

OM ACCTS	31/1
ADMIN/F	15/2
RECD.	20/1
Date of writing Report	15th Dec., 1960
No. in Survey held at	Aioi
Regd Book	15/2

Report on Steam Turbine Machinery.

No. FE-7105

Received at London Office _____

Date of writing Report 15th Dec., 1960. When handed in at Local Office JAN 19 1961 Port of Kobe

No. in Survey held at Aioi Date, First Survey 20th July, 1959 Last Survey 8th November, 1960.

Regd Book 15/2 (Number of Visits 82)

on the ~~Twin~~ ~~Triple~~ ~~Quadruple~~ Screw Vessel "MIR" Tons (Gross 25,037 (Net 16,304)

Built at Aioi, Japan By whom built Harima Shipbuilding & Eng., Co., Ltd. Yard No. 529 When built 1960, 11

Engines made at Tokyo, Japan By whom made Ishikawajima Heavy Ind., Co., Ltd. Engine No. IT-2261 When made 1960, 11

Boilers made at Aioi, Japan By whom made Harima Shipbuilding & Eng., Co., Ltd. Boiler No. B867, B868 When made 1960, 11

Shaft Horse Power { Maximum 17,600 Owners Vseso Juznoje Exportno-Importno Port belonging to Odessa, USSR

M.N. as per Rule 3,520 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.

No. of Turbines Ahead _____ Direct coupled, single reduction geared } to _____ propelling shafts. No. of primary pinions to each set of reduction gearing _____

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 { No. of rows _____				
Reaction Blading { No. of stages _____				
No. of rows in each stage _____				

Shaft Horse Power at each turbine { H.P. _____ I.P. _____ L.P. _____

Revolutions per minute, at full power, of each Turbine Shaft { H.P. _____ I.P. _____ L.P. _____

Rotor Shaft diameter at journals { H.P. _____ I.P. _____ L.P. _____

Pitch Circle Diameter { 1st pinion _____ 1st reduction wheel _____ 2nd pinion _____ main wheel _____

Width of Face { 1st reduction wheel _____ main wheel _____

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion _____ 1st reduction wheel _____ 2nd pinion _____ main wheel _____

Flexible Pinion Shafts, diameter { 1st _____ 2nd _____

Pinion Shafts, diameter at bearings { External 1st _____ 2nd _____ Internal 1st _____ 2nd _____

diameter at bottom of pinion teeth { 1st _____ 2nd _____

Wheel Shafts, diameter at bearings { 1st _____ 2nd _____

diameter at wheel shroud, { 1st _____ 2nd _____

Generator Shaft, diameter at bearings _____

Propelling Motor Shaft, diameter at bearings _____

Intermediate Shafts, diameter as per rule _____ as approved _____

as fitted _____ 538 mm. _____

Thrust Shaft, diameter at collars as per rule _____ as fitted _____

Tube Shaft, diameter as per rule _____ as fitted _____

Screw Shaft, diameter as per rule _____ as fitted _____ 570 mm. _____

Is the { screw } shaft fitted with a continuous liner { Yes _____

Bronze Liners, thickness in way of bushes as per rule _____ as approved _____

as fitted _____ 36 mm. _____

Thickness between bushes as per rule _____ as fitted _____ 28 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 2800 mm.

Propeller, diameter 6,750 mm. Pitch 5,200 mm. No. of Blades 5 State whether Moveable No Total Developed Surface 22.9 M² square feet.

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes, in emergency _____

Can the H.P. or L.P. Turbines exhaust direct to the _____

Condenser Yes No. of Turbines fitted with astern wheels 1 Feed Pumps { No. and size. Main: 3x100M³/H, Cold Start: 1 x 3M³/H

How driven Main: Steam Turbine, Cold Start: Elect. Motor.

Pumps connected to the Main Bilge Line { No. and size. Bilge pump 1x15M³/H, Fire & bilge pump 1x140/95M³/H, General service pump 140M³/H

How driven Elect. Motor, Elect. Motor, Steam

Ballast Pumps, No. and size 1x250M³/H, 2x160M³/H. Lubricating Oil Pumps, including Spare Pump, No. and size 2 x 140 M³/H

Are two independent means arranged for circulating water through the Oil Cooler Yes Branch Bilge Suctions, No. and size:—In Engine

and Boiler Rooms 5x4" (fw'd p.&s. hats. Aft p.&s. Aftmost) 3 x 2" (fw'd centre, p.& s.) In Pump Room 2x3" (p.&s.) 1 x 2" (p.&s.)

In Holds, &c. Engine room coff'm. 31x2", Fw'd coff'm. 2x3", Aft coff'm. 2x3" 1x4" (c)

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1 x 20" Direct Bilge Suctions to the Engine and/or Boiler Room

Bilges, No. and size Port 1x4", Star'd 1x6" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. _____

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. Yes 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 below

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. None How are they protected. _____

What pipes pass through the deep tanks. None 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. _____ Is it fitted with a watertight door. _____ worked from _____

BOILERS, &c.—Total Heating Surface of Boilers 1110.53M² (Generating tubes 513.27M², Superheater tubes 141.35M²)

Is Forced Draught fitted Yes No. and Description of Boilers 2—Two Drum Water Tube Boiler Working Pressure 48 Kg/cm²

Is a Report on Main Boilers now forwarded? Yes

015483-015495-0025

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 **2-5-1958**

Plans. Are approved plans forwarded herewith for Shafting **25-7-58** Main Boilers **16-10-1958** Auxiliary Boilers **18-2-1958** Donkey Boilers **-**

(If not, state date of approval)

Superheaters **21-7-1959** General Pumping Arrangements **9-4-1959** Oil Fuel Burning Arrangements **3-3-1959**

Geared turbines **Have torsional vibration characteristics of system been approved** Yes **Date of approval** **15-5-59**
situated aft.

SPARE GEAR.

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

State the principal additional spare gear supplied **None**

The foregoing is a correct description. **Y. Matsuyama, Manager of Aioi Works.**
IHE HARIMA SHIPBUILDING & ENGINEERING CO., LTD.

5292 Aioi, Aioi-shi, Hyogo-ken, Japan

Manufacturer.

Dates of Survey while building

During progress of work in shops - - 1959, July 20, Aug. 18, 28 Sep. 3, 5, 10, 11, 14, 15, 16, 25, 28 Oct. 14, 17, 20, 22, 24, 26, 28, 29, 31 Nov. 2, 5, 6, 7, 9, 11, 12, 13, 16, 19, 21, 24, 26, 30, Dec. 1, 2, 3, 7, 10, 14, 18, 28. 1960, Jan. 7, 11.

During erection on board vessel - - 1959, Oct. 6, 13, 15 Nov. 12, 13, 19, 27, Dec. 15, 19, 21, 24. 1960, Jan. 9, 13, 20, Feb. 23, 26, March 1, 4, 5, 10, 12, 18 April 4, 6, 7, 9, 11, Oct. 7, 8, 19, 22, 26, 27, 28, 31, Nov. 2, 8.

Total No. of visits **82**

Dates of Examination of principal parts—Casings Rotors Blading Gearing

Wheel shaft Thrust shaft Intermediate shafts 22-9-59 Tube shaft Screw shaft 18-8-59

28-10-59 Propeller 13-11-59 Stern bush 12-11-59 Engine and boiler seatings 1-3-60 5-3-60 Engine holding down bolts 1-3-60, 5-3-60

Completion of fitting sea connections 19-11-59 Completion of pumping arrangements 15-3-60 Boilers fixed 15-12-59 Engines tried under steam 9-4-60

Main boiler safety valves adjusted 13-1-60 Thickness of adjusting washers P.Sat.F-21.8 mm A-18.5 mm Spt.27.1 mm S.Sat.F-17.7 mm A-17.9 mm Spt.24.8 mm

Rotor shaft, Material and tensile strength Identification Mark

Flexible Pinion Shaft, Material and tensile strength Identification Mark

Pinion shaft, Material and tensile strength Identification Mark

; Chemical analysis

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

1st Reduction Wheel Shaft, Material and tensile strength Identification Mark

Wheel shaft, Material Identification Mark Thrust shaft, Material Identification Mark

Intermediate shafts, Material Steel Forging Identification Marks KT-FL388 Tube shaft, Material Identification Marks

Screw shaft, Material Steel Forging Identification Marks KT-FL374 Steam Pipes, Material Cr-Mo Steel Carbon Steel Test pressure 65.25 Kg/cm²

1959 Sept. 17, 18, Oct. 19, 26, Nov. 5, 20, 24, 27, 28, 30. Dec. 3, 4, 7, 14, 21, 28

Date of test 1960 Jan. 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

Full description of Fire Extinguishing Apparatus fitted in machinery spaces Steam Smothering in Engine Room & Boiler Room, Form Fire Extinguisher 136 ltr x 1, 45 ltr x 1, 9 ltr x 10, Sand Box 150 ltr x 2 CO₂ Fire Extinguisher 10 lbs x 2, HOSC Coupling 1 1/2" x 5 Canvas Hose 1 1/2" x 4.

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.)

The Boilers and Machineries have been installed on board the steam tanker "KATE N.L." at Aioi in a proper manner and found satisfactory when tested at sea under working conditions and eligible in our opinion for classification with the records of LMC11.60, MBS(W.T.) 683Lbs/in² Spt. 620Lbs/in² 847°F 11.60, SGS 142Lbs/in² 11.60, TS(CL)4.60, SPS 11.60 and OF 11.60

Neither gear hammer nor rough running could be detected at any speed.

The safety valve on the low pressure steam generator was adjusted under steam to 10 kg/cm² and accumulation test carried out and found satisfactory.

Installation

The amount of Entry Fee ... £ 365.250 When applied for

Special ... £ : : 19

Donkey Boiler Fee ... £ : : When received

Travelling Expenses (if any) £ : : 19

Committee's Minute FRIDAY 24 MAR 1961

Assigned

FA. Macfarlane & P. Macfarlane
Engineer Surveyor to Lloyd's Register of Shipping



Lloyd's Register Foundation