

# Report on Steam Turbine Machinery.

GENERATOR

Kab. No. 1536

No. FE 34

29 SEP 1954

Rpt. 4a.

Received at London Office

27. AUG 1953

Port of Yokohama : Kabe

Date of writing Report

When handed in at Local Office

No. in Survey held at Tokyo & Aioi Japan

Date, First Survey 19th Aug. 1952

Last Survey 21st June 1953

Reg. Book

(Number of Visits 25)

on the steel single screw vessel S.T. KOHO-MARU

Tons (Gross 17208.11  
Net 13397.88)

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 Ishikawajima Heavy Industries Co., Ltd. Engine No. 1A 1181 When made July 1953

Boilers made at Aioi, Japan By whom made Harima Shipbuilding & Engineering Co., Ltd. Boiler No. 8762 When made July 1953

Shaft Horse Power at Full Power 660 X 2 Owners Line Kaifu 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 Ahead 1 Direct coupled, single reduction geared to 550 KVA Generator No. of primary pinions to each set of reduction gearing 1

direct coupled to Alternating Current Generator 3 phase 60 periods per second rated 550 KVA Kilowatts 450 Volts at 1200 revolutions per minute; Direct Current Generator

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	No. of rows 7			
Reaction Blading	No. of stages			
	No. of rows in each stage			

Shaft Horse Power at each turbine H.P. 660 I.P. 8.441 1st reduction wheel L.P. main shaft 1200

Rotor Shaft diameter at journals H.P. 70 mm Pitch Circle Diameter 1st pinion 119.48 mm 1st reduction wheel 2nd pinion main wheel 840.52 mm Width of Face 1st reduction wheel main wheel 180 mm

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

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

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

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

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

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

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 Lubricating Oil Pumps, including Spare Pump, No. and size

Ballast Pumps, 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

Is Forced Draft fitted No. and Description of Boilers Working Pressure

Is a Report on Main Boilers now forwarded?

012624-012630 0250



Is a Donkey Boiler fitted? If so, is a report now forwarded?  
(an Auxiliary)  
Is the donkey boiler intended to be used for domestic purposes only  
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.

The foregoing is a correct description, **M. Yoshikawa** **Takao Naruse** Manufacturer.

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, 8, 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 **1182 4-3-53** 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 **L 52.8 T 50.6** Identification Mark **Y 4092**  
Rotor shaft, Material and tensile strength **Ni Cr Mo Steel L 47.7 T 48.6 T/D"** Identification Mark **Y 4321**  
Flexible Pinion Shaft, Material and tensile strength **L 53.2 T/D"** Identification Mark **Y 4071-2**  
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 **yes** If so, state name of vessel **"YUHO MARU"**

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  
**FRIDAY 16 OCT 1953**

Committee's Minute  
Assigned **See Rpt. 4a.**

