

# REPORT ON BOILERS.

No. 32,866

Received at London Office MAY - 8 1940

Date of writing Report

When handed in at Local Office

4 MAY 1940

Port of

Sunderland

No. in Survey held at

Sunderland

Date, First Survey

Last Survey May 1 1940

eg. Book.

on the Screw Steamer "GRAIGLAS"

(Number of Visits) Gross 4312 Net 2549

Master

Built at Sunderland

By whom built

J. Thompson & Sons Ld. Yard No. 598

When built 1940

Engines made at

Sunderland

By whom made

G. Black (1938) Ld.

Engine No. 1219

When made 1940

Boilers made at

Sunderland

By whom made

G. Black (1938) Ld.

Boiler No. 1219

When made 1940

Nominal Horse Power

348

Owners

Graig Shipping Co Ld.

Port belonging to

Cardiff

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

Manufacturers of Steel

Appleby & Radcliff Steel Co Ld.

(Letter for Record S.)

Total Heating Surface of Boilers

1380 sq ft (or oil)

Is forced draught fitted No.

Coal or Oil fired Both

No. and Description of Boilers

One Single Ended multitubular marine

Working Pressure 220

Tested by hydraulic pressure to

380

Date of test

24/1/40

No. of Certificate

4324

Can each boiler be worked separately

Area of Firegrate in each Boiler

34 sq ft

No. and Description of safety valves to each boiler

Two cockburn cup high lift

Area of each set of valves per boiler

per Rule 3.64 sq in

as fitted 4.8 sq in

Pressure to which they are adjusted

220

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

2'-0"

Is the bottom of the boiler insulated

Largest internal dia. of boilers

11'-9 1/16"

Length

10'-6"

Shell plates: Material

Steel

Tensile strength

29/33

Thickness

1 5/32"

Are the shell plates welded or flanged

No.

Description of riveting: circ. seams

1 1/4"

Pitch of rivets

3 3/4" 8 9/16"

Long. seams

T.R.D.B.S.

Diameter of rivet holes in

circ. seams 1 1/4"

long. seams 1 1/4"

Percentage of strength of circ. end seams

plate 66.0

rivets 44.8

Percentage of strength of circ. intermediate seam

Percentage of strength of longitudinal joint

plate 85.409

rivets 92.15

combined 89.2

Working pressure of shell by Rules

222.5

Thickness of butt straps

outer 7/8"

inner 1"

No. and Description of Furnaces in each Boiler

Two corrugated (Brighton)

Material

Steel

Tensile strength

26/30

Smallest outside diameter

3'-5 9/16"

Length of plain part

top 2 1/32"

bottom

Thickness of plates

2 1/32"

Description of longitudinal joint

welded

Dimensions of stiffening rings on furnace or top or bottom

Working pressure of furnace by Rules

231

End plates in steam space

Material

Steel

Tensile strength

26/30

Thickness

1 5/16"

Pitch of stays

15'-11"

How are stays secured

Double nuts

Working pressure by Rules

227

Tube plates

Material

Steel

Tensile strength

26/30

Thickness

3 1/32"

2 3/32"

Mean pitch of stay tubes in nests

9'-8 3/4"

Pitch across wide water spaces

14 1/2"

Working pressure

front 226

back 233

Girders to combustion chamber tops

Material

Steel

Tensile strength

29/33

Depth and thickness of girder

at centre

8 1/2" x 1 1/2"

Length as per Rule

28"

Distance apart

10 1/2"

No. and pitch of stays

in each

2 @ 8 1/4"

Working pressure by Rules

229

Combustion chamber plates

Material

Steel

Tensile strength

26/30

Thickness: Sides

3/4"

Back

2 3/32"

Top

3/4"

Bottom

3/4"

Pitch of stays to ditto

Sides 10 1/2" x 8 1/4"

Back 9 1/4" x 8 1/8"

Top 10 1/2" x 8 1/4"

Are stays fitted with nuts or riveted over

Nuts

Working pressure by Rules

222, 239

Front plate at bottom

Material

Steel

Tensile strength

26/30

Thickness

3 1/32"

Lower back plate

Material

Steel

Tensile strength

26/30

Thickness

3 1/32"

Pitch of stays at wide water space

14 1/2" x 8 1/8"

Are stays fitted with nuts or riveted over

Nuts

Working Pressure

280

Main stays

Material

Steel

Tensile strength

28/32

Diameter

At body of stay, 3"

Over threads, 3 1/4"

No. of threads per inch

6

Area supported by each stay

22" x 15"

Working pressure by Rules

227

Screw stays

Material

Steel

Tensile strength

26/30

Diameter

At turned off part, 1 3/4"

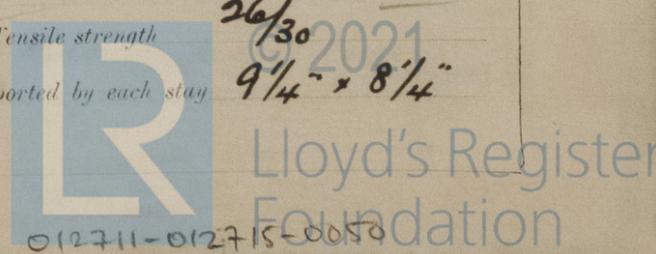
Over threads

No. of threads per inch

9

Area supported by each stay

9 1/4" x 8 1/4"



012711-012715-0059

Working pressure by Rules **241** Are the stays drilled at the outer ends **no.** Margin stays: Diameter (At turned off part, or Over threads) **1 1/8" + 2 1/8"**  
 No. of threads per inch **9** Area supported by each stay **1 1/8" x 8 1/8", 10 1/2" x 8 1/4"** Working pressure by Rules **221 246**  
 Tubes: Material **S.D. Steel** External diameter (Plain **3 1/4"** Stay **3 1/4"**) Thickness **1/4" 5/16" 3/8"** No. of threads per inch **9**  
 Pitch of tubes **4 1/2" x 4 3/8"** Working pressure by Rules **264, 269** Manhole compensation: Size of opening

shell plate **16 x 12 (2nd plate)** Section of compensating ring  No. of rivets and diameter of rivet holes **2**  
 Outer row rivet pitch at ends **4"** Depth of flange if manhole flanged **4"** Steam Dome: Material **none**  
 Tensile strength **900** Thickness of shell **1/4"** Description of longitudinal joint **None**  
 Diameter of rivet holes **3/8"** Pitch of rivets **4"** Percentage of strength of joint (Plate Rivets) **100%**  
 Internal diameter **16"** Working pressure by Rules **264, 269** Thickness of crown **1/4"** No. and diameter stays **2**  
 How connected to shell **None** Inner radius of crown **None** Working pressure by Rules **264, 269** Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell **None**

Type of Superheater **None** Manufacturers of Tubes **None** Steel castings **None**  
 Number of elements **None** Material of tubes **None** Internal diameter and thickness of tubes **None**  
 Material of headers **None** Tensile strength **None** Thickness **None** Can the superheater be shut off at the boiler be worked separately **None**  
 Is a safety valve fitted to every part of the superheater which can be shut off from the boiler **None**  
 Area of each safety valve **None** Are the safety valves fitted with easing gear **None** Working pressure as per Rules **None**  
 Pressure to which the safety valves are adjusted **None** Hydraulic test pressure **None**  
 tubes **None** castings **None** and after assembly in place **None** Are drain cocks or valves fitted to free the superheater from water where necessary **None**

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with **Yes.**

The foregoing is a correct description,  
**GEORGE CLARK (1938) LTD.**  
*A. J. Bennett* Manufacturer  
**Inspector & General Manager**

Dates of Survey (During progress of work in shops - - -) **Please see Rpt. 4.** Are the approved plans of boiler and superheater (If not state date of approval.) **Yes**  
 while building (During erection on board vessel - - -) **Yes** Total No. of visits **2**

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)  
 This boiler has been Constructed under Special Survey in accordance with the approved plan & the rules of the Society.  
 The materials & workmanship are good.  
 On Completion the boiler has been tested by hydraulic pressure of 38 lbs/sq. & found tight & sound.  
 The boiler has been securely fixed on board the vessel, fitted to burn oil fuel (F.P. above 150°F), Section 20 of the Rules has been Complied with, examined under Steam & safety valves adjusted to working pressure in accordance with rule requirements.  
 In recommendation please see Mech. Rpt.

Survey Fee ... .. £ **See Mech. Rpt.** When applied for, 192  
 Travelling Expenses (if any) £ **Rpt.** When received, 192

*J. St. Hasen.*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **TUE. 14 MAY 1940**  
 Assigned **See Std. J.E. 32866**

