

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Received at London Office AUG - 2 1938

Date of writing Report 25th May 1938 When handed in at Local Office 25th May 1938 Port of SHIMONOSEKI

Survey held at NAGASAKI Date, First Survey 2nd April 37 Last Survey 10th May 1938

Book No. 414 on the Single Screw Steamer "TENRYO MARU" ex "Bolshevik" (Number of Visits 104) Tons { Gross 2,193.50 Net 1,156.41

Built at Nagasaki By whom built Kawaminami Kogyo Kabushiki Kaisha Yard No. 106 When built 1938

Engines made at Nagasaki By whom made " " " Engine No. 106 When made 1938

Boilers made at " " " " " Boiler No. 106 When made 1938

Registered Horse Power 1450 Owners Kawaminami Kogyo Kabushiki Kaisha Port belonging to Osaka

Horse Power as per Rule 294 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Vessel for which Vessel is intended All Seas.

Engines, &c. - Description of Engines Triple Expansion. Revs. per minute 90

No. of Cylinders 480x810x1340 m/m Length of Stroke 990 m/m No. of Cranks 3 No. of Cranks 3

Crank shaft, dia. of journals as per Rule 268.9 m/m as fitted 278 m/m Crank webs Mid. length breadth 178 m/m Thickness parallel to axis 334 m/m

Intermediate Shafts, diameter as per Rule 256.1 m/m as fitted 266 m/m Thrust shaft, diameter at collars as per Rule 268.9 m/m as fitted 278 m/m

Shafts, diameter as per Rule / as fitted / Screw Shaft, diameter as per Rule 299.7 m/m as fitted 302 m/m Is the screw shaft fitted with a continuous liner Yes

Liner thickness in way of bushes as per Rule 16.7 m/m as fitted 22 m/m Thickness between bushes as per Rule 12.5 m/m as fitted 21 m/m Is the after end of the liner made watertight in the stern boss Yes

If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner Yes

Does the liner do 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

Are the liners 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 /

Propeller, dia. 4220 m/m Pitch 4450 m/m No. of Blades 4 Material C.S. whether Moveable Yes Total Developed Surface 54,464 M<sup>2</sup> sq. feet

Pumps worked from the Main Engines, No. 2 Diameter 100 m/m Stroke 508 m/m Can one be overhauled while the other is at work Yes

Pumps worked from the Main Engines, No. 2 Diameter 100 m/m Stroke 508 m/m Can one be overhauled while the other is at work Yes

How driven Steam. Pumps connected to the Main Bilge Line No. and size 1 off, 305x215x455 m/m How driven Main Eng. direct & Steam driven.

Oil Pumps, No. and size 1 off, 305x305x330 m/m Lubricating Oil Pumps, including Spare Pump, No. and size /

Oil Cooler / Suctions, connected to both Main Bilge Pumps and Auxiliary Pumps; - In Engine and Boiler Room 4x65 m/m Bore in E.R. 4x65 m/m in B.R. 1x65 m/m in Shaft Tunnel.

In Holds, &c. 2 @ 65 m/m in No. 1, 2, 3, 4 & Crossbunker holds.

Water Circulating Pump Direct Bilge Suctions, No. and size 1 off, 180 m/m Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 off, 120 m/m.

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 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 Above

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

Pipes pass through the bunkers None 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 Yes Is it fitted with a watertight door Yes worked from Bridge Dk and Eng. Room.

BOILERS, &c. - (Letter for record S) Total Heating Surface of Boilers 429.08 Sq.M. 4617 sq

Is a Draft fitted Yes No. and Description of Boilers 2, Single ended Multitubular. Working Pressure 14 Kg/cm<sup>2</sup>

REPORT ON MAIN BOILERS NOW FORWARDED? Yes

DONKEY BOILER FITTED? No If so, is a report now forwarded? /

Is a donkey boiler intended to be used for domestic purposes only /

Are approved plans forwarded herewith for Shafting 4-2-37 Main Boilers 1-4-37 Auxiliary Boilers / Donkey Boilers /

General Pumping Arrangements 10-9-37 Oil fuel Burning Piping Arrangements /

## SPARE GEAR.

Spare gear required by the Rules been supplied Yes. principal additional spare gear supplied One set off water valves for Main boilers. 1 set of water valves for Fresh water pump. 1 set of water valves for Aux. feed pump. 1 MP escape valve spring. 1 LP escape valve spring. 1 LP escape valve spring. 1 HP. piston ring. 1 LP piston ring.

Complete:- 2 c.s. propeller blades with one set of studs & nuts to be placed on board, Builders states that these have been ordered and will be placed on board at first available opportunity.

The foregoing is a correct description.

T. Shinohara

Manufacturer. General Manager



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Dates of Survey while building  
 During progress of work in shops - - 1937:- April 2.4.13.14 May 14.17.24.29.31 June 3.9.16.18.19.25 July 3.5.6.9.10  
 13.19.20.23.26.29.30 Aug 3.6.10.11.13.16.17.18.19 Sep 7.14.16.17.21.24  
 27.28.30 Oct 2.4.6.8.9.11.22.23 Nov 1.12.15.22.24.25.26.28.30 Dec 1.3.7  
 8.9.10.13.14.15.17.20.21.23.24.28  
 During erection on board vessel - - 1938:- Jan 7.11.13.17.18.20.24.26.27.28 Feb 2.3.8.10.12.16.28 Mar 1.8.9.25.  
 April 5.9.28 May 3.10.  
 Total No. of visits 104.

Dates of Examination of principal parts—Cylinders 22 & 23-7-37 Slides 22-7-37 Covers 23-7-37  
 Pistons 22-7-37 Piston Rods 10-8-37 Connecting rods 4-8-37  
 Crank shaft 4-8-37 Thrust shaft 10-8-37 Intermediate shafts 17-8-37  
 Tube shaft / Screw shaft 6-8-37 Propeller 17-8-37  
 Stern tube 10-7-37 Engine and boiler seatings 1 to 7-9-37 Engines holding down bolts 24-11-37  
 Completion of fitting sea connections 9-8-37  
 Completion of pumping arrangements 27-1-38 Boilers fixed 23 & 26-8-37 Engines tried under steam 16-2-38 and 28-4-38.  
 Main boiler safety valves adjusted 8-2-38 and 28-4-38. Thickness of adjusting washers Lock nuts fitted.  
 Crank shaft material Steel Identification Mark LR No. 6155 HDB Thrust shaft material Steel Identification Mark LR No. 6325 HDB  
 Intermediate shafts, material Steel Identification Marks See below Tube shaft, material / Identification Mark /  
 Screw shaft, material Steel Identification Mark LR No. 6401 T.P. Steam Pipes, material Steel Test pressure 42 Kg/cm<sup>2</sup> Date of Test 10-12-37  
 Is an installation fitted for burning oil fuel / Is the flash point of the oil to be used over 150°F. /  
 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 / 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 Yes  
 Is this machinery duplicate of a previous case No If so, state name of vessel No

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
**Identification Marks for Tunnel Shaft:-** LR No. 6398.6269.6268 & 6389, HDB.

The Machinery of this vessel has been constructed under Special survey in accordance with the Rules and Approved plans, the materials have been tested, found efficient, and the workmanship is good. It has been efficiently installed on board tried under full working conditions with satisfactory results. The Boiler & Superheater safety valves were adjusted & accumulation test carried out and found safety valves adequate in size and working satisfactorily.

The discharge valves fitted direct on the ship's side are not in accordance with the Rules being fitted with screw down valves at the request of the U.S.S.R. representative, but a relief valve has been fitted on the discharge side of all pumps to avoid increase of pressure in the discharge lines, also a relief valve has been fitted on the feed heater to ensure that an increase of the steam pressure in the heater will not be attended with serious consequences.

Upon completion of trials, Engines & Boilers were opened up, examined all over and found good. This case is eligible in our opinion to have the record of **LMC 5-38** in the Register Bk.

**Note:-** The 2 spare cast steel propeller blades with 1 set of studs & nuts have not been placed on board, but they have been ordered and will be placed on board at some future date.

Certificate to be sent to  
 The Surveyors are requested not to write on or before the space for Committee's Minute.

The amount of Entry Fee ...	£ 4- 0- 0	:	When applied for,
Special ...	£ 86- 7- 0	:	7. 7 1938
Donkey Boiler Fee ...	£	:	When received,
Travelling Expenses (if any) £	:	:	9. 12 1938

For Mr. H. J. Buchanan  
 & self. R. Lockhart  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE, 9 AUG 1938  
 Assigned + LMC 5.38 subject  
 F.D. CH

