

REPORT ON MACHINERY

No. 1086.

Received at London Office

WED. 1-NOV. 1916

NAGASAKI.

Date of writing Report 3rd Oct. 1916 When handed in at Local Office 3rd Oct. 1916 Port of

No. in Survey held at **NAGASAKI.** Date, First Survey 30th June, 1915 Last Survey 3rd Oct. 1916
Reg. Book. on the *Twin s.s. "Tsuyama Maru"* (Number of Visits 132)

Master *J. Sate* Built at *Nagasaki* By whom built *Mitsubishi Dockyard & Eng. Works* When built 1916
Tons { Gross 7289
Net 4507

Engines made at *Nagasaki* By whom made *Mitsubishi Dockyard & Engine Works* when made 1916
Boilers made at *Do.* By whom made *Do.* when made 1916

Registered Horse Power Owners *Nippon Yusen Kaisha* Port belonging to *Tokio*

Nom. Horse Power as per Section 28 620 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines *Twin screw Triple Expansion* No. of Cylinders 6 No. of Cranks 6

Dia. of Cylinders *20 1/2", 33 1/2", & 56"* Length of Stroke *48"* Revs. per minute *89* Dia. of Screw shaft *12.89"* 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. 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 *5' 3"*

Dia. of Tunnel shaft *11.6"* Dia. of Crank shaft journals *13.185"* Dia. of Crank pin *13"* Size of Crank webs *17" x 8"* Dia. of thrust shaft under collars *12 1/2"* Dia. of screw *15.9"* Pitch of Screw *17.9"* No. of Blades *4* State whether moveable Yes. Total surface *66.5 sq. ft. each*

No. of Feed pumps *2* Diameter of ditto *4 1/2"* Stroke *24"* Can one be overhauled while the other is at work Yes.

No. of Bilge pumps *4* Diameter of ditto *3 1/2"* Stroke *24"* Can one be overhauled while the other is at work Yes.

No. of Donkey Engines *3 sets duplex* Sizes of Pumps *1 @ 7" x 5" x 13", 2 @ 8" x 10" x 22"* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3 @ 3 1/2"* In Holds, &c. *2 @ 3 1/2" in Nos. 1, 2, 3, 4, 5 Holds and in cross bunker 1 @ 3 1/2" in shaft tunnel & Tannal well.*

No. of Bilge Injections *2* sizes *9"* Connected to condenser, or to circulating pump *circulating pump* Is a separate Donkey Suction fitted in Engine room & size *2 @ 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 *Valves & Cocks*

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 steel plate.*

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 *upper deck.*

BOILERS, &c.—(Letter for record *S.*) Manufacturers of Steel *David Colville & Sons.*

Total Heating Surface of Boilers *8903.4* Is Forced Draft fitted Yes. No. and Description of Boilers *4 cylindrical, single ended.*

Working Pressure *200 lbs.* Tested by hydraulic pressure to *400 lbs.* Date of test *25.6.16* No. of Certificate *68*

Can each boiler be worked separately Yes. Area of fire grate in each boiler *56.2 sq. ft.* No. and Description of Safety Valves to each boiler *2 Spring loaded* Area of each valve *9.62 sq. in.* Pressure to which they are adjusted *205 lbs.* Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork *18"* Mean dia. of boilers *14.3"* Length *11.6"* 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 *riveted lap.*

long. seams *double butt strap* Diameter of rivet holes in long. seams *1 3/8"* Pitch of rivets *9 1/2" & 7 1/2"* Lap of plates or width of butt straps *20 1/2"*

Per centages of strength of longitudinal joint *88.6* Working pressure of shell by rules *209 lbs.* Size of manhole in shell *12" x 16"*

Size of compensating ring *31" x 35" x 1 7/16"* No. and Description of Furnaces in each boiler *3 Morrison* Material *Steel* Outside diameter *45 1/2"*

Length of plain part *top 5"* Thickness of plates *bottom 8"* Description of longitudinal joint *welded* No. of strengthening rings *15*

Working pressure of furnace by the rules *244 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *1 1/16"* Back *1 1/16"* Top *1 1/16"* Bottom *1 1/16"*

Pitch of stays to ditto: Sides *8" x 9"* Back *8 1/2" x 9"* Top *8 1/4" x 9"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *212 lbs.*

Material of stays *Steel* Area at smallest part *2.02 sq. in.* Area supported by each stay *76.5 sq. in.* Working pressure by rules *237 lbs.* End plates in steam space: Material *Steel* Thickness *1 1/2"* Pitch of stays *19 1/2" x 16 1/2"* How are stays secured *Double nuts* Working pressure by rules *216 lbs.* Material of stays *Steel*

Area at smallest part *7.07 sq. in.* Area supported by each stay *321.7 sq. in.* Working pressure by rules *229 lbs.* Material of Front plates at bottom *Steel*

Thickness *3/4"* Material of Lower back plate *Steel* Thickness *1 1/16"* Greatest pitch of stays *7 1/2" x 15"* Working pressure of plate by rules *216 lbs.*

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

Pitch across wide water spaces *13 3/4"* Working pressures by rules *216 lbs.* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *10" x 3 1/2" double* Length as per rule *29 5/16"* Distance apart *8 1/2"* Number and pitch of stays in each *2 @ 9"*

Working pressure by rules *325 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 *Loakley's* Date of Approval of Plan *18/5/15* Tested by Hydraulic Pressure to *1000 lbs.*

Date of Test *4th July, 1916* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *Yes.*

iameter of Safety Valves *2"* Pressure to which each is adjusted *205 lbs. per sq. in.* Is Easing Gear fitted *No.*

IS A DONKEY BOILER FITTED? No.

If so, is a report now forwarded? ✓

SPARE GEAR. State the articles supplied:— As per Rule, and in addition 2 sets of crosshead brasses, 2 sets of crank pin brasses, 1 set of piston springs, 1 crank shaft, 1 propeller shaft, 1 set of propeller blades, 1 set of check valves & seats, 1 valve spindle, 2 eccentric rods, 1 air pump rod, 1 circulating pump spindle &c.

The foregoing is a correct description,

MITSUBISHI DOCKYARD & ENGINE WORKS

J. Shiro
General Manager

Manufacturer.

Dates of Survey while building { During progress of work in shops -- 1915 June 30, July 2, Aug. 23, Oct. 29, Nov. 1, 12, 18, 20, 27, 30, Dec. 1, 3, 4, 13, 15, 17, 22, 27, 29.
1916 Jan. 7, 10, 11, 22, 26, 28, 31, Feb. 7, 9, 10, 14, 21, 24, 26, 28, 29, March 2, 3, 4, 13, 16, 17, 20, 23, 27, 28, April 5, 7, 14, 15, 18, 19, 21, 24, 28, May 1, 2, 10, 16, 18, 19, 20, 22, 25, 27, 30, 31, June 1, 2, 5, 6, 7, 9, 10, 12, 13, 14, 15, 16, 17, 21, 22, 23, 26, 27, July 1, 3, 4, 5, 7, 8, 10, 11, 12, 13, 17, 18, 19, 20, 24, 25, 26, 27, 28, 29, 31, August 1, 4, 7, 15, 18, 19, 21, 23, 24, 25, 26, 28, 29, 30, Sept. 1, 5, 9, 12, 16, 21, 26, 28, Oct. 3.
During erection on board vessel --
Total No. of visits 132

Is the approved plan of main boiler forwarded herewith Yes

" " " donkey " " " ✓

Dates of Examination of principal parts—Cylinders 28.7.16 Slides 7.8.16 Covers 28.7.16 Pistons 7.8.16 Rods 7.8.16
Connecting rods 7.8.16 Crank shaft 7.7.16 Thrust shaft 22.6.16 Tunnel shafts 25.7.16 Screw shaft 29.6.16 Propeller 4.9.16
Stern tube 5.7.16 Steam pipes tested 30.8.16 Engine and boiler seatings 7.8.16 Engines holding down bolts 28.8.16
Completion of pumping arrangements 1.9.16 Boilers fixed 28.8.16 Engines tried under steam 16.9.16
Completion of fitting sea connections 7.7.16 Stern tube 7.7.16 Screw shaft and propeller 4.9.16
Main boiler safety valves adjusted 12.9.16 Thickness of adjusting washers Jamb nuts

Material of Crank shaft Steel Identification Mark on Do. No. 126 A.S.W. Material of Thrust shaft Steel Identification Mark on Do. No. 126 A.S.W.

Material of Tunnel shafts Steel Identification Marks on Do. No. 126 A.S.W. Material of Screw shafts Steel Identification Marks on Do. No. 126 A.S.W.

Material of Steam Pipes Solid drawn steel Test pressure 600 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 Yes If so, state name of vessel "Jouruga Maru"

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

The Boilers have been fitted with Esaki's Superheaters in accordance with the Society's requirements.

The 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 10.16 in the Register Book.

Mean speed of 6 Runs on Trial when Half Loaded = 14.825 Knots.

It is submitted that this vessel is eligible for THE RECORD + LMC 10.16, F.D.

J.W.D.
1/11/16

A.P.S.

A.S. Williamson

Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 3 : 0.0 :
Special ... £ 76 : 10.0 :
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ : :
When applied for, 2nd Oct. 1916
When received, 4th Oct. 1916

Committee's Minute FRI. 3 - NOV. 1916

Assigned + L.M.C. 10.16

F.D.

MACHINERY CERTIFICATE WRITTEN



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Lloyd's Register Foundation



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Certificates (if required) to be sent to Registrar's Office.

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B1) 2m. 35. T.