

## REPORT ON BOILERS.

No. 77993

13 DEC 1930

Received at London Office

Date of writing Report

10

When handed in at Local Office

10 DEC. 1930

Port of

LIVERPOOL.

No. in  
Reg. Book

Survey held at

Birkenhead

Date, First Survey

11<sup>th</sup> June / 30

Last Survey

27<sup>th</sup> Nov / 1930

89947 on the

S. S. 'Calder'

(Number of Visits

57)

Gross 1045

Tons

Net

Master

Built at

Birkenhead

By whom built

Cammell Laird &amp; Co. Ltd

Yard No.

976

When built

1930

Engines made at

Birkenhead

By whom made

Cammell Laird &amp; Co. Ltd

Engine No.

976

When made

1930

Boilers made at

Birkenhead

By whom made

Cammell Laird &amp; Co. Ltd

Boiler No.

976

When made

1930

Nominal Horse Power

352

Owners

London Midland &amp; Scottish Railway

Port belonging to

Goolo

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

Manufacturers of Steel

David Colville &amp; Sons Ltd

(Letter for Record

S. /

Total Heating Surface of Boilers

5220 sq. ft.

Is forced draught fitted

Yes

Coal or Oil fired

Coal

No. and Description of Boilers

Two Cylindrical Multitubular

Working Pressure

200 lb. sq. in.

Tested by hydraulic pressure to

350 lb. sq. in.

Date of test

14.9.30

No. of Certificate

2369

Can each boiler be worked separately

Yes

Area of Firegrate in each Boiler

62 1/2 sq. ft.

No. and Description of safety valves to each boiler

Two spring loaded.

High lift

Area of each set of valves per boiler

7.55 sq. ft.

Pressure to which they are adjusted

205 lb. sq. in.

Are they fitted with easing gear

Yes

See list 18/12/30

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

5'-4"

Is oil fuel carried in the double bottom under boilers

No

Smallest distance between shell of boiler and tank top plating

Is the bottom of the boiler insulated

No

Largest internal dia. of boilers

15'-0"

Length

11'-6"

Shell plates: Material

Steel

Tensile strength

28-32 tons sq. in.

Thickness

1 3/8"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

and boiler lap

long. seams

Double R. Double butt

Diameter of rivet holes in

circ. seams

1 7/16"

Pitch of rivets

3.85"

Percentage of strength of circ. and seams

plate 62.6

rivets 50.3

Percentage of strength of circ. intermediate seam

plate 85

rivets 94.4

Percentage of strength of longitudinal joint

plate 85

rivets 94.4

Working pressure of shell by Rules

202 lb. sq. in.

Thickness of butt straps

outer 1 1/16"

inner 1 3/16"

No. and Description of Furnaces in each Boiler

Three Corrugated.

Material

Steel

Tensile strength

26-30 tons sq. in.

Smallest outside diameter

3'-8 3/4"

Length of plain part

top 1 1/16"

bottom 1 3/16"

Thickness of plates

crown 5/8"

bottom 5/8"

Description of longitudinal joint

weld.

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

None

Working pressure of furnace by Rules

204 lb. sq. in.

End plates in steam space: Material

Steel

Tensile strength

26-30 tons sq. in.

Thickness

1 9/32"

Pitch of stays

20 1/2 x 2 1/2"

How are stays secured

Double nuts and plain washers

Working pressure by Rules

204 lb. sq. in.

Tube plates: Material

front Steel

back Steel

Tensile strength

26-30 tons sq. in.

Thickness

3/32"

Pitch of stays

20 1/2 x 2 1/2"

Mean pitch of stay tubes in nests

9 1/16"

Pitch across wide water spaces

13 1/2"

Working pressure

front 276 lb. sq. in.

back 290 lb. sq. in.

Girders to combustion chamber tops: Material

Steel

Tensile strength

28-32 tons sq. in.

Depth and thickness of girder

at centre

Two plates 8 3/8 x 1"

Length as per Rule

2'-9"

Distance apart

10 1/4"

No. and pitch of stays

in each

3 at 7 5/8"

Working pressure by Rules

206 lb. sq. in.

Combustion chamber plates: Material

Steel

Tensile strength

26-30 tons sq. in.

Thickness: Sides

1 1/16"

Back

1 1/16"

Top

1 1/16"

Bottom

7/8"

Pitch of stays to ditto:

Sides 9 1/2 x 8 1/4"

Back 9 1/4 x 7 3/4"

Top 10 1/2 x 7 5/8"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules

202 lb. sq. in.

Front plate at bottom: Material

Steel

Tensile strength

26-30 tons sq. in.

Thickness

3 1/32"

Lower back plate: Material

Steel

Tensile strength

26-30 tons sq. in.

Thickness

7/8"

Pitch of stays at wide water space

14 3/4 x 7 1/4"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

225 lb. sq. in.

Main stays: Material

Steel

Tensile strength

28-32 tons sq. in.

Diameter

At body of stay,

3 3/8"

No. of threads per inch

6

Area supported by each stay

430 sq. in.

Working pressure by Rules

203 lb. sq. in.

Screw stays: Material

Steel

Tensile strength

26-30 tons sq. in.

Diameter

At turned-off part,

1 5/8" backstays

1 3/4" side stays

No. of threads per inch

9

Area supported by each stay

75.5 sq. in.

W615-0244

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Foundation



Working pressure by Rules *203 1/2* Are the stays drilled at the outer ends *no* Margin stays: Diameter *1 7/8*  
No. of threads per inch *9* Area supported by each stay *950* Working pressure by Rules *224 1/2*  
Tubes: Material *B.B. Iron* External diameter *2 1/2* Thickness *1 9/16* No. of threads per inch *9*  
Pitch of tubes *3 7/8 x 3 7/8* Working pressure by Rules *243 1/2* Manhole compensation: Size of opening in  
shell plate *17 1/2 x 21 1/2* Section of compensating ring *11 x 17 1/6* No. of rivets and diameter of rivet holes *44 @ 1 7/16*  
Outer row rivet pitch at ends *9 7/8* Depth of flange if manhole flanged *3 1/4* Steam Dome: Material *none*  
Tensile strength ☒ Thickness of shell ☒ Description of longitudinal joint ☒  
Diameter of rivet holes ☒ Pitch of rivets ☒ Percentage of strength of joint ☒  
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 ☒  
Number of elements ☒ Material of tubes ☒ Tubes ☒  
Material of headers ☒ Tensile strength ☒ Steel castings ☒  
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 22 inclusive for boilers been complied with *Yes*

**SMITH, LAIRD AND COMPANY LIMITED**  
The foregoing is a correct description.

SECRETARY, Manufacturer.

Dates of Survey ☒ During progress of work in shops - -  
while building ☒ During erection on board vessel - -

*See Machinery report.*

Are the approved plans of boiler and superheater forwarded herewith *Yes*  
(If not state date of approval.)

Total No. of visits *57*

Is this Boiler a duplicate of a previous case *no* If so, state Vessel's name and Report No. ☒

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

*These boilers have been constructed under special Survey and are in accordance with the Rules and the approved plan. The workmanship is good. They have been satisfactorily fitted on board and examined under steam.*

Survey Fee ... £ ☒

Travelling Expenses (if any) £ ☒

When applied for, 19

When received, 19

*J. L. Milton*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

LIVERPOOL 12 DEC. 1930

Assigned

*See Machinery report*



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