

REPORT ON STEAM TURBINE MACHINERY. No. 38079

Received at London Office. DEC 29 1937

Date of writing Report 7 Dec 1937 When handed in at Local Office 10 Dec 1937 Port of NEW YORK

No. in Survey held at NEW YORK Date, First Survey 9 August Last Survey 26 Nov 1937

Reg. Book. SS ESSO BAYWAY (Number of Visits 28)

Built at KEARNY N.J. By whom built FEDERAL S. B. & D. D. Co. Yard No. 144 When built 1937

Engines made at TRENTON N.J. By whom made DE LAVAL STEAM TURBINE Co. Engine No. 226445 When made 1937

Boilers made at CARTERET N.J. By whom made FOSTER WHEELER CORP. Boiler No. When made 1937

Shaft Horse Power at Full Power 3300 Owners STANDARD OIL Co. OF NEW JERSEY Port belonging to WILMINGTON DEL.

Nom. Horse Power as per Rule 916 Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES

Trade for which Vessel is intended 912 CARRYING PETROLEUM IN BULK

STEAM TURBINE ENGINES, &c.—Description of Engines GEARED STEAM TURBINES

No. of Turbines 2 Direct coupled, single reduction geared } to ONE propelling shaft. 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.			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	510"	22.463"	1				1.280	25.828"	1	1st Row 720 2nd 1.390	30.707"	1
2ND	640	15.611	1					27.028	1	3.330	35.218	1
3RD	670	"	1				1.450	28.398	1			
4TH	670	"	1				2.140	30.848	1			
5TH	695	"	1				2.720	33.088	1			
6TH	770	"	1				3.730	35.588	1			
7TH	720	19.826	1				6.500	38.798	1			
8TH	850	"	1									
9TH	820	"	1									
10TH	965	"	1									
11TH	1.180	"	1									
12TH												

No. I.P. TURBINE

Shaft Horse Power at each turbine { H.P. 1585 I.P. L.P. 1415 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 6005 I.P. L.P. 5043 }

Rotor Shaft diameter at journals { H.P. 4" I.P. L.P. 6" } Pitch Circle Diameter { 1st pinion 6.905" HP 8.221" LP } 1st reduction wheel 46.200" } Width of Face { 1st reduction wheel 12" main wheel 26.7" }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 10" 2nd pinion 19 3/8" } 1st reduction wheel 10" main wheel 22 5/8"

Flexible Pinion Shafts, diameter { 1st 4 1/2" HP 2nd 5 1/4" LP } Pinion Shafts, diameter at bearings { External 5 1/2" Internal } 1st 9" 2nd 6" diameter at bottom of pinion teeth { 1st 6.557 HP 7.873 LP } 2nd 11.097"

Wheel Shafts, diameter at bearings { 1st 5 1/2" main 15" } diameter at wheel shroud, { 1st 46.436 Generator Shaft, diameter at bearings } main 118.791 Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule 13.15" as fitted 13 1/2" Thrust Shaft, diameter at collars as per rule 11" (No Torque) Tube Shaft, diameter as fitted

Screw Shaft, diameter as per rule 14.59" as fitted 15 1/2" Is the shaft fitted with a continuous liner { YES } Bronze Liners, thickness in way of bushes as per rule 3/4" as fitted 59/64"

Thickness between bushes as per rule 1/16" as fitted 1/16" 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 IN 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 FITS TIGHTLY 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 Length of Bearing in Stern Bush next to and supporting propeller 62"

Propeller, diameter 17'-3" Pitch 14'-9" NEAN No. of Blades 4 State whether Moveable NO Total Developed Surface 103.3 square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine YES Can the H.P. or I.P. Turbine exhaust direct to the Condenser YES No. of Turbines fitted with astern wheels ONE Feed Pumps { No. and size 2 MAIN-ROTARY 65 G.P.M. T-Aux 10x6x24 V.S. How driven STEAM TURBINE STEAM

Pumps connected to the Main Bilge Line { No. and size 1-BILGE PUMP 12x8 1/2 x 12 HD } How driven STEAM 1-FIRE & BILGE ROTARY 450 G.P.M. ELEC. MOTOR

Ballast Pumps, No. and size 1-FIRE & BILGE PUMP 7 1/2 x 9 x 10 V.D. Lubricating Oil Pumps, including Spare Pump, No. and size 1-ROTARY 150 G.P.M. 1-6x7x12 V.S. 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:—In Engine and Boiler Room 4-3"

In Holds, &c. OIL CARGO PUMPING SYSTEM, 1-2 1/2" IN FOR PUMP ROOM, 2-2 1/2" IN COFFERDAMS, 2-2 1/2" IN DRY HODD, 1-4" IN DRY TANK, 1-4" IN FORE PEAK

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-10" BILGE INJECTION INDEPENDENT POWER PUMP DIRECT SUCTIONS to the Engine Room Bilges, No. and size 1-4" 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 NO

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 SPIGOT ONLY

What pipes pass through the bunkers NONE 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 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 NO TUNNEL Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record *S*) Total Heating Surface of Boilers *9190 sq ft*
 Is Forced Draft fitted *YES* No. and Description of Boilers *2 WATERTUBE* Working Pressure *450 LBS*

Is a Report on Main Boilers now forwarded?

Is *a Donkey* Boiler fitted? *NO* If so, is a report now forwarded?
an Auxiliary

Plans. Are approved plans forwarded herewith for Shafting *PLANS FORWARDED WITH REPORT ON SISTER VESSEL* Main Boilers *1/2 ESSO BAYONNE NYK RPT 37918*
 (If not state date of approval)

Superheaters _____ General Pumping Arrangements _____ Oil Fuel Burning Arrangements _____

Spare Gear. State the articles supplied:—
1 COMPLETE SET OF SPARE GEAR AS PER RULES FOR 1935-6 EXCEPT SPARE PROPELLER, WHICH HAS NOT BEEN SUPPLIED
 ADDITIONAL SPARE GEAR SUPPLIED *1 TAIL SHAFT COMPLETE.*

FEDERAL SHIPBUILDING & DRY DOCK CO.

per *S. E. Malmquist* Manufacturer

The foregoing is a correct description,

Dates of Survey while building
 During progress of work in shops -- *1937 Sept 20, 22 Aug 9, 13, 16, 18, 19, 20, Sept 7, 9, 20, 22, 27, 29*
 During erection on board vessel --- *Oct 6, 7, 11, 15, 26 Nov 2, 9, 11, 15, 16, 22, 24, 26,*
 Total No. of visits *28*

Dates of Examination of principal parts—Casings *22 Sept 1937* Rotors *22/9/37* Blading *22/9/37* Gearing *22/9/37*

Wheel shaft *22/9/37* Thrust shaft *22/9/37* Intermediate shafts *16/8/37* Tube shaft Screw shaft *16/8/37*

Propeller *16/8/37* Stern tube *16/8/37* Engine and boiler seatings *31/8/37* Engine holding down bolts *15/10/37*

Completion of pumping arrangements *15/11/37* Boilers fired *15/10/37* Engines tried under steam *24/11/37*

Main boiler safety valves adjusted *16/11/37* Thickness of adjusting washers *LOCK NUTS FITTED IN LIEU OF WASHERS*

Rotor shaft, Material and tensile strength *HP. STEEL HP 80000 TS LP 3 1/2% NICKEL STEEL 120,000 TS* Identification Mark *NOT STAMPED*

Flexible Pinion Shaft, Material and tensile strength *STEEL HP 90000 LP 80000* Identification Mark *✓*

Pinion shaft, Material and tensile strength *3 1/2 NICKEL STEEL 100,000 TS* Identification Mark *✓*

1st Reduction Wheel Shaft, Material and tensile strength *STEEL 80,000 TS* Identification Mark *✓*

Wheel shaft, Material *STEEL* Identification Mark *✓* Thrust shaft, Material *STEEL* Identification Mark *✓*

Intermediate shafts, Material *STEEL* Identification Marks *✓* Tube shaft, Material *✓* Identification Marks *✓*

Screw shaft, Material *STEEL* Identification Marks *✓* Steam Pipes, Material *STEEL* Test pressure *SHOP 900 LBS IN PLACE 675.*

Date of test *26/10/37* 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 *TANKER* 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 *1/2 ESSO BAYONNE NYK RPT 37918.*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel has not been built under Special Survey but it has been examined & found to comply with the Rules, & the workmanship & material as far as can be seen are good. The forgings & steel castings have been tested by the representatives of American Bureau of Shipping and/or U. S. Government.*

The machinery has been satisfactorily tried at full power, & the electric welded gear cases & seatings afterwards examined & found good. It is now in good & safe working condition & eligible, in my opinion, to receive the notations LMC 11.37 F.D. and 'FITTED FOR OIL FUEL 11.37 F.P. ABOVE 150°F.

The amount of Entry Fee ... £ *\$1000⁰⁰* When applied for, *DEC 17 1937*
 Special ... £ : :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When received, *11/1 1938*

John S. Heck
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

NEW YORK DEC 15 1937

Assigned *LMC 11.37*



NEW YORK

Certificate (if required) to be sent to... This Surveys are requested not to write on or below the space for Committee's Minute.

Note CL FD