

## REPORT ON MACHINERY.

No. 1143

Date of writing Report 18<sup>th</sup> Sept. 1917 When handed in at Local Office 18<sup>th</sup> Sept. 1917 Port of NAGASAKI Received at London Office TUE. 13 NOV. 1917No. in Survey held at NAGASAKI Date, First Survey 6<sup>th</sup> July 1916 Last Survey 11<sup>th</sup> Sept. 1917 Reg. Book.

on the s.s. "Toyo Maru No. 2" (Number of Visits 55)

Master O. Hayakawa Built at Nagasaki By whom built Matsuo Iron Works Tons { Gross 3078 Net 1828

Engines made at Nagasaki By whom made Matsuo Iron Works when made 1917

Boilers made at Nagasaki By whom made Matsuo Iron Works when made 1917

Registered Horse Power Owners S. Sawayama Port belonging to Nagasaki

Nom. Horse Power as per Section 28 262 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

ENGINES, &amp;c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 22", 37" &amp; 61" Length of Stroke 42" Revs. per minute 75 Dia. of Screw shaft as per rule 12.76 Material of screw shaft Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight

in the propeller boss Yes If the liner is in more than one length are the joints burned Yes 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 Length of stern bush 4' 7"

Dia. of Tunnel shaft as per rule 11.3 Dia. of Crank shaft journals as per rule 11.86 Dia. of Crank pin 12.25 Size of Crank webs 8 1/2 x 23 1/2 Dia. of thrust shaft under

collars 12 1/4 Dia. of screw 15.9 Pitch of Screw 16.9 No. of Blades 4 State whether movable Yes Total surface 77.2 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work Yes

No. of Donkey Engines 3 Sizes of Pumps 1 Duplex 4 1/2 x 3 1/2 x 5 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 3 c 3 1/2 In Holds, &amp;c. No. 1 Hold 2 c 3 1/2 No. 2 Hold 2 c 3 1/2

No. 3 Hold 2 c 3 1/2 Tunnel well 1 c 2 1/2

No. of Bilge Injections 1 sizes 7 1/2 Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room &amp; size Yes 3 1/2

Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible None

Are all connections with the sea direct on the skin of the ship Yes Are they 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 Discharge Pipes 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

What pipes are carried through the bunkers Bilge pipes How are they protected With iron plates

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Bridge deck

BOILERS, &amp;c.—(Letter for record S. 4033) Manufacturers of Steel John Spencer &amp; Sons &amp; Carnegie Steel Coy.

Total Heating Surface of Boilers 4635.7 Is Forced Draft fitted No. No. and Description of Boilers 2 Cylindrical, Single ended

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 21<sup>st</sup> July 1917 No. of Certificate 74

Can each boiler be worked separately Yes Area of fire grate in each boiler 56.87 sq. ft. No. and Description of Safety Valves to

each boiler 2 Spring loaded Area of each valve 8.61 sq. in. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 16" Mean dia. of boilers 14.3" Length 11' 0" Material of shell plates Steel

Thickness 1 5/16" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams Double lap

Long. seams Double riveted Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9" &amp; 4 1/2" Lap of plates or width of butt straps 18 1/2"

Percentages of strength of longitudinal joint rivets 85.25 Working pressure of shell by rules 207 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 36 1/2" x 32 1/2" x 1 5/8" No. and Description of Furnaces in each boiler 3 Morrison Material Steel Outside diameter 3.8 3/4"

Length of plain part top Thickness of plates crown 5 Description of longitudinal joint welded No. of strengthening rings

Working pressure of furnace by the rules 225 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 3/4"

Pitch of stays to ditto: Sides 7 1/2" x 8 1/2" Back 7 1/2" x 8 1/2" Top 7 1/2" x 8 1/2" If stays are fitted with nuts or riveted heads No. Working pressure by rules 217 lbs.

Material of stays Steel Area at smallest part 1.79 sq. in. Area supported by each stay 59.8 sq. in. Working pressure by rules 260 lbs. End plates in steam space:

Material Steel Thickness 1 1/8" Pitch of stays 16 1/4" x 15 1/2" How are stays secured Double nuts Working pressure by rules 237 lbs. Material of stays Steel

Area at smallest part 5.93 sq. in. Area supported by each stay 260 sq. in. Working pressure by rules 230 lbs. Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 13 1/2" Working pressure of plate by rules 207 lbs.

Diameter of tubes 3 1/2" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 7/8" Back 7/8" Mean pitch of stays 9 1/2"

Pitch across wide water spaces 13 1/2" Working pressures by rules 267 lbs. Girders to Chamber tops: Material Steel Depth and

Thickness of girder at centre 9" x 7 1/2" Length as per rule 34" Distance apart 8 1/2" Number and pitch of stays in each 3 c 7 1/2"

Working pressure by rules 197 lbs. Steam dome: description of joint to shell % of strength of joint

Diameter Thickness of shell plates Material Description of longitudinal joint Diam. of rivet holes

Pitch of rivets Working pressure of shell by rules Crown plates Thickness How stayed

SUPERHEATER. Type Date of Approval of Plan Tested by Hydraulic Pressure to

Date of Test Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve Pressure to which each is adjusted Is Easing Gear fitted

W1096-0083



IS A DONKEY BOILER FITTED?

Yes.

If so, is a report now forwarded?

Yes.

SPARE GEAR.

State the articles supplied:— As per Rule, and in addition one set of packing rings, gunk ring bolts & nuts for each piston, 1 valve spindle, 2 eccentric rods, 1 set each of top & bottom brasses for one connecting rod, 42 condenser tubes, 1 set of air pump valves rod, 1 propeller spindle for circulating pump, 2 safety valve springs, 3 escape valve springs, 1 propeller blade.

The foregoing is a correct description,

For Matsuo Iron works & Dockyard, K. Osaka Manufacturer.

1916  
Dates of Survey while building { During progress of work in shops -- July 6, 22, Aug. 17, Sept. 7, 13, 20, 29, Oct. 3, 6, 21, Nov. 6, 8, 17, 24, Dec. 8, 23.  
During erection on board vessel -- Jan. 17, Feb. 16, 23, Mar. 17, 31, Apr. 10, 27, May. 2, 8, 10, 23, 25, 28, 29, June 6, 14, 20, 27, 28, 29, July 3, 4, 5, 17, 21, 24, 27, 28, Aug. 7, 9, 15, 20, 24, 27, Sept. 3, 7, 11, 15, 14.  
Total No. of visits 55

Is the approved plan of main boiler forwarded herewith

Yes.

Yes.

Dates of Examination of principal parts—Cylinders 28.5.17 Slides 23.5.17 Covers 28.5.17 Pistons 6.6.17 Rods 17.6.17

Connecting rods 28.7.17 Crank shaft 3.7.17 Thrust shaft 28.6.17 Tunnel shafts 28.6.17 Screw shaft 3.7.17 Propeller 15.8.17

Stern tube 3.8.17 Steam pipes tested 9.8.17 Engine and boiler seatings 27.7.17 Engines holding down bolts 9.8.17

Completion of pumping arrangements 27.8.17 Boilers fixed 7.8.17 Engines tried under steam 3.9.17

Completion of fitting sea connections 8.7.17 Stern tube 8.7.17 Screw shaft and propeller 27.8.17

Main boiler safety valves adjusted 27.8.17 Thickness of adjusting washers Jamb nuts

Material of Crank shaft Steel Identification Mark on Do. No. 598 G. H. Material of Thrust shaft Steel Identification Mark on Do. No. 598 G. H.

Material of Tunnel shafts Steel Identification Marks on Do. No. 598 G. H. Material of Screw shafts Steel Identification Marks on Do. No. 598 G. H.

Material of Steam Pipes Copper Test pressure 360 lb.

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 Section 49 of the Rules been complied with

Is this machinery duplicate of a previous case If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.)

These Engines and Boilers have been constructed under Special Survey, in accordance with the Rules, and of good materials and workmanship. They have been securely fitted on board, and have been satisfactorily tried under steam. The Machinery of this vessel is eligible, in my opinion, for the record of LMC 9.17 in the Register Book.

Mean speed of 6 runs on Trial when Light Ship = 11 knots.

It is submitted that this vessel is eligible for THE RECORD. + LMC 9.17.

J. M. H. D.

14/11/17.

A. S. Williamson

Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 2 : 0 : 0 When applied for, Special ... £ 49 : 13 : 0 17<sup>th</sup> Sept. 1917 Donkey Boiler Fee ... £ : : : When received, Travelling Expenses (if any) £ : : : 25/9/17

Committee's Minute FRI. 16 NOV. 1917

Assigned + LMC 9.17

MACHINERY CERTIFICATE



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