

## REPORT ON BOILERS.

No. 12108

Received at London Office

11 OCT 1924

Date of writing Report

192

When handed in at Local Office

9.10.24

Port of

Middlesbrough  
See Report on EnginesNo. in  
g. Book.

Survey held at

Stockton-on-Tees

Date, First Survey

Last Survey

192

on the

Steel Arrow steamer SOUTHBOROUGH

(Number of Visits)

Tons {  
Gross  
Net

Master

Built at

Stockton

By whom built

Richardson &amp; Co. Ltd

Yard No.

689 When built

1924

Engines made at

Stockton

By whom made

Messrs Blair &amp; Co. Ltd

Engine No.

1954 When made

1924

Boilers made at

Stockton

By whom made

Messrs Blair &amp; Co. Ltd

Boiler No.

1954 When made

1924

Nominal Horse Power

417

Owners

Messrs Hazledorn Shipping Co. Ltd

Port belonging to

Cardiff

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

Manufacturers of Steel

Messrs D. Colville &amp; Sons Ltd

(Letter for Record (3))

Total Heating Surface of Boilers

7080 sq ft

Is forced draught fitted

no

Coal or Oil fired

coal

No. and Description of Boilers

3 single ended

Working Pressure

180

Tested by hydraulic pressure to

320

Date of test

18.9.24

No. of Certificate

6393

Can each boiler be worked separately

yes

Area of Firegrate in each Boiler

53.9 sq ft

No. and Description of safety valves to each boiler

2 direct spring "High lift"

Area of each set of valves per boiler

{ per Rule 10.08  
as fitted 11.88

Pressure to which they are adjusted

180

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

2'-0"

Is oil fuel carried in the double bottom under boilers

no

Smallest distance between shell of boiler and tank top plating

2'-6"

Is the bottom of the boiler insulated

yes

Largest internal dia. of boilers

15'-3 7/16"

Length

11'-0"

Shell plates: Material

11'-0" steel

Tensile strength

28-32

Thickness

1 3/16"

Are the shell plates welded or flanged

no

Description of riveting: circ. seams

{ end 2 Riv. lap  
inter. ✓

g. seams

2 Butt - 3 Riveted

Diameter of rivet holes in

{ circ. seams 1 3/8"  
long. seams 1 5/16"

Pitch of rivets

{ 4 1/4"  
8 3/4"

Percentage of strength of circ. end seams

{ plate 67.6  
rivets 44.6

Percentage of strength of circ. intermediate seam

{ plate  
rivets

Percentage of strength of longitudinal joint

{ plate 85.02  
rivets 93.1  
combined 88.67

Working pressure of shell by Rules

183 lbs

Thickness of butt straps

{ outer 19 3/8 x 1"  
inner 19 3/8 x 1 1/8"

No. and Description of Furnaces in each Boiler

3 Drighton

Material

steel

Tensile strength

26-30 tons

Smallest outside diameter

43 1/8"

Length of plain part

{ top ✓  
bottom ✓

Thickness of plates

{ crown 9"  
bottom 7 1/16"

Description of longitudinal joint

weld

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

none

Working pressure of furnace by Rules

189 lbs

End plates in steam space: Material

steel

Tensile strength

26-30 tons

Thickness

1 7/16"

Pitch of stays

19 1/2" { 20"  
20" { 17"

How are stays secured

nuts &amp; 1 1/2 x 1" cone washers

Working pressure by Rules

190 lbs

End plates: Material

{ front steel  
back steel

Tensile strength

{ 26-30 tons  
26-30 tons

Thickness

{ 1 1/2"  
1 9/16"

Can pitch of stay tubes in nests

11 1/16"

Pitch across wide water spaces

14 1/2 x 9 3/4"

Working pressure

{ front 185 lbs  
back 180 "

Ends to combustion chamber tops: Material

steel

Tensile strength

28-32 tons

Depth and thickness of girder

centre

8" x 1 3/8"

Length as per Rule

29"

Distance apart

9 3/4"

No. and pitch of stays

each

2 @ 9"

Working pressure by Rules

284 lbs

Combustion chamber plates: Material

steel

Tensile strength

26-30 tons

Thickness: Sides

1 1/16"

Back

1 1/16"

Top

1 1/16"

Bottom

7/8"

Pitch of stays to ditto: Sides

8 3/8 x 10 1/4"

Back

9 3/8 x 9 3/8"

Top

9 3/8 x 9"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules

188 lbs

Front plate at bottom: Material

steel

Tensile strength

26-30 tons

Thickness

1 1/16"

Lower back plate: Material

steel

Tensile strength

26-30 tons

Thickness

3 1/32"

Pitch of stays at wide water space

14 x 9 3/8"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

273 lbs

Main stays: Material

steel

Tensile strength

28-32 tons

Diameter

{ At body of stay,  
or  
Over threads

3 1/4"

No. of threads per inch

6

Area supported by each stay

395

Working pressure by Rules

203

Screw stays: Material

steel

Tensile strength

26-30 tons

Diameter

{ At turned off part,  
or  
Over threads

1 3/4"

No. of threads per inch

8

Area supported by each stay

87.89

483-0034



80151

Working pressure by Rules 204 ✓ Are the stays drilled at the outer ends no Margin stays: Diameter { At turned off part, 1 1/2 or Over threads 1 1/2  
No. of threads per inch 8 ✓ Area supported by each stay 103.12 Working pressure by Rules 201 lbs  
Tubes; Material iron ✓ External diameter { Plain 3 1/2 ✓ Stay 3 1/2 ✓ Thickness { Nº 8 - 4.5.9 No. of threads per inch 9 ✓  
Pitch of tubes 4 3/4" x 4 7/8" ✓ Working pressure by Rules 215 + 200 Manhole compensation: Size of opening in  
shell plate 16" x 12" Section of compensating ring 8" x 1 1/2" ✓ No. of rivets and diameter of rivet holes 27 @ 1 3/8"  
Outer row rivet pitch at ends 9" ✓ Depth of flange if manhole flanged ✓ 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 \_\_\_\_\_ 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,  
N. P. Navillon Manufacturer.

Dates of Survey { During progress of work in shops - - } See Report on Are the approved plans of boiler and superheater forwarded herewith yes  
while building { During erection on board vessel - - } Examiner (If not state date of approval.)  
Total No. of visits \_\_\_\_\_

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been built  
under special survey: are of good material and workmanship and on completion  
were tested by hydraulic pressure with satisfactory results  
The boilers have been satisfactorily secured on board, examined under  
steam and safety valves adjusted

Survey Fee see my bill When applied for, 192  
Travelling Expenses (if any) ✓ When received, 192

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

Committee's Minute TUE. 14 OCT. 1924

Assigned \_\_\_\_\_