

2 main Boilers

NEWCASTLE-ON-TYNE, No. 102336

pt. 5a.

## REPORT ON BOILERS.

No. 116658.

19/5/41 1941 When handed in at Local Office 17 SEP 1941 Received at London Office 24 SEP 1941

Port of Liverpool

No. in Survey held at Birkenhead Date, First Survey 17/10/41 Last Survey 19

on the Two Boilers FOR ~~THE~~ EMPIRE LADY.

(Number of Visits) Gross 7046 Tons Net 4727.

At Newcastle By whom built Shipbuilding Corp<sup>n</sup> (Tyne Branch) Yard No. 8 When built 1944-8.

Engines made at N.E. Mar E. (1938) L<sup>td</sup>. Engine No. 3057 When made 1944.

Boilers made at Birkenhead By whom made Cammell Laird & Co<sup>td</sup> Boiler No. 2223 When made 1941

Original Horse Power 389 Owners Min. of War Transport Port belonging to Newcastle

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

Manufacturers of Steel Colvilles' L<sup>td</sup>. (Letter for Record S.)

Heating Surface of Boilers 5830 ft<sup>2</sup> Is forced draught fitted Yes. Coal or Oil fired Coal.

and Description of Boilers 2 S.E. Working Pressure 220 lb.

Tested by hydraulic pressure to 380 lb Date of test 13-6-41 No. of Certificate 2539

Area of Firegrate in each Boiler 67 ft<sup>2</sup> No. and Description of safety valves to each boiler 2 3/4" double J.H.L.

Area of each set of valves per boiler per Rule 4.80" Pressure to which they are adjusted 220 lb. 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 18" and Is oil fuel carried in the double bottom under boilers No.

Smallest distance between shell of boiler and tank top plating 22 7/8" and Is the bottom of the boiler insulated Yes

Greatest internal dia. of boilers 16' 3" Length 12' 2 1/2" Shell plates: Material Steel Tensile strength 29/33 Tons

Thickness 1 19/32" Are the shell plates welded or flanged no Description of riveting: circ. seams D.R.

Seams T.R.-D.B.S. Diameter of rivet holes in circ. seams 1 5/8" Pitch of rivets 4.23"

Percentage of strength of circ. end seams plate 61.5% rivets 48.7% Percentage of strength of circ. intermediate seam plate 85.3% rivets 87.2%

Percentage of strength of longitudinal joint plate 88.1% rivets 88.1%

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

Material Steel Tensile strength 26/30 Tons Smallest outside diameter 3' 5 1/4"

Length of plain part top 2 1/32" Thickness of plates crown 2 1/32" Description of longitudinal joint Weld.

Dimensions of stiffening rings on furnace or c.c. bottom ✓

End plates in steam space: Material Steel Tensile strength 26/30 Tons Thickness 1 15/32" Pitch of stays 2 1/2" x 19 1/2"

How are stays secured D.N.

End plates: Material front Steel Tensile strength 26-30 Tons Thickness 1 1/32" 13/16" wings, 29/32" Centre.

Back Steel

Minimum pitch of stay tubes in nests 9 7/16" Pitch across wide water spaces 14"

Access to combustion chamber tops: Material Steel Tensile strength 28/32 Tons Depth and thickness of girder

Centre 10 1/2" x 3/4" double Length as per Rule 2-10 11/32" Centre Distance apart 9 1/2" No. and pitch of stays

Each 3 @ 8 1/2"

Combustion chamber plates: Material Steel

Tensile strength 26/30 Tons Thickness: Sides 3/4" Back 3/4" Top 3/4" Bottom 7/8"

Pitch of stays to ditto: Sides 9 1/2" x 8 1/2" Back 9 1/2" x 8 1/2" Top 9 1/2" x 8 1/2" Are stays fitted with nuts or riveted over nuts

End plate at bottom: Material Steel Tensile strength 26/30 Tons

Thickness 1 1/32" Lower back plate: Material Steel Tensile strength 24/30 Tons Thickness 1"

Pitch of stays at wide water space 14 1/4" x 9 1/2" Are stays fitted with nuts or riveted over on margins both ends other free side.

Shipping stays: Material Steel Tensile strength 29/33 Tons

At body of stay, or Over threads 3 1/2" No. of threads per inch 6

How stays: Material Steel Tensile strength 26/30 Tons

At turned off part, or Over threads 1 3/4" No. of threads per inch 9.



Are the stays drilled at the outer ends no

Margin stays: Diameter { At turned off part, or Over threads 2"

No. of threads per inch 9

Tubes: Material Iron External diameter { Plain 3" Stay 3" Thickness { 8 s.w.g. 5 1/16" x 3/8" No. of threads per inch 9

Pitch of tubes 4 1/4" x 4 1/8" Manhole compensation: Size of opening 40 - 1 1/16"

shell plate 18" x 22" Section of compensating ring 1'-0 7/16" x 1 7/8" No. of rivets and diameter of rivet holes 40 - 1 1/16"

Outer row rivet pitch at ends 11 3/8" Depth of flange if manhole flanged 3 1/2" Steam Dome: Material Iron

Tensile strength 8 Thickness of shell 3 1/2" Description of longitudinal joint { Plate Rivets

Diameter of rivet holes 8 Pitch of rivets 8 Percentage of strength of joint { Plate Rivets

Internal diameter 20 1/2" Thickness of crown 3 1/2" No. and diameter of rivets 40 - 1 1/16"

stays 8 Inner radius of crown 3 1/2" Diameter of rivet holes and pitch 40 - 1 1/16"

How connected to shell 8 Size of doubling plate under dome 3 1/2"

of rivets in outer row in dome connection to shell 8

Type of Superheater NEM. Smoketube Manufacturers of { Tubes Applby & Frodingham Steel Co Steel forgings Applby & Frodingham Steel Co Steel castings Applby & Frodingham Steel Co

Number of elements 124 Material of tubes S.D. Stl. Internal diameter and thickness of tubes 17" m.m. + 2 1/2" m.m.

Material of headers 7. Stl. Tensile strength 26 to 30 tons Thickness 7/8" Can the superheater be shut off Yes

the boiler be worked separately Yes 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 3.1416 Are the safety valves fitted with easing gear Yes

Pressure to which the safety valves are adjusted 225 lb Hydraulic test pressure 440 lb

tubes 1500 lb forgings and castings 660 lb and after assembly in place 440 lb

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, J.P. Underwood Manufacture

1940: Oct 17, 30, Nov 18, Dec 27, 1941: Jan 13, 14, Mar 28, Apr 8, 23, 29, May 15, 16, June 6, 13, 30, July 8, 15, 24

Dates of Survey { During progress of work in shops - - - Are the approved plans of boiler and superheater forwarded here with (If not state date of approval for Empire Steam Engine Club)

while building { During erection on board vessel - - - Total No. of visits 280-27

Is this Boiler a duplicate of a previous case Yes If so, state Boiler No 2220 Report No. Rpt. 11

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been built under special survey, to approved plans in accordance with the Society's Rules. Materials and workmanship are good. They are ordered by M.O.S. and are held by builders for instruction.

These two Main Boilers have been fitted with NEM. Smoketube Superheater and installed on board the S/s Empire Lady, Shipley Corp (Type Branch). The S.V.s were adjusted under steam to 220 lb. and the boilers tested under working conditions with satisfactory results.

Admitted new castle on 2nd Sept 1944

Survey Fee ... £ 31.19.0

Travelling Expenses (if any) £ :

When applied for, 17 SEP 1941

When received, 19

H. Luthers

Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute

Assigned

Transmit to London

23 SEP 1941

TUES. 19 SEP 1941

see minute on 28 Sept

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