

REPORT ON BOILERS.

No. 2241

Received at London Office 17 MAR 1928

Date of writing Report 9th March 1928 When handed in at Local Office 13th March 1928 Port of Barrow-in-Furness

No. in Surrey held at Barrow Date, First Survey April 7th 1926 Last Survey March 5th 1928

42144 on the Twin Screw Steamer "Orford" (Number of Visits 69) Tons { Gross 19941.5 Net 12024

Master Built at Barrow By whom built Bickers-Armstrongs Ltd Yard No. 624 When built 1928

Engines made at Barrow By whom made Bickers-Armstrongs Ltd Engine No. 624 When made 28

Boilers made at 28 By whom made 28 Boiler No. When made 28

Nominal Horse Power 3825 Owners Orient Steam Navigation Co Ltd Port belonging to Barrow.

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel W. Beadmore & Co Ltd David Colville & Sons Ltd (Letter for Record 3 ✓)

Total Heating Surface of Boilers (Double ended) 39876 sq ft Is forced draught fitted Yes ✓ Coal or Oil fired Oil ✓

No. and Description of Boilers Six Double ended Cylindrical multitubular Working Pressure 215 lb ✓

Tested by hydraulic pressure to 343 lb Date of test 24/4/24 23/5/27 No. of Certificates 409, 410, 412 Can each boiler be worked separately Yes ✓

Area of Firegrate in each Boiler 290 sq ft No. and Description of safety valves to each boiler Four direct spring (high lift) ✓

Area of each set of valves per boiler { per Rule 28.92 as fitted 33.18 Pressure to which they are adjusted 220 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 uptakes and bunkers on woodwork 18" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 22 1/2" Is the bottom of the boiler insulated Yes ✓

Largest internal dia. of boilers 16'-6" Length 21'-9" Shell plates: Material Steel Tensile strength 30 to 34 tons

Thickness 1 1/2" Are the shell plates welded or flanged No Description of riveting: circ. seams { end 20 lb lap inter. 20 lb lap

long. seams Triple (Double butt strap) Diameter of rivet holes in { circ. seams 1 9/16" & 1 11/32" Pitch of rivets { 4-01762 & 4-649 10 1/2"

Percentage of strength of circ. end seams { plate 61.1% rivets 48.48% Percentage of strength of circ. intermediate seam { plate 66.23% rivets 64.83%

Percentage of strength of longitudinal joint { plate 85.1% rivets 84.64% combined 84.43% Working pressure of shell by Rules 215.6 lb

Thickness of butt straps { outer 1 5/32" inner 1 9/32" No. and Description of Furnaces in each Boiler 2 Morrison 6 cf.

Material Steel Tensile strength 26 to 30 tons Smallest outside diameter 44 1/4" 43 1/2"

Length of plain part { top bottom Thickness of plates { crown 23/32" bottom 23/32" Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 222 lb

End plates in steam space: Material Steel Tensile strength 26 to 30 tons Thickness 1 3/16" Pitch of stays 18" x 1 1/2"

How are stays secured Double nuts Working pressure by Rules 220 lb

Tube plates: Material { front Steel back Steel Tensile strength { 26 to 30 tons Thickness { 15/16" 15/16"

Mean pitch of stay tubes in nests 11 1/4" x 4 1/2" Pitch across wide water spaces 13 1/2" Working pressure { front 239 lb back 216 lb 239 lb

Girders to combustion chamber tops: Material Steel Tensile strength 28 to 30 tons Depth and thickness of girder

at centre 8" x 1 1/2" Length as per Rule 30 27/32 Distance apart 8 1/4" No. and pitch of stays

in each 2 @ 10" Working pressure by Rules 216 lb Combustion chamber plates: Material Steel

Tensile strength 26 to 30 tons Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 15/16"

Pitch of stays to ditto: Sides 10 3/8" x 4 3/4" Back 10 3/16" x 8 Top 10" x 8 1/4" Are stays fitted with nuts or riveted over Nuts

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

Thickness 15/16" Lower back plate: Material Steel Tensile strength Thickness

Pitch of stays at wide water space Are stays fitted with nuts or riveted over

Working Pressure ✓ Main stays: Material Steel Tensile strength 28 to 32 tons

Diameter { At body of stay, 2 3/4" No. of threads per inch 6 Area supported by each stay 294 sq in

Over threads ✓ Working pressure by Rules 230 lb Screw stays: Material Steel Tensile strength 26 to 30 tons

Diameter { At turned off part, 1 3/4" No. of threads per inch 9 Area supported by each stay 82.5 sq in

Over threads ✓

Working pressure by Rules 220 lb Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, or Over threads 1 1/2

No. of threads per inch 9 Area supported by each stay Working pressure by Rules

Tubes: Material Iron External diameter { Plain 2 1/2 Stay 2 1/2 Thickness { 8 1/2 1 1/4 5/8 3/4 No. of threads per inch 9

Pitch of tubes 2 3/4 x 3 3/4 Working pressure by Rules 300 lb Manhole compensation: Size of opening in shell plate 2 1/2 x 1 1/2 Section of compensating ring 4 3/8 x 1 1/2 flanged No. of rivets and diameter of rivet holes 36

Outer row rivet pitch at ends 10 1/2 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.
VICKERS ARMS & SONS LIMITED.
Manufacturer.
DIRECTOR.

1926 - April 27, May 7, June 7, 16, 18, 23, 25, July 6, 9, 14, 22, 28
Dates of Survey { During progress of work in shops - Dec 8, 1927, Feb 4, 25, 17, 18, May 9, 10, 13, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 1928, June 2, 3, 10, 17, 22, July 4, 7, 12, 19, 27, Aug 23, 30, Sept 1, 14, 16, 23, 1928, Oct 4, 31, Nov 4, 15, 1928, Dec 23, 30, 31, 1928, Jan 14, 19
while building { During erection on board vessel - - - - -
Total No. of visits 69

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been built in accordance with the approved plans and the Rules. The workmanship and materials are good: they have been efficiently fitted on board the vessel and their safety valves adjusted under steam.

Survey Fee ... £ Inclg Reprint. } When applied for, 192
Travelling Expenses (if any) £ When received, 192

Wm Craig
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES, 27 MAR 1928
Assigned See B. rpt attached