

## REPORT ON BOILERS.

No. 9508.

Received at London Office

-5 JUN 1936

Date of writing Report 9-4-1936 When handed in at Local Office 23-4-1936 Port of KOBE

No. in Reg. Book. Surrey held at TAMA Date, First Survey 14-8-1935 Last Survey 4-4-1936

on the STEEL SINGLE SCREW MOTORSHIP "OTOWASAN MARU" (Number of Visits 14) Gross Tons 9234 Net Tons 5338

Master ✓ Built at TAMA By whom built MITSUI BUSSAN KAISHA Yard No. 211 When built 1936

Engines made at TAMA By whom made MITSUI BUSSAN KAISHA Engine No. 95 When made 1936

Boilers made at TAMA By whom made MITSUI BUSSAN KAISHA Boiler No. 132 133 When made 1936

Nominal Horse Power 1231 Owners MITSUI BUSSAN KAISHA Port belonging to KOBE

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel SHELL PLATES: GUTEHOFFNUNGSHUTTE OBERHAUSEN A.G. DUSSEL DORF CERT. OTHER PLATES: NIPPON SEITETSU, YAWATA WORKS. (Letter for Record (5) ✓)

Total Heating Surface of Boilers 221.73 M<sup>2</sup> Is forced draught fitted YES Coal or Oil fired OIL

No. and Description of Boilers 2: SINGLE ENDED MULTITUBULAR. Working Pressure 14 Kg/cm<sup>2</sup> ✓

Tested by hydraulic pressure to 24.5 Kg/cm<sup>2</sup> Date of test 1-2-1936 No. of Certificate 4906 + 4907 Can each boiler be worked separately YES

Area of Firegrate in each Boiler 5.85 M<sup>2</sup> EACH No. and Description of safety valves to each boiler 2. SPRING LOADED.

Area of each set of valves per boiler { per Rule 9000 mm<sup>2</sup> as fitted 12400 mm<sup>2</sup> Pressure to which they are adjusted 14 Kg/cm<sup>2</sup> Are they fitted with easing gear YES

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 NO BUNKER + WOOD WORK IN VICINITY OF BOILERS. Is oil fuel carried in the double bottom under boilers ✓

Smallest distance between shell of boiler and tank top plating BOILERS FITTED IN MID-TWEEN DECK Is the bottom of the boiler insulated YES.

Largest internal dia. of boilers 4100 mm ✓ Length 3500 mm ✓ Shell plates: Material STEEL Tensile strength 26-32 T/a" ✓

Thickness 32 mm ✓ Are the shell plates welded or flanged NO. Description of riveting: circ. seams { end DOUBLE RIVETED LAP inter. ✓

long. seams TREBLE RIVETED DOUBLE BUTT STRAP Diameter of rivet holes in { circ. seams 36.5 mm ✓ Pitch of rivets { 180 mm ✓ 230 mm ✓

Percentage of strength of circ. end seams { plate 63.5 rivets 53.7 Percentage of strength of circ. intermediate seam { plate ✓ rivets ✓

Percentage of strength of longitudinal joint { plate 85.4 rivets 92.2 combined 89.2 Working pressure of shell by Rules 14.53 Kg/cm<sup>2</sup>

Thickness of butt straps { outer 25 mm ✓ inner 28 mm ✓ No. and Description of Furnaces in each Boiler 3 MORISON TYPE CORRUGATED EACH. ✓

Material STEEL Tensile strength 26-32 T/a" Smallest outside diameter 945 mm. ✓

Length of plain part { top 157 mm ✓ bottom 157 mm ✓ Thickness of plates { crown 15 mm ✓ bottom 15 mm ✓ Description of longitudinal joint WELDED.

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 16.2 Kg/cm<sup>2</sup>

End plates in steam space: Material STEEL Tensile strength 26-30 T/a" Thickness 30 mm ✓ Pitch of stays 440 mm x 450 mm ✓

How are stays secured DOUBLE NUTS + WASHERS. Working pressure by Rules 15.9 Kg/cm<sup>2</sup>

Tube plates: Material { front STEEL Tensile strength { 26-30 T/a" ✓ Thickness { 21 mm ✓ back STEEL 26-30 T/a" 21 mm ✓

Mean pitch of stay tubes in nests 218 mm Pitch across wide water spaces 340 mm x 110 mm Working pressure { front 16.6 Kg/cm<sup>2</sup> back 23.4 Kg/cm<sup>2</sup>

Girders to combustion chamber tops: Material STEEL Tensile strength 28-32 T/a" Depth and thickness of girder

at centre 230 mm 2-18 mm ✓ Length as per Rule 741 mm ✓ Distance apart 200 mm ✓ No. and pitch of stays

in each 2-240 mm ✓ Working pressure by Rules 21.4 Kg/cm<sup>2</sup> Combustion chamber plates: Material STEEL

Tensile strength 26-30 T/a" Thickness: Sides 18 mm ✓ Back 18 mm ✓ Top 18 mm ✓ Bottom 21 mm ✓

Pitch of stays to ditto: Sides 250 mm x 190 mm Back 230 mm x 200 mm Top 240 mm x 200 mm Are stays fitted with nuts or riveted over NUTS.

Working pressure by Rules 16.1 Kg/cm<sup>2</sup> Front plate at bottom: Material STEEL Tensile strength 26-30 T/a" ✓

Thickness 21 mm ✓ Lower back plate: Material STEEL Tensile strength 26-30 T/a" Thickness 19 mm ✓

Pitch of stays at wide water space 200 mm x 340 mm Are stays fitted with nuts or riveted over NUTS.

Working Pressure 19.3 Kg/cm<sup>2</sup> Main stays: Material STEEL Tensile strength 28-32 T/a" ✓

Diameter { At body of stay, 75 mm ✓ No. of threads per inch 6 ✓ Area supported by each stay 410 mm x 450 mm ✓

Working pressure by Rules 18.3 Kg/cm<sup>2</sup> Screw stays: Material STEEL Tensile strength 26-30 T/a" ✓

Diameter { At turned off part, 44.5 mm ✓ No. of threads per inch 9 ✓ Area supported by each stay 483.87 mm<sup>2</sup> (75 mm<sup>2</sup>) ✓

Working pressure by Rules  $17.1 \text{ Kg/cm}^2$  Are the stays drilled at the outer ends ☒ YES. Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part, } \checkmark \\ \text{Over threads } 50.8 \text{ mm} \times 47.6 \text{ mm} \end{array} \right.$

No. of threads per inch 6 Area supported by each stay  $57096 \text{ mm}^2 (88.5 \text{ sq. in.})$  Working pressure by Rules  $16.8 \text{ Kg/cm}^2$

Tubes: Material STEEL External diameter  $\left\{ \begin{array}{l} \text{Plain } 80 \text{ mm} \\ \text{Stay } 80 \text{ mm} \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} 4 \text{ mm} \\ 8 \text{ mm} \times 10 \text{ mm} \end{array} \right.$  No. of threads per inch 9

Pitch of tubes  $108 \text{ mm} \times 110 \text{ mm}$  Working pressure by Rules  $25.9 \text{ Kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $550 \text{ mm} \times 450 \text{ mm}$  Section of compensating ring  $545 \text{ mm} \times 32 \text{ mm}$  No. of rivets and diameter of rivet holes 42,  $36.5 \text{ mm}$

Outer row rivet pitch at ends  $210 \text{ mm}$  Depth of flange if manhole flanged  $105 \text{ mm}$  Steam Dome: Material NONE

Tensile strength ☒ Thickness of shell ☒ Description of longitudinal joint ☒

Diameter of rivet holes ☒ Pitch of rivets ☒ Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate } \checkmark \\ \text{Rivets } \checkmark \end{array} \right.$

Internal diameter ☒ Working pressure by Rules ☒ Thickness of crown ☒ No. and diameter of stays ☒

How connected to shell ☒ Inner radius of crown ☒ Working pressure by Rules ☒

Size of doubling plate under dome ☒ Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell ☒

Type of Superheater NONE Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes } \checkmark \\ \text{Steel castings } \checkmark \end{array} \right.$

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.

The ~~PER-PRO~~ MITSUI BUSSAN KAISHA, LTD.,  
is a correct description,

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops} \\ \text{During erection on board vessel} \end{array} \right.$

1935: Aug. 14, SEPT. 10, OCT. 4, NOV. 22, 25, 27, DEC. 11, 27.  
1936: FEB. 1

Are the approved plans of boiler and superheater forwarded herewith ☒ 28-3-35  
(If not state date of approval.)

1936: FEB. 12, MAR. 23, 28, 31, APR. 4  
Total No. of visits 14

# GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

These boilers have been constructed under special survey in accordance with the Rules and approved plan.

The materials and workmanship are good.

The boilers were tested by hydraulic pressures to  $24.5 \text{ Kg per sq. cm.}$ , and found sound and tight, afterwards installed in accordance with the Rules in the vessel, and the safety valves adjusted under steam to  $14 \text{ Kg per sq. cm. (200 lbs/sq. in.)}$ .

These boilers, in my opinion, are eligible to have the record of D.B.  $14 \text{ Kg per sq. cm. (200 lbs/sq. in.)}$ .

Survey Fee ...  $\pounds 57-10-6$ :

Travelling Expenses (if any)  $\pounds$  :

When applied for, 7th Apr. 1936

When received, 26.6 192 367D

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 12 JUN 1936

Assigned

See minute on J.E. Rpt.



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