Rpt. 5a.

REPORT ON BOILERS.

No. 69542

Received at London Office 26 APR 1945

Date of writing Report 19 When handed in at Local Office 23. 4 1945 Port of Glasgow

No. in Reg. Book. Survey held at Glasgow Date, First Survey 8. 9. 44 Last Survey 11. 4 1945

on the "Empire Shetland" (Number of Visits 22) Tons Gross 813 Net 334

Master Built at Glasgow By whom built A. & J. Inglis Ltd Yard No. 1288P When built 1945

Engines made at Greenock By whom made Rankin & Blackmore Ltd Engine No. No. 90 When made 1945

Boilers made at Glasgow By whom made David Rowan & Co Ltd Boiler No. B486 When made 1944

Nominal Horse Power 144 Owners Ministry of War Transport Port belonging to

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

Manufacturers of Steel The Steel Company of Scotland, Ltd. (Letter for Record S. ✓)

Total Heating Surface of Boilers 2237 ft ✓ Is forced draught fitted Yes ✓ Coal or Oil fired Oil ✓

No. and Description of Boilers One S.E. boiler ✓ **Working Pressure** 190 LBS/□" ✓

Tested by hydraulic pressure to 335 LBS/□" Date of test 8-12-44 No. of Certificate 21838 Can each boiler be worked separately ✓

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 1 - 3" Double Spring ✓

Area of each set of valves per boiler { per Rule 12·8 □" 13·6 / as fitted 14·1 □" ✓ } Pressure to which they are adjusted 190 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 2'-0" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating Open Floors Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 14'-6" ✓ Length 11'-6" ✓ **Shell plates:** Material S ✓ Tensile strength 29/33 Tons

Thickness 1 7/32" ✓ Are the shell plates welded or flanged No Description of riveting: circ. seams { end D.R. / intey. ✓ }

long. seams T.R.D.B.S. ✓ Diameter of rivet holes in { circ. seams B.E. 1 5/16": F.E. 1 3/16" / long. seams 1 5/16" ✓ } Pitch of rivets { B.E. 3·528" F.E. 3·2" / 8 15/16" ✓ }

Percentage of strength of circ. end seams { plate B.E. 62·7 F.E. 62·9 / rivets B.E. 50·1 F.E. 45 } Percentage of strength of circ. intermediate seam { plate ✓ / rivets ✓ }

Percentage of strength of longitudinal joint { plate 85·3 / rivets 92·5 / combined 89·1 } Working pressure of shell by Rules ✓

Thickness of butt straps { outer 59/64" ✓ / inner 1 3/64" ✓ } **No. and Description of Furnaces in each Boiler** 3 Deighton ✓

Material S. ✓ Tensile strength 26/30 Tons Smallest outside diameter 3'-6 7/8"

Length of plain part { top ✓ / bottom ✓ } Thickness of plates { crown 9/16" ✓ / bottom } Description of longitudinal joint Welded. ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules ✓

End plates in steam space: Material S ✓ Tensile strength 26/30 Tons ✓ Thickness 1 1/4" ✓ Pitch of stays 18 1/2" x 20 1/2" ✓

How are stays secured D.N. ✓ Working pressure by Rules ✓

Tube plates: Material { front S ✓ / back } Tensile strength { 26/30 Tons / } Thickness { 27/32" ✓ / 3/4" ✓ }

Mean pitch of stay tubes in nests 9 7/8" ✓ Pitch across wide water spaces 13 3/4" ✓ Working pressure { front ✓ / back ✓ }

Girders to combustion chamber tops: Material S. ✓ Tensile strength 28/32 Tons Depth and thickness of girder

at centre 2 @ 10" x 7/8" ✓ Length as per Rule 3'-3 9/16" Distance apart 9 1/4" No. and pitch of stays

at each 3 @ 10" ✓ Working pressure by Rules ✓ **Combustion chamber plates:** Material S.

Tensile strength 26/30 Tons ✓ Thickness: Sides 23/32" Back 11/16" ✓ Top 23/32" ✓ Bottom 23/32" ✓

Pitch of stays to ditto: Sides 10" x 9 1/4" ✓ Back 9 3/4" x 8 1/4" Top 10" x 9 1/4" ✓ Are stays fitted with nuts or riveted over Nuts ✓

Working pressure by Rules ✓ **Front plate at bottom:** Material S Tensile strength 26/30 Tons ✓

Thickness 27/32" ✓ **Lower back plate:** Material S. ✓ Tensile strength 26/30 Tons Thickness 25/32" ✓

Pitch of stays at wide water space 13 1/2" ✓ Are stays fitted with nuts or riveted over Nuts

Working Pressure ✓ **Main stays:** Material S. Tensile strength 28/32 Tons ✓

Diameter { At body of stay, 2 3/4" & 3" ✓ / or Over threads ✓ } No. of threads per inch 6 ✓ Area supported by each stay ✓

Working pressure by Rules ✓ **Screw stays:** Material S Tensile strength 26/30 Tons

Diameter { At turned off part, ✓ / or Over threads 1 5/8" & 1 3/4" ✓ } No. of threads per inch 9 ✓ Area supported by each stay ✓

Working pressure by Rules ✓ *Are the stays drilled at the outer ends* No *Margin stays: Diameter* { *At turned off part, or Over threads* } ✓ 1¼", 1⅞", 2"

No. of threads per inch 9 ✓ *Area supported by each stay* ✓ *Working pressure by Rules* ✓

Tubes: *Material* S ✓ *External diameter* { *Plain* 2¾" ✓ *Stay* 2¾" ✓ } *Thickness* { 9 W.G. ✓ 5/16", ⅜" ✓ } *No. of threads per inch* 9

Pitch of tubes 4" × 3⅞" ✓ *Working pressure by Rules* ✓ **Manhole compensation:** *Size of opening in*

shell plate 19½" × 15½" ✓ *Section of compensating ring* 19" × 1 7/32" ✓ *No. of rivets and diameter of rivet holes* 34 @ 1 5/16" ✓

Outer row rivet pitch at ends 8 15/16" ✓ *Depth of flange if manhole flanged* 3" **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 None. *Manufacturers of* { *Tubes* *Steel forgings* *Steel castings* }

Number of elements *Material of tubes* *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 David Rowan T.C. Ltd.
Arch. N. Grierson, *Manufacturer.*

Dates of Survey while building

During progress of work in shops 1944 Sep 8 Oct 18 Nov 14 Dec 5.8.18.

During erection on board vessel 1945 Jan 9.11.12.16.18 and Feb 2.6 then 14.19.27. 39 Apr 4.5.9.11

Are the approved plans of boiler ~~and superheater~~ forwarded herewith Yes (If not state date of approval.)

Total No. of visits 22.

Is this Boiler a duplicate of a previous case Yes. *If so, state Vessel's name and Report No.* "Empire Bute" Glas. Rept. No 6916

GENERAL REMARKS (*State quality of workmanship, opinions as to class, &c.*) This boiler has been built under Special Survey in accordance with the Rules & approved plans. The materials and workmanship are good. It has been efficiently installed in the vessel and the safety valves have been adjusted to the working pressure.

The specification requirements have been carried out satisfactorily.

Survey Fee ... ... £ 14-18

~~Travelling Expenses (if any)~~ Specin £ 3-14-6.

When applied for, 24 APR 1945 19

When received, 19

Jas. Stevenson & J.R. Dale
Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 24 APR 1945

Assigned SEE ACCOMPANYING MACHINERY REPORT.