

## REPORT ON BOILERS.

No. 45175.

Received at London Office

25 NOV 1925 17 FEB 1926

Date of writing Report 20<sup>th</sup> Nov 1925 When handed in at Local Office 23-11-1925 Port of Glasgow.

No. in Reg. Book. Survey held at

Glasgow.

Date, First Survey

24-8-25

Last Survey

17-11-1925

on the Boiler No. 1858. SS "A ZANIA"

(Number of Visits 16)

Gross Tons  
Net

Master

Built at

Pt. Glasgow

By whom built

Ferguson Bros (Pt Glasgow)

No. 277

When built 1926

Engines made at

Port Glasgow.

By whom made

Ferguson Bros (Pt Glasgow)

Engine No. 244

When made 1926.

Boilers made at

Glasgow.

By whom made

The Firth S. &amp; E. Co (1921)

Boiler No. 1858

When made 1925.

Nominal Horse Power

109

Owners

Port belonging to

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

The Steel Co of Scotland Ltd.

(Letter for Record S. ✓)

Total Heating Surface of Boilers

1637 sq ft

Is forced draught fitted

No ✓

Coal or Oil fired

Coal ✓

No. and Description of Boilers

One Cyl. Mult. Single End.

Working Pressure

140 lb.

Tested by hydraulic pressure to

260 lb.

Date of test

17-11-25

No. of Certificate

16981

Can each boiler be worked separately ✓

Area of Firegrate in each Boiler

56 sq ft

No. and Description of safety valves to each boiler

Two direct spring

IMPROVED X HIGH LIFT

Area of each set of valves per boiler

per Rule 2 1/2"

Pressure to which they are adjusted

144

Are they fitted with easing gear

Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler

None.

Smallest distance between boilers or uptakes and bunkers or woodwork

10"

Is oil fuel carried in the double bottom under boilers

No

Smallest distance between shell of boiler and tank top plating

2'-4"

Is the bottom of the boiler insulated

No.

Largest internal dia. of boilers

13'-3"

Length

10'-9"

Shell plates: Material

S. ✓

Tensile strength

28/32 T. ✓

Thickness

7/8"

Are the shell plates welded or flanged

No.

Description of riveting: circ. seams

end

28/32 T. ✓

long. seams

285/TR. ✓

Diameter of rivet holes in

circ. seams

1 1/16"

Pitch of rivets

3/4"

Percentage of strength of circ. end seams

plate 67.3

rivets 57.4

Percentage of strength of circ. intermediate seam

plate 86.2

rivets 81.3

Percentage of strength of longitudinal joint

plate 86.2

rivets 81.3

combined 90.3.

Working pressure of shell by Rules

143 lb.

Thickness of butt straps

outer 1 1/16"

inner 1 3/16"

No. and Description of Furnaces in each Boiler

3. Dighton ✓

Material

S. ✓

Tensile strength

26/30 T. ✓

Smallest outside diameter

39 7/8"

Length of plain part

top 1'

bottom 1'

Thickness of plates

crown 7/16"

bottom 7/16"

Description of longitudinal joint

Weld

Dimensions of stiffening rings on furnace or c.c. bottom

None

Working pressure of furnace by Rules

156 lb.

End plates in steam space: Material

S. ✓

Tensile strength

26/30 T. ✓

Thickness

1"

Pitch of stays

19" x 17"

How are stays secured

D.N. ✓

Working pressure by Rules

141 lb.

Tube plates: Material

front S. ✓

back S. ✓

Tensile strength

26/30 T. ✓

Thickness

3/4"

Mean pitch of stay tubes in nests

13 1/2" x 8 3/4"

Pitch across wide water spaces

13 7/8"

Working pressure

front 192 lb.

back 148 lb.

Girders to combustion chamber tops: Material

S. ✓

Tensile strength

28/32 T. ✓

Depth and thickness of girder

at centre

9 1/8" x 1 1/2"

Length as per Rule

34 1/16"

Distance apart

11"

No. and pitch of stays

in each

3 @ 8 1/8"

Working pressure by Rules

144 lb.

Combustion chamber plates: Material

S

Tensile strength

26/30 T. ✓

Thickness: Sides

5/8"

Back

19/32"

Top

5/8"

Bottom

5/8"

Pitch of stays to ditto: Sides

11" x 8 1/8"

Back

9 1/2" x 8 3/4"

Top

11" x 8 1/8"

Are stays fitted with nuts or riveted over

Nuts ✓

Working pressure by Rules

144 lb.

Front plate at bottom: Material

S. ✓

Tensile strength

26/30 T. ✓

Thickness

3/4"

Lower back plate: Material

S. ✓

Tensile strength

26/30 T. ✓

Thickness

23/32"

Pitch of stays at wide water space

13 7/8" x 8 3/4"

Are stays fitted with nuts or riveted over

Nuts ✓

Working Pressure

153 lb.

Main stays: Material

S

Tensile strength

28/32 T. ✓

Diameter

At body of stay 2 7/8"

Over threads 2 7/8"

No. of threads per inch

8 ✓

Area supported by each stay

323 sq in.

Working pressure by Rules

153 lb.

Screw stays: Material

S

Tensile strength

26/30 T. ✓

Diameter

At turned off part 1 1/2"

Over threads 1 1/2"

No. of threads per inch

9 ✓

Area supported by each stay

89 sq in.



Working pressure by Rules 148 1/4 Are the stays drilled at the outer ends no Margin stays: Diameter { At turned off part, 1 7/8 or Over threads 1 7/8 ✓

No. of threads per inch 9 ✓ Area supported by each stay: 103 ✓ Working pressure by Rules 148 1/4 ✓

Tubes: Material 1 External diameter { Plain 3 1/4 Stay 3 1/4 ✓ Thickness 9 16 ✓ No. of threads per inch 9 ✓

Pitch of tubes 4 1/2 x 4 3/8 Working pressure by Rules 143 1/4 ✓ Manhole compensation: Size of opening in shell plate 18 3/4 x 14 1/4 Section of compensating ring 3 1/2 x 27 x 7/8 ✓ No. of rivets and diameter of rivet holes 36 - 1 1/16 ✓

Outer row rivet pitch at ends 7 7/8 ✓ Depth of flange if manhole flanged 3 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 { 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 None 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,  
 FOR THE FORTH SHIPBUILDING & ENGINEERING CO. (LTD.)  
 (LINDSAY BURNET'S BOILER WORKS) W. L. Burnet Manufacturer

Dates of Survey { During progress of work in shops - - - 1925 Aug 27 Sep 1-14 30 Oct 6 8 13 Are the approved plans of boiler and superheater forwarded herewith yes ✓  
 while building { During erection on board vessel - - - 1925 22-28 Nov 4 9 13 14 17 (If not state date of approval.)

Total No. of visits 16

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) This boiler has been constructed under Special Survey in accordance with the Rules. The materials and workmanship employed in its manufacture are sound and good.

It will be forwarded to Port Glasgow to be fitted in a trial steaming vessel.

The boiler has been securely fitted on board the vessel, and the safety valves adjusted under steam as stated.

Accumulation tests carried out satisfactorily.

Survey Fee ... £ 10 : 18 : 0 When applied for, 23/11/1925 ✓

Travelling Expenses (if any) £ ✓ When received, 25/11/1925 ✓

W. L. Burnet J. A. away  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 24 NOV 1925 GLASGOW 16 FEB 1926

Assigned TRANSMIT TO LONDON See Gen. Rpt. No. 18505