

## REPORT ON BOILERS.

No. 1743

Total 79

Received at London Office 19 SEP 1930

Date of writing Report 25th Aug. 1930 When handed in at Local Office 25th Aug. 1930 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 29th Nov. 29. Last Survey 15th Aug. 1930.

Reg. Book 6658 on the Steel Twin Screw Motor Ship "TOKAI MARU". (Number of Visits See Machy. rpt. 8,365.28 Tons Net 5,046.44

Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha, Ltd. Yard No. 472. When built 1930

Engines made at Nagasaki. By whom made Mitsubishi Zosen Kaisha, Ltd. Engine No. 472. When made 1930

Boilers made at Nagasaki. By whom made Mitsubishi Zosen Kaisha, Ltd. Boiler No. 472 When made 1930

Owners Osaka Shosen Kabushiki Kaisha.

Port belonging to Osaka.

## VERTICAL DONKEY BOILER.

Made at Nagasaki By whom made Mitsubishi Zosen Kaisha Boiler No. 472. When made 1930 Where fixed In Engine Room.

Manufacturers of Steel Gutehoffnungshutte A.G. Oberhausen. The Steel Co of Scotland, Ltd., The Rivet, Bolt &amp; Nut Co, Ltd.,

Total Heating Surface of Boiler 199.1 sq.ft. Is forced draught fitted No Coal or Oil fired Oil

No. and Description of Boilers One vertical. Working pressure 100 lbs

Tested by hydraulic pressure to 200 lbs. sq.in. Date of test 30th April 1930. No. of Certificate 139.

Area of Firegrate in each Boiler / No. and Description of safety valves to each boiler Two- 1 1/2" Direct spring loaded.

Area of each set of valves per boiler { per rule 2.6 sq.in. as fitted 3.53 sq.in. Pressure to which they are adjusted 105 lbs Are they fitted with easing gear Yes

State whether steam from main boilers can enter the donkey boiler / Smallest distance between boiler or uptake and bunkers

Woodwork / Is oil fuel carried in the double bottom under boiler Yes Smallest distance between base of boiler and tank top plating

4'-3" Is the base of the boiler insulated Yes Largest internal dia. of boiler 1400 m/m Height 3500 m/m

Shell plates: Material Steel Tensile strength 28-35 tons sq.in. Thickness 10 m/m

Are the shell plates welded or flanged No Description of riveting: circ. seams { end S.R.L. inter. " long. seams D.R. Lap.

Dia. of rivet holes in { circ. seams 20 m/m Pitch of rivets { 52.1 m/m 65.8 m/m Percentage of strength of circ. seams { plates 61.61 % rivets 49.5 % of Longitudinal joint { plates 70.3 % rivets 76.3 % combined /

Working pressure of shell by rules 130.6 lbs sq.in. Thickness of butt straps { outer / inner /

Shell Crown: Whether complete hemisphere, dished partial spherical, or flat Dished partial spherical Material Steel

Tensile strength 28-35 tons sq.in. Thickness 13 m/m Radius 819 m/m Working pressure by rules 186 lbs sq.in.

Description of Furnace: Plain, spherical, or dished crown Hemispherical Material Steel Tensile strength 26-30 tons sq.in.

Thickness 13 m/m External diameter { top 1200 m/m bottom / Length as per rule / Working pressure by rules 179.1 lbs sq.in.

Pitch of support stays circumferentially / and vertically / Are stays fitted with nuts or riveted over /

Diameter of stays over thread / Radius of spherical or dished furnace crown 600 m/m (ext) Working pressure by rule /

Thickness of Ogee Ring 16 m/m Diameter as per rule { D 1400 m/m d 1200 m/m Working pressure by rule 118.2 lbs sq.in.

Combustion Chamber: Material / Tensile strength / Thickness of top plate /

Radius if dished / Working pressure by rule / Thickness of back plate / Diameter if circular /

Length as per rule / Pitch of stays / Are stays fitted with nuts or riveted over /

Diameter of stays over thread / Working pressure of back plate by rules /

Tube Plates: Material { front Steel back / Tensile strength { 26-30 tons sq.in. Thickness { 17 m/m " Mean pitch of stay tubes in nests 118.5 m/m

Comprising shell, Dia. as per rule { front 1074 m/m back 1280 " Pitch in outer vertical rows { 160 m/m " Dia. of tube holes FRONT { stay 50.8 m/m plain " BACK { stay 56 m/m plain " }

Each alternate tube in outer vertical rows a stay tube Yes Working pressure by rules { front 150.2 lbs sq.in. back 126 " }

Girders to combustion chamber tops: Material / Tensile strength /

Depth and thickness of girder at centre / Length as per rule /

Distance apart / No. and pitch of stays in each / Working pressure by rule /

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Crown stays: Material / Tensile strength / Diameter { at body of stay, / or / over threads. /  
No. of threads per inch / Area supported by each stay / Working pressure by rules /  
Screw stays: Material / Tensile strength / Diameter { at turned off part, / or / over threads. / No. of threads per inch /  
Area supported by each stay / Working pressure by rules / Are the stays drilled at the outer ends /  
Tubes: Material Mild steel. External diameter { plain 50.8 m/m / stay " / Thickness { 10 I.S.G. / 8 m/m /  
No. of threads per inch 9 Pitch of tubes 78 x 80 m/m Working pressure by rules (Plain) 215 lbs sq. in  
Manhole Compensation: Size of opening in shell plate 300 x 400 m/m Section of compensating ring / No. of rivets and diam  
of rivet holes / Outer row rivet pitch at ends / Depth of flange if manhole flanged 90 m/m  
Uptake: External diameter 286 m/m Thickness of uptake plate 13 m/m  
Cross Tubes: No. / External diameters { / Thickness of plates /  
Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with Yes

The foregoing is a correct description,  
NAGASAKI WORKS, MITSUBISHI ZEN-EN KAISHA, LTD.  
S. Motora  
GENERAL MANAGER

Dates of Survey { During progress of work in shops - - }  
while building { During erection on board vessel - - }  
See Machinery Report.  
Is the approved plan of boiler 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 pl satisfactorily fitted in the vessel and safety valves adjusted under steam as above.

Survey Fee ... £ : :  
Travelling Expenses (if any) £ : :  
See Machy.rpt.  
When applied for, 19  
When received, 19

Committee's Minute FRI. 26 SEP 1930  
Assigned See F.I. Rpt.

George Anderson & L. Kishu  
Engineer Surveyor to Lloyd's Register of Shipping.