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# REPORT ON BOILERS.

No. 726

16 JUN 1930

Received at London Office

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19th May, 1930 When handed in at Local Office 19th May 1930. Port of **NAGASAKI.**  
Survey held at **NAGASAKI.** Date, First Survey **27th April 1929** Last Survey **14th May, 1930.**  
(Number of Visits ) Gross **9,626.69**  
on the **Steel Twin Sc. Motor Vessel "Rio de Janeiro Maru".** Tons Net **5,848.11**  
Built at **Nagasaki.** By whom built **Mitsubishi Zosen Kaisha** Card No. **457** When built **1930.**  
Nagasaki. By whom made **Mitsubishi Zosen Kaisha, Ltd..** Engine No. **457.** When made **1930.**  
Nagasaki. By whom made **Mitsubishi Zosen Kaisha, Ltd.** Boiler No. **457.** When made **1930.**  
Initial Horse Power **1,503.** Owners **Osaka Shosen Kabushiki Kaisha.** Port belonging to **Osaka.**

## MULTITUBULAR BOILERS ~~MAIN AUXILIARY OR~~ DONKEY.

Manufacturers of Steel **Mannesmannrohrenwerke, Huckingen., Calderbank Steel Works.** (Letter for Record **S.**)  
**Gutehoffnungshutte A.G. Oberhausen.**  
Total Heating Surface of Boilers **464.5 sq.ft.** Is forced draught fitted **No.** Coal or Oil fired **Oil.**  
and Description of Boilers **One single ended Multitubular type.** Working Pressure **120 lbs.**  
Tested by hydraulic pressure to **230 lbs** Date of test **26-10-29** No. of Certificate **135.** Can each boiler be worked separately /  
Area of Firegrate in each Boiler / No. and Description of safety valves to each boiler **Two-direct spring loaded.**  
Area of each set of valves per boiler { per Rule **5.16 sq.in.** Pressure to which they are adjusted **120 lbs** Are they fitted with easing gear **Yes**  
as fitted **6.28** " **Main boilers not fitted.**  
In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler  
Smallest distance between boilers or uptakes and bunkers or woodwork **30"** Is oil fuel carried in the double bottom under boilers **Yes**  
Smallest distance between shell of boiler and tank top plating **6"** Is the bottom of the boiler insulated **Yes**  
Largest internal dia. of boilers **7'-9"** Length **7'-6"** Shell plates: Material **Steel** Tensile strength **28-35 tons**  
Thickness **9/16"** Are the shell plates welded or flanged **No** Description of riveting: circ. seams { end **S.R.lap.**  
D.R.D.B.S. Diameter of rivet holes in { circ. seams **15/16"** Pitch of rivets { **2.25"**  
long. seams **"** **3 7/16"**  
Percentage of strength of circ. end seams { plate **58.5** Percentage of strength of circ. intermediate seam { plate /  
rivets **44.6** **72.7**  
Percentage of strength of longitudinal joint { plate **110.0** Working pressure of shell by Rules **127.3 lbs**  
rivets **100.5** combined  
Thickness of butt straps { outer **1/2"** No. and Description of Furnaces in each Boiler **One- Leeds forge bulb suspension**  
inner **"** **furnace.**  
Material **Steel** Tensile strength **26-30 tons sq.in.** Smallest outside diameter **38 7/8"**  
Length of plain part { top **7/16"** Thickness of plates { crown **7/16"** Description of longitudinal joint **Welded**  
bottom **"** **bottom**  
Dimensions of stiffening rings on furnace or c.e. bottom / Working pressure of furnace by Rules **170.5 lbs sq.in.**  
End plates in steam space: Material **Steel** Tensile strength **26-30 tons** Thickness **25/32"** Pitch of stays **13"**  
How are stays secured **Double nuts and washers.** Working pressure by Rules **143 lbs sq.in.**  
Tube plates: Material { front **Steel.** Tensile strength { **26-30 tons** Thickness { **25/32"**  
back **5/8"**  
Mean pitch of stay tubes in nests **8.1875"** Pitch across wide water spaces **10 1/2"** Working pressure { front **167.9 lbs sq.in.**  
back **204.6** "  
Girders to combustion chamber tops: Material **Steel** Tensile strength **28-35 tons** Depth and thickness of girder  
at centre **5 1/2" x 7/16" x 2** Length as per Rule **17 13/16"** Distance apart **9 1/4" (max)** No. and pitch of stays  
in each **2 @ 5 3/4"** Working pressure by Rules **158.2 lbs sq.in.** Combustion chamber plates: Material **Steel**  
Tensile strength **26-30 tons sq.in.** Thickness: Sides **9/16"** Back **9/16"** Top **9/16"** Bottom **9/16"**  
Pitch of stays to ditto: Sides **9 1/2" x 7 7/8"** Back **9" x 8 3/4"** Top **5 3/4" x 9 1/4"** Are stays fitted with nuts or riveted over **Nuts**  
Working pressure by Rules **Sides 142 lbs** **Back 138.4 lbs** Front plate at bottom: Material **Steel** Tensile strength **26-30 tons sq.in.**  
Top **182.7 lbs**  
Thickness **25/32"** Lower back plate: Material **Steel** Tensile strength **26-30 tons** Thickness **25/32"**  
Pitch of stays ~~XXXXXX~~ **8 3/4" x 9"** Are stays fitted with nuts or riveted over **Nuts.**  
Working Pressure **Back 316.3 lbs sq.in.** Main stays: Material **Steel.** Tensile strength **28-35 tons sq.in.**  
Front **320** "  
Diameter { At body of stay, **2"** No. of threads per inch **6** Area supported by each stay **175.5 sq.in.**  
Over threads  
Working pressure by Rules **149.2 lbs sq.in.** Screw stays: Material **Steel** Tensile strength **26-30 tons sq.in.**  
Diameter { At turned off part, **1 3/8"** No. of threads per inch **9** Area supported by each stay **Back 78.75 sq.in.**  
Over threads **Sides 52.0** "

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Working pressure by Rules Back 128.5 lbs / Sides 194.6 lbs / Are the stays drilled at the outer ends No / Margin stays: Diameter { At turned off part, or Over threads 1 1/2" / No. of threads per inch 9 / Area supported by each stay 74.4 / Working pressure by Rules 168.6 lbs / Tubes: Material Steel / External diameter { Plain 3" / Stay 3" / Thickness 10 L.S.G. / 5/16 / No. of threads per inch 9 / Pitch of tubes 4 1/2" x 4 1/8" / Working pressure by Rules 140 lbs (plain) / Manhole compensation: Size of opening in shell plate 19 1/2" x 15 1/2" / Section of compensating ring 2x5x3/4 (flanged) / 2x5x25/32 (under dome) / No. of rivets and diameter of rivet holes 44 @ 7/8" / Outer row rivet pitch at ends 11" under dome. / Depth of flange if manhole flanged / Steam Dome: Material Steel / Tensile strength 26-30 tons / Thickness of shell 7/16" / Description of longitudinal joint Gas welded & single butt strap / Diameter of rivet holes 7/8" / Pitch of rivets 2 1/8" / Percentage of strength of joint { Plate 58.8 / Rivets 57.2 / Internal diameter 24" / Working pressure by Rules 225.5 lbs sq.in. / Thickness of crown 7/16" / No. and diameter of stays / Inner radius of crown 24" / Working pressure by Rules 211.2 lbs. / How connected to shell Double riveted. / Size of doubling plate under dome / Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell 7/8" @ 3.36" pitch. /

Type of Superheater / Manufacturers of { Tubes / Steel castings / Number of elements / Material of tubes / Internal diameter and thickness of tubes / Material of headers / Tensile strength / Thickness / Can the superheater be shut off and the boiler be worked separately / Is a safety valve fitted to every part of the superheater which can be shut off from the boiler / Area of each safety valve / Are the safety valves fitted with easing gear / Working pressure as per Rules / Pressure to which the safety valves are adjusted / Hydraulic test pressure: tubes / castings / and after assembly in place / Are drain cocks or valves fitted to free the superheater from water where necessary. /

Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with Yes

NAGASAKI WORKS, MITSUBISHI ZOSSEN KAISHA, LTD.

*J. Hirota*  
for GENERAL MANAGER.

The foregoing is a correct description.

Manufacturer.

Dates of Survey { During progress of work in shops - - / while building { During erection on board vessel - - - /

See Machinery report.

Are the approved plans of boiler ~~and superheater~~ forwarded herewith Yes (If not state date of approval.)

Total No. of visits /

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) The materials and workmanship are good. The boiler has been constructed under special survey in accordance with the Rules and Approved plan, satisfactorily fitted in the vessel and safety valves adjusted under steam as above.

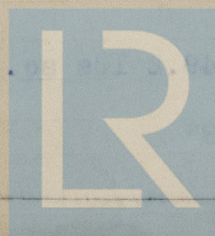
Survey Fee ... See Machinery Report. When applied for, 192 Travelling Expenses (if any) £ ... When received, 192

*George Anderson*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 20 JUN 1930

Assigned

*See F.E. Rpt.*



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