

# REPORT ON BOILERS.

No. 9045

13 JAN 1944

Received at London Office

Date of writing Report 29<sup>th</sup> Dec 1943 When handed in at Local Office 31<sup>st</sup> Dec 1943 Port of Dundee

No. in Reg. Book. 37396 Survey held at Dundee Date, First Survey 6<sup>th</sup> Jan 43 Last Survey 11<sup>th</sup> June 1943

on the 5<sup>th</sup> " Empire Canyon (Number of Visits in Shop. 19 Gross Tons 7058 Net Tons 4871)

Master \_\_\_\_\_ Built at Dundee By whom built Caledon S. B. + E. Co. Ld. Yard No. 408 When built 1943

Engines made at Wallsend By whom made R. E. Marine Eng. Co (1938) Ld. Engine No. 3065 When made 1943

Boilers made at Dundee By whom made Caledon S. B. + E. Co. Ld. Boilers No. 608 When made 1943

Nominal Horse Power of Boilers 483 Owners Ministry of War Transport Port belonging to Dundee

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

Manufacturers of Steel Bolville's Ld (Letter for Record (S) )

Total Heating Surface of Boilers 7248 sq ft Is forced draught fitted yes Coal or Oil fired coal

No. and Description of Boilers 3 - Single-Ended Multitubular Working Pressure 220 lbs

Tested by hydraulic pressure to 380 lbs Date of test 11-6-43 No. of Certificate 1051 Can each boiler be worked separately yes

Area of Firegrate in each Boiler 54.84 sq ft No. and Description of safety valves to each boiler Double Improved High Lift

Area of each set of valves per boiler per Rule 12.85 Ordinary Pressure to which they are adjusted 220 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'-7" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 1'-11" Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 15'-0 1/16" Length 11'-6" Shell plates: Material Steel Tensile strength 29/33 tons

Thickness 1 13/32" Are the shell plates welded or flanged No Description of riveting: circ. seams end D. R. Lap

long. seams J. R. Double Butt Staps Diameter of rivet holes in circ. seams 1 1/2" Pitch of rivets 4.07"

Percentage of strength of circ. end seams plate 63.1% rivets 46.7% Percentage of strength of circ. intermediate seam plate rivets

Percentage of strength of longitudinal joint plate 85.5% rivets 86.2% combined 88.2% Working pressure of shell by Rules 225 lbs

Thickness of butt straps outer 1 1/8" inner 1 1/4" No. and Description of Furnaces in each Boiler 3 - Deighton Section

Material Steel Tensile strength 26/30 tons Smallest outside diameter 45 1/4"

Length of plain part top 8 3/4" bottom 8 3/4" Thickness of plates top 1 1/16" bottom 1 1/16" Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom None Working pressure of furnace by Rules 223 lbs

End plates in steam space: Material Steel Tensile strength 26/30 tons Thickness 1 13/32" Pitch of stays 21" x 20"

How are stays secured Double Nuts Working pressure by Rules 221 lbs

Tube plates: Material Steel Tensile strength 26/30 tons Thickness 15/16" 25/32"

Mean pitch of stay tubes in nests 9 7/8" Pitch across wide water spaces 14" Working pressure front 229 lbs back 237 lbs

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

at centre 10 1/2" x 2 (1 1/16") Length as per Rule 33.53" Distance apart 9 1/4" No. and pitch of stays

in each 3 - 8" Working pressure by Rules 226 lbs Combustion chamber plates: Material Steel

Tensile strength 26/30 tons Thickness: Sides 23/32" Back 1 1/16" Top 23/32" Bottom 1 1/16"

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

Working pressure by Rules 221 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 27/32"

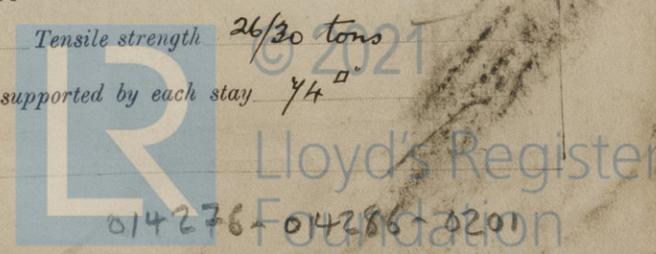
Pitch of stays at wide water space 14" x 8" Are stays fitted with nuts or riveted over Nuts

Working Pressure 224 lbs Main stays: Material Steel Tensile strength 28/32 tons

Diameter At body of stay, 3 1/4" Over threads, 3 5/8" No. of threads per inch 6 Area supported by each stay 21" x 20"

Working pressure by Rules 221 lbs Screw stays: Material Steel Tensile strength 26/30 tons

Diameter At turned off part, 1 3/4" Over threads, 1 3/4" No. of threads per inch 9 Area supported by each stay 7 1/4"



Working pressure by Rules **232 lbs** Are the stays drilled at the outer ends **No** Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part, } \checkmark \\ \text{or} \\ \text{Over threads } 1 \frac{7}{8} \text{''} \end{array} \right.$

No. of threads per inch **9** Area supported by each stay **93''<sup>2</sup>** Working pressure by Rules **229 lbs**

Tubes: Material **Seamless Steel** External diameter  $\left\{ \begin{array}{l} \text{Plain } 3 \text{''} \\ \text{Stay } 3 \text{''} \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} \text{8 W.G.} \\ 3 \frac{5}{8} \text{''} - 3 \frac{7}{16} \text{''} \end{array} \right.$  No. of threads per inch **9**

Pitch of tubes **11 1/2'' x 8 1/4''** **4 1/2'' x 4 1/2''** Working pressure by Rules **230 lbs** Manhole compensation: Size of opening in shell plate **Manhole in End Plate** Section of compensating ring  No. of rivets and diameter of rivet holes

Outer row rivet pitch at ends  Depth of flange if manhole flanged  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  $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right.$

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 **H. E. Marine Smoke tube type** Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes } \checkmark \\ \text{Steel forgings } \checkmark \\ \text{Steel castings } \checkmark \end{array} \right.$

Number of elements **144** Material of tubes **Steel** Internal diameter and thickness of tubes **15 7/8'' - 2 1/2''**

Material of headers **Ingot Steel** Tensile strength  Thickness **1 1/8''** Can the superheater be shut off and 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 **3.14''<sup>2</sup>** Are the safety valves fitted with casing gear **Yes** Working pressure as per Rules **220 lbs** Pressure to which the safety valves are adjusted **227 lbs** Hydraulic test pressure: tubes  forgings and castings  and after assembly in place **660 lbs** Are drain cocks or 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** FOR AND ON BEHALF OF THE CALEDON SHIPBUILDING & ENGINEERING CO. LTD.

The foregoing is a correct description, **Henry Main** Manufacturer.

Dates of Survey while building  $\left\{ \begin{array}{l} \text{During progress of work in shops - } \checkmark \\ \text{During erection on board vessel - } \checkmark \end{array} \right.$  **1943** **Jan. 6-14-21-26. Feb 3-11-25. Mar 5-15-26.** Are the approved plans of boiler and superheater forwarded herewith **Boiler No. 5** **Apr. 6-15-21. May 5-11-13. June 3-10-11** (If not state date of approval.) **See Mach<sup>y</sup> Rpt N<sup>o</sup> 9403.** Total No. of visits in shops **19.** **also. NUC. ref. NO. 101638.**

Is this Boiler a duplicate of a previous case **yes, except for Superheaters** If so, state Vessel's name and Report No. **S/S "Empire Asche" Dum Rpt N<sup>o</sup> 9323**

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)

These Boilers have been constructed under Special Survey, in accordance with the Rules, & the approved plan. The materials & workmanship are good, & the boilers were found tight & sound under hydraulic pressure.

They have been efficiently fitted on board, & their safety valves have been adjusted under steam for the working pressure of 220 lbs per sq. inch.

The Requirements of the Ministry of War Transport specification have been satisfactorily carried out.

For recommendation for class see Mach<sup>y</sup> Report N<sup>o</sup> 9403.

Survey Fee ... .. £ **36-13-0** When applied for, **31<sup>st</sup> Dec 1943.**

Travelling Expenses (if any) £ : : } When received, **19**

**25% addition for Spec<sup>y</sup> Requirements** **9-3-0**

**£ 45-16-0**

**John Houston & G. E. Murdoch.**  
Engineer Surveyor, to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 11 JAN 1944**

Assigned \_\_\_\_\_

