

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

Port of New York

No. in Survey held at Schenectady, N.Y.  
Reg. Book.

Date, First Survey 14 Feb Last Survey 31 Mar 1930.

Number of Visits 6.

Single  
on the ~~Steam~~  
Engine  
Screw vessel

"L.T.C. No 2"

Tons { Gross 548  
Net 321

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.

## OIL ENGINES, &amp;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

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

Thickness parallel to axis

Flywheel Shaft, diameter as per Rule  
as fitted

MOTOR

Intermediate Shaft, diameter as per Rule  
as fitted

Mid. length thickness

Thickness around eyehole

Tube Shaft, diameter as per Rule  
as fittedScrew Shaft, diameter as per Rule  
as fittedIs the tube  
screwThrust Shaft, diameter at collars as per Rule  
as fittedBronze Liners, thickness in way of bushes as per Rule  
as fittedThickness between bushes as per Rule  
as fitted

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 YES

If two liners are fitted, is the shaft lapped or protected between the liners YES

Is an approved Oil Gland or other appliance fitted at the after end of the tube

shaft No If so, state type YES

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, &amp;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

FORWARDED WITH

PLANS. Are approved plans forwarded herewith for, Shafting

N. YK RPT 31406 Receivers

Separate Tanks

Donkey Boilers

General Pumping Arrangements

YES

Oil Fuel Burning Arrangements

SPARE GEAR.

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 *W. D. 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 14 Feb Flywheel shaft ✓ Thrust shaft 3-3-30 MOTOR 14 Feb. Tube shaft ✓  
Screw shaft 24-4-30 Propeller 24-4-30 Stern tube 29-4-30 Engine seatings 9-5-30 Engines holding down bolts 21-5-30  
Completion of fitting sea connections 9-5-30 Completion of pumping arrangements 9-6-30 Engines tried under working conditions 12-6-30  
GENERATOR Crank shaft, Material Steel Identification Mark LLOYD'S JSH 2.14.30 Flywheel shaft, Material Identification Mark  
Thrust shaft, Material STEEL Identification Mark LLOYD'S 1053 E.W. MOTOR Intermediate shafts, Material STEEL Identification Marks LLOYD'S No 1048 E.W. 17.1.30.  
Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material STEEL 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

When applied for,

Special ... 9.9.30 ... £ \$100.00

April 19 30

Donkey Boiler Fee ... £

When received,

Travelling Expenses (if any) ... £

75.00

175.00 May 9th 1930

Engineer Surveyor to Lloyd's Register of Shipping.

*John S. Heck*

Committee's Minute

TUE. 16 DEC 1930

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

CERTIFICATE WRITTEN.



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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 Shipping 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. Patton* Manufacturer.

Dates of Examination of principal parts—Cylinders Feb. 14-26 Covers Mar. 26 Pistons Mar. 26 Rods Mar. 26 Connecting rods Feb. 14-26  
 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 12-12-29 Identification Mark G.D.  
 Thrust shaft, Material Identification Mark 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 "2 OIL ENGINES 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 ... .. £	When received
Travelling Expenses (if any) £	17.50

*E. B. Samuel*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned + L.M.C. 6-30. 2 Oil Engines connected to Elec. Motor & Sc. Shaft.

apt. 9a.

Port of NEW YORK

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 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.*