

# "Esso Baltimore"

## REPORT ON STEAM TURBINE MACHINERY. No. 7421

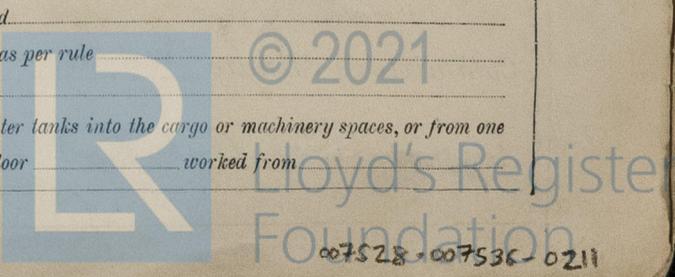
Date of writing Report 11 Jan 1938 When handled in at Local Office 11 Jan 1938 Port of Philadelphia Received at London Office NOV - 5 1938  
 No. in Survey held at Quincy Mass. Date, First Survey 9 Last Survey 17 Nov 1937/1938  
 Reg. Book. Bethlehem SB Corp Ltd Hull 4308 (Number of Visits 1)  
 on the Quincy Mass. Tons <sup>Gross</sup> 4308 <sub>Net</sub> 1938  
 Built at Spangor P. Md By whom built Bethlehem SB Corp Ltd Yard No. 4308 When built 1938  
 Engines made at Quincy Mass By whom made " Engine No. " When made "  
 Boilers made at " By whom made " Boiler No. " When made "  
 Shaft Horse Power at Full Power 3600 Owners Standard Oil Co of New Jersey Port belonging to "  
 Nom. Horse Power as per Rule " Is Refrigerating Machinery fitted for cargo purposes " Is Electric Light fitted Yes  
 Trade for which Vessel is intended Carrying Petroleum in bulk.

**TEAM TURBINE ENGINES, &c.**—Description of Engines Steam Turbines, Double reduction gear  
Single compound impulse machines type turbines  
 No. of Turbines Ahead 2 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 LADING.	H.P.			I.P. (cont'd)			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 1/4"	14 1/2"	5	19 3/32"	20 27/32"	1	29 3/32"	28 7/32"	13	3 1/4"	33 7/16"	Stage
2ND "	1 1/16"	14 7/8"	5	1 5/16"	21 13/32"	2	2 3/64"	29 9/16"	14	1 1/4"	33 15/16"	1
3RD "	1 1/8"	15 1/8"	4	1 11/32"	21 15/16"	3	2 27/32"	30 25/32"	15	1 3/4"	34 7/16"	"
4TH "	1 1/4"	15 1/2"	4	1 3/8"	22 47/32"	4	3 3/16"	32 3/8"	16	2 1/4"	32 15/16"	Stage
5TH "	1 9/16"	16 1/8"	4	1 13/32"	23 1/16"	5	3 15/32"	33 1/2"	17	4"	32 1/16"	2
6TH "	Impulse	25 1/16"	1 row	1 29/64"	23 19/32"	6	3 47/64"	34 29/32"	18			
7TH "	Magn.	25 3/16"	2 rows	1 31/64"	24 1/8"	7	4 1/32"	35 29/32"	19			
8TH "				1 17/32"	24 21/32"	8	4 19/32"	37 3/16"	20			
9TH "				1 9/16"	25 7/32"	9	5 11/32"	38 9/16"	21			
10TH "				1 11/64"	25 27/32"	10	6 1/64"	40	22			
11TH "				1 27/32"	26 23/32"	11	6 5/64"	41 21/64"	23			
12TH "				2 1/16"	27 7/8"	12						

Shaft Horse Power at each turbine { H.P. 1800 ✓ I.P. 1800 ✓ L.P. 1800 ✓ } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 1500 ✓ I.P. 1500 ✓ L.P. 1500 ✓ }  
 Rotor Shaft diameter at journals { H.P. 4 1/2" ✓ I.P. 4 1/2" ✓ L.P. 8" ✓ } Pitch Circle Diameter { 1st pinion 8.00" ✓ H.P. 11.625" ✓ L.P. 11.625" ✓ } 1st reduction wheel 149.125" ✓ L.P. 145.50" ✓ } Width of Face { 1st reduction wheel 17" overall ✓ }  
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 11 3/4" ✓ } 1st reduction wheel 78" 12 1/4" ✓ }  
 Flexible Pinion Shafts, diameter { 1st None } Pinion Shafts, diameter at bearings { External 1st 11 1/2" ✓ } diameter at bottom of pinion teeth { 1st 7 7/12" ✓ }  
 Wheel Shafts, diameter at bearings { 1st 7" ✓ } diameter at wheel shroud, { 1st 11" ✓ } Propelling Motor Shaft, diameter at bearings "  
 Intermediate Shafts, diameter { as per rule " } Thrust Shaft, diameter at collars { as per rule " } Tube Shaft, diameter { as per rule " }  
 Screw Shaft, diameter { as per rule " } Is the { tube } shaft fitted with a continuous liner { as per rule " } Bronze Liners, thickness in way of bushes { as per rule " }  
 Thickness between bushes { as per rule " } 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 " } 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.  
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine " Can the H.P. or I.P. Turbine exhaust direct to the Condenser Yes ✓ No. of Turbines fitted with astern wheels 1 Feed Pumps { No. and size " }  
 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 Holds, &c. " }  
 Main Water Circulating Pump Direct Bilge Suctions, No. and size " } 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 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 they fitted with Valves or Cocks " }  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold 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 " }



**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 } Boiler fitted? \_\_\_\_\_ If so, is a report now forwarded? \_\_\_\_\_  
 { an Auxliary }

Plans. Are approved plans forwarded herewith for Shafting \_\_\_\_\_ Main Boilers \_\_\_\_\_ Auxiliary Boilers \_\_\_\_\_ Donkey Boilers \_\_\_\_\_  
 (If not state date of approval)

Superheaters \_\_\_\_\_ General Pumping Arrangements \_\_\_\_\_ Oil Fuel Burning Arrangements \_\_\_\_\_

Spare Gear. State the articles supplied:—

BETHLEHEM SHIPBUILDING CORPORATION, LTD.  
 FORE RIVER PLANT, QUINCY, MASS.

The foregoing is a correct description,

*J. E. Bunker*  
 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 17 Nov 1937 Rotors 17 Nov 1937 Blading 17 Nov 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 pumping arrangements \_\_\_\_\_ Boilers fixed \_\_\_\_\_ Engines tried under steam \_\_\_\_\_

Main boiler safety valves adjusted \_\_\_\_\_ Thickness of adjusting washers \_\_\_\_\_

Rotor shaft, Material and tensile strength *Steel 9500 lbs. (min)* 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 \_\_\_\_\_

Is this machinery a duplicate of a previous case *Yes*. 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 & they comply with the rules, the workmanship & 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, and to the satisfaction of the Surveyor, the machinery of the vessel will be eligible, in my opinion to receive the notation LMC with date.*)

The amount of Entry Fee	Inclusive fee:	When applied for,
Special ...	... to be charged:	19...
Donkey Boiler Fee ...	£ against	When received,
Travelling Expenses (if any) £	Gunnery.	19...

*W. T. C. ...*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute NEW YORK OCT 26 1938

Assigned *See Bal. Rpt. 6615* *Jwb*

