

## REPORT ON BOILERS.

No. 32866

MAY -8 1940

Received at London Office

Date of writing Report

192

When handed in at Local Office

192

Port of

Sunderland

No. in  
Reg. Book.

Survey held at

Sunderland

Date, First Survey

Last Survey

May 1 1940

on the

Steel Screw Steamer "GRAIGLAS"

(Number of Visits

Gross

4312

Tons

2549.

Master

Built at

Sunderland

By whom built

J. L. Thompson &amp; Co. Ltd.

Yard No.

598

When built

1940

Engines made at

Sunderland

By whom made

G. Clark (1938) Ltd.

Engine No.

1219

When made

1940

Boilers made at

Sunderland

By whom made

G. Clark (1938) Ltd.

Boiler No.

1219

When made

1940.

Nominal Horse Power

348

Owners

Craig Shipping Co. Ltd.

Port belonging to

Cardiff

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

Manufacturers of Steel

The Steel Co. of Scotland.

Total Heating Surface of Boilers

(3584 sq ft) 3450 sq ft

Is forced draught fitted

Geo.

(Letter for Record

S.

Coal or Oil fired

Bolt.

No. and Description of Boilers

Two Single Ended multitubular marine

Working Pressure

220.

Tested by hydraulic pressure to

380

Date of test

24/1/40

No. of Certificate

4322

Can each boiler be worked separately

Geo.

Area of Firegrate in each Boiler

33 sq ft

No. and Description of safety valves to each boiler

4.98 sq in.

Two Cockburn Imp. High Lift.

Area of each set of valves per boiler

per Rule

6.28 sq in.

Pressure to which they are adjusted

220

Are they fitted with easing gear

Geo.

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

Geo.

Smallest distance between shell of boiler and tank top plating

2'-0"

Is the bottom of the boiler insulated

Geo.

Largest internal dia. of boilers

13'-0 1/2"

Length

12'-4 1/2"

Shell plates: Material

Steel

Tensile strength

29/33

Thickness

1 1/4"

Are the shell plates welded or flanged

No.

Description of riveting: circ. seams

end

D.R. Lap.

long. seams

T.R.D.B.S.

Diameter of rivet holes in

circ. seams

1 5/16"

Pitch of rivets

3 3/4"

Percentage of strength of circ. end seams

plate

65.0

rivets

45.2

Percentage of strength of circ. intermediate seam

plate

✓

Percentage of strength of longitudinal joint

plate

85.6

rivets

84.1

Working pressure of shell by Rules

222

Thickness of butt straps

outer

3 1/32"

inner

1 3/32"

No. and Description of Furnaces in each Boiler

Two Corrugated (Brighton).

Material

Steel

Tensile strength

26/30

Smallest outside diameter

3'-8 5/8"

Length of plain part

top

✓

Thickness of plates

crown

1 1/16"

Description of longitudinal joint

welded.

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

✓

Working pressure of furnace by Rules

225

End plates in steam space: Material

Steel

Tensile strength

26/30

Thickness

1 9/16"

Pitch of stays

16" x 21"

How are stays secured

Double nuts.

Working pressure by Rules

226.

Tube plates: Material

front

Steel

back

Tensile strength

26/30

Thickness

15/16"

24/32"

Mean pitch of stay tubes in nests

10" x 4 1/2"

Pitch across wide water spaces

14 1/2"

Working pressure

front

224.

back

292.

Girders to combustion chamber tops: Material

Steel

Tensile strength

29/33

Depth and thickness of girder

at centre

11 3/4" x 2"

Length as per Rule

46 1/2"

Distance apart

8 15/16"

No. and pitch of stays

in each

3 @ 10 3/4"

Working pressure by Rules

229.

Combustion chamber plates: Material

Steel

Tensile strength

26/30

Thickness: Sides

25/32"

Back

13/16"

Top

25/32"

Bottom

4/8"

Pitch of stays to ditto: Sides

10 3/4" x 8 1/2"

Back

11 7/16" x 8 5/16"

Top

10 3/4" x 8 15/16"

Are stays fitted with nuts or riveted over

nuts.

Working pressure by Rules

230, 222, 221,

Front plate at bottom: Material

Steel

Tensile strength

26/30.

Thickness

15/16"

Lower back plate: Material

Steel

Tensile strength

26/30

Thickness

15/16"

Pitch of stays at wide water space

14 1/2" x 9 1/2"

Are stays fitted with nuts or riveted over

nuts.

Working Pressure

24.

Main stays: Material

Steel

Tensile strength

28/32

Diameter

At body of stay,

3"

or

3 1/4"

No. of threads per inch

6

Area supported by each stay

21" x 16"

Working pressure by Rules

233

Screw stays: Material

Steel

Tensile strength

26/30

Diameter

At turned off part,

1 7/8"

or

1 1/2"

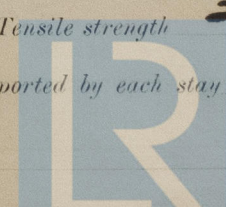
No. of threads per inch

9

Area supported by each stay

10 3/4" x 8 7/16"

11 1/2" x 8 5/8"



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Working pressure by Rules <sup>221</sup> 218 Are the stays drilled at the outer ends <sup>40</sup> Margin stays: Diameter { At turned off part, 2" or Over threads }  
 No. of threads per inch <sup>9</sup> 9 Area supported by each stay <sup>11 1/2" x 9 1/4"</sup> Working pressure by Rules <sup>233</sup> 233.  
 Tubes: Material <sup>S.D. Steel</sup> S.D. Steel External diameter { Plain <sup>2 1/2"</sup> 2 1/2" Stay <sup>2 1/2"</sup> 2 1/2" Thickness { 8 WG. 3/8" 1/16" 3/8" No. of threads per inch <sup>9</sup> 9  
 Pitch of tubes <sup>4" x 3 3/4"</sup> 4" x 3 3/4" Working pressure by Rules <sup>246</sup> 246. Manhole compensation: Size of opening  
 shell plate (End plate) Section of compensating ring No. of rivets and diameter of rivet holes  
 Outer row rivet pitch at ends Depth of flange if manhole flanged <sup>4"</sup> 4" Steam Dome: Material <sup>none.</sup> 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  
 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 <sup>N.E.M. Co. Combustion</sup> Chamber type. Manufacturers of { Tubes <sup>Stubs L.</sup> Stubs L. Steel castings <sup>Stewart & Lloyd.</sup> Stewart & Lloyd.  
 Number of elements <sup>24.</sup> 24 Material of tubes <sup>S.D. Steel</sup> S.D. Steel Internal diameter and thickness of tubes <sup>1.023" x 4 WG.</sup> 1.023" x 4 WG.  
 Material of headers <sup>S.D. Steel</sup> S.D. Steel Tensile strength <sup>26/28.</sup> 26/28. Thickness <sup>1"</sup> 1" Can the superheater be shut off and  
 the boiler be worked separately <sup>Yes.</sup> Yes. Is a safety valve fitted to every part of the superheater which can be shut off from the boiler <sup>Yes.</sup> Yes.  
 Area of each safety valve <sup>3.1416 sq. in.</sup> 3.1416 sq. in. Are the safety valves fitted with easing gear <sup>Yes.</sup> Yes. Working pressure as per  
 Rules <sup>220 lbs.</sup> 220 lbs. Pressure to which the safety valves are adjusted <sup>220 lbs.</sup> 220 lbs. Hydraulic test pressure  
 tubes <sup>1500 lbs.</sup> 1500 lbs. castings <sup>660 lbs.</sup> 660 lbs. and after assembly in place <sup>440 lbs.</sup> 440 lbs. Are drain cocks or valves fitted  
 to free the superheater from water where necessary <sup>Yes.</sup> Yes.  
 Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with <sup>Yes.</sup> Yes.

The foregoing is a correct description,  
 GEORGE CLARK (1888) LTD.

Dates of Survey { During progress of work in shops - - } Please see Rpt 4. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)  
 while building { During erection on board vessel - - }  
 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 approved plan & the rules of the Society. The materials & workmanship are good.

On completion the boilers have been tested by hydraulic pressure of 380 lbs. & found tight & sound.

They have been securely fixed on board the vessel, & examined under steam & safety valves of boilers & superheater adjusted to working pressure in accordance with rule requirements.

They have been fitted for burning oil fuel (F.T. above 150°). Section 20 of the Rules has been complied with.

For recommendation please see memo. Rpt.

Survey Fee ... £ See memo. When applied for, 102  
 Travelling Expenses (if any) £ Rpt. When received, 102

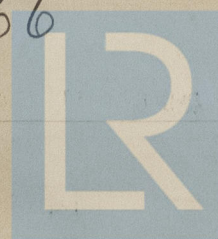
*John H. Brown*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE. 14 MAY 1940

Assigned

See Std. F.E. 32866



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