

REPORT ON STEAM TURBINE MACHINERY. No. 6615

Rpt. 4a

Received at London Office NOV - 5 1938

Date of writing Report 4th October, 1938 When handed in at Local Office 4th October, 1938 Port of Baltimore, Maryland
 No. in Survey held at Baltimore, Maryland Date, First Survey 2nd February, 1938 Last Survey 14th September 1938
 Reg. Book. 74127 on the Steel Single Screw Tanker "ESSO BALTIMORE" (Number of Visits 15) Tons Gross 7949
Net 4711
 Built at Sparrows Point, Maryland By whom built Bethlehem S.B. Corp. Yard No. 4308 When built 1938
 Engines made at Quincy, Mass. By whom made Bethlehem S.B. Corp. Engine No. 4308 When made 1938
 Boilers made at Dansville, New York By whom made Foster Wheeler Corp. Boiler No. B602-3 When made 1938
 Shaft Horse Power at Full Power 3600 Owners Standard Oil Co. of New Jersey Port belonging to Wilmington, Del.
 Nom. Horse Power as per Rule 938 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
 Trade for which Vessel is intended Carriage of petroleum in bulk.

STEAM TURBINE ENGINES, &c. — Description of Engines Cross compound Impulse Reaction type Turbine
 No. of Turbines Two Ahead One Astern One propelling shafts. No. of primary pinions to each set of reduction gearing Two
 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.			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	2 9/32"	28 17/32	13th	1 9/32"	20 27/32	1st	3/4"	33 7/16"	Stage
2ND "	15/16"	14 7/8"	5	2 35/64"	29 9/16	14th	1 5/16"	21 13/32	2nd	1 1/2"	33 15/16"	One
3RD "	1 1/16"	15 1/8"	4	2 27/32"	30 25/32	15th	1 11/32"	21 15/16	3rd	1 3/4"	34 7/16"	Stage
4TH "	1 1/4"	15 1/2"	4	3 3/16"	32 3/8	16th	1 3/8"	22 15/32	4th	2 1/4"	32 15/16"	Stage
5TH "	1 9/16"	16 1/8"	4	3 15/32"	33 1/2	17th	1 13/32"	23 1/16	5th	4"	34 11/16"	Two
6TH Impulse Stage	11/16"	25 1/16"	1st Row	3 47/64"	34 23/32	18th	1 29/64"	23 19/32	6th			
7TH "	1 3/16"	25 13/16"	2nd Row	4 1/32"	35 29/32	19th	1 31/64"	24 1/8	7th			
8TH "				4 19/32"	37 3/16	20th	1 17/32"	24 21/32	8th			
9TH "				5 11/32"	38 9/16	21st	1 9/16"	25 7/32	9th			
10TH "				6 1/64"	40"	22nd	1 41/64"	25 27/32	10th			
11TH "				6 55/64"	41 21/32	23rd	1 27/32"	26 23/32	11th			
12TH "							2 1/16"	27 5/8	12th			

Shaft Horse Power at each turbine { H.P. 1800 I.P. 1800 L.P. 1800 } H.P. 5500 I.P. 5500 L.P. 5500
 Rotor Shaft diameter at journals { H.P. 4 1/2" I.P. 4 1/2" L.P. 8" } H.P. 8.00 I.P. 11.625 L.P. 45.50
 Pitch Circle Diameter { 1st pinion H.P. 13.947 I.P. 13.4 L.P. 13.4 } 1st reduction wheel 135.600
 2nd pinion H.P. 13.4 I.P. 13.4 L.P. 13.4 } main wheel 135.600
 Width of Face { 1st reduction wheel 17" overall }
 2nd reduction wheel 29 1/2" working
 main wheel 32" overall

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 11 3/4" } 1st reduction wheel 12 1/2"
 { 2nd pinion 21 1/2" } main wheel 23 & 24"
 Flexible Pinion Shafts, diameter { 1st None } Pinion Shafts, diameter at bearings { 1st 4 1/2" } diameter at bottom of pinion teeth { 1st H.P. 7.712 }
 { 2nd 5 3/4" } { 2nd Solid } { 2nd 7 3/8" } { 2nd H.P. 12.90 }
 { 2nd 7" } { 2nd 11" } { 2nd 11" } { 2nd L.P. 12.90 }

Wheel Shafts, diameter at bearings { 1st 7" } Generator Shaft, diameter at bearings -
 { main 13" } Fore 16 1/2" } Propelling Motor Shaft, diameter at bearings -
 { as per rule 13.6" } } Thrust Shaft, diameter at collars as per rule Kingsbury thrust approved
 Intermediate Shafts, diameter { as fitted 14 1/2" } Under collar 11" Dia. of collar 27"

Tube Shaft, diameter { as per rule - } as fitted 15.225 } Is the tube fitted with a continuous liner { Yes }
 as fitted - } as fitted 15 1/2" } Is the after end of the liner made watertight in the
 Bronze Liners, thickness in way of bushes { as per rule .79 } as fitted 15/16" } Thickness between bushes { as per rule .59 } as fitted 29/32 }
 as fitted - } as fitted 57/64" } Is the after end of the liner made watertight in the
 Propeller boss Yes If the liners in more than one length are the junctions made by fusion through the whole thickness of the liner One length

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 Stern bearing and ligam-vitae Length of Bearing in Stern Bush next to and supporting propeller 5' - 5"
 Propeller, diameter 18' - 6" Pitch 15' - 3" No. of Blades Four State whether Moveable Solid Total Developed Surface 112.2 square feet.

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes, 2 1/2" Eng'g Line Can the H.P. or I.P. Turbine exhaust direct to the
 Condenser Yes (6") No. of Turbines fitted with astern wheels One Feed Pumps { No. and size 4" suct - 2" dischg }
 { No. and size 3 1/2" suct - 3" dischg }
 How driven Main feed-turbine, Aux. feed steam recipg.
 Pumps connected to the Main Bilge Line { No. and size 12" suct. 1-12x8 1/2 x 12 Horzt. Gen. Ser. 3" suct. E.R. }
 { How driven Motor driven } Steam driven Motor 200 gals/m In forward pump room One 10x7x10 vert steam
 { No. and size 1-200 Gal/m }
 { How driven Motor } Vert steam 1-#2

Ballast Pumps, No. and size 1-2x8 1/2 x 12 Duplex in ER steam Lubricating Oil Pumps, including Spare Pump, No. and size 1-3x9x16 1-#2
1-2x10 Vert duplex P. Rm. 1-2x R2 Centf Motor Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
 Are two independent means arranged for circulating water through the Oil Cooler Elevated 1-4" Aft end ER 2-3" Fwd ER 1-3" for fathometer space Pump Room 1-4" Aft
 Pumps, No. and size: — In Engine and Boiler Room
 In Holds, &c. Forward Dry Hold 1-3", 1-2 1/2" Boatwain-Dry space, 1-4" Fore peak, 1-3" Fwd Cofferdam, 2-2 1/2" Aft Coff.

Main Water Circulating Pump Direct Bilge Suctions, No. and size One - 12" Independent Power Pump Direct Suctions to the Engine Room
 Bilges, No. and size 1-4" & 1-3" Aft ER Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes
 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 Yes
 Are all Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks Valves

Are they fitted sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes Are the Overboard Discharges above or below the deep water line below
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate spigot
 What pipes pass through the bunkers None How are they protected All run in special pipe tunnel
 What pipes pass through the deep tanks Three - 5" sea suct, 3" Coff' & 3" Cargo Hold Have they been tested as per rule Yes

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes
 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 Yes Is the Shaft Tunnel watertight None Is it fitted with a watertight door - worked from -

BOILERS, &c.—(Letter for record -) Total Heating Surface of Boilers Inc. Waterwalls & Economizers 9856 sq. ft. Superheaters 1320 sq. ft. Working Pressure 450 lbs. Superheaters 425

Is Forced Draft fitted Yes No. and Description of Boilers Two Foster-Wheeler Type "D" Steam generators

Is a Report on Main Boilers now forwarded? Yes

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 March 20, 1937 Main Boilers Auxiliary Boilers Donkey Boilers

Superheaters General Pumping Arrangements November 2, 1937 Oil Fuel Burning Arrangements

Has the spare gear required by the Rules been supplied Yes

SPARE GEAR.

State the principal additional spare gear supplied

One complete spare tail shaft and nut.

Steam throttle valve pilot and power springs (ahead & astern) also shuttle valve springs.

End cover adjustment liners - H.P. turbine. Thermometers. Numerous special bolts, studs and nuts i.e.

duplicates to engine special fastenings etc. and taper and screw dowels also cotter pins and special washers and auxiliary engine fittings.

* Note:- Upon completion of Hull #4309 a duplicate of this case, such plans as received at this office, will be forwarded along with report.

The foregoing is a correct description,

Bethlehem Shipbuilding Corporation, Ltd. Quincy, Mass. See Philadelphia Rpt. 7421 attached. Manufacturer.

Dates of Survey while building One - November 17th, 1937 Refer Philadelphia Rpt. No. 7421 attached herewith. During erection on board vessel Feb. 2, 3, 26; March 23, 31; April 8, 29; May 4, 17, 23; June 4, 10; August 8; Sept. 2, 14. Total No. of visits fifteen (15)

Dates of Examination of principal parts-Casings August 8th, 1938 Rotors August 8th, 1938 Blading August 8th, 1938 Gearing Sept. 14th, 1938 Wheel shaft August 8th, 1938 Thrust shaft August 8th, 1938 Intermediate shafts August 8th, 1938 Tube shaft April 29th, 1938 Screw shaft April 29th, 1938 Propeller May 4th, 1938 Stern tube April 29th, 1938 Engine and boiler seatings February 2nd, 1938 Engine holding down bolts August 8th, 1938

Completion of fitting sea connections May 4, 1938 Completion of pumping arrangements Sept. 2, 1938 Boilers fixed Feb. 26, 1938 Engines tried under steam Sept. 14, 1938

Main boiler safety valves adjusted Sept. 14, 1938 Thickness of adjusting washers None - lock nuts - Crosby Pat., 42,100 lbs. per hour HS 2

Rotor shaft, Material and tensile strength Nickel Molybdenum steel 95,000 (min) Identification Mark HP 29G612 H1 F2 4-37

Flexible Pinion Shaft, Material and tensile strength Nickel Moly' steel 90,000 min. Identification Mark 863 E1 5574 AB 12

Pinion shaft, Material and tensile strength Chrome Nickel Molybdenum HS & LS 100,000 min. Identification Mark 912 E 5579 AB 22

1st Reduction Wheel Shaft, Material and tensile strength O H steel 70,000 min. Identification Mark 76895 5574 AB 22

Wheel shaft, Material O H steel Identification Mark 76809-5575 AB 114 Thrust shaft, Material O H steel Identification Mark 76809-5575 AB 114

Intermediate shafts, Material O H steel Identification Marks 899B 9-37 AB 22 Tube shaft, Material - Identification Marks 872 E

Screw shaft, Material O H steel Identification Marks 897E 9-37 AB 22 Steam Pipes, Material O H steel Test pressure 1500 lbs. sq. in. affidavit - factory 900 lbs. in 675 lbs. in

Date of test May 17th & 23rd, 1938

Is an installation fitted for burning oil fuel Yes

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

Have the requirements of the Rules for the use of oil as fuel been complied with Yes

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo Oil tanker

If so, have the requirements of the Rules been complied with Yes

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with not desired.

Is this machinery a duplicate of a previous case. Yes If so, state name of vessel "R. W. Gallagher"

General Remarks (State quality of workmanship, opinions as to class, etc.) This machinery has not been built under Special Survey (Refer Pha. Report 7421 attached herewith) but has been installed on board the vessel, examined & found to comply with the Society's Rules and the workmanship and material as far as can be seen are good. All the machinery during construction is stated to have been specially surveyed by the Surveyors to the American Bureau of Shipping and the forgings and castings tested by the representatives of the American Bureau of Shipping and/or the United States Government in compliance with their rules and stamped by them for identification., the marks are inserted as above.

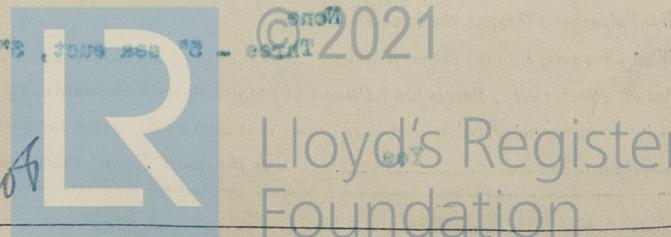
The Machinery has been satisfactorily tested at full working power and the electric welded gear cases and seatings afterwards examined and found good. It is now in good and safe working condition and eligible in my opinion to receive the notations L.M.C. 9-38 F D and Fitted for oil fuel 9-38, F.P. above 150° F. made in Register.

The amount of Entry Fee ... £ \$1000.00 : When applied for, Oct. 4th 1938 Special ... £ : Donkey Boiler Fee ... £ : Travelling Expenses (if any) ... £ : When received, 28/10 1938

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute NEW YORK OCT 26 1938

Assigned - L.M.C. 9-38



Note CH FD