

REPORT ON STEAM TURBINE MACHINERY. No. 6582

Date of writing Report July 19th 1938 When handed in at Local Office July 19th 1938 Port of Spartanburg, S.C. U.S.A.
 No. in Survey held at Spartanburg, S.C. Date, First Survey June 19th 1937 Last Survey July 12th 1938
 Reg. Book. 38042 on the Steel Single Screw Tanker 'Esso Baton Rouge' (Number of Voids 16) Tons { Gross 4989 Net 4738
 Built at Spartanburg Shipyard By whom built Bethlehem S.B. Corp Yard No. 4306 When built 1937-38
 Engines made at Quincy, Mass. By whom made Do Engine No. 4306 When made 1937
 Boilers made at Danville, New York By whom made Foster Wheeler Corp Boiler No. 3541-2 When made 1937
 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 238.98 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes
 Trade for which Vessel is intended Cargo of Petroleum in bulk

STEAM TURBINE ENGINES, &c.—Description of Engines Cross compound Impulse Reaction Type

No. of Turbines Ahead Two Direct coupled, single reduction geared } to ONE propelling shafts. No. of primary pinions to each set of reduction gearing Two
 Astern ONE double reduction geared }
 direct coupled to { Alternating Current Generator — phase — periods per second } rated — Kilowatts — Volts at — revolutions per minute;
 Direct Current Generator }
 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 7/32"	13 1/2"	1 9/32"	20 1/32"	1 1/2"	3/4"	33 1/4"	Stage
2ND	1 1/16"	14 7/8"	5	2 35/64"	29 1/16"	14 1/2"	1 5/16"	21 1/32"	2 1/2"	1 1/2"	33 1/8"	ONE
3RD	1 1/16"	15 1/8"	4	2 27/32"	30 25/32"	15 1/2"	1 9/32"	21 1/8"	3 1/2"	1 3/4"	34 1/16"	ONE
4TH	1 1/4"	15 3/8"	4	3 3/16"	32 3/8"	16 1/2"	1 7/8"	22 1/32"	4 1/2"	2 1/4"	32 1/8"	Stage
5TH	1 9/16"	16 1/8"	4	3 15/32"	33 1/2"	17 1/2"	1 7/8"	23 1/16"	5 1/2"	4"	34 1/16"	100
6TH	1 1/16"	25 1/16"	11 Rows	3 4/64"	34 23/32"	18 1/2"	1 29/64"	23 1/32"	6 1/2"			
7TH	1 1/16"	25 13/16"	2 Rows	4 1/32"	35 3/32"	19 1/2"	1 31/64"	24 1/8"	7 1/2"			
8TH				4 7/32"	37 3/16"	20 1/2"	1 7/32"	24 25/32"	8 1/2"			
9TH				5 1/32"	38 9/16"	21 1/2"	1 9/16"	25 7/16"	9 1/2"			
10TH				6 1/64"	40"	22 1/2"	1 41/64"	25 27/32"	10 1/2"			
11TH				6 5/64"	41 1/32"	23 1/2"	1 27/32"	26 23/32"	11 1/2"			
12TH							2 1/16"	27 7/8"	12 1/2"			

Shaft Horse Power at each turbine H.P. 1800 I.P. 5500 1st reduction wheel 865
 I.P. 1800 main shaft 85
 Rotor Shaft diameter at journals H.P. 4 1/2" Pitch Circle Diameter 11.625 1st reduction wheel 45.50 Width of Face 15 1/2" WORKING
 I.P. 8" 2nd pinion 13.4 main wheel 135.600 main wheel 29 1/4" WORKING
 L.P. 8" 2nd pinion 13.4 main wheel 135.600 main wheel 32" OVERALL
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 11 1/2" 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 7 1/2" diameter at bottom of pinion teeth 1st 15 1/2" WORKING
 2nd 5 1/4" Internal 1st 4 1/2" 2nd 7 1/2" diameter at bottom of pinion teeth 2nd 15 1/2" WORKING
 Wheel Shafts, diameter at bearings 1st 7" diameter at wheel shroud 1st 13 1/16" 2nd 13.8"
 main FORE AFT. 13.8"
 Intermediate Shafts, diameter as per rule 14 1/2" Thrust Shaft, diameter at collars as per rule 15.225 as fitted 15 1/4" Is the shaft fitted with a continuous liner Yes
 Tube Shaft, diameter as per rule 15.225 as fitted 15 1/4" Is the shaft fitted with a continuous liner Yes
 Bronze Liners, thickness in way of bushes as per rule 5/16" 5/16" Thickness between bushes as per rule 29/32" as fitted 29/32" 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 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 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 Stem bearing of Kignum-Vitec Length of Bearing in Stern Bush next to and supporting propeller 5 1/2"
 Propeller, diameter 18 1/6" Pitch 15.3 No. of Blades Four State whether Moveable Fixed Total Developed Surface 112.2 square feet.
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes 22 1/2" Exh. Pipe can be H.P. or L.P. Turbine exhaust direct to the condenser Yes
 Condenser Yes (6) No. of Turbines fitted with astern wheels ONE Feed Pumps No. and size 4" Suck - 2" Disch How driven Main Turbine, Aux Feed Steam Recip
 Pumps connected to the Main Bilge Line No. and size Main Cist - 12" Suct. 1-12 x 8 1/2 x 12 Horg Gen Set 3" Suct 1-12 x 8 1/2 x 12 Horg In End Pump Room 1-200 Gal/min 1-8 x 9 x 18 1/2 1-1/2
 How driven Motors Driven Steam Driven No. and size 1-200 Gal/min 1-8 x 9 x 18 1/2 1-1/2
 Ballast Pumps, No. and size 1-12 x 8 1/2 x 12 Duplex in ER Room Lubricating Oil Pumps, including Spare Pump, No. and size 1-2 1/2" R Cent Motor-ER Aft
 Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge 1-3" Fore P. Room 1-4" Aft P. Room
 Pumps, No. and size: In Engine and Boiler Room ELEVATED 1-1/4" AFT ER. 2-3" FURER 1-3" for fuel water In Pump Room 1-4" Aft P. Room
 In Holds, &c. Forward Dry Vats, 1-22"
 Main Water Circulating Pump Direct Bilge Suctions, No. and size One - 12" Independent Power Pump Direct Suctions to the Engine Room Yes
 Bilges, No. and size One - 4" & One 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 Yes
 Are they fixed 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 Yes
 What pipes pass through the bunkers None How are they protected All Run in Special Joints
 What pipes pass through the deep tanks Three - 5" Sea Suct, 3" Coff + 3" Cargo 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 Yes

BOILERS, &c.—(Letter for record)

Is Forced Draft fitted yes No. and Description of Boilers Two Foster-Wheeler Type D Steam Generators Total Heating Surface of Boilers Inc. Waterwalls Economizer 9856 sq. ft. Superheater 1320 sq. ft. Working Pressure 450 lbs. 15" Superheaters 425 lbs. 15"

Is a Report on Main Boilers now forwarded? yes

If so, is a report now forwarded? yes

Is a Donkey Boiler fitted? no

Is the donkey boiler intended to be used for domestic purposes only? yes

Plans. Are approved plans forwarded herewith for Shafting March 20th 1937

Main Boilers yes

Auxiliary Boilers yes

Donkey Boilers yes

Superheaters yes

General Pumping Arrangements Nov 2nd 1937

Oil Fuel Burning Arrangements yes

SPARE GEAR.

Has the spare gear required by the Rules been supplied? yes

State the principal additional spare gear supplied:—

One Complete Spare Tailshaft + nut. Steam Throttle valve (plus + power springs (ahead + astern) also Throttle Valve Spring End cover adjustment liners + HP. turbine. Thermometer. Numerous special bolts. Shaft + nut 12. Duplicate of engine special fastenings & also Taper + screw downer also cotter pins, special washer and Auxiliary engine fittings

The foregoing is a correct description,

Bethlehem Shipbuilding Corporation, Ltd., Quincy, Mass. See New York Report N° 38163 attached. Manufacturer.

Dates of Survey while building August 12th 1937 June 19th 1937 to July 12th 1938 15 visits

Dates of Examination of principal parts—Casings Jan 21st 1938 Rotors Jan 21st 1938 Blading Jan 21st 1938 Gearing July 6th 1938

Wheel shaft June 29th 1938 Thrust shaft Feb 2nd 1938 Intermediate shafts Feb 2nd 1938 Tube shaft Feb 2nd 1938 Screw shaft Oct 20th 1937

Propeller Oct 20th 1937 Stern tube Oct 14th 1937 Engine and boiler seatings June 19th 1937 Engine holding down bolts Feb 4th 1938

Completion of fitting sea connections Oct 20th 1937 Completion of pumping arrangements Feb 28th 1938 Boilers fired Aug 12th 1937 Engines tried under steam March 4th 1938

Main boiler safety valves adjusted July 12th 1938 Thickness of adjusting washers None. Grady Patent 42,100 lbs. Jan 20th - NS 205.

Rotor shaft, Material and tensile strength Nuclear Molybdenum 95,000 - 105,000 Identification Mark LP 37-1228-43

Flexible Pinion (Shaft, Material and tensile strength Chrome Nickel Molybdenum 90,000 (min) Identification Mark 904 E. 114 F AB 22

Pinion shaft, Material and tensile strength Chrome Nickel Molybdenum NS 185 100,000 (min) Identification Mark 86650-82F 1/16 1/38

1st Reduction Wheel Shaft, Material and tensile strength ON Steel 70,000 (min) Identification Mark 76809 B-37 AB 22

Wheel shaft, Material ON Steel Identification Mark 222-37 22 Thrust shaft, Material ON Steel Identification Mark 37-1222 22

Intermediate shafts, Material ON Steel Identification Marks 5291 S-37 AB 5292 E AB Tube shaft, Material None. Identification Marks None.

Screw shaft, Material ON Steel Identification Marks 829E S-37 22 Steam Pipes, Material Steel Test pressure 1500 lbs./sq. in.

Date of test July 20th 1937 Test of 9000 lbs. at 1 yard. 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? See 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? Notation not desired.

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.) This Machinery has not been built under Special Survey (Refer New York Report N° 38163 attached herewith). but has been installed on board the vessel in compliance with the Society's Rules + the workmanship + material are good. All the Machinery during construction is shown to have been specially surveyed by the Surveyors to the American Bureau of Shipping + the material certified in accordance with their Rules. The Machinery now seen under full working conditions found satisfactory and eligible to have the Record of LMC 7-38 made in the Register Book

The amount of Entry Fee ... £ : Aug 15 1938
Special ... £ : 1000-
Donkey Boiler Fee ... £ : 6/9 1938
Travelling Expenses (if any) £ : 2/6 1938

Committee's Minute NEW YORK AUG 24 1938

Assigned LMC. 7-38

Note F.D. Ch