

# REPORT ON STEAM TURBINE MACHINERY. No. 6600

Received at London Office SEP 12 1938

Date of writing Report Aug 12<sup>th</sup> 38 When handed in at Local Office Aug 27<sup>th</sup> 38 Port of Baltimore, Md.

No. in Survey held at Baltimore, Md. Date, First Survey October 17, 1937 Last Survey August 8<sup>th</sup> 1938

Reg. Book. 39944 on the Steel Single Screw Tanker "R. H. Gallagher" (Number of Visits 13) Gross Tons 1989 Net Tons 4738

Built at Sparrow Point, Maryland By whom built Bethlehem S. S. Corp. Yard No. 4307 When built 1937-38

Engines made at Quincy, Mass. By whom made Do Engine No. 4307 When made 1937

Boilers made at Danville, New York By whom made Foster Wheeler Corp. Boiler No. Do When made 1937

Shaft Horse Power at Full Power 3600 Owners Standard Oil Co. of New Jersey Port belonging to Silmington, Del.

Nom. Horse Power as per Rule 938.9 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 Direct coupled, single reduction geared to One propelling shaft. No. of primary pinions to each set of reduction gearing Two

direct coupled to Alternating Current Generator — phase — periods per second — Direct Current Generator } 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.			L.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	3/4"	14 1/2"	5	2 9/32"	28 17/32"	13	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"	14	1 5/16"	21 13/32"	2nd	1 1/4"	33 15/16"	One
3RD "	1 3/16"	15 1/8"	4	2 27/32"	30 25/32"	15	1 11/32"	21 15/16"	3rd	1 3/4"	34 7/16"	One
4TH "	1 1/4"	15 1/2"	4	3 3/16"	32 3/8"	16	1 3/8"	22 15/32"	4th	2 1/4"	32 15/16"	Stage
5TH "	1 9/16"	16 1/8"	4	3 10/32"	33 1/2"	17	1 13/32"	23 1/16"	5th	4"	34 1/16"	Two
6TH <u>Impulse</u>	1 1/16"	25 1/16"	1st Row	3 47/64"	34 23/32"	18	1 27/64"	23 19/32"	6th			
7TH <u>Stage</u>	1 3/16"	25 13/16"	2nd Row	4 1/32"	35 29/32"	19	1 31/64"	24 1/8"	7th			
8TH "				4 19/32"	37 9/16"	20	1 27/32"	24 21/32"	8th			
9TH "				5 1/32"	38 7/16"	21	1 9/16"	25 7/32"	9th			
10TH "				6 1/64"	40"	22	1 41/64"	25 27/32"	10th			
11TH "				6 55/64"	41 21/32"	23	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. ✓ Revolutions per minute, at full power, of each Turbine Shaft { H.P. 5500 1st reduction wheel 865 I.P. ✓ main shaft 85

Rotor Shaft diameter at journals { H.P. 4 1/2" I.P. ✓ Pitch Circle Diameter { 1st pinion HP 8.00 11.625 1st reduction wheel HP 49.125 45.50 Width of Face { 1st reduction wheel 17" Overall 29 1/4" 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 1/4" 2nd pinion 21 1/2" main wheel 2.3 x 24"

Flexible Pinion Shafts, diameter { 1st None 2nd 5 3/4" Pinion Shafts, diameter at bearings { External 1st 4 1/2" 2nd 11" Internal 1st Solid 2nd 7 3/8" diameter at bottom of pinion teeth { H.P. 7.712 I.P. 11.337 HP 12.90 2nd LP 12.90

Wheel Shafts, diameter at bearings { 1st 7" 2nd 13" diameter at wheel shroud, { 1st ✓ Generator Shaft, diameter at bearings { 1st ✓ Propelling Motor Shaft, diameter at bearings { main ✓

Intermediate Shafts, diameter { as per rule 13.8" as fitted 14 1/2" Thrust Shaft, diameter at collars { as per rule 15.225 as fitted 15 1/4" Is the tubo screw shaft fitted with a continuous liner { Yes

Tube Shaft, diameter { as per rule 15.225 as fitted 15 1/4" Is the tubo screw shaft fitted with a continuous liner { Yes

Bronze Liners, thickness in way of bushes { as per rule .79 as fitted .78 Thickness between bushes { as per rule .59 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. ✓ 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 Stem bearing of Aquin-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. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes 2 1/2" Eng. & Dis. Can the H.P. or L.P. Turbine exhaust direct to the Tubes No. 2 DES VOLUTE 4 one Vent Simplex 10x6x24 3 1/2" Vent - 5" Disch. 3rd Vent - 5" Disch.

Condenser { No. of Turbines fitted with astern wheels One Feed Pumps { How driven Main Feed Turbine Aux. Feed Steam Receiver 3rd Feed Pump Room Vent Steam

Pumps connected to the Main Bilge Line { No. and size Main Cais - 12" Suct 1-12 x 8 1/2 x 12 Horgt. Suct 3" Suct ER one 10x7 1/2 How driven Motor driven Steam driven Motor 200 Gal/min. 1-8 x 7 x 18.

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 Motor 1-No. 2 Vent Steam Hand Pump Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size 1-4" AFT END ER 2-3" FWD ER 1-3" for fathometer In Pump Room 1-4" AFT

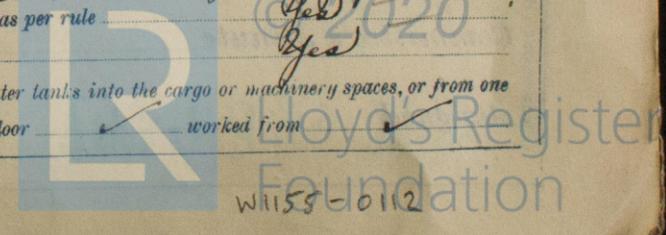
In Holds, etc. Forward Dry Hold 1-2 1/2" Main Water Circulating Pump Direct Bilge Suctions, No. and size One - 12" Independent Power Pump Direct Suctions to the Engine Room { Bilges, No. and size One - 4" & One 3" AFT ER Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. 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 they fitted with Valves or Cocks. Valves Are all Sea Connections fitted direct on the skin of the ship. Yes Are the Overboard Discharges above or below the deep water line. Below

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

What pipes pass through the bunks. None 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. worked from

NOTE.—The words which do not apply should be crossed out.



BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers *Inc Waterwalls + Economisers 9856 sq. ft.*

Is Forced Draft fitted?  No. and Description of Boilers *Two Foster Wheeler Type Steam generators* Working Pressure *450 lbs.*

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 tailshaft & 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. duplicated of engine special fastenings etc. also taper & screw dowels also cotter pins, special washers and auxiliary engine fittings. There is one set of plans covering four vessels namely 4306, 4307, 4308 & 4309. Upon completion of hull #4309 the plans will be forwarded with Belts. The foregoing is a correct description, Bethlehem Shipbuilding Corporation Ltd Quincy, Mass. - See New York, Rpt. 38164 attached.*

Dates of Survey while building: During progress of work in shops -- *August 12, 1937*. Refer New York Report No. 38164 attached herewith.

During erection on board vessel --- *October 19, 1937 to August 3, 1938* Total 13 visits

Dates of Examination of principal parts: Casings *February 17, 1938* Rotors *February 17, 1938* Blading *February 17, 1938* Gearing *August 3, 1938*

Wheel shaft *July 18, 1938* Thrust shaft *January 26, 1938* Intermediate shafts *January 26, 1938* Tube shaft  Screw shaft *January 13, 1938*

Propeller *January 19, 1938* Stern tube *January 10, 1938* Engine and boiler seatings *October 19, 1937* Engine holding down bolts *February 4, 1938*

Completion of fitting sea connections *Jan. 21, 1938* Completion of pumping arrangements *Mar. 28, 1938* Boilers fired *Oct. 19, 1937* Engines tried under steam *Aug. 3, 1938*

Main boiler safety valves adjusted *August 3, 1938* Thickness of adjusting washers *None Crosby Patent HS 205 42,100 lbs. per hour*

Rotor shaft, Material and tensile strength *Nickel Molybdenum steel 95 (min)* Identification Mark *H.P. 298-582-H-1/57*

Flexible Pinion Shaft, Material and tensile strength *Nickel Molybdenum steel 90 (min)* Identification Mark *L.P. 298-596-52*

Pinion shaft, Material and tensile strength *Chrome nickel Molybdenum steel HS & LS 100,000* Identification Mark *905E2, 76895*

1st Reduction Wheel Shaft, Material and tensile strength *O.H. steel 70,000 (min)* Identification Mark *5177*

Wheel shaft, Material *O.H. steel* Identification Mark *1228-37* Thrust shaft, Material *O.H. steel* Identification Mark *1228-37*

Intermediate shafts, Material *O.H. steel* Identification Marks *832E, 819E* Tube shaft, Material  Identification Marks

Screw shaft, Material *O.H. steel* Identification Marks *828E* Steam Pipes, Material *steel* Test pressure *1500 lbs. at Pipe Factory*

Date of test *February 15, 1938* - Test of *900 lbs* at 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? *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? *Notation not desired*

Is this machinery a duplicate of a previous case? *Yes* If so, state name of vessel: *"Casso Baton Rouge"*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This machinery has not been built under special survey (Refer New York Report No. 38164 attached herewith) but has been installed on board the vessel in compliance with the Society's rules and the workmanship and material are good. All the machinery during construction is stated to have been specially surveyed by the Surveyors to the American Bureau of Shipping & the material certified in accordance with their rules. The machinery was run under full working conditions & found satisfactory & eligible to have the record of L.M.C. 8-38 made in the Register Book.*

The amount of Entry Fee ... £ *1000.00* When applied for, *Aug 29, 1938*

Special ... £ : : When received, *20/9/38*

Donkey Boiler Fee ... £ : : Travelling Expenses (if any) £ : :

Committee's Minute *NEW YORK AUG 31 1938*

Assigned *L.M.C. 8-38*

