

# REPORT ON BOILERS.

Received at London Office - 1 NOV 1924

Date of writing Report 25<sup>th</sup> October 1924 When handed in at Local Office 29<sup>th</sup> October 1924 Port of Barrow-in-Furness

No. in Reg. Book. Survey held at Barrow. Date, First Survey 28<sup>th</sup> January 1923 Last Survey 22<sup>nd</sup> October 1924 (Number of Visits 75)

49141 on the Twin screw steamer "Orama" Tons { Gross 19444 Net 11942

Master Built at Barrow. By whom built Bickers Ltd. Yard No. 598 When built 1924

Engines made at Barrow. By whom made Bickers Ltd. Engine No. 598 When made 1924

Boilers made at No. By whom made No. Boiler No. 598 When made 1924

Nominal Horse Power 3856 Owners Orient Steam Navigation Co. Ltd. Port belonging to Barrow.

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Messrs Beardmore & Co. & David Colville & Sons Ltd. (Letter for Record (S))

Total Heating Surface of Boilers (H.S.S.) 11484 sq ft Is forced draught fitted Yes Coal or Oil fired Oil

No. and Description of Boilers Four Single ended Cylindrical Multitubular 4 SB Working Pressure 215 lb

Tested by hydraulic pressure to 273 lb. Date of test 11-4-24. No. of Certificate 354, 358 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 192 sq ft No. and Description of safety valves to each boiler Two Direct Spring loaded

Area of each set of valves per boiler { per Rule 16 sq in as fitted 19 sq 20 sq Pressure to which they are adjusted 219 lb 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 on upstake and bunkers on woodwork 18 in Is oil fuel carried in the double bottom under boilers Yes

Smallest distance between shell of boiler and tank top plating 2 1/2 in Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 16'-6" Length 11'-3" Shell plates: Material Steel Tensile strength 30 to 34 tons

Thickness 1 1/2 in Are the shell plates welded or flanged No. Description of riveting: circ. seams { end 27 lap inter. 4-014

long. seams 4 A Double butt straps Diameter of rivet holes in { circ. seams 1 9/16 in long. seams 1 9/16 in Pitch of rivets { 10 1/2 in

Percentage of strength of circ. end seams { plate 60 rivets 49 Percentage of strength of circ. intermediate seam { plate rivets

Percentage of strength of longitudinal joint { plate 84.54 rivets 85.1 combined 84.4 Working pressure of shell by Rules 215 lb

Thickness of butt straps { outer 1 5/8 in inner 1 9/32 in No. and Description of Furnaces in each Boiler 4 CF H Morrison

Material Steel Tensile strength 26 to 30 tons Smallest outside diameter 41 3/4 in

Length of plain part { top bottom Thickness of plates { crown 5/8 in bottom Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 218 lb

End plates in steam space: Material Steel Tensile strength 26 to 30 tons Thickness 1 5/8 in Pitch of stays 16 3/4 x 16 1/2 in

How are stays secured Double nuts. Working pressure by Rules 225 lb

Tube plates: Material { front back Steel Tensile strength { 26 to 30 tons Thickness { 1 1/4 in

Mean pitch of stay tubes in nests 12 3/4 x 8 1/2 Pitch across wide water spaces 13 3/4 Working pressure { front 231 lb back 258 lb

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

at centre 8 x 1 1/2 Length as per Rule 29 27/32 Distance apart 8 in No. and pitch of stays

in each 2 @ 10 in Working pressure by Rules 240 lb Combustion chamber plates: Material Steel

Tensile strength 26 to 30 tons Thickness: Sides 23/32 in Back 23/32 in Top 23/32 in Bottom 1/8 in

Pitch of stays to ditto: Sides 8 x 10 in Back 10 7/8 x 4 1/8 Top 8 x 10 in Are stays fitted with nuts or riveted over nuts

Working pressure by Rules 216 lb Front plate at bottom: Material Steel Tensile strength 26 to 30 tons

Thickness 1 in Lower back plate: Material Steel Tensile strength 26 to 30 tons Thickness 15/16 in

Pitch of stays at wide water space 14 3/8 x 4 1/8 Are stays fitted with nuts or riveted over nuts

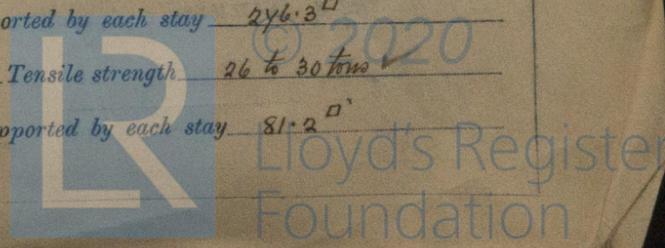
Working Pressure 240 lb Main stays: Material Steel Tensile strength 28 to 35 tons

Diameter { At body of stay 2 3/4 in or Over threads No. of threads per inch Six Area supported by each stay 246.3 sq in

Working pressure by Rules 237 lb Screw stays: Material Steel Tensile strength 26 to 30 tons

Diameter { At turned off part or Over threads 1 3/4 in No. of threads per inch Nine Area supported by each stay 81.2 sq in

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# REPORT ON BOILERS

Working pressure by Rules 224 lb. Are the stays drilled at the outer ends Yes Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part, } \checkmark \\ \text{or} \\ \text{Over threads } 2" \end{array} \right.$

No. of threads per inch none Area supported by each stay 94.3 Working pressure by Rules 255 lb.

Tubes: Material Iron External diameter  $\left\{ \begin{array}{l} \text{Plain } 3" \checkmark \\ \text{Stay } 3" \checkmark \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} 8 \text{ lbs. } \checkmark \\ 5/16 \text{ } \checkmark \end{array} \right.$  No. of threads per inch none

Pitch of tubes 1 1/4 Working pressure by Rules 250 lb. Manhole compensation: Size of opening in shell plate 2 1/4 x 1 7/8 Section of compensating ring 3 1/4 x 1 1/4 x 1 1/2 flanged No. of rivets and diameter of rivet holes 36 - 1 1/4

Outer row rivet pitch at ends 10 1/2 Depth of flange if manhole flanged 1 1/4 Steam Dome: Material Iron

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 H. G. Marine type 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 Yes

Area of each safety valve 4.06 Is a safety valve fitted to every part of the superheater which can be shut off from the boiler Yes

Are the safety valves fitted with easing gear Yes Working pressure as per Rules 220 lb. Hydraulic test pressure: tubes ✓ castings ✓ and after assembly in place 430 lb. Are drain cocks or valves fitted to free the superheater from water where necessary Yes

Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with Yes

The foregoing is a correct description,  
*J. Callender* Manufacturer.  
**VICKERS LIMITED**

Dates of Survey while building	During progress of work in shops	1923 - Jan 8, 10, 13, 16, Feb 7, 13, 16, 22, 27, Mar 9, 12, 14, 16, 19, 21, 24, 26, June 7, 12, 20	Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) <u>Yes</u>
	During erection on board vessel	Jan 23, Aug 1, 2, 20, 22, Sept 13, 19, 24, Oct 8, 11, 13, 15, 17, 19, 21, 23, 25, 27, Nov 13, 23, 30, Dec 5, 11, 19, 26, Jan 5, 12, 19, 26, Feb 5, 9, 19, 26, Mar 11, 20, 27, Apr 7, 11, 14, 21, 27, 30, June 18, July 10, 18, 22, Aug 22, 27, Sept 8, 11, Oct 12, 16, 19, 22	
		Total No. of visits	<u>75</u>

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.) These boilers have been constructed in accordance with the approved plans and the Rules, the workmanship and materials are good. (Please see Machinery Report)

Survey Fee ... .. £	<i>Machinery Report</i>	When applied for, .....	192
Travelling Expenses (if any) £		When received, .....	192

*W. A. Craig*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES. 4 NOV 1924

Assigned \_\_\_\_\_



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 Foundation