

Report on Steam Turbine Machinery.

GENERATOR

Kab. No. 1536

No. FE 34

29 SEP 1954

Rpt. 4a.

Received at London Office

Date of writing Report 27. AUG 1953 When handed in at Local Office Yokohama Port of Kobe
 No. in Survey held at Tokyo & Aioi Japan Date, First Survey 19th Aug. 1952 Last Survey 21st June 1953
 Reg. Book on the steel single screw vessel "S.T. KOHO-MARU" Tons (Gross) 1708.11
 (Net) 1337.88
 Built at Aioi, Japan By whom built Harima Shipbuilding & Engineering Co., Ltd. Yard No. 477 When built July 1953
 Engines made at Tokyo, Japan By whom made Shikawajima Heavy Industries Co., Ltd. Engine No. IA 1181 When made July 1953
 Boilers made at Aioi, Japan By whom made Harima Shipbuilding & Engineering Co., Ltd. Boiler No. 8761 When made July 1953
 Shaft Horse Power at Full Power 660 X 2 Owners Line Kaimu K.K. Port belonging to Tokyo
 Nom. Horse Power as per Rule 132 X 2 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
 Trade for which Vessel is intended Ocean going

STEAM TURBINE ENGINES, &c.—Description of Engines Multistage Impulse type
 No. of Turbines 1 Ahead 1 Direct coupled, single reduction geared to 550 KVA Generator No. of primary pinions to each set of reduction gearing 1
 Astern double reduction geared
 direct coupled to Alternating Current Generator 3 phase 60 periods per second rated 550 KVA Kilowatts 450 Volts at 1200 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.
Impulse Blading	7			
Reaction Blading				
No. of rows				
No. of stages				
No. of rows in each stage				

Shaft Horse Power at each turbine
 H.P. 660 I.P. Revolutions per minute, at full power, of each Turbine Shaft L.P. 8.441 1st reduction wheel
 I.P. main shaft 1,200

Rotor Shaft diameter at journals
 H.P. 70 mm Pitch Circle Diameter 1st pinion 119.48 mm Width of Face 1st reduction wheel
 I.P. main wheel 840.52 mm main wheel 180 mm
 L.P. 1st pinion 170 mm 1st reduction wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings
 1st pinion 170 mm 1st reduction wheel 170 mm
 2nd pinion main wheel 170 mm

Flexible Pinion Shafts, diameter at bearings
 1st External 70 mm 2nd diameter at bottom of pinion teeth
 2nd Internal 1st 117.98 mm 2nd

Wheel Shafts, diameter at bearings
 1st diameter at wheel shroud Generator Shaft, diameter at bearings
 main 120 mm main 846.68 mm Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule Thrust Shaft, diameter at collars as fitted
 as fitted

Tube Shaft, diameter as per rule Screw Shaft, diameter as fitted Is the tube shaft fitted with a continuous liner
 as fitted as fitted as fitted

Bronze Liners, thickness in way of bushes as per rule Thickness between bushes as fitted Is the after end of the liner made watertight in the propeller boss
 as fitted as fitted 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
 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
 If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Bades State whether Moveable Total Developed Surface 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. Turbines exhaust direct to the Condenser
 No. of Turbines fitted with astern wheels Feed Pumps No. and size How driven

Pumps connected to the Main Bilge Line No. and size How driven
 Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size

Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room In Pump Room
 In Holds, &c.

Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

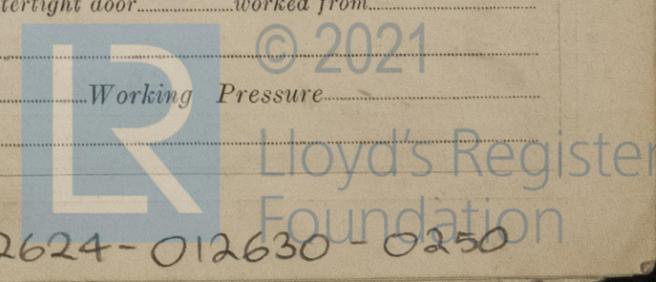
Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges
 Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges above or below the deep water line Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate What pipes pass through the bunkers 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

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 Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers Working Pressure
 Is Forced Draft fitted No. and Description of Boilers
 Is a Report on Main Boilers now forwarded?



Is a Donkey Boiler fitted? *Yes* If so, is a report now forwarded? *Yes*
 (an Auxiliary) *Boiler fitted?*
 Is the donkey boiler intended to be used for domestic purposes only? *Yes*
 Plans. Are approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers
 (If not, state date of approval)
 Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements
 (Geared turbines situated aft.) **GENERATOR MACHINERY** Have torsional vibration characteristics of system been approved *yes* Date of approval *2-2-53*

SPARE GEAR.

Has the spare gear required by the Rules been supplied? *Yes*
 State the principal additional spare gear supplied *Bearing bushes for each reduction gear and each rotor.*
Pads for turbine thrust.

Ishikawajima Heavy Industries Co., Ltd.
Takeo Naruse Manufacturer.

The foregoing is a correct description, *M. Yoshikawa*

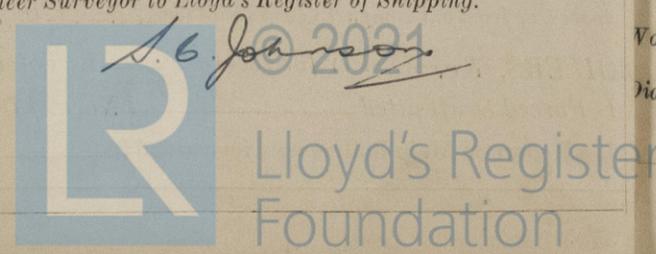
Dates of Survey while building	During progress of work in shops -	1952:- Aug 19, 22, 26, Sep. 2, 5, 9, 16, 27, 29, Oct. 1, 29, Nov. 15, 28, Dec. 2, 16, 27.
	During erection on board vessel -	1953:- Jan. 27, 29, Feb. 2, 6, 17, 22, March 4, 6, 7, 10, 13, 17, 20, Apr. 6, 7.
	Total No. of visits	35
Dates of Examination of principal parts	Casings	1181 27-2-53
	Rotors	17-2-53
	Blading	10-3-53
	Gearing	17-3-53
Wheel shaft	27-1-53	
Thrust shaft		
Intermediate shafts		
Tube shaft		
Screw shaft		
Propeller		
Stern tube		
Engine and boiler seatings		
Engine holding down bolts		
Completion of fitting sea connections		
Completion of pumping arrangements		
Boilers fixed		
Engines tried under steam		
Main boiler safety valves adjusted		
Thickness of adjusting washers		
Rotor shaft, Material and tensile strength	Ni Cr Mo Steel L 52.8 T 50.6	Identification Mark Y 4092
	L 47.7 T 48.6 T/D"	Y 4321
Flexible Pinion Shaft, Material and tensile strength		Identification Mark Y 4071-2
	L 53.2 T/D"	Y 4071-1
Pinion shaft, Material and tensile strength	Ni Cr Steel L 54.3 T/D"	Identification Mark Y 4071-1
	Chemical analysis C 0.36 Si 0.26 Mn 0.48 P 0.012 S 0.006 Ni 2.86 Cr 0.88	
If Pinion Shafts are made of special steel state date of approval of chemical analysis, physical properties and heat treatment		2-2-53
1st Reduction Wheel Shaft, Material and tensile strength		Identification Mark Y 4512 A
Wheel shaft, Material	Forged steel	Identification Mark Y 4512 B
Thrust shaft, Material		Identification Mark
Intermediate shafts, Material		Identification Marks
Tube shaft, Material		Identification Marks
Screw shaft, Material		Identification Marks
Steam Pipes, Material		Test pressure
Date of test		Is an installation fitted for burning oil fuel
Is the flash point of the oil to be used over 150°F		Have the requirements of the Rules for the use of oil as fuel been complied with
Is the vessel (not being an oil tanker) fitted for carrying oil as cargo		If so, have the requirements of the Rules been complied with
If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with		
Is this machinery a duplicate of a previous case	<i>Yes</i>	If so, state name of vessel <i>"YUHO MARU"</i>

General Remarks. (State quality of workmanship, opinions as to class, &c.) *These Turbines have been constructed under the supervision of the Society's Surveyors in accordance with Approved plans and the Rules, the workmanship and materials have been found satisfactory. The turbines were examined during and after shop trials and found in good order. It is submitted that these engines are eligible for classification with this Society with the notation of + LMC when satisfactorily installed in the vessel. The machinery has now been satisfactorily installed on board and tested under full working condition and found satisfactory.*

The amount of Entry Fee *Y 84,000* When applied for *during construction only.*
 Special ... £ : : 19
 Donkey Boiler Fee ... £ : : When received
 Travelling Expenses (if any) £ : : 19
 Committee's Minute
 Assigned *See Rpt. 4a.*

YOKOHAMA
 FRIDAY 16 OCT 1953

J. Nonaka
M. Schizaki
 Engineer Surveyor to Lloyd's Register of Shipping.



Certificate (if required) to be sent to

The Surveyors are requested not to write on or below the space for Committee's Minute.

Rpt. 5
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