

REPORT ON BOILERS.

No. 9660

Received at London Office

20 AUG 1936

Date of writing Report 15th July 1936 When handed in at Local Office 30th July 1936 Port of Kobe

No. in Reg. Book. Survey held at O.H. HARIMA Date, First Survey 9th Sep. 1935 Last Survey 29th June 1936

on the Single Screw vessel KAGI MARU (Number of Visits) Gross 6807 Tons Net 3688

Master Built at O.H. HARIMA By whom built HARIMA S.S.E. CO., LTD. Yard No. 216 When built 1936

Engines made at KOBE By whom made KAWASAKI DOCK YARD CO., LTD. Engine No. 222 When made 1936

Boilers made at O.H. HARIMA By whom made HARIMA S.S.E. CO., LTD. Boiler No. When made 1935

Nominal Horse Power Owners KOKUSAI KISEN KAB. KAISHA Port belonging to TOKIO

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel The Steel Company of Scotland, Ltd. (Letter for Record S ✓)

Total Heating Surface of Boilers 218 M² 2346 S. Is forced draught fitted No Coal or Oil fired oil, ex. gas

No. and Description of Boilers One, two furnace multitubular ✓ Working Pressure 7 kg/cm² ✓ 180/6.

Tested by hydraulic pressure to 14 kg/cm² ✓ Date of test 23-12-35 No. of Certificate 4847 ✓ Can each boiler be worked separately ✓

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler two spring loaded ✓ 115 mm. dia.

Area of each set of valves per boiler { per Rule 16500 mm² as fitted 20700 mm² } Pressure to which they are adjusted 7 kg/cm² Are they fitted with easing gear Yes ✓

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler No main boilers ✓

Smallest distance between boilers or uptakes and bunkers or woodwork No woodwork Is oil fuel carried in the double bottom under boilers No ✓

Smallest distance between shell of boiler and tank top plating boiler on tween dk. plat. ✓ Is the bottom of the boiler insulated Yes ✓

Largest internal dia. of boilers 3800 mm. ✓ Length 3500 mm. ✓ Shell plates: Material Steel ✓ Tensile strength 44-50 kg/mm² ✓

Thickness 22 mm. ✓ Are the shell plates welded or flanged No ✓ Description of riveting: circ. seams end AR lap inter. ✓

long. seams T.R.P.B.S. ✓ Diameter of rivet holes in { circ. seams 24 mm. ✓ long. seams 24 mm. ✓ Pitch of rivets { 75 mm. ✓ 166 mm. ✓

Percentage of strength of circ. end seams { plate 68 rivets 45 } Percentage of strength of circ. intermediate seam { plate 85.6 rivets 95.5 combined 90.2 } Working pressure of shell by Rules 10.55 kg/cm² ✓

Thickness of butt straps { outer 19 mm. ✓ inner 22 mm. ✓ } No. and Description of Furnaces in each Boiler 2- Morrison's corrugated ✓

Material Steel ✓ Tensile strength 41-47 kg/mm² ✓ Smallest outside diameter 1099 mm. ✓

Length of plain part { top 198 mm. ✓ bottom 198 mm. ✓ } Thickness of plates { crown 16 mm. ✓ bottom 16 mm. ✓ } Description of longitudinal joint Welded ✓

Dimensions of stiffening rings on furnace or c.c. bottom None ✓ Working pressure of furnace by Rules 14.95 kg/cm² ✓

End plates in steam space: Material Steel ✓ Tensile strength 41-47 kg/mm² ✓ Thickness 25 mm. ✓ Pitch of stays 360 mm. ✓

How are stays secured Double nuts ✓ Working pressure by Rules 7 kg/cm² ✓

Tube plates: Material { front Steel ✓ back Steel ✓ } Tensile strength { 41-47 kg/mm² ✓ 41-47 kg/mm² ✓ } Thickness { 22 mm. ✓ 19 mm. ✓ }

Mean pitch of stay tubes in nests 277 mm. ✓ Pitch across wide water spaces 350 mm. x 180 mm. ✓ Working pressure { front 10.8 kg/cm² ✓ back 11.8 kg/cm² ✓ }

Girders to combustion chamber tops: Material Steel ✓ Tensile strength 44-50 kg/mm² ✓ Depth and thickness of girder at centre 200 x 19 mm. x 2 ✓ Length as per Rule 717 mm. ✓ Distance apart 300 mm. ✓ No. and pitch of stays in each 2 @ 200 mm. ✓ Working pressure by Rules 11.4 kg/cm² ✓ Combustion chamber plates: Material Steel ✓

Tensile strength 41-47 kg/mm² ✓ Thickness: Sides 16 mm. ✓ Back 14 mm. ✓ Top 16 mm. ✓ Bottom 19 mm. ✓

Pitch of stays to ditto: Sides 200 x 300 mm. Back 240 x 200 mm. Top 200 x 300 mm. Are stays fitted with nuts or riveted over Nuts ✓

Working pressure by Rules 9.6 kg/cm² ✓ Front plate at bottom: Material Steel ✓ Tensile strength 41-47 kg/mm² ✓

Thickness 22 mm. ✓ Lower back plate: Material Steel ✓ Tensile strength 41-47 kg/mm² ✓ Thickness 22 mm. ✓

Pitch of stays at wide water space 200 x 350 mm. Are stays fitted with nuts or riveted over Nuts ✓

Working Pressure 13.5 kg/cm² ✓ Main stays: Material Steel ✓ Tensile strength 44-50 kg/mm² ✓

Diameter { At body of stay, or Over threads 2 1/2" ✓ } No. of threads per inch 6 ✓ Area supported by each stay 360 x 410 mm. ✓

Working pressure by Rules 13.5 kg/cm² ✓ Screw stays: Material Steel ✓ Tensile strength 41-47 kg/mm² ✓

Diameter { At turned off part, or Over threads 1 1/2" ✓ } No. of threads per inch 9 ✓ Area supported by each stay 240 x 200 mm. ✓

Working pressure by Rules 11.8 $\frac{\text{Kgs}}{\text{cm}^2}$ Are the stays drilled at the outer ends Yes Margin stays: Diameter { At turned off part, or Over threads 44.5 mm
No. of threads per inch 9 Area supported by each stay 200 x 345 mm Working pressure by Rules 11.2 $\frac{\text{Kgs}}{\text{cm}^2}$
Tubes: Material Steel External diameter { Plain 22" Stay 22" Thickness 10 L.S.G. 7/16" No. of threads per inch 9
Pitch of tubes 95 x 90 mm Working pressure by Rules 12.35 $\frac{\text{Kgs}}{\text{cm}^2}$ Manhole compensation: Size of opening in shell plate 430 x 530 mm Section of compensating ring 447 x 22 mm No. of rivets and diameter of rivet holes 48 @ 24 mm
Outer row rivet pitch at ends 166 mm Depth of flange if manhole flanged 85 mm Steam Dome: Material None
Tensile strength 315 Thickness of shell Description of longitudinal joint
Diameter of rivet holes Pitch of rivets Percentage of strength of joint { Plate Rivets
Internal diameter Working pressure by Rules Thickness of crown No. and diameter of stays
How connected to shell 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 { 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 22 inclusive for boilers been complied with Yes

THE HARIMA SHIP-BUILDING AND ENGINEERING CO. LTD.
The foregoing is a correct description.
Manufacturer.

Dates of Survey { During progress of work in shops - - - Sep 9 Oct 30 Nov 25 30 Dec 23
while building { During erection on board vessel - - - April 18 May 12 June 35 12 29
Are the approved plans of boiler and superheater forwarded herewith 29-7-35 (If not state date of approval.)
Total No. of visits 12

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

This boiler has been constructed under Special Survey in accordance with the Rules & approved plans.
The materials & workmanship are good.
The boiler was tested by hydraulic pressure to 14 kgs per sq. cm. & found sound & tight, afterwards being installed in the vessel in accordance with the Rules & the safety valves adjusted under steam to 100 lb. square inch.
This boiler, in our opinion, is eligible to have the record of D.B. 10016.

Survey Fee £ 23 : 8 : 0 When applied for, 192 25/19
Travelling Expenses (if any) £ : : When received, 25.9.1923
For C. Macpherson & self
J. Hamada
Assistant Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 25 AUG 1936
Assigned See minute on 28 Rpt.