

# REPORT ON BOILERS.

Received at London Office

3 APR 1928

Date of writing Report

102

When handed in at Local Office

2 APR 1928

Port of Sunderland

No. in Survey held at Reg. Book.

Sunderland

Date, First Survey

Last Survey

M. J. 24 1928

39984 on the

S. S. "BADJESTAN"

(Number of Visits)

Gross 5573

Net 3353

Master

Built at Sunderland

By whom built Bartram & Sons, L<sup>d</sup>

Yard No. 260

When built 1928

Engines made at

Sunderland

By whom made MacColl & Pollock, L<sup>d</sup>

Engine No. 352

When made 1928

Boilers made at

Sunderland

By whom made MacColl & Pollock, L<sup>d</sup>

Boiler No. 352

When made 1928

Nominal Horse Power

415

Owners Hindustan Steam Shipping Co. L<sup>d</sup>

Port belonging to

Newcastle.

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

Manufacturers of Steel

The Steel Company of Scotland Limited

(Letter for Record (S))

Total Heating Surface of Boilers

5801 sq ft

Is forced draught fitted Yes

Coal or Oil fired Coal

No. and Description of Boilers

Three - Single ended Marine type Corrugated Furnaces. Working Pressure 220 lbs sq in.

Tested by hydraulic pressure to

380 lbs sq in.

Dates of tests 16-9-27, 22-9-27

Nos. of Certificates 3957, 3958

Can each boiler be worked separately Yes

Area of Firegrate in each Boiler

46.56 sq ft

No. and Description of safety valves to each boiler

Two. Direct Spring loaded. (High Lift)

Area of each set of valves per boiler

5.24 sq in. (I.H.L.)

Pressure to which they are adjusted

225 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 Yes

Smallest distance between boilers or uptakes and bunkers or woodwork

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

13' 3"

Length 11' 9" (FULL)

Shell plates: Material Steel

Tensile strength 29 to 33 tons sq in.

Thickness

1 9/32"

Are the shell plates welded or flanged No

Description of riveting: circ. seams

end D.R. Lap.

long. seams

I. R. D. B. S.

Diameter of rivet holes in

circ. seams 1 5/16"

long. seams 1 3/8"

Pitch of rivets

3 7/8"

9 5/16"

Percentage of strength of circ. end seams

plate 66.12

rivets 43.23

Percentage of strength of circ. intermediate seam

plate 85.23

rivets 92.6

Percentage of strength of longitudinal joint

plate 89.0

rivets 92.6

Working pressure of shell by Rules

220.5 lbs sq in.

Thickness of butt straps

outer 1 1/16"

inner 1 1/8"

No. and Description of Furnaces in each Boiler

Three - Corrugated - Dighton type.

Material

Steel

Tensile strength 26 to 30 tons sq in.

Smallest outside diameter 3' 2 7/16"

Length of plain part

top 19"

bottom 32"

Thickness of plates

19/32"

Description of longitudinal joint

Welded

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

Working pressure of furnace by Rules

224 lbs sq in.

End plates in steam space: Material

Steel

Tensile strength 26 to 30 tons sq in.

Thickness

1 3/16"

Pitch of stays 17 1/2" x 16 1/2"

How are stays secured

Double Nuts & Washers outside.

Working pressure by Rules

227.2 lbs sq in.

Tube plates: Material

front Steel

back Steel

Tensile strength 26 to 30 tons sq in.

Thickness

27/32"

Mean pitch of stay tubes in nests

10.593"

Pitch across wide water spaces

14"

Working pressure

front 229.4 lbs sq in.

back 229.1 lbs sq in.

Girders to combustion chamber tops: Material

Steel

Tensile strength 26 to 30 tons sq in.

Depth and thickness of girder

at centre

9 1/4" x 1 7/8"

Length as per Rule

34.375"

Distance apart

8 3/4"

No. and pitch of stays

in each

3 x 8 1/8"

Working pressure by Rules

224 lbs sq in.

Combustion chamber plates: Material

Steel

Tensile strength

26 to 30 tons sq in.

Thickness: Sides

23/32"

Back

3/4"

Top

11/16"

Bottom

23/32"

Pitch of stays to ditto: Sides

9 7/8" x 8 1/8"

Back

9 1/2" x 8 5/8"

Top

8 3/4" x 8 1/8"

Are stays fitted with nuts or riveted over

Fitted with nuts.

Working pressure by Rules

Sides 222 lbs sq in.

Back 276 lbs sq in.

Top 241 lbs sq in.

Bottom 232 lbs sq in.

Front plate at bottom: Material

Steel

Tensile strength 26 to 30 tons sq in.

Thickness

15/16"

Lower back plate: Material

Steel

Tensile strength 26 to 30 tons sq in.

Thickness

27/32"

Pitch of stays at wide water space

13 7/16" x 8 5/8"

Are stays fitted with nuts or riveted over

Fitted with nuts.

Working Pressure

228 lbs sq in.

Main stays: Material

Steel

Tensile strength 28 to 32 tons sq in.

Diameter

At body of stay, 3" & 2 5/8"

or

Over threads

No. of threads per inch

6

Area supported by each stay

288.75 sq in.

Working pressure by Rules

232.8 lbs sq in. & 228 lbs sq in.

Screw stays: Material

Steel

Tensile strength

26 to 30 tons sq in.

Diameter

At turned off part, 1 5/8" & 1 3/4"

or

Over threads

No. of threads per inch

9

Area supported by each stay

Sides 80.25 sq in.

Back 70.625 sq in.

W. Backs 82 sq in.

Tops 71.125 sq in.

Working pressure by Rules <sup>Sides 226 lbs 0"</sup> <sup>Backs 239 lbs 0"</sup> <sup>Tops 255 lbs 0"</sup> Are the stays drilled at the outer ends *No* Margin stays: Diameter <sup>At turned off part.</sup>  $1\frac{7}{8}$ " <sup>or</sup> <sup>Over threads</sup>

No. of threads per inch *9* Area supported by each stay *93.60"* Working pressure by Rules *228 lbs 0"*

Tubes: Material *Wrought Iron* External diameter <sup>Plain</sup> *3"* <sup>Stay</sup> *3"* Thickness <sup>7.W.G.</sup>  $5\frac{1}{16}$  &  $3\frac{3}{8}$ " No. of threads per inch *9*

Pitch of tubes  $4\frac{5}{16}$  x  $4\frac{1}{8}$ " Working pressure by Rules <sup>Stay tubes in Nuts 229 lbs 0"</sup> <sup>Stay tubes W.W. Shear 220 lbs 0"</sup> <sup>Plain tubes 300 lbs 0"</sup> Manhole compensation: Size of opening *32 @ 1 $\frac{3}{8}$ " Dia.*

shell plate *16" x 12"* Section of compensating ring *8" x 10 $\frac{1}{16}$ " x 1 $\frac{9}{32}$ "* No. of rivets and diameter of rivet holes *32 @ 1 $\frac{3}{8}$ " Dia.*

Outer row rivet pitch at ends  $9\frac{5}{16}$ " 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 <sup>Plate</sup>  <sup>Rivets</sup>

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 *Smoke tube type made by the Superheater Manufacturers of* Tubes *The Superheater Co. L<sup>d</sup>* Steel castings *The Superheater Co. L<sup>d</sup>*

Number of elements *94* Material of tubes *Solid Drawn Steel* Internal diameter and thickness of tubes *17 M.M. & 2 $\frac{1}{2}$  M.M.*

Material of headers *Forged Steel* Tensile strength *26 to 30 tons 0"* Thickness *1" (min)* Can the superheater be shut off and the boiler be worked separately *Yes* Is a safety valve fitted to every part of the superheater which can be shut off from the boiler *Yes*

Area of each safety valve *1.7671 sq ins* Are the safety valves fitted with easing gear *Yes* Working pressure as per Rules *220 lbs 0"* Pressure to which the safety valves are adjusted *228 lbs 0"* Hydraulic test pressure: Tested tubes *1250 lbs 0" (as maker's test)* *660 lbs 0" (at maker's Works)* and after assembly in place *450 lbs 0"* 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,*  
 PER PRO **MACCOLL & POLLOCK LTD.**  
*J.H. Delling* Manufacturer.

Dates of Survey <sup>During progress of work in shops - - -</sup> *Please see Machinery Report* Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

<sup>During erection on board vessel - - -</sup> 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 ... £ *Please see Machinery Report* When applied for, 192

Travelling Expenses (if any) £ *Please see Machinery Report* When received, 192

*A. T. Griffith.*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **WED. 11 APR 1928**

Assigned *See Minute on Sld Rpt 29691 attached*

