Rpt. 5a.

REPORT ON BOILERS.

No. 52301.

Received at London Office 2 FEB 1944

Date of writing Report 1-11-1943. When handed in at Local Office 1 FEB 1944 Port of HULL

No. in Reg. Book. Survey held at HULL. Date, First Survey 29.3.43. Last Survey 27.1.1944

on the STEAM TUG. EMPIRE CHARLES (Number of Visits 29.) A/MS 707 Tons Gross 244 Net 116

Built at HESSLE By whom built Henry Scarr's Ltd controlled by Richard Dunston (Hessle) Ltd Yard No. 5432. When built 1944

Engines made at HULL. By whom made Chas. D. Holmes Ltd Engine No. 1652. When made "

Boilers made at HULL. By whom made Chas D. Holmes Ltd Boiler No. 1651 When made "

Nominal Horse Power 177. Owners Ministry of War Transport Port belonging to

---

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

Manufacturers of Steel Appleby Frodingham Steel Co. Ltd and Colville Ltd (Letter for Record S.

Total Heating Surface of Boilers 2778 ft. Is forced draught fitted Yes. Coal or Oil fired Coal

No. and Description of Boilers One S.E. **Working Pressure** 210 lbs/in.

Tested by hydraulic pressure to 365. Date of test 26-8-43. No. of Certificate 4199. Can each boiler be worked separately —

Area of Firegrate in each Boiler 64 ft. No. and Description of safety valves to each boiler 2. Spring loaded

Area of each set of valves per boiler {per Rule 18.60 in. - 15.42 / as fitted 19.24 in.} Pressure to which they are adjusted 210 lbs/in. 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 1'-4½" Is oil fuel carried in the double bottom under boilers —

Smallest distance between shell of boiler and tank top plating None Is the bottom of the boiler insulated No

Largest internal dia. of boilers 15'-9¼". Length 11'-6". **Shell plates:** Material Steel Tensile strength 31-35 tons/in.

Thickness 1 3/8". Are the shell plates welded or flanged No. Description of riveting: circ. seams {end D.R. Lap. / inter. —}

long. seams T.R., D.B.S. Diameter of rivet holes in {circ. seams 1 13/32" / long. seams 1 13/32"} Pitch of rivets {3 7/8" / 9 1/8"}

Percentage of strength of circ. end seams {plate 63-71%. / rivets 43-33%.} Percentage of strength of circ. intermediate seam {plate / rivets}

Percentage of strength of longitudinal joint {plate 84-6%. / rivets 85-5%. / combined 86-3%.}

Thickness of butt straps {outer 1 1/16" / inner 13/16".} **No. and Description of Furnaces in each Boiler** 3 c.f. Deighton Section.

Material Steel Tensile strength 26-30 tons/in. Smallest outside diameter 3'-10".

Length of plain part {top — / bottom —} Thickness of plates {crown 11/16". / bottom} Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom NONE

End plates in steam space: Material Steel Tensile strength 26-30 tons/in. Thickness 1 3/32" Pitch of stays 18 5/8" x 19¼".

How are stays secured Double nuts & washers.

Tube plates: Material {front Steel / back Steel} Tensile strength {26-30 tons/in. / 26-30 tons/in.} Thickness {15/16" / 7/8".}

Mean pitch of stay tubes in nests 9 13/16". Pitch across wide water spaces 13½" x 8½"

Girders to combustion chamber tops: Material Steel. Tensile strength 29-33 tons/in. Depth and thickness of girder at centre 9¼" x 7/8" Double Length as per Rule 2'-8 29/32" Distance apart 9½" No. and pitch of stays in each 3 @ 7½".

Combustion chamber plates: Material Steel

Tensile strength 26-30 tons/in. Thickness: Sides 23/32". Back 23/32" Top 11/16". Bottom 7/8".

Pitch of stays to ditto: Sides 8½" x 9½" Back 8½" x 9½" Top 7½" x 9½" Are stays fitted with nuts or riveted over Nuts.

Front plate at bottom: Material Steel Tensile strength 26-30 tons/in.

Thickness 15/16". **Lower back plate:** Material Steel Tensile strength 26-30 tons/in. Thickness 7/8".

Pitch of stays at wide water space 13¾" x 9⅜". Are stays fitted with nuts or riveted over Nuts.

Main stays: Material Steel Tensile strength 28-32 tons/in.

Diameter {At body of stay, or Over threads 3¼"} No. of threads per inch 8.

Screw stays: Material Steel Tensile strength 26-30 tons/in.

Diameter {At turned off part, or Over threads 1¾"} No. of threads per inch 10.

EMPIRE CHARLES. A/MS 707.

Are the stays drilled at the outer ends No. Margin stays: Diameter { At turned off part — / Over threads 2", 2 1/8". }

No. of threads per inch 10

Tubes: Material L. W. Iron. External diameter { Plain 3" / Stay 3". } Thickness { 8 W.G. / 5/16" 3/8" } No. of threads per inch 9.

Pitch of tubes 4 1/4" x 4 1/4". **Manhole compensation:** Size of opening in shell plate 12" (x16"). Section of compensating ring 12 3/16" x 1 3/8" No. of rivets and diameter of rivet holes 16 @ 1 13/32"

Outer row rivet pitch at ends 9 1/8". Depth of flange if manhole flanged bottom 3 3/8" **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 { Plate / Rivets }

Internal diameter ____ Thickness of crown ____ No. and diameter of stays ____ Inner radius of crown ____

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 ____

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 CHARLES D. HOLMES & CO., LTD.
W. R. Evans
Manufacturer.

Dates of Survey while building { During progress of work in shops: 1943 Mar. 29. Apr. 2.8. May 4.10. June 18.29. July 1920. 22. Aug 6. 12. / During erection on board vessel: See machinery report. } Are the approved plans of boiler and superheater forwarded herewith 15.2.43. (If not state date of approval.) Total No. of visits 29.

Is this Boiler a duplicate of a previous case ____ If so, state Vessel's name and Report No. This Boiler is similar to S.TUG EMPIRE BIRCH HULRPT. 51472. Thickness and arrangement of stay tubes differ.

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

This Boiler has been constructed under Special Survey in accordance with the Rules and the approved plan

The Workmanship and Material are good and, when subjected to an hydraulic test of 365 lbs 10" it was found satisfactory in every respect.

The above boiler installed on "EMPIRE CHARLES" at Hull, steaming under steam, safety valves adjusted as overleaf, accumulation test held and afterwards steaming on completion of all tests and found satisfactory in every respect. W. S. Shildo.

Survey Fee ... ... £ : : | When applied for, ____ 19

Travelling Expenses (if any) £ : : | When received, ____ 19

J. Fleming.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES. 8 FEB 1944

Assigned See ft. machy rpt.