

REPORT ON MACHINERY

No. 1086.

WED. 1-NOV. 1916

Received at London Office

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.

(Number of Visits 132)

on the Twin s.s. "Isuyama Maru"

Tons { Gross 7289
Net 4507

Master J. Date Built at Nagasaki By whom built Mitsubishi Dockyard & Eng. Works When built 1916

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 30 $\frac{1}{2}$ " 33 $\frac{1}{2}$ " & 56" Length of Stroke 48" Revs. per minute 89 Dia. of Screw shaft as per rule 12.89" Material of screw shaft as fitted 13 $\frac{1}{8}$ " 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 as per rule 11.6" Dia. of Crank shaft journals as per rule 12.185" Dia. of Crank pin 13" Size of Crank webs 17" x 8" Dia. of thrust shaft under
collars 12 $\frac{1}{2}$ " 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 $\frac{1}{2}$ " Stroke 24" Can one be overhauled while the other is at work Yes
No. of Bilge pumps 4 Diameter of ditto 3 $\frac{1}{2}$ " Stroke 24" Can one be overhauled while the other is at work Yes
No. of Donkey Engines 3 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 $\frac{1}{2}$ " In Holds, &c. 2 @ 3 $\frac{1}{2}$ " in Nos. 1, 2, 3, 4, 5 Holds and in
cross bunker 1 @ 3 $\frac{1}{2}$ " in shaft tunnel & Tunnel well.
No. of Bilge Injections 2 sizes 9" Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size 2 @ 3 $\frac{1}{2}$ "
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 $\frac{5}{16}$ " 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 $\frac{3}{8}$ " Pitch of rivets 9 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ " Lap of plates or width of butt straps 20 $\frac{1}{2}$ "
Per centages of strength of longitudinal joint rivets 88.6 plate 85.3 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 $\frac{1}{2}$ " No. and Description of Furnaces in each boiler 3 Morrison Material Steel Outside diameter 45 $\frac{1}{2}$ "
Length of plain part top Thickness of plates crown 5" bottom 8" Description of longitudinal joint welded No. of strengthening rings
Working pressure of furnace by the rules 244 lbs. Combustion chamber plates: Material Steel Thickness: Sides 1 $\frac{1}{16}$ " Back 1 $\frac{1}{16}$ " Top 1 $\frac{1}{16}$ " Bottom 1 $\frac{1}{16}$ "
Pitch of stays to ditto: Sides 8" x 9" Back 8 $\frac{1}{2}$ " x 9" Top 8 $\frac{1}{2}$ " 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 $\frac{1}{32}$ " Pitch of stays 19 $\frac{1}{2}$ " x 16 $\frac{1}{2}$ " How are stays secured washers 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 $\frac{1}{4}$ " Material of Lower back plate Steel Thickness 1 $\frac{1}{16}$ " Greatest pitch of stays 7 $\frac{1}{2}$ " x 15" Working pressure of plate by rules 216 lbs.
Diameter of tubes 3 $\frac{1}{4}$ " Pitch of tubes 4 $\frac{1}{2}$ " x 4 $\frac{3}{8}$ " Material of tube plates Steel Thickness: Front 3 $\frac{1}{4}$ " Back 3 $\frac{1}{4}$ " Mean pitch of stays 8 $\frac{7}{8}$ "
Pitch across wide water spaces 13 $\frac{3}{4}$ " Working pressures by rules 216 lbs. Girders to Chamber tops: Material Steel Depth and
thickness of girder at centre 10" x 3 $\frac{1}{2}$ " double Length as per rule 29 $\frac{5}{16}$ " Distance apart 8 $\frac{1}{2}$ " 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 Loak'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
Diameter of Safety Valves 2" Pressure to which each is adjusted 203 lbs. per sq. in. Is Easing Gear fitted No

007324-007373-0047

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

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.
During erection on board vessel - 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, 24, 25, 27, 30, 31, June 1, 2, 5, 6, 7, 9, 10, 12, 13, 14, 15, 16, 17, 21, 22, 23, 26, 29, Sept. 1, 5, 9, 12, 16, 21, 26, 28, Oct. 3.
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 Jam 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 "Tsuruga Maru".

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

The Boilers have been fitted with Esakys 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.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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