

# REPORT ON BOILERS.

21 JAN 1925

Received at London Office 10 DEC 1924

Date of writing Report 192 When handed in at Local Office 8-12-1924 Port of Glasgow

No. in Survey held at Glasgow Date, First Survey 23 Sept Last Survey 20-11-1924  
Reg. Book. (Number of Visits 6) Gross 398  
Tons Net 270

on the S.S. "Downshire"

Master                      Built at Bowling By whom built Scott & Sons Yard No. 297 When built 1925

Engines made at Glydebank By whom made Aitchison Blair Ltd Engine No. 150 When made 1924

Boilers made at Glasgow By whom made W. Rowan & Co Ltd Boiler No. 331 When made 1924

Nominal Horse Power 80 Owners East Downshire S.B. Co Port belonging to Beefact

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

Manufacturers of Steel Gutehoffnungshütte A.G. of Oberhausen The Steel Company of Scotland (furnace plate) The Lanarkshire Steel Co (stays) (Letter for Record S)

Total Heating Surface of Boilers 1502 sq ft Is forced draught fitted no Coal or Oil fired Coal  
15B Working Pressure 180

No. and Description of Boilers One single ended marine

Tested by hydraulic pressure to 320 Date of test 20-11-24 No. of Certificate 16662 Can each boiler be worked separately ✓

Area of Firegrate in each Boiler 48 sq ft No. and Description of safety valves to each boiler 2 Spring

Area of each set of valves per boiler per Rule as fitted 4.9 sq ft Pressure to which they are adjusted 185 lb 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                      Is the bottom of the boiler insulated                     

Largest internal dia. of boilers 13'-0" Length 10'-6" Shell plates: Material steel Tensile strength 28-32 tons

Thickness 1 5/16" Are the shell plates welded or flanged no Description of riveting: circ. seams end WR  
inter. ✓

long. seams WBS. TR Diameter of rivet holes in circ. seams 1 1/16" Pitch of rivets 3-01"  
long. seams 1 1/8" 8 1/2"

Percentage of strength of circ. end seams plate 64.7 Percentage of strength of circ. intermediate seam plate ✓  
rivets 45 rivets ✓

Percentage of strength of longitudinal joint plate 86 Working pressure of shell by Rules 182  
rivets 87.8 combined 84.5

Thickness of butt straps outer 1 3/16" No. and Description of Furnaces in each Boiler Three Deighton  
inner 1 5/16" 3cf.

Material steel Tensile strength 26-30 tons Smallest outside diameter 35.9"

Length of plain part top ✓ Thickness of plates crow 29" Description of longitudinal joint welded  
bottom 64"

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 180

End plates in steam space: Material steel Tensile strength 26-30 Thickness 1 3/32" Pitch of stays 17 1/2" x 17 1/2"

How are stays secured WN Working pressure by Rules 181

Tube plates: Material front steel Tensile strength 26-30 Thickness 29"  
back steel 26-30 32" 25"

Mean pitch of stay tubes in nests 10" Pitch across wide water spaces 15 1/8" Working pressure front 182  
back 208

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

at centre 2 @ 8' x 7/8" Length as per Rule 30-56" Distance apart 11 1/8" No. and pitch of stays

in each 3 @ 7 1/4" Working pressure by Rules 182 Combustion chamber plates: Material steel

Tensile strength 26-30 tons Thickness: Sides 1 1/16" Back 5/8" W 3/32" Top 1 1/16" Bottom 1 1/16"

Pitch of stays to ditto: Sides 10 x 9 Back 9 1/2" - 8 3/4" Top 7 1/4" x 11 1/8" Are stays fitted with nuts or riveted over nuts

Working pressure by Rules 180 Front plate at bottom: Material steel Tensile strength 26-30 tons

Thickness 29" Lower back plate: Material steel Tensile strength 26-30 Thickness 5 1/16"  
32" 64"

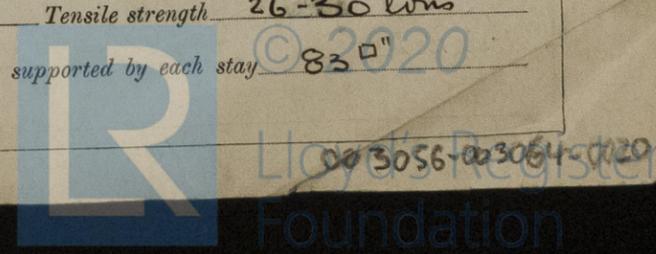
Pitch of stays at wide water space 14 3/8" Are stays fitted with nuts or riveted over nuts

Working Pressure 183 Main stays: Material steel Tensile strength 28-32 tons

Diameter At body of stay 2 1/2" No. of threads per inch 6 Area supported by each stay 280 sq in  
Over threads

Working pressure by Rules 191 Screw stays: Material steel Tensile strength 26-30 tons

Diameter At turned off part 1 5/8" No. of threads per inch 10 Area supported by each stay 83 sq in  
Over threads



Working pressure by Rules 183 Are the stays drilled at the outer ends no Margin stays: Diameter <sup>At turned off part,</sup> 1 7/8" <sub>or</sub> <sup>Over threads</sup> 1 7/8"  
 No. of threads per inch 10 Area supported by each stay 92.20" Working pressure by Rules 232  
 Tubes; Material Iron External diameter <sup>Plain</sup> 3 1/4" <sup>Stay</sup> 3 1/4" Thickness <sup>9 wg</sup> 1/4 & 5/16" No. of threads per inch 9  
 Pitch of tubes 4 5/8 x 4 1/2" & 4 3/8 x 4 1/2" Working pressure by Rules 188 Manhole compensation: Size of opening in shell plate 19 1/2" x 15 1/2" Section of compensating ring 8 1/2" x 1 1/4" flanged No. of rivets and diameter of rivet holes 34 @ 1 3/8"  
 Outer row rivet pitch at ends 8 1/8" Depth of flange if manhole flanged 1 5/8" 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 <sup>Plate</sup> \_\_\_\_\_ <sub>Rivets</sub> \_\_\_\_\_  
 Internal diameter \_\_\_\_\_ Working pressure by Rules \_\_\_\_\_ Thickness of crown \_\_\_\_\_ No. and diameter of stays \_\_\_\_\_  
 How connected to shell \_\_\_\_\_ Inner radius of crown \_\_\_\_\_ Working pressure by Rules \_\_\_\_\_  
 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 \_\_\_\_\_ Manufacturers of <sup>Tubes</sup> \_\_\_\_\_ <sub>Steel castings</sub> \_\_\_\_\_  
 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 \_\_\_\_\_ 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 23 inclusive for boilers been complied with \_\_\_\_\_

The foregoing is a correct description,  
 For David Rowan & Co. Ltd. Manufacturer.  
 Arch. H. Ersson

Dates of Survey <sup>During progress of</sup> 1924 Sp. 23 Oct 9 21 Nov 4 12 30 <sup>work in shops - -</sup> Are the approved plans of boiler and superheater forwarded herewith yes <sub>(If not state date of approval.)</sub>  
<sup>while building</sup> <sup>During erection on</sup> board vessel - - - Total No. of visits 6

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
The materials and workmanship are good.  
The boiler has been constructed under special survey and in accordance with the Rules.

Annual Survey Request

This boiler has securely fitted on board & tried under steam see Gls report N<sup>o</sup>  
Jas Cairns

Survey Fee ... .. £ 10 : : } When applied for, 8/12/24 1924  
 Travelling Expenses (if any) £ : : } When received, 17/12/24 1924

J. C. Duns  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 9-DEC-1924

GLASGOW 20 JAN 1925

Assigned TRANSMIT TO LONDON

See accompanying machinery report



a.c.  
 8/12/24