

## REPORT ON BOILERS.

No. 2973.

Rpt. 5a.

Received at London Office

24 FEB 1944

Date of writing Report 18/2/44.

When handed in at Local Office 22.2.44.

Port of BARROW-IN-FURNESS.

No. in Survey held at BARROW

Date, First Survey 18/8/43.

Last Survey 16 February, 1944.

9435 on the

S.S. EMPIRE RABAU

(Number of Visits 25.)

Gross 7306.93  
Net 5104.81

Master

Built at S. Shields By whom built J. Readhead &amp; Sons Ltd No. 543 When built 1945

Engines made at South Shields By whom made J. Readhead &amp; Sons Ltd Engine No. 543 When made 1945

Boilers made at BARROW By whom made Vickers-Armstrongs, Ltd. Boiler No. 850 When made 1944 -2

Nominal Horse Power

Owners Ministry of War Transport Port belonging to S. Shields

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

Manufacturers of Steel Colvilles &amp; Steel Co. of Scotland

(Letter for Record S)

Total Heating Surface of Boilers 7248<sup>0</sup> ft.

Is forced draught fitted Yes

Coal or Oil fired Coal

No. and Description of Boilers 3 SB.

Working Pressure 220 lbs. <sup>0</sup> "Tested by hydraulic pressure to 380 lbs. <sup>0</sup> " Date of test 14.10.43 30.10.43 17.11.43

No. of Certificate 496 497 498

Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 54.8<sup>0</sup> ft. No. and Description of safety valves to each boiler 2 Improved high lift spring loadedArea of each set of valves per boiler (per Rule 6.42<sup>0</sup> " as fitted 9.82<sup>0</sup> " Pressure to which they are adjusted 220 lbs. <sup>0</sup> " 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 hangers or woodwork 1'-6"

Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 2'-0"

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 <sup>0</sup> "

Thickness 1.15/32" 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 1.31/64" {long. seams do

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 - {rivets -

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. Deighton Section

Material Steel

Tensile strength 26/30 tons <sup>0</sup> "

Smallest outside diameter 45 1/2"

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.e. bottom

Working pressure of furnace by Rules

End plates in steam space: Material Steel

Tensile strength 26/30 tons <sup>0</sup> "

Thickness 1.13/32"

Pitch of stays 20" x 21"

How are stays secured Nuts inside and out

Working pressure by Rules

Tube plates: Material {front Steel {back Steel

Tensile strength {26/30 tons <sup>0</sup> " {De -

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 - {back -

Girders to combustion chamber tops: Material Steel

Tensile strength 28/32 tons <sup>0</sup> "

Depth and thickness of girder

at centre 10 1/2" x 1.3/8" (2 x 11/16")

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 <sup>0</sup> "

Thickness: Sides 11/16"

Back 25/32"

Top 11/16"

Bottom 13/16"

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 <sup>0</sup> "

Thickness 15/16"

Lower back plate: Material Steel

Tensile strength 26/30 tons <sup>0</sup> "

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 <sup>0</sup> "

Diameter {At body of stay, 3 1/4" {Over threads -

No. of threads per inch 6

Area supported by each stay 420 <sup>0</sup> "

Working pressure by Rules

Screw stays: Material Steel

Tensile strength 26/30 tons <sup>0</sup> "

Diameter {At turned off part, 1 3/4" {Over threads -

No. of threads per inch 9

Area supported by each stay 74 <sup>0</sup> "Lloyd's Register  
Foundation

005353-005357-0104



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Working pressure by Rules Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, or Over threads 1 7/8" ✓

No. of threads per inch 9 Area supported by each stay 93" Working pressure by Rules 8 W.G.

Tubes: Material Steel External diameter { Plain 3" Stay 3" Thickness { 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 end / 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" btm. 3 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 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 Co's. "S" type Manufacturers of { Tubes Weldless Steel Tube Co. Steel castings Crofts, Bradford.

Number of elements 47 per Blr. Material of tubes Steel Internal diameter and thickness of tubes 17m/m x 2 1/2 m/m

Material of headers Forged Steel Tensile strength Thickness 1" Can the superheater be shut off a the boiler be worked separately Yes

Area of each safety valve 1.77" Are the safety valves fitted with easing gear Yes Working pressure as Rules ✓ Pressure to which the safety valves are adjusted 225 lb Hydraulic test pressure tubes 1000 lb castings 600 lb and after assembly in place 440 lb Are drain cocks or valves fitted to free the superheater from water where necessary Yes

Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with Yes

The foregoing is a correct description,  
J. H. Matthews Esq. Manufacturer

Dates of Survey { During progress of work in shops - - 1943. Aug. 18, 24. Sept. 1, 10, 13, 15. Are the approved plans of boiler and superheater forwarded herewith 11.9.4  
while building { ~~XXXXXXXXXX~~ 1944. Feb. 2, 16. (If not state date of approval) Superheater see Man.

Total No. of visits 25.

Is this Boiler a duplicate of a previous case YES. See Brw. Rpt. 2905 & 2946.

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 and the Specification. The workmanship and materials are good and when tested by hydraulic pressure the boilers were found tight and satisfactory in every respect. The boilers are completed awaiting instructions for transfer to Messrs. J. Readhead & Sons, Ltd., they having been provisionally allocated to their vessel A/MS.966.

These boilers have been efficiently installed & fixed in vessel, examined under steam & their safety valves adjusted to the approved pressure

J. H. Matthews

Survey Fee ... £ 40 : 4 : 0 When applied for, 29.2. 1944.  
Specification 10 : 1 : 0  
Travelling Expenses (if any) £ : : : When received, 192

Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute FRI, 23 MAR 1945

Assigned Su F. E. machy opt.