Report on Steam Turbine Machinery. No. 682

Received at London Office 19 MAY 1952

writing Report ..... 19 ... When handed in at Local Office ..... 19 ... Port of Kobe

Survey held at Kobe ... Date, First Survey 17th Feb., 1951 Last Survey 10th December 19 51

(Number of Visits 56)

...on the Steel Single Screw Steam Ship "Nippon Maru" ... Tons (Gross 6209.88 (Net 3614.10

at Kobe, Japan ... By whom built Kawasaki Dockyard Co., Ltd. Yard No. 913 When built 12. 51

...s made at Kobe, Japan ... By whom made Kawasaki Dockyard Co., Ltd. Engine No. T-314 When made 12. 51

...s made at Kobe, Japan ... By whom made Kawasaki Dockyard Co., Ltd. Boiler No. 2153 2154 When made 12. 51

...Horse Power at Full Power 4500 IP ... Owners Nippon Kaiun Co., Ltd. ... Port belonging to Kobe

...Horse Power as per Rule 1096.939 ... Is Refrigerating Machinery fitted for cargo purposes none Is Electric Light fitted yes

...for which Vessel is intended International

M TURBINE ENGINES, &c.—Description of Engines Impulse type, with H.P. & L.P. Turbines

Turbines Ahead 1-H.P. 1-L.P. ~~Direct coupled, single reduction geared~~ double reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing 1-H.P. 1-L.P.
Astern 1-L.P.

...coupled to { Alternating Current Generator — phase — periods per second / Direct Current Generator } rated — Kilowatts — Volts at — revolutions per minute;

...plying power for driving ... Propelling Motors, Type ...

— Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

BINE DING.	H.P.	I.P.	L.P.	ASTERN.
No. of rows	10	—	8	3
No. of stages				
No. of rows in each stage				

...lorse Power at each turbine { H.P. 2100 / I.P. — / L.P. 2400 } **Revolutions** per minute, at full power, of each Turbine Shaft { H.P. 7020 / I.P. — / L.P. 5430 } 1st reduction wheel H.P. 792 L.P. 737 / main shaft 110

...haft diameter at journals { H.P. 100 mm / I.P. — / L.P. 110 mm } **Pitch Circle Diameter** 1st pinion H.P. 149.53 mm L.P. 178.97 1st reduction wheel H.P. 1325.66 mm L.P. 1316.36 / 2nd pinion H.P. 381.06 L.P. 408.77 main wheel 2743.63 mm **Width of Face** { 1st reduction wheel 440 mm / main wheel 760 mm }

...ce between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 180 mm 1st reduction wheel 295 mm / 2nd pinion 400 mm main wheel 435 mm }

...e Pinion diameter { 1st — / 2nd H.P. 145 L.P. 155 } **Pinion Shafts,** diameter at bearings External { 1st H.P. 100 mm L.P. 110 / 2nd H.P. 250 mm L.P. 200 } Internal { 1st H.P. 160 L.P. 170 / 2nd H.P. 1333, 2455 mm L.P. 1326, 3617 } diameter at bottom of pinion teeth 1st H.P. 139.41 L.P. 164.04 / 2nd H.P. 361.80 L.P. 389.52

...Shafts, diameter at bearings { 1st 250 / main 375 } diameter at wheel shroud, { main 2755, 6331 } **Generator Shaft,** diameter at bearings —

...diate Shafts, diameter as per rule 350.1 mm / as fitted 360 **Propelling Motor Shaft,** diameter at bearings —

Thrust Shaft, diameter at collars as per rule 368 / as fitted 375

...haft, diameter as per rule — / as fitted — **Screw Shaft,** diameter as per rule 386.3 / as fitted 395 Is the { ~~tube~~ / screw } shaft fitted with a continuous liner yes

...Liners, thickness in way of bushes as per rule 19.40 / as fitted 22 Thickness between bushes as per rule 14.6 / as fitted 18 Is the after end of the liner made watertight in the ...r boss yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner —

...ner 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 ...ners 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 none If so, state type — Length of Bearing in **Stern Bush** next to and supporting propeller 1800 mm

...er, diameter 5250 mm Pitch 3810 mm No. of Bades 4 State whether Moveable moveable Total Developed Surface 8.8 square M.

...e 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 ...er yes No. of Turbines fitted with astern wheels 1 **Feed Pumps** { No. and size 2-26"x380 M R.P.M. 4700 / How driven Turbine driven }

...onnected to the **Main Bilge Line** { No. and size 1-Bilge fire pump 100"x50 M, 1-General service pump 100"x50 M, 1-Ballast pump 180"x25 M, 1-Bilge Sanitary pump 75"x30 M / How driven Electric Motor Electric motor Electric motor Intermediate shaft }

...Pumps, No. and size 1-180"x25 M **Lubricating Oil Pumps,** including Spare Pump, No. and size 2-70"x30 M

...independent means arranged for circulating water through the **Oil Cooler** yes **Suctions,** connected both to Main Bilge Pumps and Auxiliary ...mps, No. and size:—In Engine and Boiler Room 1x5½" (aft. S) 7x3" (E.R. P&S, tunnel) In Pump Room —

..., &c. 10x3", deep F 2x3", Aft. bilge hat 2x3", coffer dam (fore side) 1x2", E.R. Coffer dam 2x2½"

...Water Circulating Pump Direct Bilge Suctions, No. and size 1x320 m/m **Independent Power Pump Direct Suctions** to the Engine Room ...No. and size 1x3"(P.aft) 1x5½"(S.aft) 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

...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 ...ker 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 ...plate yes What pipes pass through the bunkers — How are they protected —

...pes pass through the deep tanks — 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

...rangement 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 ...from one compartment to another yes Is the Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper deck

...S, &c.—(Letter for record .....) Total Heating Surface of Boilers 432.2 m² (Total economizer surface 546 m²)

...d Draft fitted yes No. and Description of Boilers 2 x 2 Drums D type Water tube boiler Working Pressure 22 Kg/cm²

...ort on Main Boilers now forwarded ? yes

Is { a Donkey / an Auxiliary } Boiler fitted? None 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 24-5-51 Main Boilers 19-7-51 Auxiliary Boilers — Donkey Boilers —
(If not, state date of approval)

Superheaters 19-7-51 General Pumping Arrangements 14-9-51 Oil Fuel Burning Arrangements 14-9-51

Geared turbines situated aft. } Have torsional vibration characteristics of system been approved yes Date of approval 26-9-51

SPARE GEAR.

Has the spare gear required by the Rules been supplied yes

State the principal additional spare gear supplied 11 water tubes, 24 Superheater tubes, 12 Economizer tubes, 4 air cones, 4 Frame cones, 20 air preheater tubes, 226 Bricks, 2 safety Valve springs, 2 Superheater safety Valve springs, 1 set water gaug, 6 glasses of water gauge, 5 H.P. feed water heater tubes, 30 Oil cooler tubes, 5 L.P. feed water heater tubes, 20 Aux. condenser tubes, 5 Fuel Oil heater tubes, 3 Oil burning pump rotors, 3 L.O. pump rotors, 1 set Ballast pump impeller & shaft, 1 set General service pump impeller & shaft, 1 set Bilge fire pump Bucket Ring, 5 condenser tubes.

The foregoing is a correct description, Takeo. Morimatoz Manufacturer.

Dates of Survey while building

During progress of work in shops: Feb. 17 Mar. 5. May 14, 16, 18, 21, 23, 24 25. June 11, 12, 18. July 3, 6, 20, 30, Aug. 11, 21, 25, 27, 28, Sep. 3, 4, 6, 10, 11, 16, 19, 21, 25, 26, 28, 29 Oct 1, 4, 5, 10, 11, 13, 15, 22, 24, 29 Nov. 2, 7, 12, 14, 16, 19, 26.

During erection on board vessel: Nov. 30 Dec. 1, 3, 6, 8, 10

Total No. of visits 56

Dates of Examination of principal parts—Casings HP 27-8-51 LP 10-9-51 Rotors HP 25-9-51 LP 1-10-51 Blading HP 25-9-51 LP 1-10-51 Gearing 3-9-51

Wheel shaft 10-9-51 Thrust shaft 10-9-51 Intermediate shafts No1 24-5-51 No2 12-6-51 No3 11-6-51 No4 12-6-51 No5 18-6-51 No6 3-7-51 Tube shaft — Screw shaft 17-2-51

Propeller 18-6-51 Stern tube 18-5-51 Engine and boiler seatings 2-11-51 Engine holding down bolts 21-11-51

Completion of fitting sea connections 16-9-51 Completion of pumping arrangements 8-12-51 Boilers fixed 12-11-51 Engines tried under steam 6-12-51

Main boiler safety valves adjusted 1-12-51 Thickness of adjusting washers —

Rotor shaft, Material and tensile strength Forged steel, HP 40.9 T/in² LP 36 T/in² Identification Mark HP Y1684 LP Y1685

Flexible Pinion Shaft, Material and tensile strength Forged steel, HP 36.5 T/in² LP 36 T/in² Identification Mark HP KW-F 702 LP KW-F 732

Pinion shaft, Material and tensile strength 1st pinion HP 49 T/in² LP 43 T/in² 2nd pinion HP 45.5 T/in² LP 45.5 T/in² Identification Mark 1st KW-F 795- 2nd KW-F 796

; Chemical analysis KW-F 795-1 KW-F 795-2 KW-F 796-1 KW-F 796-2 C. 0.29 0.28 Si. 0.26 0.24 Mn. 0.58 0.51 P 0.007 0.007 S. 0.005 0.004 Ni 3.98 3.81

If Pinion Shafts are made of special steel state date of approval of chemical analysis, physical properties and heat treatment 24-5-51

1st Reduction Wheel Shaft, Material and tensile strength HP forged steel 29.7 T/in², LP forged steel 30.4 T/in² Identification Mark HP KW-F 717-1 LP KW-F 717-2

Wheel shaft, Material Forged steel Identification Mark KW-F 703 Thrust shaft, Material Forged steel Identification Mark KW-F 6

Intermediate shafts, Material Forged steel Identification Marks No1 KW-F 805 K.T.B. No2 KW-F 843 K.T.B. No3 KW-F 858-1 K.T.B. No4 KW-F 844 K.T.B. No5 KW-F 858-2 K.T.B. No6 KW-F 885-2 K.T.B. Tube shaft, Material — Identification Marks —

Screw shaft, Material Forged steel Identification Marks KW-F 639-2 Steam Pipes, Material steel pipe Test pressure 64 K

Date of test 1951 Oct. 22, 24, 29 Nov. 2, 7, 12, 14, 16, 19, 21. 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 ye

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 y

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.) These turbines have been constructed under the supervision of the Society's Surveyors in accordance with the Rules, approved plans and Secretary's letters.

The materials were found sound and free from defects and the workmanship is good.

The machinery was examined under working conditions during shop trial & comprehensive Sea trial and found satisfactory.

In our opinions the machinery of this vessel is worthy of a record of

+ L.M.C. 12/51, B.S. 12/51, T.S. (C.L.) 12/51.

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

The amount of Entry Fee ...	£ 71:7.440	When applied for ..... 19 .....
Special	£ —:—	
Donkey Boiler Fee ...	£ —:—	When received ..... 19 .....
Travelling Expenses (if any)	£ 28.000:	

FRI. 20 JUN 1952

Committee's Minute

Assigned + LMC 12.51

FITTED FOR OIL FUEL 12.51 FLASH POINT ABOVE 150°F. F.D. C.L. 2 WTB 455lb (Spl. 440lb)

J. Burns & K. Tabuchi
Engineer Surveyor to Lloyd's Register of Shipping.