

# REPORT ON MACHINERY.

No. 1138

Received at London Office

FRI. 19 OCT. 1917

Date of writing Report 12<sup>th</sup> July 1917 When handed in at Local Office 12<sup>th</sup> July 1917 Port of **NAGASAKI.**

No. in Survey held at **NAGASAKI.** Date, First Survey 14<sup>th</sup> Sept 1916 Last Survey 9<sup>th</sup> July 1917

Reg. Book. on the s.s. "Calcutta Maru" (Number of Voids: 103) Tons { Gross 5226 Net 3188

Master **O. Sakamoto** Built at **Nagasaki** By whom built **Mitsubishi S. & E. Works** When built **1917**

Engines made at **Nagasaki** By whom made **Mitsubishi Dockyard & Engine Works** when made **1917**

Boilers made at **Nagasaki** By whom made **Do.** when made **1917**

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

Nom. Horse Power as per Section 28 **490** Is Refrigerating Machinery fitted for cargo purposes **No.** Is Electric Light fitted **Yes**

## ENGINES, &c.—Description of Engines: **Triple Expansion** No. of Cylinders **3** No. of Cranks **3**

Dia. of Cylinders **26 1/2, 44 1/2, 75** Length of Stroke **48** Revs. per minute **81** Dia. of Screw shaft as per rule **15.78** Material of screw shaft **Steel**

Is the screw shaft fitted with a continuous liner the whole length of the stern tube **No liner fitted** 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 **Yes** If two liners are fitted, is the shaft lapped or protected between the liners **Yes** Length of stern bush **5.63**

Dia. of Tunnel shaft as per rule **13.74** Dia. of Crank shaft journals as per rule **14.437** Dia. of Crank pin **15** Size of Crank webs **22 1/2 x 9 1/2** Dia. of thrust shaft under collars **14.75** Dia. of screw **18.0** Pitch of Screw **20.0** No. of Blades **4** State whether moveable **Yes** Total surface **91.6 sq. ft.**

No. of Feed pumps **2** Diameter of ditto **5** Stroke **21** Can one be overhauled while the other is at work **Yes**

No. of Bilge pumps **2** Diameter of ditto **5** Stroke **21** Can one be overhauled while the other is at work **Yes**

No. of Donkey Engines **4** Sizes of Pumps **1 Ballast 9x12x10 2 Feed Sump 7x7x21** No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room **3 @ 3 1/2** In Holds, &c. No. 1 Hold **2 @ 3 1/2** No. 2 Hold **2 @ 3 1/2** Spare

Bunker **2 @ 3 1/2** Cross Bunker **2 @ 3 1/2** No. 3 Hold **2 @ 3 1/2** No. 4 Hold **2 @ 3 1/2** Tunnel well **1 @ 2 1/2**

No. of Bilge Injections **1** sizes **8** Connected to condenser, or to circulating pump **Yes** Is a separate Donkey Suction fitted in Engine room & 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 **None** How are they protected **Yes**

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

Total Heating Surface of Boilers **6498.9** Is Forced Draft fitted **Yes** No. and Description of Boilers **3 Cylindrical, Single ended**

Working Pressure **200 lbs.** Tested by hydraulic pressure to **400 lbs.** Date of test **18<sup>th</sup> May 1917** No. of Certificate **72**

Can each boiler be worked separately **Yes** Area of fire grate in each boiler **54.32 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 **203 lbs.** Are they fitted with easing gear **Yes**

Smallest distance between boilers or uptakes and bunkers or woodwork **9.5** Mean dia. of boilers **14.0** 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 **Double lap**

long. seams **2 straps** Diameter of rivet holes in long. seams **1 3/8** Pitch of rivets **9 1/2 x 4 1/2** Lap of plates or width of butt straps **20 1/2**

Per centages of strength of longitudinal joint rivets **85.6** Working pressure of shell by rules **212 lbs.** Size of manhole in shell **16 x 12**

Size of compensating ring **37 x 33 x 1 5/16** No. and Description of Furnaces in each boiler **3 Morrison's** Material **Steel** Outside diameter **3.9 1/2**

Length of plain part top **9** Thickness of plates crown **7/16** Description of longitudinal joint **Welded** No. of strengthening rings **15**

Working pressure of furnace by the rules **217 lbs.** Combustion chamber plates: Material **Steel** Thickness: Sides **3/4** Back **3/4** Top **3/4** Bottom **1/2**

Pitch of stays to ditto: Sides **11 1/4 x 7 1/2** Back **9 x 10 1/2** Top **7 x 11 1/2** 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 **81.6 sq. in.** Working pressure by rules **223 lbs.** End plates in steam space:

Material **Steel** Thickness **1 3/32** Pitch of stays **18 x 20** How are stays secured **Double nuts** Working pressure by rules **214 lbs.** Material of stays **Steel**

Area at smallest part **7.67 sq. in.** Area supported by each stay **360 sq. in.** Working pressure by rules **221 lbs.** Material of Front plates at bottom **Steel**

Thickness **3/4** Material of Lower back plate **Steel** Thickness **3/4** Greatest pitch of stays **13 3/4** Working pressure of plate by rules **211 lbs.**

Diameter of tubes **3 1/4** Pitch of tubes **4 3/8 x 4 1/2** Material of tube plates **Steel** Thickness: Front **3/4** Back **3/4** Mean pitch of stays **11 1/4**

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 1/4 x 7/8** Length as per rule **31.9** Distance apart **11 1/2** Number and pitch of stays in each **3 @ 7**

Working pressure by rules **214 lbs.** Steam dome: description of joint to shell **Yes** % of strength of joint **Yes**

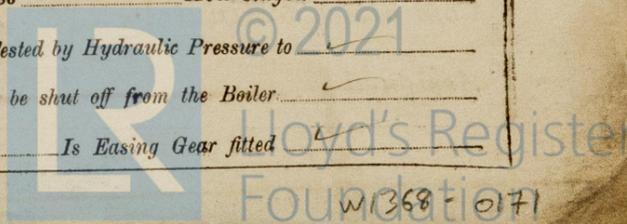
Diameter **Yes** Thickness of shell plates **Yes** Material **Yes** Description of longitudinal joint **Yes** Diam. of rivet holes **Yes**

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

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

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

Material of Safety Valve **Yes** Pressure to which each is adjusted **Yes** Is Easing Gear fitted **Yes**



IS A DONKEY BOILER FITTED?

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— As per Rule, and in addition 1 H.P. valve spindle, 1 L.P. valve spindle, 2 eccentric rods, 1 air pump rod, 1 set each of H.P. I.P. & L.P. packing rings, 1 set each of top & bottom brasses for one connecting rod, 13 junk ring bolts, 1 set of air pump valves, 1 impeller spindle for circulating pump, 53 condenser tubes & 160 ferrules, 1 complete set of valves & seats for main & donkey feed checks, 3 cylinder escape valves & springs, 1 safety valve spring.

The foregoing is a correct description,

MITSUBISHI DOCKYARD & ENGINE WORKS,

*Shimoda*  
General Manager

Manufacturer.

Dates of Survey while building	During progress of work in shops --	1916 Sept. 14, 30. Oct. 5, 14, 20, 25. Nov. 4, 10, 11, 14, 17, 30. Dec. 16, 18, 23, 27, 29. 1917 Jan. 6, 10, 16, 20, 22, 23, 24, 31.
		Feb. 3, 6, 14, 17, 19, 20, 22, 28. Mar. 2, 3, 5, 6, 7, 8, 9, 10, 15, 17, 19, 21, 22, 26, 27, 29. Apr. 2, 4, 5, 6, 9, 10, 11, 12, 13, 14, 16, 18.
		20, 21, 23, 25, 26, 27, 28. May 1, 2, 4, 8, 9, 10, 11, 14, 15, 17, 18, 19, 21, 23, 24, 26, 28, 30. June 1, 2, 4, 5, 7, 8, 9.
	During erection on board vessel ---	14, 15, 16, 18, 20, 25, 26, 30. July 6, 9.
	Total No. of visits	103.

Is the approved plan of main boiler forwarded herewith  Yes.

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 14.5.17 Slides 19.5.17 Covers 14.5.17 Pistons 9.6.17 Rods 14.6.17  
 Connecting rods 19.5.17 Crank shaft 1.5.17 Thrust shaft 14.5.17 Tunnel shafts 5.6.17 Screw shaft 14.5.17 Propeller 24.5.17  
 Stern tube 21.5.17 Steam pipes tested 18.6.17 Engine and boiler seatings 7.6.17 Engines holding down bolts 16.6.17  
 Completion of pumping arrangements 25.6.17 Boilers fixed 20.6.17 Engines tried under steam 30.6.17  
 Completion of fitting sea connections 5.6.17 Stern tube 23.5.17 Screw shaft and propeller 30.5.17  
 Main boiler safety valves adjusted 26.6.17 Thickness of adjusting washers Jamb nuts  
 Material of Crank shaft Steel Identification Mark on Do. No 135 A.S.W. Material of Thrust shaft Steel Identification Mark on Do. No 135 A.S.W.  
 Material of Tunnel shafts Steel Identification Marks on Do. No 135 A.S.W. Material of Screw shafts Steel Identification Marks on Do. No 135 A.S.W.  
 Material of Steam Pipes Steel solid drawn ✓ Test pressure 600 lbs. per sq. in.

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 "Somedono Maru"

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 **LMO 7.17** in the Register Book.

Mean speed of burns on Trial when 1/3 Loaded = 14.609 knots.

It is submitted that this vessel is eligible for THE RECORD. + LMC 7.17. F.D.

*J.M. J.W.D.*  
22/10/17

*A.S. Williamson*  
Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee	... <i>Yes</i> 3:0:0	When applied for,
Special	... <i>Yes</i> 66:15:9	12 <sup>th</sup> July 1917
Donkey Boiler Fee	... £	When received,
Travelling Expenses (if any)	... £	13 <sup>th</sup> July 1917

Committee's Minute

TUE OCT 23 1917

Assigned

+ LMO 7.17

F.D.

MACHINERY CERTIFICATE  
ISSUED.



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Certificate (if required) to be sent to Nagasaki Office. The Surveyors are requested not to write on or below the space for Committee's Minute.