Lpool F.E. Rpt No. 112416.

Rpt. 5a.

REPORT ON BOILERS.

No. 111942.

Received at London Office JAN 25 1939

Date of writing Report ____ 19__ When handed in at Local Office 20 JAN 1939 19__ Port of LIVERPOOL

S.H.D.

No. in Reg. Book. Survey held at Birkenhead Date, First Survey 29th June/38 Last Survey Dec 21st 1938

(Number of Visits 12.)

on the S.S. Trefoil Tons { Gross / Net

Master ____ Built at Northwich By whom built Yarwood & Co Ltd Yard No. 627 When built 1939

Engines made at Northwich By whom made Yarwood & Co Ltd Engine No. 627 When made 1939

Boilers made at Birkenhead By whom made Wm McCammell Laud & Co Ltd Boiler No. 2205 When made 1938

Nominal Horse Power 38 Owners Mersey Dock & Harbour Board Port belonging to Liverpool

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

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

Total Heating Surface of Boilers 1020 □' Is forced draught fitted No Coal or Oil fired Coal

No. and Description of Boilers One Cylindrical Multitubular **Working Pressure** 200 lbs □"

Tested by hydraulic pressure to 350 lbs □" Date of test 16·8·38 No. of Certificate 2507 Can each boiler be worked separately ✓

Area of Firegrate in each Boiler 35 □' No. and Description of safety valves to each boiler Two spring loaded - improved lightfoot

Area of each set of valves per boiler { per Rule 2·97 □" / as fitted 3·52 □" Pressure to which they are adjusted ____ 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~~ 9" Is oil fuel carried in the double bottom under boilers None

Smallest distance between shell of boiler and ~~tank~~ top ~~plating~~ floor 15½" Is the bottom of the boiler insulated No

Largest internal dia. of boilers 11'-0" Length 10'-3" **Shell plates:** Material Steel Tensile strength 29-33 tons □"

Thickness 1" Are the shell plates welded or flanged No Description of riveting: circ. seams { end D.R. lap / inter. ✓

long. seams Treble R. double butts Diameter of rivet holes in { circ. seams 1 1/16" / long. seams 1 1/16" Pitch of rivets { 2·82" / 7 3/16"

Percentage of strength of circ. end seams { plate 62 / rivets 50 Percentage of strength of circ. intermediate seam { plate ✓ / rivets "

Percentage of strength of longitudinal joint { plate 85·2 / rivets 92 / combined 89 Working pressure of shell by Rules 204 lbs □"

Thickness of butt straps { outer 13/16" / inner 15/16" **No. and Description of Furnaces in each Boiler** Two Corrugated.

Material Steel Tensile strength 26-30 tons □" Smallest outside diameter 3'-2 7/8"

Length of plain part { top ✓ / bottom ✓ Thickness of plates { crown 9/16" / bottom 9/16" Description of longitudinal joint Weld.

Dimensions of stiffening rings on furnace or c.c. bottom None Working pressure of furnace by Rules 209 lbs □"

End plates in steam space: Material Steel Tensile strength 26-30 tons □" Thickness 15/16" Pitch of stays 15¼ x 14"

How are stays secured Double nuts + outside washers Working pressure by Rules 213 lbs □"

Tube plates: Material { front Steel / back Steel Tensile strength { 26-30 tons □" / 26-30 tons □" Thickness { 15/16" / 27/32"

Mean pitch of stay tubes in nests 11¼" Pitch across wide water spaces 14¼" Working pressure { front 213 lbs □" / back 203 lbs □"

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

at centre Two plates 7¼" x 11/16" Length as per Rule 2'-2 5/8" Distance apart 7 7/8" No. and pitch of stays

in each Two. 8¼" Working pressure by Rules 230 lbs □" **Combustion chamber plates:** Material Steel

Tensile strength 26-30 tons □" Thickness: Sides 21/32" Back 21/32" Top 21/32" Bottom 7/8"

Pitch of stays to ditto: Sides 8¾" x 8½" Back 8¾" x 8½" Top 8¼" x 7 5/8" Are stays fitted with nuts or riveted over Nutted.

Working pressure by Rules 202 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 15" x 8½" Are stays fitted with nuts or riveted over Nutted.

Working Pressure 243 lbs □" **Main stays:** Material Steel Tensile strength 28-32 tons □"

Diameter { At body of stay, or Over threads 2½" No. of threads per inch 6 Area supported by each stay 213 □"

Working pressure by Rules 207 lbs □" **Screw stays:** Material Steel Tensile strength 26-30 tons □"

Diameter { At turned off part, or Over threads 1 7/8" No. of threads per inch 9 Area supported by each stay 74 □"

Working pressure by Rules 204 lbs/ Are the stays drilled at the outer ends no Margin stays: Diameter {At turned off part, or Over threads} 1 1/8"

No. of threads per inch 9 Area supported by each stay 97 □" Working pressure by Rules 220 lbs

Tubes: Material B.B Iron External diameter {Plain 3 1/4" Stay 3 1/4"} Thickness {.408 .454 5/16"} No. of threads per inch 9

Pitch of tubes 4 1/2" x 4 1/2" Working pressure by Rules 205 lbs **Manhole compensation:** Size of opening in

shell plate 2 1/4" x 17 1/4" Section of compensating ring 9" x 1 1/16" No. of rivets and diameter of rivet holes 46 @ 1 1/16"

Outer row rivet pitch at ends 7 3/16" Depth of flange if manhole flanged 3 1/2" **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 ✓ 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 {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 ✓ 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 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,

CAMMELL LAIRD & CO. LIMITED

J. Whitemarsh MANAGER Manufacturer.

Dates of Survey while building: During progress of work in shops - - June 29. July 6.7.15.21. Aug 8.15.16.18.19.25. Dec 21. During erection on board vessel - - -

Are the approved plans of boiler ~~and superheater~~ forwarded herewith Yes (If not state date of approval.)

Total No. of visits 12 +

Is this Boiler a duplicate of a previous case No If so, state Vessel's name and Report No.

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) This boiler has been constructed under special survey, and is in accordance with the Rules and the approved plan. The workmanship is good throughout. It has now been forwarded to Portwood where it is to be fitted on board.

Survey Fee ... ... £ 6-16-0

Travelling Expenses (if any) £ : :

When applied for, 20 JAN 1939

When received, London & Glasgow 9/3/39

J. R. Mellon

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute LIVERPOOL 24 JAN 1939

Assigned Transmit to London. G.R.R.

LIVERPOOL 25 APR 1939

See minute on F.E. Machinery