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JUL 1949

# REPORT ON OIL ENGINE MACHINERY.

No. 13722

17 APR 1950

Received at London Office

Report made on 27th January, 1949. When handed in at Local Office 15th July 1949 Port of MANCHESTER.

Survey held at HAZELGROVE, STOCKPORT. Date, First Survey 14th October, 1948 Last Survey 30th December, 1948. Number of Visits 12.

on the BERGÖ (see Groningen Rpt 439 B) Tons Gross... Net...

built at Martenshoek By whom built Bodewes Scheepswerven. Yard No. 377. When built 1950.

engines made at Hazelgrove, Stockport By whom made Mirrlees, Bickerton & Day Ltd., Engine No. 32992. When made 1948.

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

Brake Horse Power 540 (12 hr. rating) Agents Hart, Nibbrig & Greave Port belonging to Rotterdam.

I.N. Power as per Rule 120.119 Owner: G. Erikson, Finland. Is Refrigerating Machinery fitted for cargo purposes ... Is Electric Light fitted ...

Trade for which vessel is intended Open Sea Service.

Oil 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 6. No. of cranks 6.

Mean Indicated Pressure 97 lbs/sq. inch. Ahead Firing Order in Cylinders 1, 3, 5, 6, 4, 2. 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 300. Weight 2,460 lbs. Moment of inertia of flywheel 3,270,000 Kg. Cm<sup>2</sup>.

Means of ignition Compression. Kind of fuel used Diesel. Crank pin dia. 8.75". Crank webs Mid. length breadth 11.25". Thickness parallel to axis ...

Intermediate Shafts, diameter ... Thrust Shaft, diameter at collar ...

Screw Shaft, diameter ... Is the (tube/screw) shaft fitted with a continuous liner ...

Bronze Liners, thickness in way of bushes ... Thickness between bushes ... 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 ...

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

Moment of inertia of propeller (16lbs. in<sup>2</sup>) ... 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 or lagged with non-conducting material Both. 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. 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 4.75". Stroke 5.5". 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 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 ... Power Driven Lubricating Oil Pumps, including spare pump, No. and size 2. Engine driven ram type. Dia. 3" x 3.5/8" stroke.

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 ...

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes ... Are the bilge suction pipes 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. 1 Reavell Ref. No. 10498. No. of stages 2. diameters 5" x 5.5/8" stroke 5 1/2" driven by Main Engine.

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

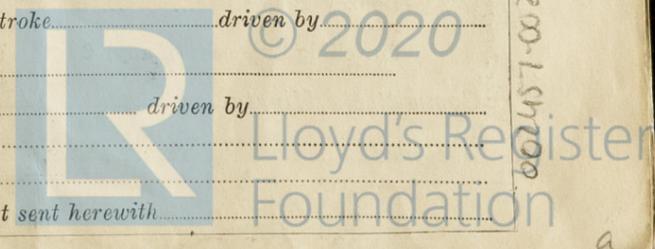
Small Auxiliary Air Compressors, No. ... diameters ... stroke ... driven by ...

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

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 ...



602457-002464-0128

**AIR RECEIVERS:** —Have they been made under survey... Yes. State No. of report or certificate... 0  
 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. doors. 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... 48 cu. ft. Internal diameter... 2' 5" 2-6" thickness... 3/16"  
 Seamless, welded or riveted longitudinal joint... Circumferentially welded... Material... O.H. Steel... Range of tensile strength... 26/30... Working pressure... Actual... 300

**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... 9th December, 1948. Receivers... Approved Standard Type. Separate fuel tanks...  
 Donkey boilers... General pumping arrangements... Pumping arrangements in machinery space...  
 Oil fuel burning arrangements...  
 Have Torsional Vibration characteristics been approved... 20th July, 1949. Date of approval...

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied... AS PER RULE REQUIREMENTS.  
 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. Manufacturer...

Dates of Survey while building: During progress of work in shops - - 1948. October 14, 18, 19, 22, 27. Nov. 4, 16, 19, 26. Dec. 13, 15, 30.  
 During erection on board vessel - - -  
 Total No. of visits... 19. 10. 48.  
 Dates of examination of principal parts—Cylinders 14. 10. 48. Covers 22. 10. 48. Pistons 15. 12. 48. Rods... Connecting rods 27. 10. 48.  
 Crank shaft 4. 11. 48. Flywheel shaft... Thrust shaft 24. 12. 48. 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 13. 12. 48.  
 Crank shaft, material O.H. Steel. Identification mark 4. 1. 48. R.J.Y. Flywheel shaft, material... Identification mark...  
 Thrust shaft, material O.H. Steel. Identification mark 24. 12. 48. W.J.I. Intermediate shafts, material... Identification marks...  
 Tube shaft, material... Identification mark... Screw shaft, material 81/470250 M.B. & D. Lloyd's. M.B. & D. 4299.  
 Identification marks on air receivers... Lloyd's Test 4270 T.D.S. W.P. 300 lbs. W.P. 300 lbs. W.J.I. 300.  
 HT. 600 lbs. 30. 12. 48. HT. 600 lbs. W.J.I. 2. 2. 49.  
 WP 300 lbs. 20. 12. 48. W.J.I. BW. 130.  
 Welded receivers, state Makers' Name... BW. 110.  
 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...

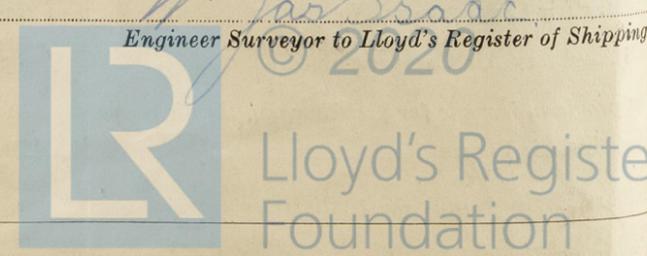
**General Remarks** (State quality of workmanship, opinions as to class, &c. This engine has been constructed under Special Survey of tested materials and in accordance with the Secretary's letters, approved plans and Rule requirements. The materials and workmanship are good. The engine was found satisfactory when tested in the shop under the following conditions of loading: Full load, overload, Astern running Starting and manoeuvring. During the test bed trials the Engine was directly coupled to a Weener Froude Dynamometer. This Engine is, in our opinion, suitable to be installed in a vessel for the purpose of main propulsion. The details of the crankshaft are in accordance with the requirements of the Rules. Torsional vibration characteristics have been approved for a service speed of 300 R.P.M. in Secretary's letter of the 20th July, 1949.  
 Copies of Air Receiver and Crankshaft forging certificates attached herewith. ✓

2/3 of £48  
 The amount of Entry Fee ... £ 32 : 0 : 0  
 Special ... £ : :  
 Donkey Boiler Fee... £ : :  
 Travelling Expenses (if any) £ 5 : 0 : 0.

When applied for 15-7-49  
 When received 19

Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute...  
 Assigned... See F.E. Mch. 1949



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