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# REPORT ON BOILERS.

No. 1845

Received at London Office 27 SEP 1932

Date of writing Report 25th Aug. 1932 When handed in at Local Office 25th Aug. 1932 Port of NAGASAKI.

No. in Reg. Book Survey held at NAGASAKI. Date, First Survey 24th Feb. 1932. Last Survey 6th August 1932

68128 on the Steel Screw Steamer "NAGOYA MARU". (Number of Visits See Machy Report. Gross 6049.31 Tons Net 3729.01)

Master / Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha Ltd. No. 503 When built 1932

Engines made at Nagasaki (Exhaust turbine & gearing Kobe). By whom made Mitsubishi Zosen Kaisha, Ltd. Engine No. 503 When made 1932

Boilers made at Nagasaki By whom made Mitsubishi Zosen Kaisha, Ltd. Boiler No. 503 When made 1932

Nominal Horse Power 691.12 Owners Ishihara Gomei Kaisha. Port belonging to Fuchu.

## MULTITUBULAR BOILERS - MAIN, ~~AUXILIARY OR DONKEY~~

Manufacturers of Steel Gutehoffnungshütte Oberhausen A.G. Krupp, Fried., A.G. Friedrich Alfred Hutte. Vereinigte Stahlwerke A.G. Dortmund Union-Hoerder Verein. (Letter for Record S.) Vereinigte Stahlwerke A.G. Stahl-und Walzwerke Thyssen. Colvilles Ltd. Pulverized Coal.

Total Heating Surface of Boilers 8934 sq. ft. Is forced draught fitted Yes Coal or Oil fired Coal.

No. and Description of Boilers Three single ended multitubular. Working Pressure 225 lbs/sq. in.

Tested by hydraulic pressure to 387.5 lbs/sq. in. Date of test 6-5-32 No. of Certificate 147 Can each boiler be worked separately Yes

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

Area of each set of valves per boiler {per Rule 15.51 sq. in. 18.6 as fitted 19.24 Pressure to which they are adjusted 230 lbs 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 7'-4" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 2'-0" Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 15'-6" Length 12'-6" Shell plates: Material Steel Tensile strength 28-32 tons/sq. in.

Thickness 1 5/8" Are the shell plates welded or flanged No Description of riveting: circ. seams end D.R. lap. inter. /

Long. seams T.R.D.B.S. Diameter of rivet holes in {circ. seams 1 1/2" long. seams 1 5/8" Pitch of rivets {4.01" 11 3/8"

Percentage of strength of circ. end seams {plate 62.59 rivets 44.56 Percentage of strength of circ. intermediate seam {plate / rivets /

Percentage of strength of longitudinal joint {plate 85.71 rivets 86.40 combined 88.70 Working pressure of shell by Rules 234.59 lbs/sq. in.

Thickness of butt straps {outer 1 1/2" inner 1 3/8" No. and Description of Furnaces in each Boiler 3- Morisons Suspension Furnaces.

Material Steel Tensile strength 26-30 tons/sq. in. Smallest outside diameter 49 5/8"

Length of plain part {top / bottom / Thickness of plates {crown 13/16" bottom 13/16" Description of longitudinal joint Welded

Dimensions of stiffening rings on furnace or c.c. bottom / Working pressure of furnace by Rules 241.8 lbs/sq. in.

End plates in steam space: Material Steel Tensile strength 26-30 tons/sq. in. Thickness 1 5/16" Pitch of stays 18" x 19"

How are stays secured Double nuts and washers. Working pressure by Rules 235.6 lbs/sq. in.

End plates: Material {front Steel back " Tensile strength {26 to 30 tons/sq. in. Thickness {7/8" + 9/16 DP at WWS. / " /

Working pressure of stay tubes in nests 9 7/8" Pitch across wide water spaces 14 1/4" Working pressure {front 252 lbs/sq. in. WWS. back 284.1 "

End plates to combustion chamber tops: Material Steel Tensile strength 28-30 tons/sq. in. Depth and thickness of girder

Centre 2" x 3/4" x 10 1/2" Length as per Rule 34 1/32" Distance apart 8 3/4" centre comb. chamber 9 1/2" wing " " No. and pitch of stays

Each 3 @ 8" Working pressure by Rules 233.5 lbs/sq. in. Combustion chamber plates: Material Steel

Tensile strength 26-32 tons/sq. in. Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 1"

Height of stays to ditto: Sides 9" x 8 1/2" Back 9" x 8 1/2" Top 8" x 9 1/2" Are stays fitted with nuts or riveted over Nuts

Working pressure by Rules 237 lbs/sq. in. Front plate at bottom: Material Steel Tensile strength 26-30 tons/sq. in.

Thickness 15/16" Lower back plate: Material Steel Tensile strength 26-30 tons/sq. in. Thickness 7/8" + 1/2" DP at WWS

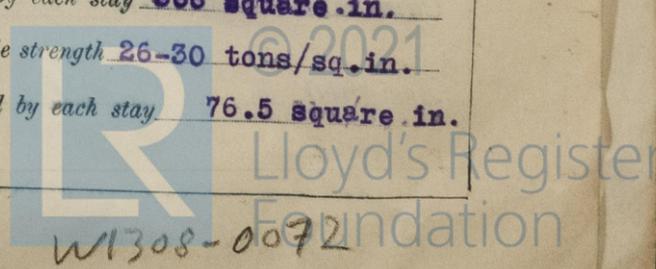
Height of stays at wide water space 14 1/2" x 8 1/2" Are stays fitted with nuts or riveted over Nuts

Working Pressure 227.3 lbs/sq. in. Main stays: Material Steel Tensile strength 28-32 tons/sq. in.

Diameter {At body of stay, 3 1/2" Over threads 3 1/8" No. of threads per inch 6 Area supported by each stay 366 square in.

Working pressure by Rules 253.4 lbs/sq. in. Screw stays: Material Steel Tensile strength 26-30 tons/sq. in.

Diameter {At turned off part, 1 3/4" Over threads 1 3/4" No. of threads per inch 9 Area supported by each stay 76.5 square in.



Working pressure by Rules **237.1 lbs/sq.in.** Are the stays drilled at the outer ends **No** ✓ Margin stays: Diameter { At turned off part. / Over threads **2"** ✓  
 No. of threads per inch **9** ✓ Area supported by each stay **98.81 sq.in.** Working pressure by Rules **250.7 lbs/sq.in.**  
 Tubes: Material **Mild steel** ✓ External diameter { Plain **3 3/4"** ✓ / Stay " ✓ Thickness **No. 7 I.S.G.** / **3/8" & 5/16"** No. of threads per inch **9** ✓  
 Pitch of tubes **5" x 4 7/8"** Working pressure by Rules **240 lbs/sq.in. (plain)** Manhole compensation: Size of opening in shell plate **17 1/2" x 21 1/2"** Section of compensating ring **2" x 9" x 1 5/8"** No. of rivets and diameter of rivet holes **36- 1 5/8"** ✓  
 Outer row rivet pitch at ends **11 3/8"** ✓ Depth of flange if manhole flanged **4"** ✓ Steam Dome: Material /  
 Tensile strength / 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 /  
 Inner radius of crown / Working pressure by Rules /  
 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 **Ferguson Superheater** Manufacturers of { Tubes **Tubes Ltd, Birmingham.** / Steel ~~xxxx~~ Headers.- **Chesterfield Tube Co.Ld.** ✓  
 Number of elements **120** Material of tubes **S.D.Steel** Internal diameter and thickness of tubes **1 1/2" I.W.G. 10.** ✓  
 Material of headers **S.D.Steel** ✓ Tensile strength **26-30 tons/sq.in.** Thickness **3/4"** ✓ Can the superheater be shut off and the boiler be worked separately **Yes** Is a safety valve fitted to every part of the superheater which can be shut off from the boiler **Yes** ✓  
 Area of each safety valve **3.14 sq.in.** Are the safety valves fitted with easing gear **Yes** ✓ Working pressure as per Rules **Tubes 348.8 lbs/sq.in.** Pressure to which the safety valves are adjusted **232 lbs/sq.in.** ✓ Hydraulic test pressure: **Headers 845.5 lbs/sq.in.** and after assembly in place **675 lbs/sq.in.** ✓  
 tubes **1000 lbs/sq.in.** ✓ Headers **675 lbs/sq.in.** ✓ Are drain cocks or valves fitted to free the superheater from water where necessary **Yes** ✓  
 Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with **Yes** ✓

The foregoing is a correct description,  
**NAGASAKI WORKS, MITSUBISHI ZEN SEEN KAISHA, LTD.** Manufacturer.  
*J. Asotora*  
**GENERAL MANAGER**  
 Are the approved plans of boiler and superheater forwarded herewith **Yes** (If not state date of approval.)  
 Total No. of visits /

Dates of Survey { During progress of work in shops - - / while building { During erection on board vessel - - - }  
**See Machinery Report.**

Is this Boiler a duplicate of a previous case **No** ✓ If so, state Vessel's name and Report No. /

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)  
**The materials and workmanship are good.** ✓  
**The boilers have been constructed under Special Survey in accordance with the Rules and Approved plans satisfactorily fitted in the vessel and safety valves adjusted under steam to 230 lbs/sq.in.** ✓

Survey Fee ... £ : : When applied for, 19  
 Travelling Expenses (if any) £ : : **See Machinery Report.** When received, 19

*George Anderson & T. Kimishu*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **TUE. 4 OCT 1932**  
 Assigned **See other report**  
**Nav. 36. 1845**