

Report on Steam Turbine Machinery. No. 89A

4a.

Port of **Kobe** Received at London Office
Date of writing Report **2-2-1950** When handed in at Local Office **19**
Date, First Survey **27th Nov '48** Last Survey **15th Nov. 1949**
(Number of Visits **42**)
on the **S.S. "Hakubasan Maru"** Tons Gross **4900** Net **2750**
Built at **Nagasaki** By whom built **Nagasaki Shipyard & Engine Works** Yard No. **1413** When built **Nov., 1949**
Engines made at **Nagasaki** By whom made **Nagasaki Shipyard & Engine Works** Engine No. **569** When made **Aug., 1949**
Boilers made at **Nagasaki** By whom made **Nagasaki Shipyard & Engine Works** Boiler No. **MN 1339** When made **17. Aug., 1949**
Shaft Horse Power at Full Power **2,800 HP** Owners **Mitsui Senpaku Co. Ltd** Port belonging to **Tokyo**
Nominal Horse Power as per Rule **(559) 720** Is Refrigerating Machinery fitted for cargo purposes **No.** Is Electric Light fitted **yes**
Trade for which Vessel is intended **N.H. = 634**

STEAM TURBINE ENGINES, &c.—Description of Engines **Mitsubishi Impulse Cross Compound Double Cylinder Double Reduction Geared Turbine**
No. of Turbines **2** Ahead **2** Direct coupled, single reduction geared to **one** propelling shaft. No. of primary pinions to each set of reduction gearing **2**
Astern **2** double reduction geared

Direct coupled to **Alternating Current Generator** phase **3** periods per second **1** rated **1** Kilowatts **1** Volts at **1** revolutions per minute;
for supplying power for driving **Propelling Motors, Type**
rated **1** Kilowatts **1** Volts at **1** revolutions per minute. Direct coupled, single or double reduction geared to **1** propelling shafts.

TURBINE	H. P.	I. P.	L. P.	ASTERN.
LOADING.				
No. of rows	5 (1 x 2 row, 4 x 1 row)		5 x 1 row	H.P. 1 x 2 row, L.P. 1 x 2 row
No. of stages				
No. of rows in each stage				

Shaft Horse Power at each turbine **H.P. 1320 HP** **I.P. 6911** **L.P. 1480 HP** **1st reduction wheel 942**
Revolutions per minute, at full power, of each Turbine Shaft **I.P. 123**

Shaft diameter at journals **H.P. 4.53"** **I.P. 6.69"** **L.P. 6.69"** **1st pinion 4.135"** **1st reduction wheel 1'0.20"** **2nd pinion 1'0.93"** **main wheel 8'2.92"** **Width of Face 1'9.65"**

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings **1st pinion 1'0.40"** **1st reduction wheel 1'3.16"** **2nd pinion 1'9.46"** **main wheel 1'11.62"**

Pinion Shafts, diameter at bearings **External 1st 4.135"** **2nd 9.05"** **Internal 1st 3'0.05"** **2nd 5.32"** **diameter at bottom of pinion teeth 1st 4.8"** **2nd 12.2"**

Wheel Shafts, diameter at bearings **1st 6.69"** **2nd 1'1.39"** **diameter at wheel shroud, main 8'3.43"** **Generator Shaft, diameter at bearings 1'0.48"** **Propelling Motor Shaft, diameter at bearings 1'1.39"**

Intermediate Shafts, diameter **as per rule 11.35"** **as fitted 11.61"** **Thrust Shaft, diameter at collars 1'0.60"** **as fitted 1'0.99"**

Shaft, diameter **as per rule 0.68"** **as fitted 0.79"** **Screw Shaft, diameter 0.51"** **as fitted 0.63"** **Is the tube shaft fitted with a continuous liner (fusion weld) yes**

Monze Liners, thickness in way of bushes **as per rule 0.51"** **as fitted 0.63"** **Is the after end of the liner made watertight in the speller boss yes** **If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner yes**

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**
two liners are fitted, is the shaft lapped or protected between the liners **yes** **Is an approved Oil Gland or other appliance fitted at the after end of the tube**

Propeller, diameter **14'11.13"** **Pitch 10'9.13"** **No. of Blades 4** **State whether Moveable No.** **Total Developed Surface 75.6 square feet.**

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **yes** **Can the H.P. or L.P. Turbines exhaust direct to the condenser yes**

No. of Turbines fitted with astern wheels **2** **Feed Pumps** **No. and size 2 sets of 3 stage horizontal turbine pump, 40,000 lbs/h** **How driven direct coupled to steam turbine**

Pumps connected to the Main Bilge Line **No. and size Three (33,000 lbs/h, 77,000 lbs/h, 220,000 lbs/h)** **Bilge G.S. Bilge & ME Bilge** **How driven 2 motor driven & 1 steam driven (vertical screw type)**

Ballast Pumps, No. and size **one, capacity 400,000 lbs/h** **Lubricating Oil Pumps, including Spare Pump, No. and size 2, cog-wheel type 275 gal/min**
Are two independent means arranged for circulating water through the Oil Cooler **yes** **Suctions, connected both to Main Bilge Pumps and Auxiliary**

Is ^{a Donkey} an Auxiliary Boiler fitted? No. If so, is a report now forwarded? _____

Is the donkey boiler intended to be used for domestic purposes only? _____

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.

Gear turbines situated aft. Have torsional vibration characteristics of system been approved? No. Date of approval _____

SPARE GEAR.

Has the spare gear required by the Rules been supplied? yes.

State the principal additional spare gear supplied. Coupling bolts of each size; Bearing bushes of each size for rotor shaft & pinion shaft; Packing rings of each gland; Pads of each thrust bearing; Adjusting rings of each bearing; Boiler tube stoppers; fire bars; Oil fuel burner nozzles; A quantity of assorted studs, bolts & nut; Numbers of those above mentioned are as specified in the Rules.

The foregoing is a correct description,

Dates of Survey while building
During progress of work in shops - (1948) NOV 27, DEC 11, 25, 26 (1949) JAN 11, 31, MAR 24, APR 6, 23, MAY 24, JUNE 13, 14, 28, 29
During erection on board vessel - (1949) OCT 26, 27, 28, 30, NOV 1, 2, 6, 7, 15
Total No. of visits 42

Dates of Examination of principal parts—Casings LP 13 June '49 HP 19 June '49 Rotors LP 23 May '49 Blading 11 July '49 Gearing 23 May '49

Wheel shaft 28 Apr '49 Thrust shaft 29 June '49 Intermediate shafts 31 Aug '49 Tube shaft _____ Screw shaft 31 Aug '49

Propeller 5 Sep '49 Stern tube 25 July '49 Engine and boiler seatings 19 Aug '49 Engine holding down bolts 4 Oct '49

Completion of fitting sea connections 7 Nov '49 Completion of pumping arrangements 7 Nov '49 Boilers fixed 26 Oct '49 Engines tried under steam 8 Aug '49

Main boiler safety valves adjusted 27 Oct '49 Thickness of adjusting washers no washer

Rotor shaft, Material and tensile strength LP Forged steel 36.9 T/D HP Forged steel 35.7 T/D Identification Mark HP MNF 321 R No ME

Flexible Pinion Shaft, Material and tensile strength HP Forged steel 35.8 T/D LP Forged steel 35.7 T/D Identification Mark LP MNF 485 R No F

Pinion shaft, Material and tensile strength HP Forged steel 47.8 T/D LP Forged steel 48.99 T/D Identification Mark LP MNF 486 R No F

; Chemical analysis C 0.35 P 0.014 S 0.019 Cu 0.18 Mn 0.49 Si 0.25 Ni 3.3%

If Pinion Shafts are made of special steel state date of approval of chemical analysis, physical properties and heat treatment 3 March '49

1st Reduction Wheel Shaft, Material and tensile strength HP Forged steel 35.8 T/D LP Forged steel 35.7 T/D Identification Mark LP MNF 337 R No F

Wheel shaft, Material Forged steel Identification Mark MNF 339 R No F 20 C Thrust shaft, Material Forged steel Identification Mark R No F 20 C

Intermediate shafts, Material Forged steel Identification Marks R No F 149 (A~E) Tube shaft, Material _____ Identification Marks

Screw shaft, Material Forged steel Identification Marks R No F 153 Steam Pipes, Material Solid drawn steel pipe Test pressure 60 Kg/cm²

Date of test 6 Oct '49 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 the use of oil as fuel been complied with? _____

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo? yes If so, have the requirements of the Rules been complied with? yes

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? No If so, state name of vessel _____

General Remarks. (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters.

The workmanship + materials are sound & good.

The machinery was examined under working condition during comprehensive deck & sea trials & found good.

In our opinion, the machinery of this vessel is eligible to have a record of + LMC 11-49 T.S. C.L. 11-49 3 W.T.B. (SPT) W.P. 20 Kgs/cm².

MACHINERY

The amount of Entry Fee £ 95,048- When applied for _____

Special ... £ - : : 19

Donkey Boiler Fee ... £ - : : When received _____

Travelling Expenses (if any) £ _____ 19

(Committee's Minute)

Assigned + LMC 11.49.

F.D. C.L. 3 WTB 285/6 Spt.

L. T. Williams & P. Ramakrishna
Engineer Surveyor to Lloyd's Register of Shipping.



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