

REPORT ON STEAM TURBINE MACHINERY. No. 322

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Writing Report 11/1/1951 When handed in at Local Office 11/1/1950 Port of Yokohama
 Survey held at Tokyo + Aioi Japan Date, First Survey 1st June Last Survey 23rd December 1950
 Book on the S/v "Nichiei Maru" (Number of Visits 2158) 10th October 1950
 at Aioi, Japan By whom built Harima Shipbuilding Wks Yard No. 453 When built Dec. '50
 made at Tokyo, Japan By whom made Ishikawajima Hvy Ind Co Engine No. IT 2152 When made 10-10-50
 made at Aioi, Japan By whom made Harima Shipbuilding Wks Boiler No. B722 B724 When made Dec. '50
 Horse Power at Full Power 7,000 HP Owners Nito Shosen Co Ltd Ltd. Port belonging to Tokyo
 Horse Power as per Rule 995 1612.3 Is Refrigerating Machinery fitted for cargo purposes ----- Is Electric Light fitted Yes
 for which Vessel is intended Ocean Going

STEAM TURBINE ENGINES, &c.—Description of Engines Impulse type, with HP & LP turbines

Turbines Ahead 2 ~~Direct coupled,~~ } to main propelling shafts. No. of primary pinions to each set of reduction gearing 2
 Astern 2 ~~single reduction geared~~ }
 Applied to Alternating Current Generator ----- phase ----- periods per second } rated ----- Kilowatts ----- Volts at ----- revolutions per minute;
 Direct Current Generator }
 Driving power for driving ----- Propelling Motors, Type -----
 ----- Kilowatts ----- Volts at ----- revolutions per minute. Direct coupled, single or double reduction geared to Double propelling shafts.

EXPANSION	H. P.			I. P.			L. P.			ASTERN.			
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	
→	35 45	695 705	2				45	1227	1	34 43	759 768	2	H.P.
→	22	733	1				62	1257	1				
→	26	741	1				94	1304	1				
→	30	749	1				132	1357	1	86 102	1286, 1302	2	L.P.
→	35	759	1				194	1434	1				
→	42	773	1				264	1529	1				
→	41	791	1										

Horse Power at each turbine { H.P. 3500 }
 { I.P. }
 { L.P. 3500 }
 Shaft diameter at journals { H.P. 170 }
 { I.P. }
 { L.P. 200 }
 between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 915 }
 { 2nd pinion 820 (H.P.) }
 { 1st reduction wheel L.P. 1515.80 }
 { 2nd reduction wheel L.P. 1610 (H.P.) }
 { 1st reduction wheel HP 270x2 }
 { 2nd reduction wheel LP 268x2 }
 { 1st reduction wheel HP 900 }
 { 2nd reduction wheel LP 900 }
 Pinion diameter { 1st HP 155 }
 { 2nd LP 150 }
 Pinion Shafts, diameter at bearings { External 160 (H.P.) }
 { Internal 1st 200 (H.P.) }
 { 2nd 202 (H.P.) }
 { 1st LP 1500 }
 { 2nd LP 1440 }
 Generator Shaft, diameter at bearings -
 Propelling Motor Shaft, diameter at bearings -

Shafts, diameter at bearings { 1st 300 }
 { main 465 }
 diameter at wheel shroud, { 1st 300 }
 { main 3050 }
 Propeller Shaft, diameter as per rule 15,7056"
 as fitted 16,0630"
 Thrust Shaft, diameter at collars as per rule 427.77
 as fitted 465
 Tube Shaft, diameter as per rule -
 as fitted -

Shaft, diameter as per rule 17.2640"
 as fitted 17.8740" } tube } shaft fitted with a continuous liner } Yes ✓
 as per rule 0.6215"
 as fitted 0.7087" } screw }
 between bushes the after end of the liner made watertight in the propeller boss Yes ✓ If the liner is in more than one length are the junctions
 fusion through the whole thickness of the liner One-length
 If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a
 material insoluble in water and non-corrosive Tight If two liners are fitted, is the shaft lapped or protected between the liners - Is an approved Oil Gland
 compliance fitted at the after end of the tube shaft - Length of Bearing in Stern Bush next to and supporting propeller 94.4883" ✓
 diameter 5700 mm. Mean Pitch 3933.2 mm. No. of Blades 4 State whether Moveable Moveable Total Developed Surface 118.1 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. Turbine exhaust direct to the
 Yes No. of Turbines fitted with astern wheels 2 Feed Pumps { No. and size 2, 42 ton/hr x 300 m head 17T/H x 300M (Steam)
 How driven driven by directly coupled steam turbine
 connected to the Main Bilge Line { No. and size 1x200M³/Hx30M, 1x110M³/Hx50M, 1x60M³/Hx60M, 1x15M³/Hx60M, 1x15M³/Hx30M
 How driven Motor ✓ Motor ✓ Motor ✓ Motor ✓ Main Shaft

Pumps, No. and size 1 x 200M³/H x 30 M Lubricating Oil Pumps, including Spare Pump, No. and size 2 x 135M³/H x 35M
 independent means arranged for circulating water through the Oil Cooler Yes ✓ Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
 No. and size:—In Engine and Boiler Room For 2 (P.S.) 3", Aft 2 (P.S.) 4", Aft (P.) 4", Aft (S.) 6", Tunnel 1/2" Condensate 1/2", In Pump Room 1-2"
 &c. Chain Locker 1-2 1/2", Cargohold 2 (P.S.) 2 1/2" Coffdam (F.N.D. 205-207) 1-3", Coffdam (F.N.O. 187-189) 1-3", Coffdam (F.N.D. 59-61) 1-1/2", Coffdam (Eng. RM) 1-2"
 Water Circulating Pump Direct Bilge Suctions, No. and size 1 x 450 mm Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes ✓
 No. and size (3-3", 3-4", 1-6", 1-450 mm) Independent Power Pump Direct Suctions to the Engine Room
 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 ✓ Both ✓
 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 line. Both ✓
 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 covering plate. Yes ✓
 pipes pass through the bunkers. ----- How are they protected -----
 pipes 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 ✓
 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. Yes ✓ Is the Shaft Tunnel watertight. NONE ✓ Is it fitted with a watertight door. No. worked from -----

BOILERS, &c.— (Letter for record) Total Heating Surface of Boilers 602.974 M2 x33
 Is Forced Draft fitted Yes ✓ No. and Description of Boilers 3 ✓ 3 Drums Water Tube Boiler Working Pressure 22 ✓
 Is a Report on Main Boilers now forwarded? Yes ✓
 Is { a Donkey } Boiler fitted? No. ✓ If so, is a report now forwarded? -----
 Plans. Are approved plans forwarded herewith for Shafting 18 July '50 Main Boilers 7 Aug. '50 Auxiliary Boilers ----- Donkey Boilers -----
 (If not state date of approval)
 Superheaters 30 Aug. 1950. General Pumping Arrangements 2 - Oct. '50. Oil Fuel Burning Arrangements 2 - Oct. '50.
 Spare Gear. State the articles ^{Principal additional gears} supplied: Yes

Bearing bushes for each reduction gear and each rotor (each 1 set.)
~~One set of pads for main thrust and turbine thrust.~~
 Bolts, reamer bolts, studs and nuts for joint of turbine casings. 1 set of fuel oil burner.

T.V.C. app^d 17/7/57 for 114 sp.

The foregoing is a correct description,

J. Parake T. Shigetomi

Dates of Survey while building { During progress of work in shops - - } 21 visits (YOKOHAMA DISTRICT) 1950 - JUN. 9. 11. 14. 21. 23. JUL. 7. 12. 14. 28. AUG. 9. 19. 24. 28. SEP. 2. 11. 12. 18. 21. OCT. 10. 17. 20. 24. 30. NOV. 2. 6. 10. (KOBE DISTRICT)
 { During erection on board vessel - - } 1950 - OCT. 5. 20. NOV. 18. 25. 30. DEC. 4. 6. 12. 14. 20. 23. (KOBE DISTRICT)
 Total No. of visits 23 58
 Dates of Examination of principal parts—Casings HP, 1-9-50 LP, 28-7-50 Rotor HP, 15-8-50 LP 22-9-50 Blading LP 22-9-50 Gearing LP 28-7-50
 Wheel shaft { HP 15-8-50 Thrust shaft 8-9-50 Intermediate shafts 18-9-50 Tube shaft - Screw shaft 28-7-50
 2nd 8-9-50 Propeller 21-9-50 Stern tube 28-8-50 Engine and boiler seatings 5-10 - 50 Engine holding down bolts 14-12-50
 Completion of pumping arrangements 6-12-50 Boilers fixed 29-10-50 Engines tried under steam shop 9-10-50
 Main boiler safety valves adjusted 4-12-50 Thickness of adjusting washers -
 Rotor shaft, Material and tensile strength HP, Ni-Co Steel, 46.0, 44.7, 45.5, LP, Forging Steel 35.7, 35.4, Identification Mark HP Y1155 LP Y1154
 Flexible Pinion Shaft, Material and tensile strength Ni-Cr-Steel HP 49.6, 48.0, LP 59.4, 59.9, Identification Mark Y836
 Pinion shaft, Material and tensile strength 1st Pinion nickel steel LP 45.0, 45.0, 44.4 2nd Pinion, nickel steel Identification Mark LP Y-771
 1st Reduction Wheel Shaft, Material and tensile strength Forging steel HP 72.7 ton/in² LP 72.1 ton/in² Identification Mark LP Y1157B
 Wheel shaft, Material Forging Steel A. 32.87 Identification Mark Y1156 Thrust shaft, Material Forging Steel 48.7 Identification Mark Y1156
 Intermediate shafts, Material O.H.S. Identification Marks No. 1 K-F 504-1 No. 2 K-F 504-2 Tube shaft, Material Seamless hot Identification Marks
 Screw shaft, Material O.H.S. - Identification Marks K_F 527 Steam Pipes, Material drawing steel Test pressure 60.66
 Date of test 9-6-50, 14-7-50, 21-6-50, 7-7-50, 23-6-50, 14-6-50 Can 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 Yes ✓ If so, have the requirements of the Rules been complied with ✓ Yes
 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 of workmanship and materials have been found satisfactory. The turbine is intended for installation in Ship No. 453 being constructed at the Harima Shipbuilding Works, Japan.

During machining of the main gear wheel some surface defects were caused to the teeth by ear. The gearing was examined after shop trials and found to be in order, but it is recommended that the gear wheel be again examined after six months' service. Subject to the foregoing the engine is submitted to be eligible for classification with this Society, and to have the notation of **Class L** when satisfactorily installed in the vessel. The machinery has now been satisfactorily installed on board and tested under full power.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	:	:	19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	19

Robert M. Shigetomi
 Engineer/Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 24 AUG 1951**

Assigned **+ LMC 12.50.**

FITTED FOR OIL FUEL 12.50 FLASH POINT ABOVE 150°F.

F.D.C.L. 3 WTB 313/6. Spt.



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