

## REPORT ON BOILERS.

No. 89401

Date of writing Report

192

When handed in at Local Office

192

Port of

Received at London Office

-2 DEC 1925

No. in Reg. Book.

Survey held at

Birkenhead

Date, First Survey

14<sup>th</sup> March/25

Last Survey

Bullock 1925

41301 on the

s/s "Upton"

(Number of Visits)

Gross 374  
Net 127

Master

Built at

Birkenhead

By whom built

Cammell, Laird &amp; Co. Ltd. Yard No. 914

When built 1925

Engines made at

Birkenhead

By whom made

Cammell, Laird &amp; Co. Ltd.

Engine No. 914

When made 1925

Boilers made at

Birkenhead

By whom made

Cammell, Laird &amp; Co. Ltd.

Boiler No. 914

When made 1925

Nominal Horse Power

150

Owners

Municipal Corporation of Birkenhead

Port belonging to

Liverpool

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

Manufacturers of Steel Plates G. Colville &amp; Sons, Ltd.

Staple Round Oak Steel Works

Total Heating Surface of Boilers

2850 sq. ft.

Is forced draught fitted

(Letter for Record S)

No. and Description of Boilers

Two - cylindrical locomotive type

Coal or Oil fired

Coal

Tested by hydraulic pressure to

320 lb

Date of test

11/9/25

No. of Certificate

2261

Working Pressure

180 lb per sq. in.

Area of Firegrate in each Boiler

47.5 sq. ft.

No. and Description of safety valves to each boiler

2 - Spring loaded

Area of each set of valves per boiler

per Rule 9.124 in.

as fitted 9.82

Pressure to which they are adjusted

183 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 or uptakes and bunkers or woodwork

4'0"

Is oil fuel carried in the double bottom under boilers

Smallest distance between shell of boiler and tank top plating

Largest internal dia. of boilers

9'3"

Length

16'7 1/2"

Shell plates: Material

Steel

Tensile strength

28/32 tons

Thickness

13/16"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

end DB

inter. TR

Long. seams

TR - DB

Diameter of rivet holes in

circ. seams

15/16"

long. seams

15/16"

Pitch of rivets

27/44" x 3/22"

6 1/2"

Percentage of strength of circ. end seams

plate 65.8

rivets 50.9

Percentage of strength of circ. intermediate seam

plate 71.1

rivets 64.58

Percentage of strength of longitudinal joint

plate 85

rivets 104.7

Working pressure of shell by Rules

187 lb per sq. in.

Thickness of butt straps

outer 5/8"

inner 3/4"

No. and Description of Furnaces in each Boiler

3 - Corrugated - Morrison type

Material

Steel

Tensile strength

26/30 tons

Smallest outside diameter

2'11 1/2"

Length of plain part

top

bottom

Thickness of plates

crown 1/2"

bottom 1/2"

Description of longitudinal joint

Weld

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

Stays and plates in steam space: Material

Steel

Tensile strength

26/30 tons

Thickness

5/16"

Pitch of stays

15 1/2" x 15"

How are stays secured

Double nuts &amp; washers

The plates: Material

front Steel

back Steel

Tensile strength

26/30 tons

Working pressure by Rules

199 lb

Thickness

15/16"

3/8"

Can pitch of stay tubes in nests

13 1/2" x 8 1/2"

Pitch across wide water spaces

14"

Working pressure

front 246 lb

back 213 lb

Orders to combustion chamber tops: Material

Steel

Tensile strength

28/32 tons

Depth and thickness of girder

Centre 2-9" x 29 3/32" Inside wing

Length as per Rule

3'4 1/2"

Distance apart

2'2 1/2"

No. and pitch of stays

Each 2-22 1/2" x 6" deep

Working pressure by Rules

Approved

Combustion chamber plates: Material

Steel

Tensile strength

26/30 tons

Thickness: Sides

1/32"

Front Back

29 3/32"

Top

1 1/16"

Bottom

1/32"

Pitch of stays to ditto: Sides

8" x 8"

Back

15 1/2" x 15"

Top

26 1/2" x 22 1/2"

Are stays fitted with nuts or riveted over

nuts (Riveted at shell)

Working pressure by Rules

196 lb

Front plate at bottom: Material

Steel

Tensile strength

26/30 tons

Thickness

5/16"

Tensile strength

26/30 tons

Thickness

5/16"

Pitch of stays at wide water space

14" x 4 3/4"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

Approved

Main stays: Material

Steel

Tensile strength

28/32 tons

Pitch of stays to ditto: At body of stay,

Over threads

2 1/2"

No. of threads per inch

6

Area supported by each stay

232.5 sq. in.

Working pressure by Rules

191 lb

Screw stays: Material

Steel

Tensile strength

26/30 tons

Pitch of stays to ditto: At turned off part,

Over threads

1 1/2"

No. of threads per inch

9

Area supported by each stay

64 sq. in.



Working pressure by Rules 196 lb Are the stays drilled at the outer ends h Margin stays: Diameter At turned off part, or Over threads ✓

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

Tubes: Material Iron External diameter Plain 3 1/2" ✓ Stay 3 1/2" ✓ Thickness 1/16" ✓ 3/12" ✓ No. of threads per inch 9 ✓

Pitch of tubes 4 1/2" ✓ Working pressure by Rules 214 lb Manhole compensation: Size of opening in shell plate 20 1/2" x 16 1/2" Section of compensating ring Mr. Neil No. of rivets and diameter of rivet holes 44 - 15/16" ✓

Outer row rivet pitch at ends 6 3/4" ✓ 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 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 ✓

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

Rules ✓ Are the safety valves fitted with easing gear ✓ Working pressure as per tubes ✓ Pressure to which the safety valves are adjusted ✓ Hydraulic test pressure: ✓

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

OF AMELL, KARR AND COMPANY LIMITED  
 J. W. Carrand  
 LOCAL SECRETARY

Dates of Survey During progress of work in shops - - See machinery rpt. During erection on board vessel - -

Are the approved plans of boiler and superheater forwarded herewith (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 constructed under Special Survey in accordance with the Rules, the approved plans and the Secretary's letters (E) of 14/2/25, 4/9/25. The Materials and Workmanship are of good quality, and, when tested under hydraulic pressure to 320 lb per sq. inch, the Boilers were found tight and satisfactory in every respect.

The Boilers have been securely fitted on board, examined under steam and safety valves adjusted for the working pressure of 180 lb per sq. inch.

Survey Fee ... .. £ ✓ : : When applied for, 192

Travelling Expenses (if any) £ ✓ : : When received, 192

B. G. Bedford  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute LIVERPOOL - 1 DEC 1925

Assigned See Wack's report.