

REPORT ON MACHINERY.

Port of **NAGASAKI.**

Received at London Office

MON. JUL. 12. 1915

No. in Survey held at **NAGASAKI.** Date, first Survey *23rd May 1914* Last Survey *10th June 1915*
 Reg. Book. on the *Twin geared turbine s.s. Joyama Maru* (Number of Visits *155*)
 Master *M. Machida* Built at *Nagasaki* By whom built *Mitsui Bishi Dockyard & Engine Works* When built *1913*
 Engines made at *Nagasaki* By whom made *Mitsui Bishi Dockyard & Engine Works* when made *1913*
 Boilers made at *Nagasaki* By whom made *Mitsui Bishi Dockyard & Engine Works* when made *1913*
 Registered Horse Power *922* Owners *Nippon Yusen Kaisha* Port belonging to *Tokio*
 Nom. Horse Power as per Section 28 *922* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*

Gross Tons *7386*
 Net Tons *4592*

ENGINES, &c.—Description of Engines *Parsons' Geared Turbines, Two Series* No. of Cylinders *4* No. of Cranks *4*
 Dia. of Cylinders *See next page* Length of Stroke *11.57"* Revs. per minute *116.13* Dia. of Screw shaft *as per rule 12.38* Material of screw shaft *Forged 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 *Yes* If two liners are fitted, is the shaft lapped or protected between the liners *Yes* Length of stern bush *5' 3"*
 Dia. of Tunnel shaft *as per rule 11.57"* Dia. of Crank shaft journals *as per rule 4.2"* Dia. of Crank pin *as per rule 5.2"* Size of Crank webs *as fitted 13.5"* Dia. of thrust shaft under collars *12.24"* Dia. of screw *14.6"* Pitch of Screw *14.0"* No. of Blades *4* State whether moveable *Yes* Total surface *65.2 sq. ft. each*
 No. of Feed pumps *3 sets* Diameter of ditto *12"* Stroke *24"* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *2 sets* Diameter of ditto *4.2"* Stroke *9"* Can one be overhauled while the other is at work *Yes*
 No. of Donkey Engines *5 sets* Sizes of Pumps *3 @ 6" x 7" x 5", 2 @ 7.5" x 9" x 15"* No. and size of Suctions connected to both Bilge and Donkey pumps in Engine Room *2 @ 3.5"* In Holds, &c. *No. 1 Hold 2 @ 3.5", No. 2 Hold 2 @ 4", No. 3 Hold 2 @ 3.5", No. 4 & 5 Hold 2 @ 4"* Sup tank *2 @ 3.5" x 2 @ 5.5"* Tunnel well *1 @ 3"* Shaft tunnel *1 @ 3"*
 No. of Bilge Injections *2 sizes 7"* Connected to condenser, or to circulating pump *Yes* Is a separate Donkey Suction fitted in Engine room & size *Yes 5.5"*
 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 *3 above for condensers*
 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 *Hood casing covered with sheet iron*
 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*
 Dates of examination of completion of fitting of Sea Connections *19.3.15* of Stern Tube *16.3.15* Screw shaft and Propeller *10.5.15*
 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 Ltd.*
 Total Heating Surface of Boilers *9507.32* 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 *6.3.15* No. of Certificate *61*
 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 *Two 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 7/16"* Range of tensile strength *28 to 32 tons* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *Double*
 long. seams *Double butt strap* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *10" x 5"* Lap of plates or width of butt straps *22"*
 Per centages of strength of longitudinal joint *rivets 91.5, plate 85.0* Working pressure of shell by rules *229.5 lbs.* Size of manhole in shell *16" x 12"*
 Size of compensating ring *36" x 31" x 1 7/16"* No. and Description of Furnaces in each boiler *3 divisions* Material *Steel* Outside diameter *45 3/4"*
 Length of plain part *top 5", bottom 8"* Thickness of plates *crowns 5", bottoms 8"* Description of longitudinal joint *Welded* No. of strengthening rings *15*
 Working pressure of furnace by the rules *229.5 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *11/16"* Back *11/16"* Top *11/16"* Bottom *15/16"*
 Pitch of stays to ditto: Sides *10 1/2" x 7 1/2"* Back *8 1/2" x 8 1/2"* Top *9" x 8 1/2"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *209 lbs.*
 Material of stays *Steel* Diameter at smallest part *1 3/4"* Area supported by each stay *73.4 sq. in.* Working pressure by rules *245 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*
 Diameter at smallest part *3"* Area supported by each stay *322.7 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 *11/16"* Greatest pitch of stays *9" x 14 1/2"* Working pressure of plate by rules *209 lbs.*
 Diameter of tubes *3"* Pitch of tubes *4 5/8" x 4 3/8"* Material of tube plates *Steel* Thickness: Front *3/4"* Back *11/16" 3/4"* Mean pitch of stays *8 5/8" x 8 1/2"*
 Pitch across wide water spaces *7 1/2" 13 1/2"* Working pressures by rules *220 lbs.* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *10" x 3 1/2" double* Length as per rule *279.3* Distance apart *8 1/2"* Number and pitch of stays in each *2 @ 9"*
 Working pressure by rules *325 lbs.* Superheater or Steam chest; how connected to boiler *Yes* Can the superheater be shut off and the boiler worked separately *Yes* Diameter *Yes* Length *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* Diameter of flue *Yes* Material of flue plates *Yes* Thickness *Yes*
 If stiffened with rings *Yes* Distance between rings *Yes* Working pressure by rules *Yes* End plates: Thickness *Yes* How stayed *Yes*
 Working pressure of end plates *Yes* Area of safety valves to superheater *Yes* Are they fitted with easing gear *Yes*

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. _____ Description _____
 Made at _____ By whom made _____ When made _____ Where fixed _____
 Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of S.P. _____
 Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____
 If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____
 Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____
 Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____
 Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____
 Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— as per Rule, and in addition one propeller shaft, 4 propeller bolts, one complete set of main bearing brasses for one set of turbines and gear wheels, one H.P. pinion shaft, one pinion shaft, 60 condenser tubes, 12 boiler tubes, 4 safety valve springs, one L.P. turbine relief valve spring and spare parts for auxiliary engines

The foregoing is a correct description,
mitsu bishi dockyard & engine works Manufacturer.

1914 May 23, 29 June 2, 5, 10, 11, 13, 15, 19, 23, 24, 27 July 4, 9, 10, 11, 13, 20, 21, 25, 27 Aug. 3, 4, 5, 6, 8, 11, 12, 13, 14, 20, 21, 22, 26, 27
 During progress of work in shops - 24, 5, 7, 8, 10, 12, 14, 16, 19, 21, 22, 26, 29, 30 Oct. 1, 7, 10, 13, 14, 15, 16, 19, 23 Nov. 2, 3, 4, 5, 6, 10, 11, 12, 16, 18, 19, 25, 26, 28, 30 Dec. 1, 4, 5, 8, 9, 11, 12
 During erection on board vessel - 19, 23, 24, 26, 28, 29, 1915 Jan. 4, 5, 6, 9, 11, 15, 16, 18, 19, 21, 22, 23, 30 Feb. 3, 4, 8, 12, 16, 17, 18, 24, 27, Mech. 1, 4, 6, 10, 11, 12, 13, 15, 16
 Total No. of visits 153
 Is the approved plan of main boiler forwarded herewith **yes**

Dates of Examination of principal parts - Cylinders _____ Casings _____ Slides _____ Rotor _____ " donkey " _____ Spindles for gear wheels _____ 30. 1. 15 _____ Rods _____
 Connecting rods ✓ Crank shaft ✓ Thrust shaft 3. 2. 15 Tunnel shafts _____ Covers _____ Screws _____ 10. 3. 15 Propeller 1. 5. 15
 Stern tube 13. 3. 15 Steam pipes tested 3. 5. 15 Engine and boiler seatings 30. 3. 15 Engines holding down bolts 10. 5. 15
 Completion of pumping arrangements 15. 5. 15 Boilers fixed 13. 4. 15 Engines tried under steam 22. 5. 15
 Main boiler safety valves adjusted 15. 5. 15 Thickness of adjusting washers No washers, brass jamb nuts.
 Material of Crank shaft ✓ Identification Mark on Do. ✓ Material of Thrust shaft Forged Steel Identification Mark on Do. No. 107 A.S.
 Material of Tunnel shafts Forged Steel Identification Marks on Do. A.S.W. Material of Screw shafts Forged Steel Identification Marks on Do. No. 10 A.S.
 Material of Steam Pipes Lap welded wrought iron and solid drawn copper Test pressure 600 lbs. per sq. in.

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 full steam. All rotor casings have been subjected to the prescribed hydraulic tests, and found sound and good.
 The machinery of this vessel is eligible, in my opinion, for the record of **LMC** in the Register Book.

Mean Speed of 6 Runs on Trial when Half Loaded = 14.5 Knots.

H.P. Rotors 1' 2 1/2" to 1' 11"	Casings 1' 3 15/16" to 2' 2 1/4"	It is submitted that this vessel is eligible for THE RECORD + LMC 6 4 Steam Turbines geared to 2 screw shafts.
L.P. do. 2' 6"	do. 2' 9 1/2" to 3' 6"	
Astern do. 1' 11"	do. 2' 5 1/4" to 2' 4"	

The amount of Entry Fee.. £ 3 : 0 : 0 When applied for, 15th June 1915
 Special £ 99 : 3 : 7
 Donkey Boiler Fee £ : : :
 Travelling Expenses (if any) £ : : : When received, 16th June 1915

J.W.D.
A.S.W.
 a.s.w. *A.S. Williamson*
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute TUE. JUL. 13. 1915
 Assigned *LMC 6.15*

Certificate (if returned) to be sent to Registrar's Office

The Surveyors are requested not to write on or below the space for Committee's Minute.

MACHINERY CERTIFICATE
 10711

