

REPORT ON BOILERS.

No. 29735

Received at London Office

23 MAY 1928

Date of writing Report

192

When handed in at Local Office

22 MAY 1928

Port of Sunderland

No. in Reg. Book. Survey held at Sunderland

Date, First Survey

Last Survey

May 17 1928

40048 on the Single Screw Steamer "BOTHNIA"

(Number of Visits)

Gross 2402

Net 1209

Master Built at Sunderland By whom built Jos. L. Thompson & Sons, Ltd. Card No. 562 When built 1928

Engines made at Sunderland By whom made John Dickinson & Sons, Ltd. Engine No. 893 When made 1928

Boilers made at -do- By whom made -do- Boiler No. 1094 When made 1928

Nominal Horse Power 403 Owners America-Levant Line, Ltd. Port belonging to London

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

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

Total Heating Surface of Boilers 1041 sq. ft. Is forced draught fitted No. Coal or Oil fired CoalNo. and Description of Boilers One-Single Ended Marine Type-Plain Furnaces. Working Pressure 180 lbs sq. in. Tested by hydraulic pressure to 320 lbs sq. in. Date of test 3.4.28 No. of Certificate 3986 Can each boiler be worked separatelyArea of Firegrate in each Boiler 31.9 sq. ft. No. and Description of safety valves to each boiler Two-Direct Spring LoadedArea of each set of valves per boiler per Rule 6.86 sq. in. as fitted 9.82 sq. in. Pressure to which they are adjusted 185 lbs sq. in. Are they fitted with easing gear Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler No-Non-return valve fitted

Smallest distance between boilers ~~or uptakes~~ and bunkers ~~or woodwork~~ 1'-4" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 2'-8" Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 10'-10 $\frac{3}{16}$ " Length 10'-6" (full) Shell plates: Material Steel Tensile strength 28 to 32 tons sq. in. Thickness 29/32 Are the shell plates welded or flanged No. Description of riveting: circ. seams $\left\{ \begin{array}{l} \text{end D.R. lap} \\ \text{inter.} \end{array} \right.$ long. seams T.R.D.B.S. Diameter of rivet holes in $\left\{ \begin{array}{l} \text{circ. seams } 1" \\ \text{long. seams } 1" \end{array} \right.$ Pitch of rivets $\left\{ \begin{array}{l} 2\frac{7}{8}" \\ 4\frac{1}{16}" \end{array} \right.$ Percentage of strength of circ. end seams $\left\{ \begin{array}{l} \text{plate } 65.2 \\ \text{rivets } 49.6 \end{array} \right.$ Percentage of strength of circ. intermediate seam $\left\{ \begin{array}{l} \text{plate } 85.8 \\ \text{rivets } 94.4 \end{array} \right.$ Percentage of strength of longitudinal joint $\left\{ \begin{array}{l} \text{plate } 95.8 \\ \text{rivets } 94.4 \end{array} \right.$ Working pressure of shell by Rules 181.2 lbs sq. in.

Percentage of strength of longitudinal joint combined 90.6

Thickness of butt straps $\left\{ \begin{array}{l} \text{outer } 11\frac{1}{16}" \\ \text{inner } 13\frac{1}{16}" \end{array} \right.$ No. and Description of Furnaces in each Boiler Two-Plain FurnacesMaterial Steel Tensile strength 26 to 32 tons sq. in. Smallest outside diameter 3'-2"Length of plain part $\left\{ \begin{array}{l} \text{top } - \\ \text{bottom } - \end{array} \right.$ Thickness of plates $\left\{ \begin{array}{l} \text{crown } 3\frac{3}{4}" \\ \text{bottom } 3\frac{1}{4}" \end{array} \right.$ Description of longitudinal joint WeldedDimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 191.3 lbs sq. in. End plates in steam space: Material Steel Tensile strength 26 to 30 tons sq. in. Thickness $\frac{7}{8}"$ Pitch of stays 15" x 14 $\frac{1}{2}"$ How are stays secured drawn Working pressure by Rules 181 lbs sq. in. Tube plates: Material $\left\{ \begin{array}{l} \text{front } \text{Steel} \\ \text{back} \end{array} \right.$ Tensile strength 26 to 30 tons sq. in. Thickness $\left\{ \begin{array}{l} 7\frac{7}{8}" \\ 4\frac{7}{8}" \end{array} \right.$ Mean pitch of stay tubes in nests 11 $\frac{1}{4}"$ Pitch across wide water spaces 13 $\frac{3}{4}"$ Working pressure $\left\{ \begin{array}{l} \text{front } 182.5 \text{ lbs } \text{sq. in. (W.W. Space)} \\ \text{back } 219 \text{ lbs } \text{sq. in.} \end{array} \right.$ Girders to combustion chamber tops: Material Steel Tensile strength 28 to 32 tons sq. in. Depth and thickness of girderat centre 6 $\frac{1}{4}"$ x 13 $\frac{1}{4}"$ Length as per Rule 29 4 $\frac{7}{8}"$ 29 $\frac{7}{16}"$ Distance apart 4 $\frac{1}{2}"$ No. and pitch of staysin each 2 @ 10" Working pressure by Rules 181.5 lbs sq. in. Combustion chamber plates: Material SteelTensile strength 26 to 30 tons sq. in. Thickness: Sides 1 $\frac{1}{16}"$ Back 1 $\frac{1}{16}"$ Top 1 $\frac{1}{16}"$ Bottom 1 $\frac{5}{16}"$ Pitch of stays to ditto: Sides 10" x 9" Back 9 $\frac{1}{8}"$ x 10" Top 10" x 4 $\frac{1}{2}"$ Are stays fitted with nuts or riveted over Fitted with nuts (inside only)Working pressure by Rules $\left\{ \begin{array}{l} \text{Sides } 182.5 \text{ lbs } \text{sq. in.} \\ \text{Backs } 180.2 \text{ lbs } \text{sq. in.} \end{array} \right.$ Front plate at bottom: Material Steel Tensile strength 26 to 30 tons sq. in. Thickness $\frac{7}{8}"$ Top 211.4 lbs sq. in. Lower back plate: Material Steel Tensile strength 26 to 30 tons sq. in. Thickness $\frac{7}{8}"$

Pitch of stays at wide water space 14" x 10" Are stays fitted with nuts or riveted over Fitted with nuts

Working Pressure 212 lbs sq. in. Main stays: Material Steel Tensile strength 28 to 32 tons sq. in. Diameter $\left\{ \begin{array}{l} \text{At body of stay, } 2\frac{3}{8}" \\ \text{Over threads} \end{array} \right.$ No. of threads per inch 6 Area supported by each stay 217.5 sq. in. Working pressure by Rules 180.5 lbs sq. in. Screw stays: Material Steel Tensile strength 26 to 30 tons sq. in. Diameter $\left\{ \begin{array}{l} \text{At turned off part, } 1\frac{3}{4}" \\ \text{Over threads} \end{array} \right.$ No. of threads per inch 9 Area supported by each stay $\left\{ \begin{array}{l} \text{Sides } 90 \text{ sq. in.} \\ \text{Back } 91.25 \text{ sq. in.} \\ \text{Top } 45 \text{ sq. in.} \end{array} \right.$

Working pressure by Rules ^{Sides 2018 lbs} ^{Backs 1988 lbs} ^{Tops 2421 lbs} Are the stays drilled at the outer ends No. Margin stays: Diameter { At turned off part, $1\frac{7}{8}$ " or Over threads }
 No. of threads per inch 9 Area supported by each stay 115 sq. in. Working pressure by Rules 185.5 lbs sq. in.
Tubes: Material Wrought Iron. External diameter { Plain $3\frac{1}{4}$ " Stay $3\frac{1}{4}$ " Thickness { 8 W.G. $5\frac{1}{16}$ " No. of threads per inch 9
 Pitch of tubes $1\frac{1}{2}$ " x $1\frac{1}{2}$ " Working pressure by Rules Plain 230 lbs sq. in. Manhole compensation: Size of opening in shell plate 16 " x 12 " Section of compensating ring 8 " x $2\frac{9}{32}$ " No. of rivets and diameter of rivet holes 30 @ 1" dia.
 Outer row rivet pitch at ends $4\frac{1}{16}$ " (Max) Depth of flange if manhole flanged — 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 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

The foregoing is a correct description,

W. H. Robertson

Manufacturer.

Director.

Dates of Survey { During progress of work in shops - - } Please see Mch. Report Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)
 while building { During erection on board vessel - - }
 Total No. of visits

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

The materials and workmanship are good.
 The Donkey Boiler has been constructed under Special Survey, and satisfactorily fitted in the vessel.
 For notation see Machinery Report.

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

A. T. Griffith.

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 25 MAY '128

Assigned

See Report attached



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