

REPORT ON STEAM TURBINE MACHINERY. No. 38164

4a.

Date of writing Report 17 JAN 1938 When handed in at Local Office 18 JAN 1938 Port of New York
 No. in Survey held at Boston, Mass Date, First Survey 12 Aug 1938
 Reg. Book. Bethlehem S.B. Corp. Hull # 4307 (Number of Visits 1) Tons ^{Gross} 4307 _{Net} 1938
 on the Sparrow Pt. Md. By whom built Bethlehem S.B. Corp. Yard No. 4307 When built 1938
 Engines made at Quincy, Mass By whom made do Engine No. 4307 When made 1938
 Boilers made at do By whom made do Boiler No. do When made do
 Shaft Horse Power at Full Power 3600 Owners Standard Oil Co of New Jersey Port belonging to do
 Nom. Horse Power as per Rule 938.985 Is Refrigerating Machinery fitted for cargo purposes Yes
 Trade for which Vessel is intended Carrying Petroleum in bulk Is Electric Light fitted Yes

STEAM TURBINE ENGINES, &c. — Description of Engines Steam Turbines Double Reduction Gear
Cam Compound Impulse reaction type tubal.

No. of Turbines 2 Ahead 1 Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2
 Astern 1 double reduction geared
 direct coupled to Alternating Current Generator phase ✓ periods per second ✓ rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;
 for supplying power for driving ✓ Propelling Motors, Type ✓
 rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute. Direct coupled, single or double reduction geared to ✓ propelling shafts.

TURBINE BLADING.	H.P.			I.P. L.P. (cm)			L.P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	3/4	14 1/2	5	1 9/32	20 27/32	1st	2 9/32	28 12/32	13th	3/4	33 7/16	Stage
2ND	15/16	14 7/8	5	1 5/16	21 13/32	2nd	2 35/64	29 9/16	14th	1 1/4	33 15/16	1
3RD	1 1/16	15 1/8	4	1 11/32	21 15/16	3rd	2 27/32	30 25/32	15th	1 3/4	34 7/16	Stage
4TH	1 1/4	15 1/2	4	1 3/8	22 15/32	4th	3 3/16	32 3/8	16th	2 1/4	32 15/16	Stage
5TH	1 9/16	16 1/8	4	1 13/32	23 11/16	5th	3 15/32	33 1/2	17th	4	34 11/16	2
6TH	Impulse	25 1/16	1st Row	1 29/64	23 19/32	6th	3 47/64	34 23/32	18th			
7TH	Stage	25 13/16	2nd n	1 31/64	24 1/8	7th	4 1/32	35 3/32	19th			
8TH				1 7/32	24 31/32	8th	4 19/32	37 3/16	20th			
9TH				1 9/16	25 1/32	9th	5 1/32	38 7/16	21st			
10TH				1 41/64	25 27/32	10th	6 1/4	40	22nd			
11TH				1 27/32	26 23/32	11th	6 55/64	41 21/64	23rd			
12TH				2 1/16	27 5/8	12th						

Shaft Horse Power at each turbine { H.P. 1800 ✓ I.P. 5500 ✓ 1st reduction wheel 865
 L.P. 1800 ✓ L.P. 3500 ✓ main shaft 85
 Rotor Shaft diameter at journals { H.P. 4 1/2" ✓ I.P. 4 1/2" ✓ L.P. 4 1/2" ✓
 Pitch Circle Diameter { 1st pinion 8.00 116.25 1st reduction wheel 49.125 145.50
 2nd pinion 13.947 139.47 main wheel 135.53
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 11 3/4" 1st reduction wheel 12 1/4
 2nd pinion 21 1/2" main wheel 23" + 24"
 Flexible Pinion Shafts, diameter { 1st None ✓ Pinion Shafts, diameter at bearings { External 1st 4 1/2" 2nd 11" diameter at bottom of pinion teeth { 1st 7.712 11.337
 2nd 5 3/4" Internal 1st 7 3/8" 2nd 12.90 12.90
 Wheel Shafts, diameter at bearings { 1st 7" ✓ diameter at wheel shroud, { 1st ✓ Generator Shaft, diameter at bearings ✓
 2nd 13" 16 1/2" ✓ main ✓ Propelling Motor Shaft, diameter at bearings ✓
 Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule as fitted
 Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the { tube screw } shaft fitted with a continuous liner { 72
 Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule 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 the tube
 shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet.
 Can the H.P. or L.P. Turbine exhaust direct to the

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine No. and size
 Condenser Yes No. of Turbines fitted with astern wheels One Feed Pumps How driven

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 Engine and Boiler Room In Pump Room

In Holds, &c. Independent Power Pump Direct Suctions to the Engine Room

Main Water Circulating Pump Direct Bilge Suctions, No. and size
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

Bilges, No. and size Are they fitted with Valves or Cocks

Are the Bilge Suctions in the Machinery Space 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 the Overboard Discharges above or below the deep water line

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Blow Off Cocks fitted with a spigot and brass covering plate
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel How are they protected

What pipes pass through the bunkers 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

BOILERS, &c.—(Letter for record)

Total Heating Surface of Boilers

Is Forced Draft fitted

No. and Description of Boilers

Working Pressure

Is a Report on Main Boilers now forwarded?

Is a Donkey
an Auxiliary 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
(If not state date of approval)

Main Boilers

Auxiliary Boilers

Donkey Boilers

Superheaters

General Pumping Arrangements

Oil Fuel Burning Arrangements

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

BETHLEHEM SHIPBUILDING CORPORATION, LTD.
FORE RIVER PLANT

The foregoing is a correct description,

J. E. Burkhardt
Chief Engineer

Manufacturer.

Dates of Survey while building During progress of
work in shops - -
During erection on
board vessel - - -
Total No. of visits

Dates of Examination of principal parts—Casings *12 Aug. 1937* Rotors *12 Aug. 1937* Blading *12 Aug. 1937* Gearing

Wheel shaft Thrust shaft Intermediate shafts Tube shaft Screw shaft

Propeller Stern tube Engine and boiler seatings Engine holding down bolts

Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength *Steel 95,000 L.S.*

Identification Mark *Not marked*

Flexible Pinion Shaft, Material and tensile strength

Identification Mark

Pinion shaft, Material and tensile strength

Identification Mark

1st Reduction Wheel Shaft, Material and tensile strength

Identification Mark

Wheel shaft, Material Identification Mark

Thrust shaft, Material Identification Mark

Intermediate shafts, Material Identification Marks

Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks

Steam Pipes, Material Test pressure

Date of test

Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F.

Have the requirements of the Rules for the use of oil as fuel 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 a duplicate of a previous case *No.* If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.) *These turbines have not been built under Special Survey but they have been examined and they comply with the Rules and the workmanship and material are good. The forgings + steel castings have been tested by the American Bureau of Shipping. These turbines have been forwarded to the shipyard for fitting on board + when this has been done in accordance with the Rules + to the satisfaction of the Surveyor, the machinery of the vessel will be eligible, in my opinion, to receive the notation L.M.C. with date.*

The amount of Entry Fee ... £ *Inclusive:* When applied for,
Special ... £ *Per* 19
Donkey Boiler Fee ... £ *to be*
Travelling Expenses (if any) £ *Charged:* When received,
As per Owner 19

John S. Heck

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **NEW YORK AUG 31 1938**

Assigned *See Bul. Rpt. 6600*



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Foundation