

REPORT ON STEAM TURBINE MACHINERY. No. 6889

Received at London Office 13 APR 1935

Date of writing Report 21st March 1935 When handed in at Local Office 30th March 1935 Port of Philadelphia
 No. in Survey held at Trenton N.J. Date, First Survey 17th May 1934 Last Survey 28 May 1935
 Reg. Book. on the S.S. Socony Vacuum Tons { Gross 9811.70 Net 5894
 Built at Camden N.J. By whom built New York Shipbuilding Corp. Yard No. 414 When built 1935-
 Engines made at Trenton N.J. By whom made De Laval Steam Turbine Co. Engine No. 223944 When made 1934-11
 Boilers made at Carteret N.J. By whom made Foster Wheeler Boiler No. When made 1934
 Shaft Horse Power at Full Power 4000 Owners Socony Vacuum Oil Co. Inc. Port belonging to New York
 Nom. Horse Power as per Rule 1083 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes
 Trade for which Vessel is intended Oil in Bulk

STEAM TURBINE ENGINES, &c.—Description of Engines Impulse Compound

No. of Turbines Ahead 2 Direct coupled, single reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing Two
 Astern 1 (in L.P.) 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 one propelling shafts.

TURBINE LOADING.	H.P.			I.P.			L.P.			ASTERN IN. LOW PRESS. TURBINE		
	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	1.470"	20.836"	2	X	X	X	1.030"	32.600"	1	1.470"	20.836"	2
2ND	1.710"	16.816"	1				1.570"	33.410"	1	1.470"	20.836"	2
3RD	1.790"	16.816"	1				1.935"	33.980"	1			
4TH	1.875"	16.816"	1				2.970"	35.800"	1			
5TH	1.975"	16.816"	1				3.695"	37.380"	1			
6TH	1.085"	16.816"	1				5.010"	39.640"	1			
7TH	1.875"	20.736"	1				7.470"	43.260"	1			
8TH	1.000"	20.736"	1									
9TH	1.930"	20.736"	1									
10TH	1.105"	20.736"	1									
11TH	1.320"	20.736"	1									
12TH												

Shaft Horse Power at each turbine { H.P. 2000 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 5480 } 1st reduction wheel 703
 { L.P. 2000 } { I.P. } main shaft 75
 { L.P. 4" } Pitch Circle Diameter { 1st pinion 8.166" } 1st reduction wheel 63.666" Width of Face { 1st reduction wheel 18 3/4"
 { L.P. 4" } { 2nd pinion 13.647" } main wheel 127.980" { main wheel 48"
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 15 1/2" } 1st reduction wheel 15 1/2"
 { 2nd pinion 18 3/8" - 20 3/8" } main wheel 44 3/8"
 Flexible Pinion Shafts, diameter { 1st Pinion Shafts, diameter at bearings External 1st 6" 2nd 12" diameter at bottom of pinion teeth { 1st 7.886"
 { 2nd 12" Internal 1st 12" 2nd 12" { 2nd 13.114"
 Wheel Shafts, diameter at bearings { 1st 12" } diameter at wheel shroud, { 1st Generator Shaft, diameter at bearings
 { main 22" } { main Propelling Motor Shaft, diameter at bearings
 Intermediate Shafts, diameter as per rule 15.056" Thrust Shaft, diameter at collars as per rule 12 1/2" - 14.2" Gear R.B. Tube Shaft, diameter as per rule
 as fitted 15 1/4" as fitted 12 1/2" - 14.2" Gear R.B. as fitted
 Screw Shaft, diameter as per rule 16.695" Is the { tube } shaft filled with a continuous liner { yes } Bronze Liners, thickness in way of bushes as per rule 0.83"
 as fitted 14 1/4" { screw } as fitted 5 1/4"
 Thickness between bushes as per rule 0.683" 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
 as fitted 3 1/4" 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 yes 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 6' 2 1/4"
 Propeller, diameter 19' 8" Pitch 18 1/2" 13 9 1/2" No. of Blades 4 State whether Moveable yes Total Developed Surface 121.66" 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. Turbine exhaust direct to the
 Condenser yes No. of Turbines fitted with astern wheels 1 in L.P. Feed Pumps { No. and size 2-3800 G.P.M. } 1 vertical simplex 15" x 10" x 24" 1 injector
 { How driven 6 stage Hor. Turbine } Steam { 1 Rotary 175 G.P.M. }
 Pumps connected to the Main Bilge Line { No. and size 1-7" x 6" x 10" } 1-7" x 6" x 10" 1-7" x 6" x 10" 1-6" x 5 1/2" x 6" 1 Rotary 175 G.P.M.
 { How driven Hor Duplex (STM) Ford, Pump Rm (STM) AFT, Pump Rm (STM) Hor Duplex (STM) Electric motor
 also to bilge Ballast Pumps, No. and size 1-general service 12" x 10" x 12" Hor Duplex (STM) Lubricating Oil Pumps, including Spare Pump, No. and size 2-200 G.P.M. (10 HP electric motor)
 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 3- 2 1/2" & 3- 3 1/2" In Holds, &c. 2- 2 1/2" in big cargo hold 2- 2 1/2" in store room fwd 4- 2 1/2" in main ship pump room 2- 2 1/2" in fore pump room.
 Main Water Circulating Pump Direct Bilge Suctions, No. and size 1- 11" diam Independent Power Pump Direct Suctions to the Engine Room
 Bilges, No. and size 3- 2 1/2" & 3- 3 1/2" 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 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 Cofferdam Suctions How are they protected
 What pipes pass through the deep tanks Suction pipes 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 yes Is it fitted with a watertight door worked from

002119-002126-0102

BOILERS, &c. — (Letter for record *W.T.*) Total Heating Surface of Boilers *11164 square ft*

Is Forced Draft fitted *yes* No. and Description of Boilers *3 W.T. (2 superheated for propulsion main 430 1 not " " cargo Working Pressure cargo 405*

Is a Report on Main Boilers now forwarded? *yes*

Is ~~a Donkey~~ *an Auxiliary* Boiler fitted? *yes (could be used for propulsion)* If so, is a report now forwarded? *yes*

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

Superheaters *yes* General Pumping Arrangements *yes* Oil Fuel Burning Arrangements *yes*

Spare Gear. State the articles supplied: *390 Condense tubes 394 ferrules, 20% tubes for oil cooler, 2 bolts & nuts for each pipe, 10% of bolts & nuts for gear casing & turbine casings, 2 thermometers for oil circulating system, 1 set bearings for each pipe gear shaft & rotor, 5 pinion shafts, 3 set thrust shoes, 1 set labyrinth packing, 1 set liners for adjusting block, 1 escape valve spring of each pipe fitted, 1 set of valves for all pumps, 1 tail shaft, 4 propeller blades, air pump rod, circulating pump shaft & impeller, assorted bolts & nuts, 1 in. plates, rods of mild steel & bars.*

The foregoing is a correct description,

New York Shipbuilding Corp. P.A. Hansen Chief Engineer, Manufacturer

Dates of Survey while building	1934 May	June	July	August	Sept	October	November
During progress of work in shops --	17, 18, 28, 6/3, 18, 26	10, 21, 24	5, 16, 20	7, 19, 22, 30			
During erection on board vessel ---	31, 5, 6, 10, 17, 24, 26, 10, 2, 25, 26	23, 26, 3, 18, 31, 27, 2, 31, 5, 6, 7, 19, 24					
Total No. of visits	44						

Dates of Examination of principal parts	Casings	Rotors	Blading	Gearing
1934 July 6, 26	1934 August 10, 19	1934 August 19, 20, 26	1934 August 17, 10	

Wheel shaft	Thrust shaft	Intermediate shafts	Tube shaft	Screw shaft
1934 October 17, 10, 26	1934 Dec 18, 19	1934 Dec 18, 19	1934 Dec 18, 19	1934 Dec 18, 19

Propeller	Stern tube	Engine and boiler seatings	Engine holding down bolts
1934 October 2, 23, 21	1934 Nov 23, 26, 21	1934 Dec 25, 26	1934 Dec 25, 26

Completion of pumping arrangements *March 18-35* Boilers fixed *November 26-34* Engines tried under steam *March 18-35*

Main boiler safety valves adjusted *27-2-35* Thickness of adjusting washers *✓*

Rotor shaft, Material and tensile strength *2 off. 1 O.H. Steel 16500 1 - Alloy Steel 123500* Identification Mark *1318, 1316*

Flexible Pinion Shaft, Material and tensile strength *LP Nickel Steel, P.N. 81000, 806 80000, H.P. 80000, 84500* Identification Mark *1361, 1360*

Pinion shaft, Material and tensile strength *LP Nickel Steel, P.N. 81000, 806 80000, H.P. 80000, 84500* Identification Mark *1364, 1365*

1st Reduction Wheel Shaft, Material and tensile strength *O.H. Steel 85000* Identification Mark *1370*

Wheel shaft, Material *O.H. Steel* Identification Mark *1372* Thrust shaft, Material *O.H. Steel* Identification Mark *1372*

Intermediate shafts, Material *Steel 64000 min* Identification Marks *2093, 2100, 10-4-34, 5-4-34* Tube shaft, Material *✓* Identification Marks *✓*

Screw shaft, Material *Steel 64000 min* Identification Marks *2096, 2098, 10-4-34, 5-4-34* Steam Pipes, Material *Steel* Test pressure *1350 lbs*

Date of test *1934 December 3, 18, 31, 23, 25* 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*

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 all been constructed under special survey & satisfactorily installed on board the vessel. All main & auxiliary machinery has been tried out under working conditions & found satisfactory. In my opinion this installation is eligible for the record of +LMC 3.35.*