

REPORT ON MACHINERY.

Port of *Nagasaki*

Received at London Office **10th 26 MAY 1908**

IN SUPPLY

No. in Survey held at *Nagasaki*

Date, first Survey *29. 9. 06* Last Survey *26. 4 1908*

Reg. Book.

31 on the **TRIPLE TURBINE, TENYO MARU.**

(Number of Visits *209*)

Tons ^{Gross} *13454*
_{Net} *7265*
When built *1908*

Master *P. Going* Built at *Nagasaki* By whom built *Mitsui Bishi D & E. Wks*

Engines made at *Newcastle* By whom made *Parsons No. 8. J. C. & Co. Ltd.* when made *1907-8*

Boilers made at *Nagasaki* By whom made *Mitsui Bishi D & E. Works.* when made *1907-8*

Registered Horse Power Owners *Toyo Kisen Kaisha* Port belonging to *Tokio*

Nom. Horse Power as per Section 28 *2970* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *yes*

ENGINES, &c.—Description of Engines *Parsons Triple Turbine* No. of Cylinders *Three* No. of Cranks *✓*

Dia. of Cylinders *Nwc N: 52996* Length of Stroke *✓* Revs. per minute *280* Dia. of Screw shaft ^{as per rule. *12.65*} Material of Lockfast *Iron*
_{as fitted. *13.75*} screw shaft

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

ners are fitted, is the shaft lapped or protected between the liners *✓* Length of stern bush *7-6 3/4"*

Dia. of Tunnel shaft ^{as per rule. *11.81*} Dia. of Crank shaft journals ^{as per rule. *HP. 15*} Dia. of Crank pin *✓* Size of Crank webs *✓* Dia. of thrust shaft under collars *13 1/2"* Dia. of screw *9-7"* Pitch of Screw *8-9"* No. of Blades *3* State whether moveable *No* Total surface *39.3* ft² each

No. of Feed pumps *4* Diameter of ditto *17x12 1/2"* Stroke *26"* Can one be overhauled while the other is at work *yes*

No. of Bilge pumps *Duplicate* Diameter of ditto *8x10"* Stroke *8"* Can one be overhauled while the other is at work *yes*

No. of Donkey Engines *Thirteen* Sizes of Pumps *largest 20x8x10x8"* No. and size of Suctions connected to both Bilge and Donkey pumps in Engine Room *3 @ 3 1/2" and 6 @ 3 1/2" in Boiler Rooms In Holds, &c.* *Two @ 3 1/2" in each hold.*

In each copper dam *3 @ 3 1/2"* to oil pumps only, discharging to settling tanks + overboard.

No. of Bilge Injections *2* sizes *12"* Connected to condenser, or to circulating pump *C.P.* Is a separate Donkey Suction fitted in Engine room & size *yes. 9"*

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 valves and 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 + below*

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 *Soil + Claytons Fan pipes.* How are they protected *Strong wood casings.*

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 *12. 9. 07* of Stern Tubes *13. 9. 07* Screw shafts and Propellers *13. 9. 07.*

Is the Screw Shaft Tunnels watertight *yes* Is it fitted with a watertight doors ^{LONG ARM.} *yes* worked from *Bridge or Engine Room.*

BOILERS, &c.—(Letter for record *S.*) Manufacturers of Steel *Hallside, Palmers, Farman Long, Fry + Co.*

Total Heating Surface of Boilers *37661* Is Forced Draft fitted *yes* No. and Description of Boilers *(13) Single ended Scotch.*

Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs* Dates of test *See over.* No. of Certificate *26.*

Can each boiler be worked separately *yes* Area of fire grate in each boiler *75.5* ft² No. and Description of Safety Valves to each boiler *2 @ 3 3/4" Spring.* Area of each valve *11.04* ft² 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 *Coal, steel baffled. 1-9"* Mean dia. of boilers *15.9* Length *11-6"* Material of shell plates *Steel*

Thickness *1 5/16"* Range of tensile strength *28-31* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *2R. Lap.*

Long. seams *3R. 2 Sharp* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *10+5"* Lap of plates or width of butt straps *22"*

Percentage of strength of longitudinal joint ^{rivets *90.5%*} _{plate *85.0%*} Working pressure of shell by rules *208 lbs* Size of manhole in shell *16x12"*

Size of compensating ring *37x32x1 1/2"* No. and Description of Furnaces in each boiler *4 Parsons Material Steel* Outside diameter *44 3/4"*

Length of plain part ^{top *19"*} _{bottom *19"*} Thickness of plates ^{crown *32"*} _{bottom *32"*} Description of longitudinal joint *Welded.* No. of strengthening rings *✓*

Working pressure of furnace by the rules *210* Combustion chamber plates: Material *Steel* Thickness: Sides *64"* Back *64"* Top *64"* Bottom *16"*

Pitch of stays to ditto: Sides *9x7 1/4"* Back *9x8 1/8"* Top *8 1/2x8"* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *194*

Material of stays *Steel* Diameter at smallest part *1 1/2"* Area supported by each stay *69.75* Working pressure by rules *192* End plates in steam space:

Material *Steel* Thickness *1 3/32"* Pitch of stays *20 1/2x17"* How are stays secured *2N+washers* Working pressure by rules *195* Material of stays *Steel*

Diameter at smallest part *3 3/8"* Area supported by each stay *348.5* Working pressure by rules *215* Material of Front plates at bottom *Steel*

Thickness *3/4"* Material of Lower back plate *Steel* Thickness *7/8"* Greatest pitch of stays *11" doubled* Working pressure of plate by rules *250*

Diameter of tubes *2 1/2"* Pitch of tubes *3 3/4x3 5/8"* Material of tube plates *Steel* Thickness: Front *3/4"* Back *3/4"* Mean pitch of stays *7 3/8"*

Pitch across wide water spaces *12 3/4"* Working pressures by rules *248 lbs* Girders to Chamber tops: Material *Steel* Depth and

Thickness of girder at centre *11 1/4x1 3/4"* Length as per rule *34 3/4"* Distance apart *8 3/4"* Number and pitch of stays in each *3 @ 8"*

Working pressure by rules *276 lbs* Superheater or Steam chest; how connected to boiler *✓* Can the superheater be shut off and the boiler worked

separately *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivet

holes *✓* Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thickness *✓*

Is stiffened with rings *✓* Distance between rings *✓* Working pressure by rules *✓* End plates: Thickness *✓* How stayed *✓*

Working pressure of end plates *✓* Area of safety valves to superheater *✓* Are they fitted with easing gear *✓*



Vertical text on the left margin: 'The Register of Shipping', 'Machinery', 'A Boiler', 'Fire Next', 'The Electric', 'at Dock'.

Vertical text on the right margin: 'W578-01117', 'Lloyd's Register Foundation'.

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *NOT ANY*. 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 So _____

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, two spare propeller shafts, one centre one wing. Two propellers, one right, one left. Two complete Main Bearing brasses, twelve rotor cover bolts and nuts. One set of valves for bilge pumps, for Main Feed Pumps, Air Pumps etc etc*

The foregoing is a correct description,
J. M. W. General Manager
Arthur Parker Woodyard & Co. Manufacturer.

Dates of Survey while building: During progress of work in shops - *Continuous on Auxiliary Machinery & Boilers from 29.9.06 to 14.9.07*
 During erection on board vessel - *Continuous from 14.9.06 to 26 April 1908. 85 visits.*
 Total No. of visits *209.* Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders Slides Covers Pistons Rods

Connecting rods Crank shaft Thrust shaft Tunnel shafts *13.5.07* Screw shafts Propellers

Stern tube *13.9.07* Steam pipes tested *14.8.07* Engine and boiler seatings *13.8.07* Engines holding down bolts *12.11.07*

Completion of pumping arrangements *25 Jun 1908* Boilers fixed *30 Jun 1908* Engines tried under steam *10.15.19 + 27 Feb 1908*

Main boiler safety valves adjusted *20 April 1908* Thickness of adjusting washers *Jamb nuts, no washers.*

Material of Crank shaft Identification Mark on Do. Material of Thrust shaft Identification Mark on Do.

Material of Tunnel shafts *Mild Steel* Identification Marks on Do. *LLOYD'S N. 26 ACH. 07.* Material of Screw shafts *Lock fast Iron* Identification Marks on Do. *LLOYD'S 1647 31.1.07 C.M.*

Material of Steam Pipes *Wrought iron lap welded.* Test pressure *550 lbs per square inch.*

General Remarks (State quality of workmanship, opinions as to class, &c. *For Report on Turbines see Newcastle Report N. 52996. These Engines and Boilers have been built in accordance with the Rules, See London Letters E. 30.6.07 E. 25.10.06 + E 1.6.07. Materials used, and workmanship are good. They are securely and satisfactorily fitted on board, and have been seen working well under a good head of steam. 180 lbs. The arrangements for burning liquid fuel are in accordance with the Rules, with complete ventilating, fumigating, and fire extinguishing arrangements. For spraying Oil from burners, compressed air is used. The machinery of this vessel is now in my opinion eligible for notation L.M.C. 4.08. Fitted for liquid fuel. Speed on trial light ship 20.608 knots.*

N: 1	2.5.07	N: 4	21.5.07	N: 7	10.6.07	N: 10	28.6.07	Date of Tests
N: 2	2.5.07	N: 5	21.5.07	N: 8	10.6.07	N: 11	28.6.07	Main
N: 3	2.5.07	N: 6	21.5.07	N: 9	10.6.07	N: 12	28.6.07	Boiler
N: 13	28.6.07							

The amount of Entry Fee. £ 3 : - : When applied for, £ 29.46 : - :
 Special £ 178 : - : 29.4.1908
 Donkey Boiler Fee £ 1748.14 : - :
 Travelling Expenses (if any) £ : - : When received, 30.4.08

A. C. Heron.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 It is submitted that this vessel is eligible for THE RECORD. L.M.C. 4.08. ELEC. LIGHT. F. II. FITTED FOR LIQUID FUEL REGISTERED 3 STEAM TURBINES.

Committee's Minute **WED. 10 JUN 1908**
 Assigned *Home 4.08 JHC 9.6.08*
 MACHINERY DATE WRITTEN

FLAT (If B GARE)
 State (thick) (thin) (B)
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 Length and thickness
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Certificate (if required) to be sent to Nagasaki

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

