

REPORT ON STEAM TURBINE MACHINERY.

Received at London Office... 1 FEB 1925

Date of writing Report 7th Nov 1925 When handed in at Local Office 10 Port of Kobe

No. in Survey held at OSAKA Date, First Survey 14th MAY 1923 Last Survey Nov. 2 1925

Reg. Book. on the S.S. ITIYO MARU (Number of Visits 67) Tons } Gross 4273.5
Net 2658.8

Built at OSAKA By whom built OSAKA IRON WORKS Yard No. 1056 When built 1925

Engines made at FINSPONG By whom made SVENSKA TURBINFABRIKS A.B. LUNGSTAD Engine No. ROM 1918 When made 1918

Boilers made at OSAKA By whom made OSAKA IRON WORKS LTD Boiler No. 1056 When made 1920 & 1925

Shaft Horse Power at Full Power 2930 Owners Do Do Port belonging to TAKASAGO

Nom. Horse Power as per Rule 562 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

STEAM TURBINE ENGINES, &c.—Description of Engines

No. of Turbines Ahead _____ Astern _____

Direct coupled, single or double reduction geared to _____ propelling shafts. No. of primary pinions to each set of reduction gearing _____, direct coupled to _____ phase periods per second, Alternating Current Generator rated _____ Kilowatts _____ Volts at _____ revolutions per minute; for supplying power for driving _____

Propelling Motors. Propelling Motors, Type _____

rated _____ Kilowatts _____ Volts at _____ revolutions per minute. Direct coupled, single or double reduction geared to _____ propelling shafts.

PARTICULARS OF 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												
2ND												
3RD												
4TH												
5TH												
6TH												
7TH												
8TH												

SEE STOCKHOLM REPORT N° 1779

Shaft Horse Power at each turbine _____ Revolutions per minute, at full power, of each Turbine Shaft _____ 1st reduction wheel _____

main shaft Pitch Circle Diameter, 1st pinion _____ 2nd pinion _____ 1st reduction wheel _____ main wheel _____

Width of Face, 1st reduction wheel _____ main wheel _____ Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, _____

1st pinion _____ 2nd pinion _____ 1st reduction wheel _____ main wheel _____ Flexible Pinion Shafts, diameter 1st _____ 2nd _____

Pinion Shafts, diameter at bearings External 1st _____ 2nd _____ diameter at bottom of teeth of pinion 1st _____ 2nd _____ Internal _____

Wheel Shafts, diameter at bearings, 1st _____ main _____ diameter at wheel shroud, 1st _____ main _____

Generator Shafts, diameter at bearings _____ Propelling Motor Shafts, diameter at bearings _____

Main Shafting, diameter of Tunnel Shafting as per rule 13.12 ✓ as fitted 13.2 ✓ diameter of Thrust Shafting as per rule 13.78 ✓ as fitted 14.37 ✓

diameter of Screw Shaft as per rule 14.53 14.39 ✓ as fitted 15.4 ✓ Is the screw shaft fitted with a continuous liner the whole length of the stern tube YES 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 joints burned _____ 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 appliance fitted at the after end of the shaft to permit of it being efficiently lubricated NO Length of Stern Bush 5' 13/4" ✓ Diameter of Propeller 17' 0" ✓

Pitch of Propeller 16' 2" ✓ No. of Blades 4 ✓ State whether Moveable NO ✓ Total Surface 90 ✓ square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine, and either the H.P. or L.P. Turbine can exhaust direct to the Condenser EQUIVALENT ARRANGTS

No. of Turbines fitted with astern wheels _____ Total number of power driven Main and Auxiliary Pumps = 5 STEAM MOTOR DRIVEN = 8

No. and size of Feed Pumps 2 ROTARY ✓ How driven MOTOR SEE RPT N° 1779 No. and size of Pumps connected to the Main Bilge Line 1 @ 7 1/2 x 5 1/2 x 6
1 @ 9 1/2 x 12 x 10
1 @ 7 x 8 x 8

How driven STEAM ✓ No. and size of Ballast Pumps ONE 9 1/2 x 12" x 10" ✓ No. and size of Lubricating Oil Pumps, including Spare Pump 1 GEARED TO EACH GENERATOR 6 1/2 lit/min ✓ " " GEARING 200 lit/min ✓ Are two independent means arranged for circulating water through the Oil Cooler YES ✓ No. and size of suction connected to both Main Bilge Pumps and Auxiliary Bilge Pumps; — In Engine and Boiler Room 3 OFF 3 1/2" DIA: ✓ and in Holds, &c. 3 @ 3 1/2" IN N° 1, 2 & 3 HOLDS
1 @ 3 1/2" " N° 4 HOLD
1 @ 2 1/2" " TUNNEL WELL.

No. and size of Main Water Circulating Pump Bilge Suctions 2 @ 7" DIA: ✓ No. and size of Donkey Pump Direct Suctions to the Engine Room Bilges ONE @ 4 1/2" DIA: ✓ 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 connections with the sea direct on the skin of the ship YES EXCEPT MAIN CIRC INLET ✓ Are they 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 Discharge Pipes above or below the deep water line ABOVE ✓

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 are carried through the bunkers NONE ✓ How are they protected YES ✓

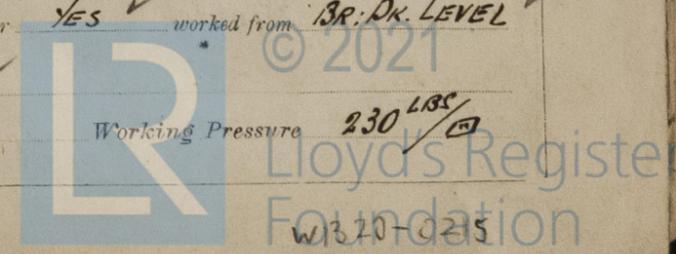
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times YES ✓

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 Screw Shaft Tunnel watertight YES ✓ Is it fitted with a watertight door YES ✓ worked from BR. DK. LEVEL ✓

BOILERS, &c.—(Letter for record B ✓) Total Heating Surface of Boilers 6479 ✓

Is Forced Draft fitted YES ✓ No. and Description of Boilers 3 S.E. MULTITUBULAR

Working Pressure 230 LBS / sq



Is a Report on Main Boilers now forwarded? **YES (2 SHEETS)**

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
(If not state date of approval)

Spare Gear. State the articles supplied:—

Sic List attached

The foregoing is a correct description,

A. Fusé

Manufacturer.



Dates of Survey while building: During progress of work in shops -- 1923-14, 17, 26 MAY. 14 JUNE. 12, 20, 26 OCT. 6, 7, 10, 15, 21, 27, NOV. 6, 15, 24 DEC. 1924-12 JAN. 19, 22, 25 FEB. 4, 24 APR. 15, 19 MAY. 14, 16, 23, JUNE 20 AUG 3 NOV. 1925-9, 25 MAR. 10-16 APR. 1, 12, 15, 20, 27, 29, 30, MAY 4, 8, 10, 23 JUNE 7-8, 17 JULY 29 AUG. 7, 9, 14, 15, 18, 24, 25, SEP. 6, 7, 9, 13, 15, 19, 20, 24, 25, 26, 29, 30 OCT.

Total No. of visits **67.**

Dates of Examination of principal parts—Casings Rotors Blading Gearing

Wheel shaft Thrust shaft **24-9-25** Tunnel shafts **22-2-24** Screw shaft **20-5-25** Propeller **19-5-25**

Stern tube **10-4-25** do fittings **4-6-25** Engine and boiler seatings **16-4-25** Engines holding down bolts **6-10-25**

Completion of pumping arrangements **24-10-25** Boilers fixed **17-7-25** Engines tried under steam **26-10-25**

Main boiler safety valves adjusted **24-10-25** Thickness of adjusting washers **LOCK NUTS FITTED**

Material and tensile strength of Rotor shaft Identification Mark on Do.

Material and tensile strength of Flexible Pinion Shaft Identification Mark on Do.

Material and tensile strength of Pinion shaft Identification Mark on Do.

Material and tensile strength of 1st Reduction Wheel Shaft Identification Mark on Do.

Material of Wheel shaft Identification Mark on Do. Material of Thrust shaft **O.H. STEEL** Identification Mark on Do.

Material of Tunnel shafts **O.H. STEEL** Identification Marks on Do. Material of Screw shafts **O.H. STEEL** Identification Marks on Do.

Material of Steam Pipes **S.D. STEEL** Test pressure **690 LBS** Date of test **1-10-25**

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 **YES** If so, state name of vessel **S.S. "BIYO MARU"**

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

The machinery of this vessel has been efficiently installed on board in accordance with the Rule requirements, & the materials & workmanship is good

Intermediate & propeller shafting was made by The Sizer Forge Co. Buffalo U.S.A.

The machinery was tested under full working conditions with satisfactory results and is eligible in my opinion to be classed + L.M.C. 10-25

Forced lubrication is fitted to turbines, alternator, Reduction gearing & Michel thrust, with an emergency gravitation supply

NOTE! Main motor rotors & cables were subjected to a static press. of 2250 volts for 10 minutes without sign of defect

" " Stator Controller switch, & Gen. Stator " " 1500 " " " " " " " "

The amount of Entry Fee **PART \$ 36.00** When applied for, **14-11-1925**

Special **INSTALLING \$ 363.00**

Boiler Fee **\$ 601.00** When received, **14-12-1925**

Travelling Expenses (if any) **\$**

H.D. Buchanan & Co.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 5 FEB 1926

Assigned **+ Lmb. 11, 25 30. Cl.**
2 Turbo Electric Motors S.R. Geared to 1 Shaft



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CERTIFICATE WRITTEN