

REPORT ON BOILERS.

No. 99774

Received at London Office 12 SEP 1941

Date of writing Report 23/8/41 When handed in at Local Office 23/8/41 Port of NEWCASTLE-ON-TYNE

No. in Survey held at Newcastle on Tyne Date, First Survey 11/12/39 Last Survey 22/8/1941
Reg. Boole. on the s/s "EMPIRE FLINT" (Number of Visits) Gross 8129 Tons Net 4630

Master Built at Newcastle By whom built Swan, Hunter & Wigham Richardson Ltd Yard No. 1601. When built 1941-
Engines made at Newcastle By whom made ditto Engine No. 1658 When made 1941
Boilers made at ditto By whom made ditto Boiler No. 1658 When made 1941
Nominal Horse Power Owners Port belonging to Newcastle.

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Steel Coy of Scotland and Colvilles (Letter for Record 5.)

Total Heating Surface of Boilers 9555 sq ft Is forced draught fitted Yes Coal or Oil fired Oil fired

No. and Description of Boilers 3 Single Ended Working Pressure 220 lbs

Tested by hydraulic pressure to 380 lbs Date of test 12th, 19th & 29th May 1941 No. of Certificate 892 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler Oil fired No. and Description of safety valves to each boiler Two of 2 1/2" dia Cookburn's Imp High Lift

Area of each set of valves per boiler per Rule 8.47 sq in as fitted 9.8 " Pressure to which they are adjusted 220 lbs Are they fitted with easing gear Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler None

Smallest distance between boilers or uptakes and bunkers or woodwork 12" Is oil fuel carried in the double bottom under boilers Yes

Smallest distance between shell of boiler and tank top plating 2'-2" Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 16'-2 31/32" Length 11'-9" mean Shell plates: Material Steel Tensile strength 30 to 34 tons

Thickness 1 33/64" Are the shell plates welded or flanged No Description of riveting: circ. seams end D.R. overlap inter. none

long. seams T.R. dbl butt plates Diameter of rivet holes in circ. seams 19/16" long. seams 19/16" Pitch of rivets 4.60" 10 1/2"

Percentage of strength of circ. end seams plate 66.03 rivets 42.17 Percentage of strength of circ. intermediate seam plate rivets none

Percentage of strength of longitudinal joint plate 85.11 rivets 86.60 combined 87.55 Working pressure of shell by Rules 221 lbs

Thickness of butt straps outer 1 5/32" inner 1 9/32" No. and Description of Furnaces in each Boiler Three Deighton Corrugated

Material Steel Tensile strength 26 to 30 tons Smallest outside diameter 4'-1 1/8"

Length of plain part top 4 ft 4 1/2" bottom 2'-7 1/2" c.c. bottom Thickness of plates crown 3/4" bottom 3/4" Description of longitudinal joint Fire weld

Dimensions of stiffening rings on furnace or c.c. bottom none Working pressure of furnace by Rules 224 lbs.

End plates in steam space: Material Steel Tensile strength 26 to 30 tons Thickness 1 7/32" Pitch of stays 15" x 19 1/2"

How are stays secured Nuts inside & outside Working pressure by Rules 228 lbs

Tube plates: Material front back Steel Tensile strength 26 to 30 tons Thickness 27/32"

Mean pitch of stay tubes in nests 10 5/8" Pitch across wide water spaces 14" Working pressure front 257 lbs back 226 lbs

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

at centre 9 1/2" x 3/4" x two Length as per Rule 2'-9 15/16" (33.94") Distance apart 8 3/4" No. and pitch of stays

in each 3 @ 8" Working pressure by Rules 225 lbs Combustion chamber plates: Material Steel

Tensile strength 26 to 30 tons Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 7/8"

Pitch of stays to ditto: Sides 10 x 8" Back 9 1/4 x 8 1/2" Top 8 3/4 x 8" Are stays fitted with nuts or riveted over with nuts

Working pressure by Rules 221 lbs (min) Front plate at bottom: Material Steel Tensile strength 26 to 30 tons

Thickness 1" Lower back plate: Material Steel Tensile strength 26 to 30 tons Thickness 1 1/16"

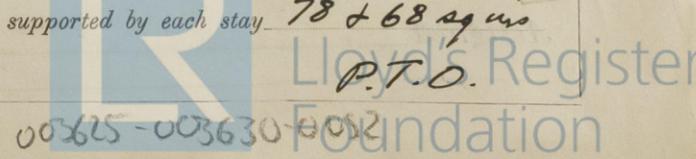
Pitch of stays at wide water space 14" x 9 1/4" (17 1/2" x 8 1/2" max.) Are stays fitted with nuts or riveted over with nuts

Working Pressure 256 lbs. Main stays: Material Steel Tensile strength 28 to 32 tons

Diameter At body of stay, or Over threads 3" dia No. of threads per inch 6 Area supported by each stay 286 sq in

Working pressure by Rules 234 lbs. Screw stays: Material Steel Tensile strength 26 to 30 tons

Diameter At turned off part, or Over threads 1 3/4" + 1 5/8" No. of threads per inch 9 Area supported by each stay 78 + 68 sq in



Working pressure by Rules $\frac{3}{4}d = 232 \text{ lbs}$ Are the stays drilled at the outer ends. No Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part.} \\ \text{Over threads} \end{array} \right. 2''$

No. of threads per inch 9 Area supported by each stay 105.3 in^2 Working pressure by Rules 234 lbs

Tubes: Material S.D. Steel External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 3''$ Thickness $\left\{ \begin{array}{l} \text{N}^\circ 8 \text{ W.G.} \\ \text{5/16} + \text{3/8} \end{array} \right.$ No. of threads per inch 9

Pitch of tubes $4\frac{1}{4} \times 4\frac{1}{4}$ Working pressure by Rules 224 lbs Manhole compensation: Size of opening in shell plate 20×16 Section of compensating ring $11\frac{1}{8} \times 1\frac{33}{64} \times \text{two}$ No. of rivets and diameter of rivet holes $32 \text{ of } 1\frac{1}{16} \text{ dia}$

Outer row rivet pitch at ends 12" Depth of flange if manhole flanged 3" 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 $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right.$

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 North Eastern Max. Smoketube Manufacturers of Jalbot Stead

Number of elements 204 Material of tubes S.D. Steel Internal diameter and thickness of tubes $15 \text{ mm bore, } 2\frac{1}{2} \text{ mm thick}$

Material of headers 7. Steel Tensile strength 26 to 30 tons Thickness $1\frac{1}{8}''$ Can the superheater be shut off and 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 $3.97 \text{ sqms (2\frac{1}{4}'' \text{ dia})}$ Are the safety valves fitted with easing gear Yes Working pressure as per Rules 220 lbs Pressure to which the safety valves are adjusted 225 lbs Hydraulic test pressure tubes 1500 lbs forgings and castings 660 lbs and after assembly in place 440 lbs Are drain cocks 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,
 SWAN, HURTER, & WIGHAM, RICHARDSON, LTD. Manufacturer
 G. J. Duddy 31/10/39

Dates of Survey $\left\{ \begin{array}{l} \text{During progress of work in shops - -} \\ \text{while building} \end{array} \right.$ See Machinery Report Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

Total No. of visits

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. S/S ENNERDALE yard No. 1656 Nov. Rpt No.

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

These Boilers have been constructed under special survey in accordance with the Society's Rules and approved plans, and the materials and workmanship are good

The Boilers have been satisfactorily fitted on board the vessel, and tested under steam under working condition.

See also Machinery Rpt. 4.

Survey Fee ... £ See Machinery Rpt. 4. } When applied for, 19

Travelling Expenses (if any) £ } When received, 19

A. Watt.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 26 SEP 1941

Assigned See Machinery Rpt.

