

## REPORT ON BOILERS.

No. 21458.

Received at London Office

-3 JUL 1941

Date of writing Report 23<sup>rd</sup> JUNE 1941.When handed in at Local Office 27<sup>th</sup> JUNE 1941.

Port of GREENOCK

No. in Reg. Book. 90954

Survey held at

GREENOCK

Date, First Survey

8<sup>th</sup> OCTOBER 1940

Last Survey

20<sup>th</sup> JUNE 1941.

on the SINGLE SCREW "EMPIRE SPRING"

(Number of Visits)

Gross 6946.46.  
Tons Net 4147.30

Master

Built at PORT GLASGOW

By whom built

LITHGOWS L<sup>td</sup>

Yard No. 944

When built 1941

Engines made at

GREENOCK

By whom made

JOHN G. KINCAID & CO L<sup>td</sup>

Engine No. 141

When made 1941

Boilers made at

GREENOCK

By whom made

JOHN G. KINCAID & CO L<sup>td</sup>

Boiler No. 141

When made 1941

Nominal Horse Power

490

Owners

MINISTRY OF SHIPPING

Port belonging to

GREENOCK.

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

The Steel Company of Scotland L<sup>td</sup>

(Letter for Record S)

Total Heating Surface of Boilers

22464

Is forced draught fitted

Yes

Coal or Oil fired One oil or gas

No. and Description of Boilers

Two cylindrical

Working Pressure 150 lb.

Tested by hydraulic pressure to

275 lb.

Date of test 12-2-41

No. of Certificate 2228

Can each boiler be worked separately

Yes

Area of Firegrate in each Boiler

No. and Description of safety valves to each boiler

1 3/4" double opening 14 lb.

Area of each set of valves per boiler

per Rule

4.28"

Pressure to which they are adjusted

150 lb.

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

Yes

Is oil fuel carried in the double bottom under boilers

Yes

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

Length 10'-6.9375"

Shell plates: Material

S

Tensile strength 29/33 ton

Thickness 25/32"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

end DR

long. seams

T.P. DBS.

Diameter of rivet holes in

circ. seams 31/32"

Pitch of rivets

3.2948"

Percentage of strength of circ. end seams

plate 70.6

rivets 46.7

Percentage of strength of circ. intermediate seam

plate

rivets

Percentage of strength of longitudinal joint

plate 86.23

rivets 86.8

Working pressure of shell by Rules 163.1

Thickness of butt straps

outer 5/8"

inner 3/4"

No. and Description of Furnaces in each Boiler

Two Dighton

Material

S

Tensile strength

24/30

Smallest outside diameter

3'-1 1/2"

Length of plain part

top

bottom

Thickness of plates

crown 13/32"

bottom 1/32"

Description of longitudinal joint

Weld

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

Yes

Working pressure of furnace by Rules 152.3 lb.

End plates in steam space: Material

S

Tensile strength

24/30 ton

Thickness

15/16"

Pitch of stays 16x16"

How are stays secured

D.N.

Working pressure by Rules 157.7 lb.

Tube plates: Material

front S

back

Tensile strength

24/30 ton

Thickness

15/16"

Mean pitch of stay tubes in nests

9.5"

Pitch across wide water spaces

14"

Working pressure

front 164 lb.

back 152 lb.

Girders to combustion chamber tops: Material

S

Tensile strength

29/33

Depth and thickness of girder

at centre

8x1 3/8"

Length as per Rule

29 3/4"

Distance apart

10"

No. and pitch of stays

in each

two 9"

Working pressure by Rules

174 lb.

Combustion chamber plates: Material

S

Tensile strength

24/30 ton

Thickness: Sides

5/8"

Back

5/8"

Top

5/8"

Bottom

5/8"

Pitch of stays to ditto: Sides

9 1/2 x 9 1/2"

Back

9 1/2 x 9"

Top

Are stays fitted with nuts or riveted over Nuts

Working pressure by Rules

149.5 lb.

Front plate at bottom: Material

S

Tensile strength

24/30 ton

Thickness

15/16"

Lower back plate: Material

S

Tensile strength

24/30 ton

Thickness

15/16"

Pitch of stays at wide water space

14" x 9 1/2"

Are stays fitted with nuts or riveted over

Nuts

Working Pressure

253 lb.

Main stays: Material

S

Tensile strength

28/32 ton

Diameter

At body of stay,

or

Over threads

2 3/8"

No. of threads per inch

6

Area supported by each stay

256"

Working pressure by Rules

153.6 lb.

Screw stays: Material

S

Tensile strength

24/30 ton

Diameter

At turned off part,

or

Over threads

1 5/8"

No. of threads per inch

9

Area supported by each stay

90"

050-0033

Working pressure by Rules 1694 Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, 1 3/4" Over threads }  
No. of threads per inch 9 Area supported by each stay 109.25" Working pressure by Rules 1664  
Tubes: Material S External diameter { Plain 3" Stay 3" Thickness { 9/16" 5/16" No. of threads per inch 9  
Pitch of tubes 4 1/4" x 4 3/16" Working pressure by Rules 2094 Manhole compensation: Size of opening in  
shell plate 16 x 20" Section of compensating ring 32 1/2" x 28 1/2" x 1 5/16" No. of rivets and diameter of rivet holes 38 - 1 1/4"  
Outer row rivet pitch at ends 8" 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 { 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

Number of elements Material of tubes Manufacturers of { Tubes Steel forgings Steel castings 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 forgings and 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

The foregoing is a correct description,  
For JOHN G. KINCAID & CO. LIMITED.  
W. G. Kincaid Director, 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 (If not state date of approval.)

Total No. of visits

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. EMPIRE RAINBOW GRK N° 21433

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been made under Special Permit in accordance with the Rules & approved plans. The safety valves have been adjusted under steam, accumulation oil. The materials and workmanship are sound & good. These boilers are eligible in my opinion to be fitted in a vessel classed in the Society's Register book.

Survey Fee ... £ : : When applied for, 10  
Travelling Expenses (if any) : : When received, 10

Charles J. Hunter

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 1 JUL 1941

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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