

REPORT ON BOILERS.

No. 2905

-9 MAR 1943

Received at London Office 4-DEC 1942

Date of writing Report 3-12-42 When handed in at Local Office 3-12-42 Port of **BARROW**

No. in Survey held at **Barrow** Date, First Survey 24-10-41 Last Survey 27-11-1942

Reg. Book. on the **STEEL SCREW STEAMER "EMPIRE MORTIMER"** (Number of Visits 22.) Gross 7050.55 Tons Net 4867.56

Master Built at **West Startlepool** By whom built **Wm Gray & Co. Ltd** Yard No. 1141 When built 1943

Engines made at **Barrow** By whom made **Vickers-Armstrongs Ltd** Engine No. 846 When made 1942

Boilers made at **Barrow** By whom made **Vickers-Armstrongs Ltd** Boilers No. 846 When made 1942

Nominal Horse Power 510 Owners **Ministry of War Transport** Port belonging to **West Startlepool**

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel **Colville & Steel Co of Scotland** (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 S.B.** Working Pressure **220 lbs/sq in**

Tested by hydraulic pressure to **380 lbs/sq in** Date of test **12-6-42** No. of Certificate **477** Can each boiler be worked separately **Yes**

Area of Firegrate in each Boiler **54.8 sq ft** No. and Description of safety valves to each boiler **2 - Improved high lift spring loaded**

Area of each set of valves per boiler {per Rule **6.42 sq in** as fitted **9.82 sq in** Pressure to which they are adjusted **220 lbs/sq 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 **21"** Is oil fuel carried in the double bottom under boilers **No**

Smallest distance between shell of boiler and tank top plating **23 3/4"** 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/sq in**

Thickness **1 5/32"** Are the shell plates welded or flanged **No** Description of riveting: circ. seams {end **D.R. - Lap** inter. **Yes**

long. seams **T.R. - D.B.S** Diameter of rivet holes in {circ. seams **1 3/16"** Pitch of rivets { **4.07"** **10 7/32"**

Percentage of strength of circ. end seams {plate **63.5%** rivets **45.8%** Percentage of strength of circ. intermediate seam {plate **85.4%** rivets **88.4%**

Percentage of strength of longitudinal joint {plate **85.4%** rivets **88.4%** combined **88.5%** Working pressure of shell by Rules

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

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

Length of plain part {top **Yes** bottom **Yes** Thickness of plates {crown **1 1/16"** bottom **1 1/16"** Description of longitudinal joint **Welded**

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

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

How are stays secured **Nuts inside & out** Working pressure by Rules

Tube plates: Material {front **Steel** back **Steel** Tensile strength { **26/30 tons/sq in** do. Thickness { **15/16"** **25/32"**

Mean pitch of stay tubes in nests **9 7/16"** Pitch across wide water spaces **14" x 8 1/4"** Working pressure {front **26/30 tons/sq in** back **28/32 tons/sq in**

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

at centre **10 1/2" x 1 3/8" (2 x 1/16")** Length as per Rule **2'-9 7/16"** Distance apart **9 1/4"** No. and pitch of stays

in each **3 @ 8" pitch** Working pressure by Rules **Combustion chamber plates: Material **Steel****

Tensile strength **26/30 tons/sq in** Thickness: Sides **1 1/16"** Back **25/32"** Top **1 1/16"** Bottom **1 3/16"**

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

Working pressure by Rules **Front plate at bottom: Material **Steel** Tensile strength **26/30 tons/sq in****

Thickness **15/16"** **Lower back plate: Material **Steel** Tensile strength **26/30 tons/sq in** Thickness **27/32"****

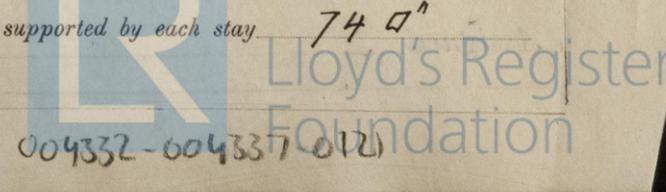
Pitch of stays at wide water space **14" x 8"** Are stays fitted with nuts or riveted over **Nuts**

Working Pressure **Main stays: Material **Steel** Tensile strength **28/32 tons/sq in****

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

Working pressure by Rules **Screw stays: Material **Steel** Tensile strength **26/30 tons/sq in****

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



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Working pressure by Rules Arc the stays drilled at the outer ends Margin stays: Diameter At turned off part, or Over threads $1\frac{1}{8}$ "

No. of threads per inch 9 Area supported by each stay 93 D^2 Working pressure by Rules

Tubes: Material Steel External diameter Plain 3" Stay 3" Thickness 8. W. G. $5\frac{1}{16}$ " $3\frac{1}{8}$ " No. of threads per inch 9.

Pitch of tubes $4\frac{1}{8} \times 4\frac{1}{4}$ " Working pressure by Rules Manhole compensation: Size of opening in End shell plate 16×12 " Section of compensating ring No. of rivets and diameter of rivet holes

Outer row rivet pitch at ends Depth of flange if manhole flanged Top $4\frac{1}{4}$ " Bottom $3\frac{1}{4}$ " 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 Superheater B (Smoke tube) Manufacturers of Tubes Weldless Steel Tube B^o Steel forgings Warr^o Steel, Peck^o & Sons. Steel castings

Number of elements 47 Material of tubes S.D. STEEL Internal diameter and thickness of tubes $1\frac{7}{8} \times 2\frac{1}{2}$ "

Material of headers FORGED STEEL Tensile strength 28/32.5 ton Thickness 1" Can the superheater be shut off and the boiler be worked separately No. 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 1.767 sq" Are the safety valves fitted with casing gear Yes. Working pressure as per Rules 220 lbs Pressure to which the safety valves are adjusted 230 lbs Hydraulic test pressure: tubes 1000 lbs forgings and castings 660 lbs 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.

The foregoing is a correct description, for Messrs. Vickers & Sons, Ltd. Manufacturer. W. Mitchell

Dates of Survey During progress of work in shops - 1941. Oct. 24. Dec. 3. 26. 30. 1942. Jan. 6. 14. Are the approved plans of boiler and superheater forwarded herewith 11.9.41 (If not state date of approval.)

During erection on board vessel - July 10. Aug. 27. Oct. 28. Nov. 27. Total No. of visits 22

Is this Boiler a duplicate of a previous case No. If so, state Vessel's name and Report No. of class made by Vickers-Armstrongs (Boilers for Standard B type knots - modified)

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

These Boilers have been constructed under Special Survey in accordance with the approved plans, the Rules & the Specification. The workmanship & materials are good & when tested by hydraulic pressure the boilers were found light & satisfactory in every respect.

The boilers complete with their mountings & fittings have been dispatched to Wm. Gray & Co. West Hartlepool. For fitting in a vessel building there.

They form part of Admiralty No. A/MS/M. ¹⁸² ~~181~~. The engines of which are still under construction at Vickers-Armstrongs & will not be fitted in the same vessel as the boilers.

These boilers have been satisfactorily fitted and secured on board.

Arthur W. Oxford.
West Hartlepool.

Survey Fee $\frac{3}{16}$ (510. NHP) £ 40 : 4 : 0 When applied for, 19
 Travelling Expenses (if any) £ : : } When received, 19

R. J. G. [Signature]
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES. 16 MAR 1943
Assigned See Hpl. J.C. 18389

