

## REPORT ON BOILERS.

No. 80400

Received at London Office

26 MAY 1926

Date of writing Report

192

When handed in at Local Office 18. 5. 1926

Port of

NEWCASTLE-ON-TYNE

No. in  
Reg. Book.

Survey held at Newcastle-on-Tyne

Date, First Survey

1<sup>st</sup> Feb 1926

Last Survey

19 April

1926

on the

S.S. CAIRNESS

(Number of Visits 10)

Gross

Tons

Net

Master

Built at Sunderland

By whom built W. Pickering &amp; Sons Ltd.

Yard No. 216

When built

Engines made at Newcastle

By whom made

Parsons Marine Steam Turbine Co. Ltd. Engine No. 234

When made

Boilers made at Newcastle

By whom made

North Eastern Marine Eng. Co. Ltd.

Boiler No. 2621

When made

Nominal Horse Power

532

Owners

Port belonging to

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

Manufacturers of Steel Steel Company of Scotland Ltd. St. Helens &amp; Sons Ltd.

(Letter for Record S.)

Total Heating Surface of Boilers

6645 sq ft

Is forced draught fitted

Yes

Coal or Oil fired

Coal

No. and Description of Boilers Three single ended cylindrical

Working Pressure 180 lbs

Tested by hydraulic pressure to

320 lbs

Date of test

17.3.26

No. of Certificate

9978

Can each boiler be worked separately

Yes

Area of Firegrate in each Boiler

50 sq ft

No. and Description of safety valves to each boiler

Two Spring-loaded

Area of each set of valves per boiler

per Rule 14.1 sq ft

as fitted 16.59 sq ft

Pressure to which they are adjusted

185 lbs

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

Is oil fuel carried in the double bottom under boilers

Smallest distance between shell of boiler and tank top plating

Is the bottom of the boiler insulated

Largest internal dia. of boilers

14'-3 1/16"

Length

12'-0"

Shell plates: Material

Steel

Tensile strength 28 1/2 - 32 1/2 tons

Thickness

1 5/32"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

end Double

long. seams

Double-Butt Strap

Diameter of rivet holes in

circ. seams

1 5/16"

long. seams

1 3/16"

Pitch of rivets

3 3/4"

Percentage of strength of circ. end seams

plate 80.6

rivets 50.6

Percentage of strength of circ. intermediate seam

plate

rivets

Percentage of strength of longitudinal joint

plate 85.8

rivets 86.4

combined 89

Working pressure of shell by Rules

181 lbs

Thickness of butt straps

outer 7/8"

inner 1"

No. and Description of Furnaces in each Boiler

Three Reighton

Material

Steel

Tensile strength

26-30 tons

Smallest outside diameter

39 3/8"

Length of plain part

top

bottom

Thickness of plates

crown 9"

bottom 9 1/16"

Description of longitudinal joint

weld

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

Working pressure of furnace by Rules

204 lbs

End plates in steam space: Material

Steel

Tensile strength

26-30 tons

Thickness

1 7/16"

Pitch of stays 26x19 3/4"

How are stays secured

Double nuts

Working pressure by Rules

182 lbs

Tube plates: Material

front Steel

back Steel

Tensile strength

26-30 tons

Thickness

3 1/4"

15 1/16"

Mean pitch of stay tubes in nests

8 1/2"

Pitch across wide water spaces

14 3/4"

Working pressure

front 182 lbs

back 278 lbs

Girders to combustion chamber tops: Material

Steel

Tensile strength

28-32 tons

Depth and thickness of girder

at centre

10 1/2" - 1 1/2"

Length as per Rule

39"

Distance apart

9 1/4"

No. and pitch of stays

in each

Three

9"

Working pressure by Rules

181 lbs

Combustion chamber plates: Material

Steel

Tensile strength

26-30 tons

Thickness: Sides

2 1/2"

Back

2 1/2"

Top

3 1/2"

Bottom

1 5/16"

Pitch of stays to ditto: Sides

9 1/4" x 9"

Back

10 1/2" x 9 1/2"

Top

9 1/4" x 9"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules

180 lbs

Front plate at bottom: Material

Steel

Tensile strength

26-30 tons

Thickness

1 5/16"

Lower back plate: Material

Steel

Tensile strength

26-30 tons

Thickness

7/8"

Pitch of stays at wide water space

14 3/4"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

196 lbs

Main stays: Material

Steel

Tensile strength

28-32 tons

Diameter

At body of stay,

3 1/4"

or

Over threads

3 1/2"

No. of threads per inch

Six

Area supported by each stay

53.5 sq in

Working pressure by Rules

180 lbs

Screw stays: Material

Steel

Tensile strength

26-30 tons

Diameter

At turned off part,

1 5/8"

or

Over threads

1 3/4"

No. of threads per inch

Nine

Area supported by each stay

83.4 sq in

99.2 sq in

005038-005046-0093



Working pressure by Rules *182 lbs* Are the stays drilled at the outer ends *no* Margin stays: Diameter { At turned off part, or Over threads *2"* ✓  
 No. of threads per inch *nine* ✓ Area supported by each stay *119.90"* Working pressure by Rules *206 lbs*  
 Tubes: Material *Iron* ✓ External diameter { Plain *3"* ✓ Stay *3"* ✓ Thickness { *12.8 S.M.G.* ✓ *1/4" x 5/16"* ✓ No. of threads per inch *nine* ✓  
 Pitch of tubes *4 1/4"* ✓ Working pressure by Rules *plain 250 lbs Stay 194 lbs* Manhole compensation: Size of opening in  
 End plate *16" x 12"* ✓ Section of compensating ring *none* ✓ No. of rivets and diameter of rivet holes  
 Outer row rivet pitch at ends ✓ Depth of flange if manhole flanged *4 1/2"* ✓ 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 { 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 *North Eastern Mar. Eng. Co. Type* Manufacturers of { Tubes *Iron* ✓ Steel castings ✓  
 Number of elements *171* Material of tubes *Solid Drawn Steel* Internal diameter and thickness of tubes *17mm. 2.5mm*  
 Material of headers *Rolled Ingot Steel* Tensile strength *26-30 Tons* Thickness *7/8"* 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 *3.44 sq"* Are the safety valves fitted with easing gear *Yes* Working pressure as per  
 Rules *180 lbs* ✓ Pressure to which the safety valves are adjusted Hydraulic test pressure:  
 tubes *1500 lbs* ✓ Headers *660 lbs* ✓ and after assembly in place *480 lbs* ✓ 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 NORTH EASTERN MARINE ENGINEERING CO., LTD.  
 The foregoing is a correct description,  
*W. Campbell* Secretary

Dates { During progress of work in shops - - } *1926 Feb. 1. 9. 17. 18. 22. Mar. 17. 23.* Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) *Yes*  
 while building { During erection on board vessel - - } *Apr. 13. 14. 19.*  
 Total No. of visits *10*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
*These Boilers have been constructed under Special Survey. The materials and workmanship are sound and good. They have been tested, on completion, by hydraulic pressure in accordance with the Rules. In my opinion these Boilers are eligible for fitting in a vessel classed with this Society.*

Survey Fee ... *£ 20* When applied for, 192  
 Travelling Expenses (if any) *£ 10* When received, 192

*R. E. Amess*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *TUES. 27 JUL 1926*  
 Assigned *See Expt. attached*

