

Report on Steam Turbine Machinery.

30 NOV 1953

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17. NOV. 1953 Port of Yokohama Kobe
of writing Report 19 When handed in at Local Office 19
Survey held at Tokyo & Aioi Japan Date, First Survey 8th Dec. 1952 Last Survey 26th Aug. 1953
Book (Number of Visits 89)
on the Steel Single Screw S.T. "DAIKYO-MARU" Tons (Gross 13,224.20 Net 9,553.47)
at Aioi Japan By whom built Harima Shipbuilding & Engineering Co. Ltd. No. 479 When built Aug. 1953
mes made at Tokyo Japan By whom made Shikawajima Heavy Industries Co. Ltd. Engine No. IT 2198 When made Aug. 1953
rs made at Aioi Japan By whom made Harima Shipbuilding & Engineering Co. Ltd. Boiler No. B 765 When made Aug. 1953
Horse Power at Full Power 9,000 SHP Owners Daikyo Oil Co., Ltd. Port belonging to Yokkaichi
Horse Power as per Rule 1,800 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes
e for which Vessel is intended Ocean going (carrying petroleum in bulk)

AM TURBINE ENGINES, &c.—Description of Engines. Multiple stage impulse turbine

of Turbines Ahead 2 Direct coupled, single reduction geared to Main propelling shafts. No. of primary pinions to each set of reduction gearing 2
Astern 1 double reduction geared
t coupled to { Alternating Current Generator — phase — periods per second — Kilowatts — Volts at — revolutions per minute;
Direct Current Generator }
upplying power for driving — Propelling Motors, Type —
l — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE	H. P.	I. P.	L. P.	ASTERN.
INDICATING.				
No. of rows	<u>10</u>		<u>7</u>	<u>3</u>
No. of stages				
No. of rows in each stage				

t Horse Power at each turbine H.P. 4,380 ✓ I.P. — Revolutions per minute, at full power, of each Turbine Shaft I.P. —
L.P. 4,620 ✓ L.P. 3,637 ✓ 1st reduction wheel HP 666 ✓ LP 643 ✓
main shaft 10.5 ✓

r Shaft diameter at journals H.P. 160 mm Pitch Circle Diameter 160 mm 1st pinion LP 255.29 1st reduction wheel HP 1492.54 LP 1444.71 Width of Face 1st reduction wheel 345 X 2
I.P. 160 mm 2nd pinion HP 517.31 LP 535.79 main wheel 3279.35 main wheel 500 X 2
L.P. 200 mm 1st pinion 282.5 1st reduction wheel 372.5
2nd pinion 505 main wheel 570

ance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 280 ✓ diameter at wheel shroud, main 500 ✓
HP 158 ✓ Pinion Shafts, diameter at bearings 1st 280 ✓ 2nd 170 ✓
HP 1502.54 LP 1454.71 Generator Shaft, diameter at bearings —
HP 1492.54 LP 1444.71 Propelling Motor Shaft, diameter at bearings —

mediate Shafts, diameter as per rule As approved as fitted 456 ✓
Thrust Shaft, diameter at collars as per rule As approved as fitted 460 ✓
Screw Shaft, diameter as per rule As approved as fitted 504 ✓
Is the { tube } shaft fitted with a continuous liner { yes }
Is the after end of the liner made watertight in the

ize Liners, thickness in way of bushes as per rule As approved as fitted 26 ✓
Thickness between bushes as per rule As approved as fitted 26 ✓
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner. —
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. —
no 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

eller, diameter 6,250 ✓ Pitch 4,438.9 No. of Blades 4 State whether Moveable Moveable Total Developed Surface 139 square feet.
ngle Screw, are arrangements made so that steam can be led direct to the L.P. Turbine yes Can the H.P. or I.P. Turbines exhaust direct to the
tenser yes No. of Turbines fitted with astern wheels 1 Feed Pumps { No. and size 2 - 55 M³/H
How driven (Steam Turbine)

ps connected to the Main Bilge Line { No. and size 1 - 50 M³/H 1 - 150 M³/H 1 - 90 M³/H 1 - 15 M³/H
How driven Steam Motor Steam Main Engine
Lubricating Oil Pumps, including Spare Pump, No. and size 2 - 120 M³/H
ast Pumps, No. and size — Suctions, connected both to Main Bilge Pumps and Auxiliary

two independent means arranged for circulating water through the Oil Cooler yes ✓
Pumps, No. and size: — In Engine and Boiler Room ENG. ROOM 3 - 2" V 5 - 4 - 1 - 3" V 1 - 6" COFF 4 - 2" 1 - 2" In Pump Room 1 - 3 1/2", 2 - 2"
olds, &c. 1 - 2" in Fore Pump Room 2 - 2 1/2" in Cargo hold ✓
n Water Circulating Pump Direct Bilge Suctions, No. and size 1 - 450 ✓ Independent Power Pump Direct Suctions to the Engine Room

es, No. and size 1 - 4" 1 - 6" 1 - 4" 1 - 6" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes ✓
re 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 ✓
re all Sea Connections fitted direct on the skin of the ship yes ✓ Are they fitted with Valves or Cocks yes ✓
re 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

ne both 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
vering plate yes ✓ What pipes pass through the bunkers Ballast suc pipe ✓ How are they protected —
That pipes pass through the deep tanks — Have they been tested as per rule —
re all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times yes ✓

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
aces, or from one compartment to another yes ✓ Is the Shaft Tunnel watertight no Is it fitted with a watertight door — worked from —
ILERS, &c. (Letter for record) Total Heating Surface of Boilers 439.0 Superheater 127.0 Total 566.0
s Forced Draft fitted yes No. and Description of Boilers 2 - water Tube Boiler Working Pressure 33 kg/cm²
a Report on Main Boilers now forwarded? yes

Is { a Donkey Boiler fitted? No
(an Auxiliary)

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. 3-2-53 ^{Kobe} Main Boilers 27-1-53 ^{Kobe} Auxiliary Boilers - Donkey Boilers -
(If not, state date of approval)

Superheaters 16-3-53 ^{Kobe} General Pumping Arrangements 20-5-53 ^{Kobe} Oil Fuel Burning Arrangements 27-5-53 ^{Kobe}
Geared turbines situated aft. Have torsional vibration characteristics of system been approved. Yes Date of approval 27-7-53

SPARE GEAR.

Has the spare gear required by the Rules been supplied. Yes

State the principal additional spare gear supplied. Complete bearing bush of each rotor, pinion & wheel shafts.
Complete turbine thrust pad of HP & LP turbine.
Bolts, reamer bolts, studs & nuts for turbine casing joints.
2 - Propeller Blades.

The foregoing is a correct description.

S. Kasuga
THE HARIMA SHIPBUILDING AND ENGINEERING COMPANY
T. Marimoto

Dates of Survey while building
During progress of work in shops - 1952:- DEC. 8 1953:- JAN. 20, 23, 27, FEB. 13, 18, 24, MARCH 4, 6, 10, 13, 20, 25, 27, APRIL 2, 3, 7, 11, 13, 17, 18, 28, MAY 2, 9, 12, 15, 16, 18, 22, 23, 26, 29, JUNE 1, 3, 4, 5, 8, 10, 11, 12, 13, 17, 18, 22, 24, JULY 1, 3, 7, 10, 11, 14, 16, 18, 28, 30, 1953, June 20, July 21, 25, Aug 7, 11, 14, 17, 19, 22, 24, 26.
During erection on board vessel - 1953, June 20, July 21, 25, Aug 7, 11, 14, 17, 19, 22, 24, 26.
Total No. of visits. Shikawana 43 Harima 46 Total 89

Dates of Examination of principal parts - Casings HP 5-6-53 HP 23-5-53 HP 8-6-53 1ST 12-6
1ST LP 9-5-53 LP 26-5-53 Rotors LP 26-5-53 Blading LP 10-6-53 Gearing 2ND 12-6
Wheel shaft 2ND 18-5-53 Thrust shaft 18-5-53 Intermediate shafts 11-6-53 Tube shaft - Screw shaft 27-2-53

Propeller 12-6-53 Stern tube 20-5-53 Engine and boiler seatings 10-7-53 Engine holding down bolts 18-7-53

Completion of fitting sea connections 17-6-53 Completion of pumping arrangements 17-8-53 Boilers fixed 20-6-53 Engines tried under steam 22-8-53
Main boiler safety valves adjusted (D) 33.9 (S) 30.8 Thickness of adjusting washers -

Rotor shaft, Material and tensile strength Ni-Cr-Mo Steel HP 71.5 70.8 71.1 70.8 LP 78.6 78.0 78.3 78.6 KG/MM² Identification Mark HP Y3416

Flexible Pinion Shaft, Material and tensile strength Ni-Cr-Mo Steel HP 80.6 81.4 LP 73.3 78.0 KG/MM² Identification Mark HP Y2622A

Pinion shaft, Material and tensile strength Ni-Cr-Mo Steel 1ST LP 70.2 70.5 70.6 71.3 2ND HP 86.6 84.4 KG/MM² Identification Mark HP Y3389A

72.8 73.5 HP 84.1 84.9 KG/MM² Identification Mark 1ST LP Y3423 2ND RIM
; Chemical analysis C 0.30 Si 0.22 Mn 0.45 P 0.018 S 0.019 Ni 2.01 Cr 0.57 Mo

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment 24-5-53

1st Reduction Wheel Shaft, Material and tensile strength O.H. Forged Steel HP 44.6 LP 45.0 KG/MM² Identification Mark HP Y4507A LP Y

Wheel shaft, Material O.H. Forged Steel Identification Mark Y 3418 Thrust shaft, Material O.H. FORGED STEEL Identification Mark Y 4513

Intermediate shafts, Material O.H. Steel Identification Marks KF-1285 Tube shaft, Material - Identification Marks -

Screw shaft, Material O.H. Steel Identification Marks KF-1319 Steam Pipes, Material O.H. seamless steel Test pressure 66 KG/MM²

Date of test 1953 July 1, 3, 7, 10, 11 Aug 7 Is an installation fitted for burning oil fuel yes

Is the flash point of the oil to be used over 150°F yes Have the requirements of the Rules for the use of oil as fuel been complied with yes

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 No If so, state name of vessel -

General Remarks. (State quality of workmanship, opinions as to class, &c.) This Turbine has 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 turbine has been tested in the shop under no load condition and found in good order.

It is submitted that this engine is eligible for classification with the Society with the notation of + LMC when satisfactorily installed in the

The machinery has now been satisfactorily installed on board and tested under full working condition and found satisfactory.

In our opinion the machinery of this vessel is worthy of record of + LMC 8.53, BS 8.53, W.P. 33 KG/cm² and TS (CL) 8.53.

The amount of Entry Fee £ 304,000 (Net) When applied for. DURING CONSTRUCTION ONLY
Special " £ 310,000 (Net) 17 NOV 1953
Donkey Boiler Fee £ : When received.
Travelling Expenses (if any) £ :

Committee's Minute FRIDAY 15 JAN 1954

Assigned + LMC 8.53

2 WTB 469 lb. (Sgt 438 lb.)

CL

Stochizuk Burns
Engineer Surveyor to Lloyd's Register of Shipping.

