

# REPORT ON BOILERS.

No. 17734

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Date of writing Report 13/9/1937. When handed in at Local Office 15/9/1937 Port of West Hartlepool

No. in Survey held at West Hartlepool

Date, First Survey 25/9/36

Last Survey 8/9/1937

on the Steel Screw Steamer "BELGRAVIAN"

(Number of Visits 105) Gross Tons 3136 Net Tons 1401

Master J. Built at West Hartlepool By whom built William Gray & Co. Ltd Yard No. 1073 When built 1937  
Engines made at West Hartlepool By whom made Central Marine Engine Works Engine No. 1073 When made 1937  
Boilers made at West Hartlepool By whom made Central Marine Engine Works Boiler No. 1073 When made 1937  
Nominal Horse Power 606 Owners Ellerman Lines Ltd Port belonging to Liverpool

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

Manufacturers of Steel Colvilles Ltd. Glasgow. (Letter for Record S)

Total Heating Surface of Boilers 4,770 sq. ft. Is forced draught fitted Yes. Coal or Oil fired coal.

No. and Description of Boilers 3, Single ended. Working Pressure 225 lbs.

Tested by hydraulic pressure to 388 lbs. Date of test 24-3-37 No. of Certificate 3861 Can each boiler be worked separately yes.

Area of Firegrate in each Boiler 55.5 sq. ft. No. and Description of safety valves to each boiler 2, Lockburn's High Lift.

Area of each set of valves per boiler {per Rule 6.745 sq. ins. as fitted 7.952 sq. ins. Pressure to which they are adjusted 235 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 on woodwork 24" ✓ Is oil fuel carried in the double bottom under boilers no.

Smallest distance between shell of boiler and tank top plating 24 1/2" ✓ Is the bottom of the boiler insulated yes.

Largest internal dia. of boilers 15'0" ✓ Length 12'6" ✓ Shell plates: Material steel Tensile strength 29.33 tons

Thickness 1 15/32" ✓ Are the shell plates welded or flanged no. ✓ Description of riveting: circ. seams {end 4" inter. 4" Rivets 10 7/16" ✓

Long. seams Y.R.W.B.S. ✓ Diameter of rivet holes in {circ. seams 1 1/2" long. seams 1 1/2" ✓ Pitch of rivets 4" ✓

Percentage of strength of circ. end seams {plate 62.5% rivets 47.7% ✓ Percentage of strength of circ. intermediate seam {plate 85.62% rivets 85.65% ✓

Percentage of strength of longitudinal joint {plate 85.62% rivets 88.38% ✓ Working pressure of shell by Rules 225.7 lbs. ✓

Thickness of butt straps {outer 1 1/8" inner 1 1/4" ✓ No. and Description of Furnaces in each Boiler 3, Deighton type.

Material steel Tensile strength 26-30 tons ✓ Smallest outside diameter 44 3/16" ✓

Length of plain part {top bottom ✓ Thickness of plates {crown 23/32" bottom 23/32" ✓ Description of longitudinal joint welded. ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 235.8 lbs. ✓

End plates in steam space: Material steel Tensile strength 26-30 tons ✓ Thickness 1 1/4" ✓ Pitch of stays 18" x 20" ✓

How are stays secured Double nuts & washers. ✓ Working pressure by Rules 228.7 lbs. ✓

Tube plates: Material {front steel back steel Tensile strength 26-30 tons ✓ Thickness 7/8" ✓

Mean pitch of stay tubes in nests 10 1/2" ✓ Pitch across wide water spaces 14" ✓ Working pressure {front 229.5 lbs. back 251 lbs. ✓

Girders to combustion chamber tops: Material steel Tensile strength 28-32 tons ✓ Depth and thickness of girder

at centre 9 1/8" Two 7/8" plates Length as per Rule 35.4" ✓ Distance apart 8 1/8" ✓ No. and pitch of stays

in each 3, 9 1/4" Working pressure by Rules 230.3 lbs. ✓ Combustion chamber plates: Material steel ✓

Tensile strength 26-30 tons ✓ Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 7/8" ✓

Pitch of stays to ditto: Sides 8 1/2" x 9 1/4" Back 8 1/2" x 7 3/4" Top 8 1/8" x 9 1/4" ✓ Are stays fitted with nuts or riveted over 50% in centre which are riveted with a constant 62.

Working pressure by Rules 229.5 lbs. 226.5 lbs. 238.5 lbs. Front plate at bottom: Material steel Tensile strength 26-30 tons. ✓

Thickness 15/16" ✓ Lower back plate: Material steel Tensile strength 26-30 tons ✓ Thickness 15/16" ✓

Pitch of stays at wide water space 14 1/4" x 8 1/2" ✓ Are stays fitted with nuts or riveted over nuts. ✓

Working Pressure 262.5 lbs. Main stays: Material steel Tensile strength 28-32 tons. ✓

Diameter {At body of stay, 3 3/8" No. of threads per inch 6. Area supported by each stay 360 sq. ins. ✓

Over threads 3 3/8" Working pressure by Rules 243 lbs. ✓ Screw stays: Material steel Tensile strength 26-30 tons. ✓

Diameter {At turned off part, 1 5/8" No. of threads per inch 9. Area supported by each stay 65.88 sq. ins. 78.6 sq. ins. ✓

Over threads 1 5/8" 1 3/4" ✓



Working pressure by Rules 231 lbs. Are the stays drilled at the outer ends no. Margin stays: Diameter 2" <sup>At turned off part, or</sup> Over threads 2"  
 No. of threads per inch 9 Area supported by each stay 93.5 sq ins. Working pressure by Rules 264.7 lbs.  
 Tubes: Material Iron. External diameter 3" Thickness 8 W.G. No. of threads per inch 9  
 Pitch of tubes 4 1/8" x 4 1/8" Working pressure by Rules 250 lbs. Manhole compensation: Size of opening  
 shell plate 20" x 16" Section of compensating ring 37" x 33" x 1 1/32" No. of rivets and diameter of rivet holes 32. 1 9/16"  
 Outer row rivet pitch at ends 11" Depth of flange if manhole flanged 4 1/4" Steam Dome: Material ✓  
 Tensile strength ✓ Thickness of shell ✓ Description of longitudinal joint ✓  
 Diameter of rivet holes ✓ Pitch of rivets ✓ Percentage of strength of joint ✓ <sup>Plate</sup> 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  
 of rivets in outer row in dome connection to shell ✓

Type of Superheater Smoke tube Manufacturers of Stewart & Boyd Glasgow.  
bolville Ltd.  
 Number of elements 57 each boiler Material of tubes solid drawn steel Steel forgings Head Wrightson & Hopkinson.  
 Material of headers Mild steel Tensile strength 26-30 tons Thickness 1 7/16" Internal diameter and thickness of tubes 1 7/8" 2 1/2"  
 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 1.76 sq ins Are the safety valves fitted with easing gear yes. Working pressure as  
 Rules approved 225 lbs. Pressure to which the safety valves are adjusted 235 lbs. Hydraulic test pressure  
 tubes 1,200 lbs. forgings and castings 675 lbs. and after assembly in place 1,000 lbs. Are drain  
 valves fitted to free the superheater from water where necessary yes.  
 Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with yes.

The foregoing is a correct description,  
 FOR THE CENTRAL MARINE ENGINE WORKS,  
 (W. Gray & Co. Ltd.)

Dates of Survey <sup>During progress of</sup> work in shops - - -  
 while <sup>During erection on</sup> board vessel - - -  
 building Are the approved plans of boiler and superheater forwarded herewith yes.  
 (If not state date of approval.)  
 Total No. of visits

Is this Boiler a duplicate of a previous case yes. If so, state Vessel's name and Report No. Malvernian. W. H. P. 110176

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These Boilers have been constructed  
under Special Survey and in accordance with the approved plans for a working pressure  
of 225 lbs per sq inch. The materials & workmanship have been found good.  
Upon completion the Boilers were tested in the presence of the undersigned  
with hydraulic pressure 388 lbs per sq inch. showed no signs of weakness and were  
found tight and sound in every respect at that pressure.

Survey Fee ... £ : : } When applied for, 19  
 Travelling Expenses (if any) £ : : } When received, 19

S. Brooke Smith

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI 24 SEP 1937

Assigned See other FE report



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