

## 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 Reg. Book.

Barrow.

Date, First Survey 24-10-41

Last Survey 27-11-1942

(Number of Visits 22.)

Gross 7050.55

Net 4867.56

on the STEEL SCREW STEAMER "EMPIRE MORTIMER"

Master

Built at West Hartlepool By whom built Wm Gray &amp; Co Ltd

Yard No. 1141

When built 1943

Engines made at

Barrow.

By whom made

General Marine Engineering Works

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 Hartlepool

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

Manufacturers of Steel

Colville &amp; Stee Co of Scotland

(Letter for Record

S.

Total Heating Surface of Boilers

7248.  $\text{ft}^2$ 

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  $\text{ft}^2$ 

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  $\text{ft}^2$ 

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.

long. seams

T.R. - D.B.S

Diameter of rivet holes in

circ. seams

1 3/16"

Pitch of rivets

4.07"

Percentage of strength of circ. end seams

plate 63.5%

rivets 45.8%

Percentage of strength of circ. intermediate seam

plate

Percentage of strength of longitudinal joint

plate 85.4%

rivets 88.4%

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

Thickness of plates

crown

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 &amp; out.

Working pressure by Rules

Tube plates: Material

front Steel

back Steel

Tensile strength

26/30 tons/sq in

Thickness

15/16"

Mean pitch of stay tubes in nests

9 7/16"

Pitch across wide water spaces

14" x 8 1/4"

Working pressure

front

back

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"

Over threads

No. of threads per inch

6

Area supported by each stay

420  $\text{ft}^2$ 

Working pressure by Rules

Screw stays: Material

Steel

Tensile strength

26/30 tons/sq in

Diameter

At turned off part,

1 3/4"

Over threads

No. of threads per inch

9

Area supported by each stay

74  $\text{ft}^2$



Working pressure by Rules	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	93 sq"	Working pressure by Rules	
Tubes: Material	Steel	External diameter { Plain Stay	3" 3"	Thickness { 8. W. G. 5/16" & 3/8"	No. of threads per inch 9.
Pitch of tubes	4 1/8" x 4 1/4"	Working pressure by Rules		Manhole compensation: Size of opening in	
Shell plate	16" x 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 1/4" Bottom 3 1/4"	Steam Dome: Material	Cone
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	
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 Co ✓  
Steel forgings Men<sup>o</sup> Steel Pech<sup>o</sup> Soger.  
Steel castings ✓

Number of elements 47 ✓ Material of tubes S.O. STEEL ✓ Internal diameter and thickness of tubes 1 7/8" x 2 1/2" m.

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 <sup>sq"</sup> Pressure to which the safety valves are adjusted 230 lbs <sup>sq"</sup> Hydraulic test pressure: tubes 1000 lbs <sup>sq"</sup> forgings and castings 660 lbs <sup>sq"</sup> and after assembly in place 660 lbs <sup>sq"</sup> 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.,  
Sheffield, Manufacturers.

Dates of Survey while building { 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  
 { Feb. 12, 17, 26 Mar. 13, 26 Apr. 14, 30 May 11, 21 June 12, 17, 20 (If not state date of approval.)  
 { July 10 Aug. 27 Oct. 28 Nov. 27  
 { During erection on board vessel - - - Total No. of visits 22

Is this Boiler a duplicate of a previous case No. If so, state Vessel's name and Report No. <sup>1<sup>st</sup></sup> of class made by Vickore-Carmstrong  
(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 Elm. Gray & Co. West Hartlepool. For fitting in a vessel building there.

They form part of Admiralty No. A/MS/M. <sup>182</sup>~~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

Charles W. Oxford.  
West Hartford.

Survey Fee	$\frac{3}{6}$ (510 NHP) £	40	:	4	:	0	When applied for,	19
<i>Specifically.</i>		40	:	1	:	0		
Travelling Expenses (if any) £		:	:	:	:	:	When received,	19

*Dijksterhuis*  
Engineer Surveyor to Lloyd

*Engineer Surveyor to Lloyd's Register of Shipping.*

## Committee's Minute

TUES. 16 MAR 1943

*Assigned*

See Kpl. J. E. 18389

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Foundation