

Report on Steam Turbine Machinery. No. 548

Received 12 MAR 1952

Writing Report 25th Sept 1951 When handed in at Local Office 25th Sept 1951 Port of Yokohama
Survey held at Tokyo Japan Date, First Survey 14th Jan. Last Survey 15th October 1951.
(Number of Visits 72)
on the Steel Twin Screw Steam Ship "TONAN MARU"
OSAKA, Japan By whom built OSAKA IRON WORKS, LTD. When built 1938 10 mo.
made at Tokyo Japan By whom made Ishikawajima Hvy. Ind. Co. Ltd. Engine No. LT2169 When made 1951 6 mo.
made at Aichi Japan By whom made Harima Shipbuilding & Engineering Co. Ltd. (For Star'd Engine) Boiler No. 8.731.8734 When made 10-1951
Horse Power at Full Power 4000. Owners Nippon Suisan K.K. Port belonging to Tokyo
Horse Power as per Rule 708.686 800 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes
for which Vessel is intended Ocean going

TURBINE ENGINES, &c.—Description of Engines Impulse type, with HP & LP Turbines, Starboard Engine
Ahead 2 Direct coupled to Main propelling shafts. No. of primary pinions to each set of reduction gearing 2
Aster 2 single reduction geared double reduction geared
Coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute;
Driving power for driving Propelling Motors, Type
Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

LINE	H. P.	I. P.	L. P.	ASTERN.
NG.				
S	8 Rows		6 Rows	HP 2 rows LP 2 rows
No. of rows				
No. of stages				
No. of rows in each stage				

Horse Power at each turbine H.P. 2000 I.P. 2000 L.P. 2000
Pitch Circle Diameter 1st pinion 140 2nd pinion 180
Revolutions per minute, at full power, of each Turbine Shaft HP 192.28 LP 230.23
Pitch Circle Diameter 1st pinion 120 2nd pinion 147
Main wheel 2761.66
Generator Shaft, diameter at bearings 1170
Propelling Motor Shaft, diameter at bearings 2630
Thrust Shaft, diameter at collars 13.9374
Screw Shaft, diameter 14.5669
Liners, thickness in way of bushes 0.7246
Thickness between bushes 0.8661
Is the after end of the liner made watertight in the
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner
If so, state type
Length of Bearing in Stern Bush next to and supporting propeller 59.0552
Pitch 3.750 mm No. of Bades 4 State whether Moveable moveable Total Developed Surface 78.2 square feet.
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
No. of Turbines fitted with astern wheels 2 Feed Pumps 3 sets, 50T/hr x 280 M (Head) 1, 50T/hr x 280M
How driven Impulse turbine driven
Connected to the Main Bilge Line No. and size 1, 150T/hr x 30M Bilge Pump 1, 200T/hr x 30M
How driven Motor Motor Motor
Pumps, No. and size 1, 200T/hr x 30M Lubricating Oil Pumps, including Spare Pump, No. and size 2, 135T/hr x 35M
Independent means arranged for circulating water through the Oil Cooler yes Suctions, connected both to Main Bilge Pumps and Auxiliary
In Engine and Boiler Room P 1 x 4" (Fore), 1 x 4" (center), 1 x 6" (Fore Bilge well), 1 x 4" (left-center), 1 x 300T/hr (emergency)
In Pump Room (Fore) PR 1 x 2 1/2", 2 x 2"
MID PR 3 x 2 1/2"
AFTER PR 3 x 2 1/2"
Water Circulating Pump Direct Bilge Suctions, No. and size 2 (P.S.) x 300T/hr x 30M Independent Power Pump Direct Suctions to the Engine Room
No. and size 1 x 6" (Bilge Ballast p.p.), 1 x 6" (Bilge p.p.) Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. yes
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
Sea Connections fitted direct on the skin of the ship. yes Are they fitted with Valves or Cocks. yes
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 cross
plate. yes What pipes pass through the bunkers. 1 x 6" (Fuel oil pipe) How are they protected. NO protection
Have they been tested as per rule.
Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times. yes
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
r from one compartment to another. yes Is the Shaft Tunnel watertight. NO Is it fitted with a watertight door. NO worked from.

S, &c.—(Letter for record) Total Heating Surface of Boilers 700.35 sq. meters x 4
ed Draft fitted. yes No. and Description of Boilers 4. Harima 3 Drum Water Tube Boiler Working Pressure 20 kg/cm²
ort on Main Boilers now forwarded? yes

Is a Donkey 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 9-8-51 Main Boilers 15-5-51 Auxiliary Boilers Donkey Boilers
Superheaters 15-5-51 General Pumping Arrangements 16-8-51 Oil Fuel Burning Arrangements 16-8-51
Geared turbines situated aft. Have torsional vibration characteristics of system been approved Date of approval

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 rotor, 1 set of pads for main thrust and turbine
Studs, reamer bolts, nuts for jointing of turbine casings

The foregoing is a correct description

M. Yoshikawa Takeso Narano
THE HARIWA SHIPBUILDING AND ENGINEERING COMPANY, LTD.

Dates of Survey while building During progress of work in shops - 1951: Jan., 14, 28, Feb., 4, 10, 16, 19, March 15, 20, 26, 28, 30 April 4, 9, 17, 21
During erection on board vessel - MAY 2, 7, 11, 24, 29, Jun 12, 19, 21, 25, 27, 30, Jul 3, 7, 10, 13, 14, 17, 19, 24, Aug 7, 9, 11, 14, 23
Total No. of visits Aug 7, 10, Sep. 29, Oct. 2, 10, 15 27 visit (YOKOHAMA office) 45 visit (KOBE office)

Dates of Examination of principal parts - Casings HP. 28-5-51, Rotors HP. 24-4-51, Blading HP. 20-6-51, Gearing 8-6-51
M 23-5-51 LP. 15-5-51, LP. 23-5-51, LP. 20-6-51

Wheel shaft 1st. 20-6-51 Thrust shaft 23-5-51 Intermediate shafts 19-7-51 Tube shaft - Screw shaft 19-7-51

Propeller 17-7-51 Stern tube 31-5-51 Engine and boiler seatings 7-8-51 Engine holding down bolts 7-8-51

Completion of fitting sea connections 10-9-51 Completion of pumping arrangements 2-10-51 Boilers fixed 31-7-51 Engines tried under steam 10

Main boiler safety valves adjusted 29-9-51 Thickness of adjusting washers -

Rotor shaft, Material and tensile strength Open Hearth Carbon Steel HP 40.1- 41.2 LP 36.6- 36.9 Identification Mark Y-1335B Y-

Flexible Pinion Shaft, Material and tensile strength Ni-Cr Steel HP 44.8 LP 44.0 - 44.8 Identification Mark 1462-A 14

Pinion shaft, Material and tensile strength 1st pinion HP 40.5-42.1 2nd HP 40.85-43.33 LP 41.3-42.1 pinion rim LP 40.5-40.85 Identification Mark 1st LP 146

2nd pinion rim HP 1459-D LP 1459-A ; Chemical analysis 1st N1.3.49 P.O.017 2nd A. N1.3.53 C.O.29 P. S. pinion, C.O.27 S.O.014 pinion D. N1.3.39 C.O.28 P. S. diameter

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

1st Reduction Wheel Shaft, Material and tensile strength Open hearth steel HP 32.3 LP 32.6 Identification Mark LP Y-1351-1

Wheel shaft, Material Open hearth steel Identification Mark Y-1788 Thrust shaft, Material Open hearth steel Identification Mark Y-17

Intermediate shafts, Material O.H. steel Identification Marks K-F748-2 Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks Steam Pipes, Material O.H. steel Test pressure 60

Date of test 7-8-51, 4-9-51, 1-10-51 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

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

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 the Rules and approved plans, the quality

workmanship and materials has been found satisfactory.

The turbine is intended for installation in Tonan-Maru, now under reconstruction at the

Shipbuilding Works, Aioi.

It is submitted that this machinery is eligible to be classed with this Society with not

of LMC when satisfactorily installed in the vessel.

The machinery has now been satisfactorily installed on board and tested under

power.

The amount of Entry Fee £ 478.950 When applied for

Special £ : : 19

Donkey Boiler Fee £ : : When received

Travelling Expenses (if any) £ : : 19

Committee's Minute

Assigned

Aburne & Hayashida
Engineer Surveyor to Lloyd's Register of Shipping.
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