

REPORT ON BOILERS.

No. 9311

Received at London Office - 3 JUN 1942

Date of writing Report 4th May 1942 When handed in at Local Office 28th May 1942 Port of Dundee

No. in Survey held at Dundee Date, First Survey 17th Sept 1941 Last Survey 19th March 1942

6463 on the s/s "EMPIRE PRINCE" (Number of Visits in Shop) 19 Tons { Gross 4030 Net 4927

Master Built at Dundee By whom built Caledon S. B. & E. Co Ltd Yard No. 394 When built 1942

Engines made at Wallsend By whom made H. E. Marine Eng^s Co (1938) Ltd Engine No. 3017 When made 1942

Boilers made at Dundee By whom made Caledon S. B. & E. Co Ltd Boiler No. 593 When made 1942

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

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

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

Total Heating Surface of Boilers 4248 sq ft Is forced draught fitted yes Coal or Oil fired Coal

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

Tested by hydraulic pressure to 380 lbs. Date of test 19-3-42 No. of Certificate 1047 Can each boiler be worked separately yes.

Area of Firegrate in each Boiler 24.84 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 sq ft Ordinary as fitted 4.95 sq ft High Lift Pressure to which they are adjusted 227 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 7/16" Length 11'-6" Mean 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 inter. ✓

Long. seams J.R. Double Butt Strap Diameter of rivet holes in { circ. seams 1 1/2" Pitch of rivets { 4.07" 10 3/8" long. seams 1 1/2" ✓

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 } Thickness of plates { crown 1 1/16" bottom } 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 Auto Working pressure by Rules 221 lbs.

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

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 (1/16") 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 3/16"

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 Fitted with nuts

Working pressure by Rules 221 lbs. Front plate at bottom: Material Steel Tensile strength 26/30 tons

Thickness 1 5/16" Lower back plate: Material Steel Tensile strength 26/30 tons Thickness 27/32"

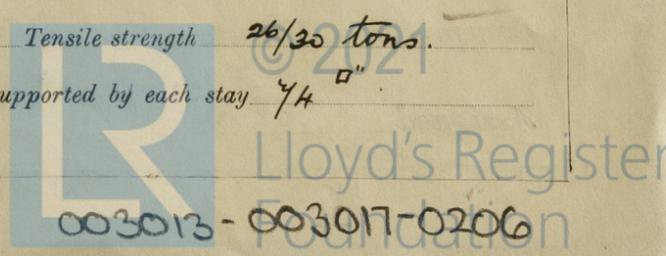
Pitch of stays at wide water space 14" X 8" Are stays fitted with nuts or riveted over Fitted with nuts.

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

Diameter { At body of stay, 3 1/4" or Over threads 3 5/8" No. of threads per inch 6 Area supported by each stay 420 sq in }

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

Diameter { At turned off part, or Over threads 1 3/4" No. of threads per inch 9 Area supported by each stay 74 sq in }



Working pressure by Rules **232 lbs** Are the stays drilled at the outer ends **No** Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 1 \frac{7}{8}$ ✓
 No. of threads per inch **9** Area supported by each stay **93 sq"** Working pressure by Rules **229 lbs**
 Tubes: Material **Seamless Steel** External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 3$ Thickness $\left\{ \begin{array}{l} \text{8 W.G.} \\ \text{3/8" + 5/16"} \end{array} \right.$ No. of threads per inch **9**
 Pitch of tubes **Marginal 11 1/4" x 8 1/4"** Working pressure by Rules **230 lbs** Manhole compensation: Size of opening

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 **None** Manufacturers of $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel forgings} \\ \text{Steel castings} \end{array} \right.$
 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 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** FOR AND ON BEHALF OF THE CALEDON SHIPBUILDING & ENGINEERING CO. LTD.
 The foregoing is a correct description, **John Houston** Director

Dates of Survey $\left\{ \begin{array}{l} \text{During progress of work in shops - } 1941 \text{ Sept } 17-30 \text{ Oct } 3-16-21-29 \text{ Nov } 7-18-21 \text{ Dec } 2 \\ \text{while building } \left\{ \begin{array}{l} \text{During erection on board vessel - } \text{See Mach } \text{Rpt } \text{No } 9309 \\ \text{---} \end{array} \right. \end{array} \right.$ Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)
 Total No. of visits in Boiler shops **19**

Is this Boiler a duplicate of a previous case **Yes** If so, state Vessel's name and Report No. **Empire Rhodes" Dun. Rpt. 928**

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. Report No. 9309

Survey Fee ... £ 36 : 13 : 0 } When applied for, **28/57** 1942.
 Travelling Expenses (if any) £ : : } When received, 19
 25% addition for Spec. requirements **9-3-0**
£ 45-16-0

John Houston
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW** 2 JUN 1942

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**

