

RECORDED NEW YORK JUN 25 1930

Rpt. 4b

REPORT ON OIL ENGINE MACHINERY

No. 31406

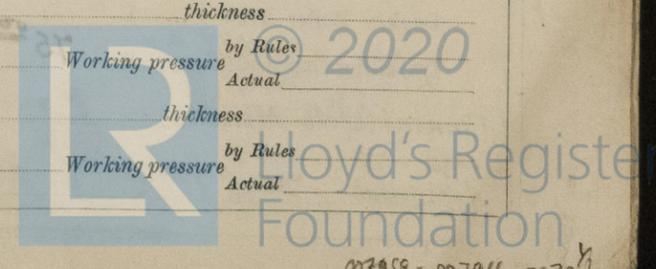
12 JUL 1930

Date of writing Report 2 April 1930 When handed in at Local Office 10 Port of New York
 No. in Survey held at Schenectady, N.Y. Date, First Survey 14 Feb Last Survey 31 Mar 1930
 Reg. Book. Single on the Empire Screw vessel "L.T.C. No 2" Number of Visits 6
 Built at Quincy, Mass By whom built Bethlehem S. B. Corp Yard No. 1437 When built 1930
 Engines made at Cleveland, O. By whom made Winton Engine Co. Engine No. 3735 When made 1930
 Donkey Boilers made at ✓ By whom made ✓ Boiler No. ✓ When made ✓
 Shaft Horse Power 500 Owners Lake Tankers Co Port belonging to WILMINGTON DEL.
 Nom. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted YES
 Trade for which vessel is intended INLAND WATERS.

Tons { Gross 548 Net 321

OIL ENGINES, &c.—Type of Engines 2 or 4 stroke cycle Single or double acting
 Maximum pressure in cylinders _____ Diameter of cylinders _____ Length of stroke _____ No. of cylinders _____ No. of cranks _____
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge _____ Is there a bearing between each crank _____
 Motor Revolutions per minute 200 Flywheel dia. _____ Weight _____ Means of ignition _____ Kind of fuel used _____
 Crank Shaft, dia. of journals _____ as per Rule _____ as fitted _____ Crank pin dia. _____ Crank Webs _____ Mid. length breadth _____ Mid. length thickness _____ Thickness parallel to axis _____ Thickness around eyehole _____
 Flywheel Shaft, diameter _____ as per Rule _____ as fitted _____ **MOTOR Intermediate Shaft**, diameter _____ as per Rule 5.43" as fitted 7" Thrust Shaft, diameter at collars _____ as per Rule 5.51 as fitted 6.5 ✓
 Tube Shaft, diameter _____ as per Rule _____ as fitted _____ Screw Shaft, diameter _____ as per Rule 5.88 as fitted 6.5 ✓ Is the { tube screw } shaft fitted with a continuous liner { YES }
 Bronze Liners, thickness in way of bushes _____ as per Rule 47 as fitted 56 ✓ Thickness between bushes _____ as per rule 35 as fitted 37.5 ✓ Is the after end of the liner made watertight in the propeller boss YES If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner YES
 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 the tube shaft No If so, state type ✓ Length of Bearing in Stern Bush next to and supporting propeller 26"
 Propeller, dia. 90" Pitch 70" No. of blades 4 Material CAST STEEL whether Moveable No Total Developed Surface _____ sq. feet
 Method of reversing Engines _____ Is a governor or other arrangement fitted to prevent racing of the engine when declutched _____ Means of lubrication _____
 Thickness of cylinder liners _____ Are the cylinders fitted with safety valves _____ 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 _____
 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. _____ Diameter _____ Stroke _____ Can one be overhauled while the other is at work _____
 Pumps connected to the Main Bilge Line { No. and Size _____ How driven _____ }
 Ballast Pumps, No. and size _____ Lubricating Oil Pumps, including Spare Pump, No. and size _____
 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 Suctions 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. _____ No. of stages _____ Diameters _____ Stroke _____ Driven by _____
 Auxiliary Air Compressors, No. _____ No. of stages _____ Diameters _____ Stroke _____ Driven by _____
 Small Auxiliary Air Compressors, No. _____ No. of stages _____ Diameters _____ Stroke _____ Driven by _____
 Scavenging Air Pumps, No. _____ Diameter _____ Stroke _____ Driven by _____
 Auxiliary Engines crank shafts, diameter _____ as per Rule _____ as fitted _____

AIR RECEIVERS:—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 _____
 High Pressure Air Receivers, No. _____ Cubic capacity of each _____ Internal diameter _____ thickness _____
 Seamless, lap welded or riveted longitudinal joint _____ Material _____ Range of tensile strength _____ Working pressure by Rules _____ Actual _____
 Starting Air Receivers, No. _____ Total cubic capacity _____ Internal diameter _____ thickness _____
 Seamless, lap welded or riveted longitudinal joint _____ Material _____ Range of tensile strength _____ Working pressure by Rules _____ Actual _____



IS A DONKEY BOILER FITTED? No

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 GENERATOR + MOTOR (If not, state date of approval)

FORWARDED WITH N. YK RPT 31406 Receivers

Separate Tanks

Donkey Boilers

General Pumping Arrangements YES

Oil Fuel Burning Arrangements

SPARE GEAR. A 19

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

FOR GENERAL DESCRIPTION OF ELECTRIC APPARATUS FOR PROPULSION OF VESSEL PLEASE SEE FOLLOWER SHEET HEREWITH

The foregoing is a correct description, General Electric Company

By D. W. Niven Manufacturer.

Manager, Federal & Marine Dept.

Dates of Survey while building: During progress of work in shops -- 1930 Feb 14, 24 March 8, 11, 19, 31; During erection on board vessel -- APRIL 22, 23, 29, MAY 26, 7, 14, 20, 23, 28, JUNE 3, 5, 9, 10, 12; Total No. of visits 6 + 16.

Dates of Examination of principal parts: Cylinders, Covers, Pistons, Rods, Connecting rods, Generator shafts, Flywheel shaft, Thrust shaft, Motor intermediate shaft, Tube shaft, Screw shaft, Propeller, Stern tube, Engine seatings, Engines holding down bolts, Completion of fitting sea connections, Completion of pumping arrangements, Engines tried under working conditions, Crank shaft, Material, Identification Mark, Flywheel shaft, Material, Identification Mark, Thrust shaft, Material, Identification Mark, Motor intermediate shafts, Material, Identification Marks, Tube shaft, Material, Identification Mark, Screw shaft, Material, Identification Mark.

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

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 YES If so, state name of vessel BETHLEHEM S. B. CORP 1436.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Main + Auxiliary Generators, the double armature Motor, + the Control Board for the propulsion of this vessel have been built under Special Survey in accordance with the Rules + approved plans, + the workmanship + material are good.

They have been forwarded to Quincy to be fitted on board, + when this has been done in accordance with the Rules + to the satisfaction of the Surveyor + the machinery has been satisfactorily tried at full power, it will be eligible, in my opinion, to receive the notation + LMC (with date) + the notation 2 OIL ENGINES CONNECTED TO ELEC. MOTOR & Sc. SHAFT.

THE MAIN AND AUXILIARY GENERATORS AND MOTOR HAVE BEEN FITTED IN THE VESSEL QUALITY OF WORKMANSHIP + MATERIAL IS GOOD THEY HAVE BEEN EXAMINED UNDER WORKING CONDITIONS AND FOUND SATISFACTORY. IN THE OPINION OF THE UNDER SIGNED, THEY ARE ELIGIBLE

TO HAVE THE RECORD OF + LMC 6-30. WITH THE NOTATION 2 OIL ENGINES CONNECTED TO ELECTRIC MOTOR YSC SHAFT.

INSTALLATION OF MACHINERY \$100.00 24 JUNE 1930. The amount of Entry Fee: Special ... \$100.00; Donkey Boiler Fee ... \$75.00; Travelling Expenses (if any) ... \$75.00.

John S. Heck, Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned + LMC 6-30. 2 Oil engines connected to Elec. Motor + Sc. Shafts

CERTIFICATE WRITTEN.



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Rpt. No. in Reg. Book. Date of v. Built in Engines Donkey Brake L. Nom. H. Trade for OIL ENGINES Maximum Span of be Revolution Crank Sh Flywheel Tube Sh Bronze L propeller bo If the liner If two line shaft Propeller Method of Forced non-conduct Cooling W Bilge Pum Pumps com Ballast Pu Are two ind Pumps, No. In Holds, & Independe Are all the led from eas Are all Sea Are they fixe Are they each What pipes p What pipes p Are all Pipe Is the arrang compartment If a wood ve Main Air C Auxiliary A Small Anxi Scavenging Auxiliary AIR RE Can the inter High Press Seamless, tap Starting Ai Seamless, tap ENGLAND.

IS A DONKEY BOILER FITTED? No

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 Yes Receivers No Separate Tanks
Donkey Boilers General Pumping Arrangements Oil Fuel Burning Arrangements

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied

The foregoing is a correct description,
The Winton Engine Co. - J. S. H. Manufacturer.

Dates of Survey 1930 Feb. 14, 24, 25, 26, 27, 28 March 5, 11, 13, 24, 26, 31 April 2, 3.
During progress of work in shops -
During erection on board vessel - APRIL 22, 23, 29. MAY 2, 6, 7, 14, 20, 23, 28. JUNE 3, 5, 9, 10, 12.
Total No. of visits 14 & 16

Dates of Examination of principal parts - Cylinders Feb. 14 - Mar. 26 Covers Feb. 14 - Mar. 26 Pistons Mar. 26 Rods Mar. 26 Connecting rods Feb. 14 - Mar. 26
Crank shaft Mar. 5 & 13 Flywheel shaft Thrust shaft Intermediate shafts Tube shaft
Screw shaft Propeller Stern tube Engine seatings Engines holding down bolts 21-5-30
Completion of fitting sea connections Completion of pumping arrangements Engines tried under working conditions 12-6-30
Crank shaft, Material O.H. Steel Identification Mark Lloyd's 2101-2102 Flywheel shaft, Material Identification Mark
Thrust shaft, Material Identification Mark G.D. Intermediate shafts, Material Identification Marks
Tube shaft, Material Identification Mark Screw shaft, Material Identification Mark

Is the flash point of the oil to be used over 150° F. YES
Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with YES
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 YES If so, state name of vessel "LTC. NO 1"

General Remarks (State quality of workmanship, opinions as to class, etc.)

The above mentioned engines (Port & Starboard) have been built under Special Survey, and on completion were tested under full and intermediate loads in the Shop. The materials and workmanship were found to be sound and efficient. When the engines have been fitted on board the vessel and tried out, to the satisfaction of the Society's surveyors, she will, in my opinion, be eligible for record L.M.C. (with date) in the Register Book. (The engines are intended to be used in connection with the electric system of propulsion)

Enclosed herewith is copy of crank shaft drawing, forging reports Nos. 2101, 2102, also copies of certificates for air receivers Nos. 420, 428, 437, 442.

THESE ENGINES HAVE BEEN FITTED ON BOARD QUALITY OF WORKMANSHIP MATERIALS GOOD. THEY HAVE BEEN EXAMINED UNDER WORKING CONDITIONS AND FOUND SATISFACTORY, AND IN THE OPINION OF THE UNDERSIGNED ELIGIBLE TO HAVE RECORD OF L.M.C. 6-30 WITH NOTATION "BOILER ENGINE CONNECTED TO ELECTRIC MOTOR & SC. SHAFT"

Fee charged as per agreement with Winton Engine Co. Request No. 194.
The amount of Entry Fee ... £ : : When applied for.
Special ... £ : : 19
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ 57.50 : : 17-6-1930
NEW YORK JUL 2 1930

L. S. H.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
Assigned + L.M.C. 6-30. 2 Oil Engines connected to Elec. Motors & Sc. Shafts.
TUE. 16 DEC 1930

pt. 9a.

Port of NEW YORK

NEW YORK JUN 25 1930
Continuation of Report No. 31406 dated 2nd April 1930 on the

ELECTRICAL MACHINERY FOR PROPULSION
BETHLEHEM S. B. Co. 1437

The propulsion equipment consists of two Winton Diesel engines, each direct connected to a General Electric Co. generator rated LDRM 7-A - 6 Pole - 210 k.w. - 375 R.P.M., 250 volt, shunt wound. These two generators supply power to the main motor, which is of the double armature type and each motor is rated LDRM-9-A - 8 Poles - 250 H.P. - 200 R.P.M., 240 volts, total 500 H.P. 500 volts.

The two main generators are operated in series with the two armatures of the double motor. The generators are operated at constant speed, the speed of the motor being obtained by varying the voltage of the generator, this being the variable voltage system of control.

Reversal is obtained by reversing the fields of the main generator.

In addition to the above, there are two auxiliary generators or exciters, rated MPC 6 - 20 k.w. - 375 R.P.M. 125 volts; one of each of these is mounted on the shaft extension of each main generator. These auxiliary generators are exciters operating at constant speed and constant voltage, and provide excitation for the main generators and motors and power for the various motor driven auxiliaries.

The forgings have been tested as per Rules, the generators and motors examined during construction and the workmanship and material found good.

The generators and electric motor have been tested at the works by being run against each other and under these conditions were found good.

J. S. H.

The Surveyors are requested to file this report in the office of the Committee's Minute.



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