates:-  
Crankshaft Forging No. F.52.  
The amount of Entry Fee ... £ 2/3 £71/4. Special ... £ 47 9 0 When applied for 12.8.49  
Donkey Boiler Fee... £ When received 19  
Travelling Expenses (if any) £ 5 20 0  
Committee's Minute  
Assigned See F.E. mch. rpt.



© 2020

Lloyd's Register Foundation