

REPORT ON BOILERS.

No. 83138

Received at London Office

13 AUG 1928

Newcastle-on-Tyne

192

When handed in at Local Office 16. 8. 1928 Port of

24 Date of writing Report

No. in Survey held at *Walker on Tyne*

Date, First Survey *17 Feb*

Last Survey *7 Aug*

1928

(Number of Visits —)

Gross *4632*

Tons Net *2862*

26 on the *Steel Screw Steamer "GRACEFIELD"*

Built at *Walker*

By whom built *S. H. W. R. Ld*

Yard No. *1274* When built *1928*

By whom made *Swan Hunter, W. Richardson Ld*

Engine No. *1274* When made *1928*

By whom made *Swan Hunter, W. Richardson Ld*

Boiler No. *1274* When made *1928*

Owners *Confined Steamship Co. Ltd* Port belonging to *Newcastle*

nominal Horse Power *448*

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Plates *Step, Steel Co Scotland, Furness Doughton Huley Ld* (Letter for Record *S*)

Total Heating Surface of Boilers *6830 sq ft* Is forced draught fitted *No* Coal or Oil fired *Coal*

No. and Description of Boilers *3 horizontal Cylindrical S.S. Multitubular* Working Pressure *200 lb/sq in*

Tested by hydraulic pressure to *350 lb/sq in* Date of test *13.6.28* No. of Certificate *280* Can each boiler be worked separately *Yes*

Area of Firegrate in each Boiler *63.33 sq ft* No. and Description of safety valves to each boiler *two direct spring high lift*

Area of each set of valves per boiler *6.61 sq ft* Pressure to which they are adjusted *200 lb/sq in* Are they fitted with easing gear *Yes*

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler *no donkey Boilers fitted.*

Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Is oil fuel carried in the double bottom under boilers *No*

Smallest distance between shell of boiler and tank top plating *2'-0"* Is the bottom of the boiler insulated *No*

Largest internal dia. of boilers *15'-3 3/8"* Length *10'-6"* Shell plates: Material *Steel* Tensile strength *30/34 tons*

Thickness *1 5/16"* Are the shell plates welded or flanged *no* Description of riveting: circ. seams *end D R LAP.*

long. seams *TR, DBS* Diameter of rivet holes in circ. seams *17/16"* Pitch of rivets *4.26"*

Percentage of strength of circ. end seams plate *66.3%* rivets *44.44%* Percentage of strength of circ. intermediate seam plate *85.13%* rivets *87.91%*

Percentage of strength of longitudinal joint combined *87.85%* Working pressure of shell by Rules *202 lb/sq in*

Thickness of butt straps outer *1"* inner *1 1/8"* No. and Description of Furnaces in each Boiler *3 Doughton Corrugated Gouley Leds.*

Material *Steel* Tensile strength *26/30 tons* Smallest outside diameter *3'-10 7/16"*

Length of plain part top *0"* bottom *0"* Thickness of plates crown *2 1/32"* bottom *2 1/32"* Description of longitudinal joint *weld*

Dimensions of stiffening rings on furnace or c.c. bottom *none* Working pressure of furnace by Rules *206 lb/sq in*

End plates in steam space: Material *Steel* Tensile strength *26/30 tons* Thickness *1 7/32"* Pitch of stays *19" x 18"*

How are stays secured *double nuts* Working pressure by Rules *202 lb/sq in*

Tube plates: Material front *Steel* back *Steel* Tensile strength *26/30 tons* Thickness *7/8"*

Mean pitch of stay tubes in nests *11 1/8"* Pitch across wide water spaces *14 1/4"* Working pressure front *202 lb/sq in* back *223 lb/sq in*

Girders to combustion chamber tops: Material *Steel* Tensile strength *28/32 tons* Depth and thickness of girder

at centre *8 3/8" x 1 1/4"* Length as per Rule *29 7/16"* Distance apart *8 1/2"* No. and pitch of stays

in each *299* Working pressure by Rules *203 lb/sq in* Combustion chamber plates: Material *Steel*

Tensile strength *26/30 tons* Thickness: Sides *3/4"* Back *1 1/16"* Top *3/4"* Bottom *3/4"*

Pitch of stays to ditto: Sides *9 3/4" x 9 1/4"* Back *9 1/2" x 8 5/8"* Top *9" x 8 1/2"* Are stays fitted with nuts or riveted over *nuts*

Working pressure by Rules *200 lb/sq in* Front plate at bottom: Material *Steel* Tensile strength *26/30 tons* Thickness *31/32"*

Thickness *1 1/16"* Lower back plate: Material *Steel* Tensile strength *26/30 tons* Thickness *31/32"*

Pitch of stays at wide water space *14 7/8" x 8 5/8"* Are stays fitted with nuts or riveted over *nuts*

Working Pressure *260 lb/sq in* Main stays: Material *Steel* Tensile strength *28/32 tons*

Diameter: At body of stay *3"* No. of threads per inch *6* Area supported by each stay *336 sq in*

Over threads *200 lb/sq in* Screw stays: Material *Steel* Tensile strength *26/30 tons*

Diameter: At turned off part *1 5/8" + 1 3/4"* No. of threads per inch *9* Area supported by each stay *758.88 sq in*

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Working pressure by Rules **205 lb** Are the stays drilled at the outer ends **No** Margin stays: Diameter { At turned off part, or Over threads **1 7/8"**

No. of threads per inch **9** Area supported by each stay **103.3"** Working pressure by Rules **206 lb**

Tubes: Material **iron** External diameter { Plain **3 3/4"** Thickness **8 W.G.** No. of threads per inch **9**

Pitch of tubes **4 1/2" x 4 3/8"** Working pressure by Rules **202 lb** Manhole compensation: Size of opening in shell plate **20" x 16"** Section of compensating ring **10 3/8" x 1 3/4"** No. of rivets and diameter of rivet holes **32 - 1 9/16" dia**

Outer row rivet pitch at ends **10"** Depth of flange of manhole flanged **2 3/4"** 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 { 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

Hydraulic test on Superheaters after fitting Boiler 500 lb/600 lb **23/6/28** **July 21st Birmingham**

Type of Superheater **NORTH EASTERN MARINE** Manufacturers of **For the Birmingham Iron Works Ltd**

Number of elements **132** Material of tubes **Steel** Internal diameter and thickness of tubes **15 7/8" 2 1/2"**

Material of headers **mild forged steel** Tensile strength **26 Tons** Thickness **1 1/8"** Can the superheater be shut off and the boiler be worked separately **No** 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 **3.14"** Are the safety valves fitted with easing gear **YES** Working pressure as per Rules **200 lb** Pressure to which the safety valves are adjusted **205 lb** Hydraulic test pressure: tubes & headers tested **600 lb** and after assembly in place **500/600 lb** 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**

FOR THE MANUFACTURER
The foregoing is a correct description,
G. J. Dwyer Manufacturer.

Dates { During progress of work in shops - - } Are the approved plans of boiler and superheater forwarded herewith **Yes**
(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 built under special Survey the material and workmanship found good and efficient.

The boiler and their Superheaters tested under hydraulic pressure and found Satisfactory

Survey Fee ... £ **See Machinery Report** When applied for, 192 **8/1**

Travelling Expenses (if any) £ When received, **20.8.** 192 **8/1**

L. G. Shallcross
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 24 AUG 1928 & FRI. 14 DEC 1928**

Assigned **See Minute on Hwe Rpt. P3138 attached**