

Report on Steam Turbine Machinery.

No. 579-A

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Received at London Office 20 OCT 1952
 Date of writing Report 10-5-1952 When handed in at Local Office 19 Port of YOKOHAMA
 No. in Survey held at Tokyo & Yokosuka Date, First Survey 4-5-50 Last Survey 28-3-1952
 Reg. Book (Number of Visits 34)
 on the S.S. "EIKEN MARU" Tons (Gross 6394.82 Net 3674.29)
 Built at YOKOSUKA, JAPAN By whom built THE URAGA DOK CO., LTD. Yard No. 637 When built MAR. 1952
 Engines made at Tokyo, Japan By whom made Ishikawajima Heavy Industries Co. Ltd. Engine No. 172175 When made Jan. 52
 Boilers made at MAIZURO, JAPAN By whom made IINO SANGYO MAIZURO WORKS Boiler No. 8112 When made 10.51
 Shaft Horse Power at Full Power 4.800 Owners HACHIUMA KISEN CO., LTD. Port belonging to NISHINOMIYA
 Nom. Horse Power as per Rule 960 Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES
 Trade for which Vessel is intended OCEAN GOING

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

No. 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 2 double reduction geared
 direct coupled to Alternating Current Generator — phase — periods per second — rated — Kilowatts — Volts at — revolutions per minute;
 for supplying power for driving — Propelling Motors, Type —
 rated — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE BLADING.	H. P.	I. P.	L. P.	ASTERN.
Impulse Blading	8	—	6	H. P. 2 L. P. 2
Reaction Blading				
No. of rows in each stage				

Shaft Horse Power at each turbine H.P. 2.400 I.P. — L.P. 2.400
 Rotor Shaft diameter at journals H.P. 140 mm I.P. — L.P. 180 mm
 Pitch Circle Diameter H.P. 186.94 mm I.P. — L.P. 1313.06 mm
 1st pinion L.P. 218.10 mm 1st reduction wheel L.P. 1281.20 mm
 2nd pinion L.P. 387.98 mm main wheel 2736.64 mm
 1st reduction wheel 205 x 2 mm
 main wheel 430 x 2 mm

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 330 mm 1st reduction wheel 405 mm
 2nd pinion 700 mm main wheel 710 mm
 Flexible Pinion Shafts, diameter at bearings External 1st 140 mm 2nd 250 mm
 Internal 1st 140 mm 2nd 152 mm
 Pinion Shafts, diameter at bearings External 1st 140 mm 2nd 250 mm
 Internal 1st 140 mm 2nd 152 mm
 Wheel Shafts, diameter at bearings 1st 152 mm 2nd 410 mm
 Intermediate Shafts, diameter as per rule 358.5 mm as fitted 365 mm
 Thrust Shaft, diameter at collars as per rule 395 mm as fitted 400 mm

Tube Shaft, diameter as per rule 395 mm as fitted 400 mm
 Screw Shaft, diameter as per rule 19.4 mm as fitted 24 mm (P.O.C.)
 Thickness between bushes as per rule 14.5 mm as fitted 20 mm
 Is 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 made by fusion through the whole thickness of the liner —
 If 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 —
 If two 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 shaft —
 If so, state type — Length of Bearing in Stern Bush next to and supporting propeller 1675 mm

Propeller, diameter 5200 mm Pitch 4200 mm No. of Blades 4 State whether Moveable — Total Developed Surface 91.44 square feet (84950 H²)
 If Single 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 Condenser YES
 No. of Turbines fitted with astern wheels 2 { H.P. Feed Pumps { No. and size MAIN 2-33 1/2" x 280" AUX 1-20 1/2" x 280"
 How driven STEAM TURBINE
 Pumps connected to the Main Bilge Line { No. and size 1-35 1/2" x 25", 1-170 1/2" x 30", 1-200 1/2" x 20", 1-15 1/2" x 35"
 How driven VERTICAL WORTHINGTON ELECTRIC MOTOR VERTICAL WORTHINGTON MAIN SHAFT DRIVEN
 Ballast Pumps, No. and size 1-200 1/2" x 20", 1-170 1/2" x 30" Lubricating Oil Pumps, including Spare Pump, No. and size 2-100 1/2" x 35"
 Are two independent means arranged for circulating water through the Oil Cooler YES Suctions, connected both to Main Bilge Pumps and Auxiliary
 Bilge Pumps, No. and size:—In Engine and Boiler Room 1-2", 4-3" (IN ENGINE RM), 2-3" (IN BOILER RM) In Pump Room —
 In Holds, &c. 8-3", 2-3 1/2"

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-340 mm Independent Power Pump Direct Suctions to the Engine Room
 Bilges, No. and size 1-5", 1-3" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes YES
 Are 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
 Are all Sea Connections fitted direct on the skin of the ship YES Are they fitted with Valves or Cocks BOTH
 Are 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
 line 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 brass
 covering plate YES What pipes pass through the bunkers — How are they protected —
 What pipes pass through the deep tanks — Have they been tested as per rule —
 Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times YES
 Is 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
 spaces, or from one compartment to another YES Is the Shaft Tunnel watertight YES Is it fitted with a watertight door YES worked from UPPER DECK

OILERS, &c.—(Letter for record —) Total Heating Surface of Boilers 405 M² x 2
 Is Forced Draft fitted YES No. and Description of Boilers 2 SETS OF 3 DRUM TYPE WATER TUBE BOILER Working Pressure 20 kg/cm²
 Is a Report on Main Boilers now forwarded? YES

6-11-52

Lloyd's Register Foundation

009789-009795-0041

Is { a Donkey } Boiler fitted? — If so, is a report now forwarded? —
{ an Auxiliary }
Is the donkey boiler intended to be used for domestic purposes only —
Plans. Are approved plans forwarded herewith for Shafting. 24-10-51 Main Boilers 23-10-51 Auxiliary Boilers — Donkey Boilers —
(If not, state date of approval)
Superheaters 24-10-51 General Pumping Arrangements 31-10-51 Oil Fuel Burning Arrangements 31-10-51
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. —

The foregoing is a correct description.

Takeo Navano Manufacture
Dates of Survey while building
During progress of work in shops — 1950: — MAY. 4. 13.
1951: — JUNE 19. 23. JULY 16. 18. 21. 23. AUG. 1. 2. 10. 20. 21. 22. 31. SEP. 5. OCT. 18. 31. NOV. 15. 26.
During erection on board vessel — 1952: — FEB. 22. 25. MAR. 10. 12. 24. 26. 28.
Total No. of visits.
Dates of Examination of principal parts—Casings H.P. 15-11-51 Rotors L.P. 22-8-51 Blading L.P. 26-11-51 Gearing 26-11-51
Wheel shaft 18-10-51 Thrust shaft — Intermediate shafts 23-1-52 Tube shaft — Screw shaft 7-1-52
Propeller 21-1-52 Stern tube 9-11-51 Engine and boiler seatings 25-2-52 Engine holding down bolts 21-1-52
Completion of fitting sea connections 10-3-52 Completion of pumping arrangements 12-3-52 Boilers fixed 29-1-52 Engines tried under steam 26-3-52
Main boiler safety valves adjusted 24-3-52 Thickness of adjusting washers —
Rotor shaft, Material and tensile strength H.P. Ni-Cr-Steel 45.7 ~ 46.1 L.P. 43.1 ~ 44.5 Identification Mark L.P. Y-2947
Flexible Pinion Shaft, Material and tensile strength Ni-Cr-Mo. Steel H.P. 52.4 ~ 54.4 Identification Mark L.P. Y-1896
Pinion shaft, Material and tensile strength Ni-Cr-Mo. Steel 1st { H.P. 43.2-44.0 L.P. 44.5-44.9 2nd { H.P. 43.2-43.3 L.P. 43.2-43.3 Identification Mark 1st L.P. Y-1894
2nd H.P. Y-1899 A ; Chemical analysis 1st H.P. 0.27 0.26 0.57 0.015 0.007 1.58 0.87 0.28
L.P. Y-1899 B ; 2nd H.P. 0.32 0.24 0.64 0.015 0.008 1.67 0.24 0.22
If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment. 24. TH. DEC. 1951
1st Reduction Wheel Shaft, Material and tensile strength Open Hearth Steel H.P. 32.3 L.P. 32.8 Identification Mark L.P. Y-2944
Wheel shaft, Material Open Hearth Steel Identification Mark Y-1892 Thrust shaft, Material — Identification Mark —
Intermediate shafts, Material O.H. Steel Identification Marks Y-2500 Tube shaft, Material — Identification Marks —
Screw shaft, Material O.H. STEEL Identification Marks Y-2089 Steam Pipes, Material O.H. STEEL Test pressure 40 kg/cm²
Date of test MARCH 3, 7, 12, 1952 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. NO 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 SURVEYOR IN ACCORDANCE WITH RULES AND APPROVED PLANS. THE QUALITY OF WORKMANSHIP AND MATERIALS FOUND TO BE SATISFACTORY.

THE MACHINERY HAS BEEN SATISFACTORILY INSTALLED IN THE VESSEL IN ACCORDANCE WITH THE RULES, TESTED UNDER WORKING CONDITIONS AND FOUND SATISFACTORY.

IT IS SUBMITTED THAT THE MACHINERY OF THIS VESSEL IS ELIGIBLE TO BE CLASSED WITH THIS SOCIETY WITH THE NOTATION OF * LMC 3,52 "FITTED FOR OIL FUEL 3,52 F.P. OVER 150 AND TSCL 3,52 SUBJECT TO MAIN ENGINE REDUCTION GEARING BEING EXAMINED BEFORE THE END OF SEPTEMBER 1952 AND ALSO SUBJECT TO THE GEARING OF THE TWO (2) GENERATOR TURBINES BEING RENEWED BEFORE THE END OF MAY 1952.

The amount of Entry Fee ... £ 700.00.00 When applied for.
Propeller Blades ... £ 8,000.00 19
Special ... £ 7,000.00
Air receiver for Emergency Dynamo
Donkey Boiler Fee ... £ : : When received.
Travelling Expenses (if any) £ 15,000.00 19

Committee's Minute TUES. 11 NOV 1952

Assigned + LMC 3,52 Subject

FITTED FOR OIL FUEL 3,52 FLASH POINT ABOVE 150°F. FD CL 2 WTB 285lb (Spt. 279lb)

Engineer Surveyor to Lloyd's Register of Shipping.

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