

## 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 17 May 1928

40078 on the Single Screw Steamer "BOTHNIA"

(Number of Visits)

Gross

2402

Tons

Net

1209

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

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

Boilers made at Sunderland By whom made John Dickinson &amp; Sons, Ltd. Boiler No. 893 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, Ltd. (Letter for Record S.)

Total Heating Surface of Boilers 5944 sq ft Is forced draught fitted Yes. Coal or Oil fired Coal.

No. and Description of Boilers Two Single Ended Marine Type—Corrugated 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 3985 Can each boiler be worked separately Yes.

Area of Firegrate in each Boiler 44.5 sq ft No. and Description of safety valves to each boiler Two—Direct Spring loaded (Patent High Lift)

Area of each set of valves per boiler (per plate as fitted) 9.816 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

Smallest distance between boilers or uptakes and bunkers or woodwork 3'-6" 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 16'-3 5/16" Length 11'-9" (full) Shell plates: Material Steel Tensile strength 28 to 32 tons sq in.

Thickness 1 1/32" 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 7/16" long. seams 1 7/16" Pitch of rivets { 3 7/8" 9 1/16" }

Percentage of strength of circ. end seams { plate 63.0 rivets 51.2 Percentage of strength of circ. intermediate seam { plate 85.2 rivets 96.0 }

Percentage of strength of longitudinal joint { plate 85.2 rivets 96.0 combined 89.6 Working pressure of shell by Rules 182 lbs sq in.

Thickness of butt straps { outer 1 1/16" inner 1 3/16" No. and Description of Furnaces in each Boiler Four—Corrugated—Deighton Type.

Material Steel Tensile strength 26 to 30 tons sq in. Smallest outside diameter 3'-5 13/16"

Length of plain part { top 14 3/32" bottom 14 3/32" Thickness of plates { crown 1 7/32" bottom 1 7/32" Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 184 lbs sq in.

End plates in steam space: Material Steel Tensile strength 26 to 30 tons sq in. Thickness 1 5/32" Pitch of stays 18" x 21"

How are stays secured d. n. &amp; w. Working pressure by Rules 185 lbs sq in.

Tube plates: Material { front Steel back Steel Tensile strength { 26 to 30 tons sq in. Thickness { 7/8" 7/8" }

Mean pitch of stay tubes in nests 9 7/8" 19 3/8" Pitch across wide water spaces 12 1/2" Working pressure { front 232 lbs sq in. (W. W. Space) back 284 lbs sq in. 23 1/2" }

Girders to combustion chamber tops: Material Steel Tensile strength 28 to 32 tons sq in. Depth and thickness of girder

at centre 6 3/4" x 2" Length as per Rule 31 7/16" Distance apart 8" No. and pitch of stays

in each 2 @ 10" Working pressure by Rules 182 lbs sq in. Combustion chamber plates: Material Steel

Tensile strength 26 to 30 tons sq in. Thickness: Sides 1 1/16" Back 1 1/16" Top 1 1/16" Bottom 1 1/16"

Pitch of stays to ditto: Sides 9" x 10" Centre 9 1/2" x 9" Back 9 1/2" x 9 1/2" Top 10" x 8 3/4" Are stays fitted with nuts or riveted over Fitted with nuts (inside)

Working pressure by Rules Sides 182.5 lbs sq in. Backs 183 lbs sq in. Tops 184 lbs sq in. Front plate at bottom: Material Steel Tensile strength 26 to 30 tons sq in.

Thickness 7/8" Lower back plate: Material Steel Tensile strength 26 to 30 tons sq in. Thickness 7/8"

Pitch of stays at wide water space 12 1/4" x 9 1/2" Are stays fitted with nuts or riveted over Fitted with nuts.

Working Pressure 230 lbs sq in. Main stays: Material Steel Tensile strength 28 to 32 tons sq in.

Diameter { At body of stay, or Over threads } 3 3/8" No. of threads per inch 6 Area supported by each stay 348 sq in.

Working pressure by Rules 194 lbs sq in. Screw stays: Material Steel Tensile strength 26 to 30 tons sq in.

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

Sides 90 sq in.  
Centre Backs 85.5 sq in.  
Wing Backs 90.25 sq in.  
Top Centre 84.5 sq in.  
Top Wings 80 sq in.



Sides 201.8 lbs  
Backs 201.2 lbs  
Tops 204.5 lbs

Working pressure by Rules 182.5 lbs Are the stays drilled at the outer ends No Margin stays: Diameter 1 7/8 At turned off part, or Over threads

No. of threads per inch 9 Area supported by each stay 117 sq in Working pressure by Rules 182.5 lbs

Tubes: Material Wrought Iron External diameter 2 1/2 Thickness 5/16 No. of threads per inch 9

Pitch of tubes 3 3/4 x 3 3/4 Working pressure by Rules 194 lbs Plan 300 lbs Manhole compensation: Size of opening in end plate 16 x 12

Section of compensating ring — No. of rivets and diameter of rivet holes —

Outer row rivet pitch at ends — Depth of flange if manhole flanged 3 3/4 Steam Dome: Material —

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

Diameter of rivet holes — Pitch of rivets — Percentage of strength of joint —

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

Number of elements — Material of tubes — Manufacturers of — Tubes — Steel castings —

Material of headers — Tensile strength — Thickness — Internal diameter and thickness of tubes —

the boiler be worked separately — Is a safety valve fitted to every part of the superheater which can be shut off from the boiler — Can the superheater be shut off and

Area of each safety valve — Are the safety valves fitted with easing gear — Working pressure as per Rules —

tubes — Pressure to which the safety valves are adjusted — Hydraulic test pressure: —

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

This foregoing is a correct description,

M. H. Kober Manufacturer.

Dates of Survey — During progress of work in shops — Please see Machy. Rpt. 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 Boilers have been constructed under Special Survey, and satisfactorily fitted in the vessel.

For notation see Machinery Report.

Survey Fee ... .. £ Charged in 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 1928

Assigned See S.F. rpt. attached