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REPORT ON STEAM TURBINE MACHINERY. No. 1676

Received at London Office

Date of writing Report 25th Apr. 1929 When handed in at Local Office 25th Apr. 1929 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 7th Feb. 1928 Last Survey 29th March, 1929.

Reg. Book. 92456 on the Steel Twin Screw Steamer "URAL MARU". (Number of Visits 169)

Supp. Nagasaki. By whom built Mitsubishi Zosen Kaisha. Yard No. 452. When built 1929-30.

Engines made at Nagasaki. By whom made Mitsubishi Zosen Kaisha. Engine No. 452. When made "

Boilers made at Nagasaki. By whom made Mitsubishi Zosen Kaisha. Boiler No. 452. When made "

Shaft Horse Power at Full Power 6500 Owners Osaka Shosen Kabushiki Kaisha. Port belonging to Osaka.

Nom. Horse Power as per Rule 1158 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

Trade for which Vessel is intended Osaka - Dairen.

STEAM TURBINE ENGINES, &c.—Description of Engines Mitsubishi Zoelly Turbine with double reduction gearing.

No. of Turbines Ahead 4 Direct coupled, single reduction geared } to Two propelling shafts. No. of primary pinions to each set of reduction gearing Two
Astern 4 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. Mean			H.P. ASTERN. Mean			L.P.			L.P. ASTERN. Mean		
	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	14 m/m	600 m/m	1	15	650	1 Mov.	33	920	1	30 m/m	1040	1 Moving.
2ND "	13 "	"	1	20	"	1 Fix.	51	"	1	40 "	"	1 Fixed.
3RD "	14 "	"	1	25	"	1 Mov.	84	"	1	50 "	"	1 Moving.
4TH "	18 "	"	1				148	"	1			
5TH "	23 "	"	1				185	"	1			
6TH "	33 "	"	1									
7TH "												
8TH "												
9TH "												
10TH "												
11TH "												
12TH "												

Shaft Horse Power at each turbine { H.P. 1511 / I.P. / L.P. 1739 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 5508 / I.P. / L.P. 3896 } 1st reduction wheel 634 main shaft 120

Rotor Shaft diameter at journals { H.P. 110 m/m / I.P. / L.P. 160 m/m } Pitch Circle Diameter { 1st pinion HP 6.225" / LP 8.800" } 1st reduction wheel 54.093" 2nd pinion 17.029" main wheel 89.954" Width of Face { 1st reduction wheel 300 m/m / main wheel 640 m/m }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 320 m/m / 2nd pinion 545 m/m } 1st reduction wheel 320 m/m (Ford) / main wheel 562.5 m/m (Aft)

Flexible Pinion Shafts, diameter { 1st 140 m/m / 2nd 140 m/m } Pinion Shafts, diameter at bearings External 1st 115 / 2nd 165 Internal { 1st 270 / 2nd 165 } diameter at bottom of pinion teeth { HP 5.6484" / LP 8.2243" / 2nd 16.1056" }

Wheel Shafts, diameter at bearings { 1st 270 m/m / main 360 m/m } diameter at wheel shroud, { 1st 1270 m/m / main 2150 m/m } Generator Shaft, diameter at bearings / Propelling Motor Shaft, diameter at bearings /

Intermediate Shafts, diameter as per rule 305 m/m (12.01") / as fitted 315 m/m Thrust Shaft, diameter at collars as per rule 320.2 m/m / as fitted 330 m/m Tube Shaft, diameter as per rule / as fitted /

Screw Shaft, diameter as per rule 334 m/m (13.13") / as fitted 350 m/m Is the screw shaft fitted with a continuous liner { Yes } Bronze Liners, thickness in way of bushes as per rule 17.7 m/m / as fitted 19 m/m

Thickness between bushes as per rule 13.3 m/m / as fitted 15 m/m 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 / 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 screw shaft No Length of Bearing in Stern Bush next to and supporting propeller 1400 m/m

Propeller, diameter 13'-6" Pitch 16'-9" No. of Blades 4 State whether Moveable Yes Total Developed Surface 64 square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine / Can the H.P. or I.P. Turbine exhaust direct to the

Condenser / No. of Turbines fitted with astern wheels 4 Feed Pumps { No. and size 3 in No. One 100 tons. 2 @ 50 tons. / How driven Steam. }

Pumps connected to the Main Bilge Line { No. and size 3 - One 200 tons. One 87 tons. One 50 tons. / How driven Steam. }

Ballast Pumps, No. and size One @ 200 tons 1 hour capacity. / One @ 100 Lubricating Oil Pumps, including Spare Pump, No. and size 2 @ 19600 galls/hr.

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 1/2" dia. 2 @ 2 1/2". Coff. One @ 2 1/2". Shaft tunnels 2 @ 3". Tunnel well One @ 3".

In Holds, etc. No.1- 2 @ 3" dia. No.2- 2 @ 3 1/2" dia. No.3- 2 @ 3" dia. No.4- one @ 3" dia. Main Water Circulating Pump Direct Bilge Suctions, No. and size 2- 1 1/2" dia. Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size One @ 5" dia. One @ 4" dia Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes / Strum boxes as per approved plan.

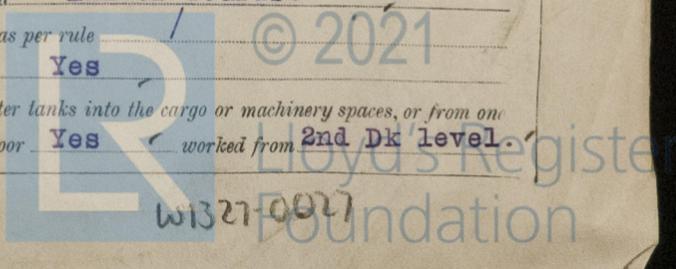
Are the Bilge Suctions in the Machinery Space led from easily accessible man-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes Are all Sea Connections fitted direct on the skin of the ship Yes / Are they fitted with Valves or Cocks Both.

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 Yes 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 Forward hold suction. / How are they protected Limber boards. What pipes pass through the deep tanks / 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 Yes / worked from 2nd Dk level.

NOTE.—The words which do not apply should be deleted.



BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 12,565 sq.ft.

Is Forced Draft fitted Yes No. and Description of Boilers 5 Single ended Multitubular Working Pressure 225 lbs.

Is a Report on Main Boilers now forwarded? Yes.

Is a Donkey Boiler fitted? No. If so, is a report now forwarded? /

Plans. Are approved plans forwarded herewith for Shafting Yes Main Boilers Yes Auxiliary Boilers / Donkey Boilers /

Superheaters Yes General Pumping Arrangements Yes Oil Fuel Burning Arrangements /

Spare Gear. State the articles supplied:— As per the Rules, and in addition. (See separate list).

NAGASAKI WORKS, LTD. KASHA, LTD.

The foregoing is a correct description,

S. Hawaii

Manufacturer.

Dates of Survey while building... 1928. Feb. 7, 13, 14, 16, 18, 28, Mar. 5, 9, 12, 16, 20, 22, Apr. 4, 5, 6, 10, 11, 12, 16, 20, 23, 25, May 7, 10, 15, 19, 24, 25, 26, 31, June 1, 7, 9, 13, 15, 18, 22, 27, 29, July 3, 4, 6, 7, 9, 10, 18, 19, 24, 25, 26, 27, 30, 3, Aug. 9, 10, 11, 14, 18, 20, 24, 28, Sep. 3, 4, 7, 8, 11, 12, 13, 14, 15, 18, 19, 20, 22, 26, 27, 28, 29, 30, Dec. 1, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 24, 27, 28, 29, 1929. Jan. 4, 7, 8, 9, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26, 28, 29, Feb. 1, 4, 7, 9, 14, 16, 18, 19, 20, 22, 25, Mar. 2, 5, 7, 8, 9, 12, 18, 19, 22, 25, 27, 29. Total No. of visits 169.

Dates of Examination of principal parts—Casings 15-5-28 to 14-8-28. Rotors 13-2-28 to 31-5-28. Blading 30-7-28. Gearing 15-5-28 to 21-9-28. Wheel shaft 13-2-28 to 15-5-28. Thrust shaft 21-9-28. Intermediate shafts 22-6-28 to 20-11-28. Tube shaft / Screw shaft 20-11-28.

Propeller 3-12-28. Stern tube 7 & 19-11-28. Engine and boiler seatings 25-1-29. Engine holding down bolts 4-1-28.

Completion of pumping arrangements 7-3-29. Boilers fixed 25-1-29. Engines tried under steam 2-3-29.

Main boiler safety valves adjusted 22-2-29. Thickness of adjusting washers No.1- 3/4"- 11/16". No.2- 7/8"- 11/16". No.3- 7/8" 15/16". No.4- 7/8"- 11/16". No.5- 27/32"- 15/16"

Rotor shaft, Material and tensile strength Ingot steel, 34 - 38 tons sq.in. Identification Mark Lloyd's No. 9 G.A. 31-5-28.

Flexible Pinion Shaft, Material and tensile strength Nickel steel, 40 tons sq.in. minimum. Identification Mark Lloyd's No. 9 G.A. 18-8-28.

Pinion shaft, Material and tensile strength Nickel steel, 40 tons sq.in. minimum. Identification Mark Lloyd's No. 9 G.A. 18-8-28.

1st Reduction Wheel Shaft, Material and tensile strength Ingot steel, 34 - 38 tons sq.in. Identification Mark Lloyd's No. 9 G.A. 15-5-28.

Wheel shaft, Material Ingot steel Identification Mark G.A. 15-5-28. Thrust shaft, Material Ingot steel Identification Mark Lloyd's No. 9 G.A. 21-9-28.

Intermediate shafts, Material Ingot steel Identification Marks Lloyd's No. 1314-1331-1321- No. 1313-1320. No. 1330-1338. No. 1346. 1322-1337. Tube shafts Material G.A. 20-11-28. Identification Marks G.A. 1-11-28. G.A. 24-7-28. G.A. 22-6-28.

Screw shaft, Material Ingot steel Identification Marks Lloyd's No. 13260-1. 13274-(Spare) G.A. 20-11-28. Steam Pipes, Material Solid draw steel Test pressure 48 kg/cm²

Date of test 16-1-29 to 21-2-29. Is an installation fitted for burning oil fuel No.

Is the flash point of the oil to be used over 150°F. / Have the requirements of the Rules for carrying and burning oil fuel been complied with /

Is this machinery a duplicate of a previous case / If so, state name of vessel /

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Machinery has been constructed under special survey and installed in the vessel in accordance with the Rules and Approved plans. The materials and workmanship are good and the machinery has been examined under working conditions and found satisfactory.

The machinery of this vessel is eligible in my opinion to have the record of LMO, 3-'29.

The amount of Entry Fee ... ¥ 60:00 When applied for, Special ... ¥ 1934:25 17. 4. 19 29 Donkey Boiler Fee ... £ Travelling Expenses (if any) £ When received, 16/5/29

George Anderson & K. Kihigami Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI 7 JUN 1929 FRI 12 JUL 1929

Assigned + LMO 3.29 R.D. C.

