

# REPORT ON BOILERS.

No. 91707

Received at London Office -3 SEP 1934

When handed in at Local Office 13<sup>th</sup> Sept. 1934 Port of NEWCASTLE-ON-TYNE

Survey held at Newcastle-on-Tyne Date, First Survey 4 May Last Survey 1<sup>st</sup> Sept 1934

on the STEEL SCREW "HAI YUAN" (Number of Visits           ) Gross Tons            Net Tons           

Built at Newcastle-on-Tyne By whom built Luan, Hunter & W. Richardson Yard No. 1456 When built 1934

Engines made at Newcastle-on-Tyne By whom made Luan, Hunter & W. Richardson Engine No. 1456 When made 1934

Boilers made at Newcastle-on-Tyne By whom made Luan, Hunter & W. Richardson Boiler No. 1456 When made 1934

Original Horse Power 383 Owners China Merchants Steam Nav. Co. Port belonging to Newcastle

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

Manufacturers of Steel Steel Company of Scotland Ltd. (Letter for Record S.)

Heating Surface of Boilers 5927 sq ft Is forced draught fitted yes Coal or Oil fired Coal

Description of Boilers Two Single Ended Working Pressure 200 lbs./sq. in.

Tested by hydraulic pressure to 350 lbs./sq. in. Date of test 19.7.34 No. of Certificate 620 Can each boiler be worked separately yes.

Number of Firegrate in each Boiler 69 sq ft No. and Description of safety valves to each boiler Two Lockburns Improved High Lift

Pressure of each set of valves per boiler 8.6 lbs./sq. in. Pressure to which they are adjusted 200 lbs. Are they fitted with easing gear yes.

Use of donkey boilers, state whether steam from main boilers can enter the donkey boiler —

Smallest distance between boilers 12" Is oil fuel carried in the double bottom under boilers no

Smallest distance between shell of boiler and tank top plating 2'-3" Is the bottom of the boiler insulated no

Smallest internal dia. of boilers 16'-0 3/16" Length 11'-6" Shell plates: Material Steel Tensile strength 29/33 tons/sq. in.

Thickness 1 13/32" Are the shell plates welded or flanged no Description of riveting: circ. seams D.R. LAP.

Seams T.R. O.B.S. Diameter of rivet holes in circ. seams 1 1/2" Pitch of rivets 4.678"

Percentage of strength of circ. end seams plate 67.93 rivets 42.6 Percentage of strength of circ. intermediate seam plate — rivets —

Percentage of strength of longitudinal joint plate 85.4 rivets 86.9 combined 88.2 Working pressure of shell by Rules 201 lbs./sq. in.

Thickness of butt straps outer 1 1/16" inner 1 3/16" No. and Description of Furnaces in each Boiler Three Brighton

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

Thickness of plain part top — bottom — Thickness of plates crown 1 1/16" bottom — Description of longitudinal joint weld

Dimensions of stiffening rings on furnace or c.c. bottom — Working pressure of furnace by Rules 205 lbs./sq. in.

Plates in steam space: Material Steel Tensile strength 26/30 tons/sq. in. Thickness 1 13/32" Pitch of stays 21 1/2" x 21"

Are stays secured D. nuts Working pressure by Rules 206 lbs./sq. in.

Plates: Material front Steel back Steel Tensile strength 26/30 tons/sq. in. Thickness 1 13/16"

Pitch of stay tubes in nests 9 3/16" C. 9 1/4" W. Pitch across wide water spaces 13 1/2" Working pressure front 212 lbs./sq. in. back 277 lbs./sq. in.

Plates to combustion chamber tops: Material Steel Tensile strength 25/32 tons/sq. in. Depth and thickness of girder

Centre 9 3/4" x 2 C 4 1/16" Length as per Rule 2'-8 1/2" Distance apart 10" No. and pitch of stays

Working pressure by Rules 203 lbs./sq. in. Combustion chamber plates: Material Steel

Thickness: Sides 25/32" Back C 23/32" Top 25/32" Bottom 25/32"

Pitch of stays to ditto: Sides 10" x 9" Back C 10" x 9" Top 10" x 9" Are stays fitted with nuts or riveted over nuts

Working pressure by Rules 200 lbs./sq. in. Front plate at bottom: Material Steel Tensile strength 26/30 tons/sq. in.

Thickness 1" Lower back plate: Material Steel Tensile strength 26/30 tons/sq. in. Thickness 1"

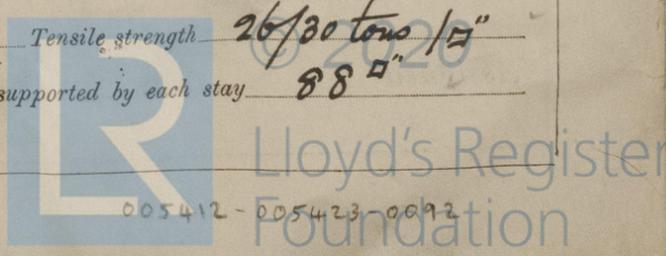
Pitch of stays at wide water space 21 1/2" dia. Are stays fitted with nuts or riveted over nuts

Working Pressure 202 lbs./sq. in. Main stays: Material Steel Tensile strength 25/32 tons/sq. in.

At body of stay, 3 1/2" No. of threads per inch 6 Area supported by each stay 458 sq. in.

Working pressure by Rules 208 lbs./sq. in. Screw stays: Material Steel Tensile strength 26/30 tons/sq. in.

At turned off part, 1 3/4" No. of threads per inch 9 Area supported by each stay 88 sq. in.



Working pressure by Rules  $206 \frac{lb}{sq. in.}$  Are the stays drilled at the outer ends *no* Margin stays: Diameter  $\begin{cases} \text{At turned off part, } 1\frac{7}{8}'' \\ \text{or } \\ \text{Over threads } 1\frac{7}{8}'' \end{cases}$

No. of threads per inch *9* Area supported by each stay  $101.25 \text{ sq. in.}$  Working pressure by Rules  $210 \frac{lb}{sq. in.}$

Tubes: Material *Iron* External diameter  $\begin{cases} \text{Plain } 2\frac{1}{2}'' \\ \text{Stay } 2\frac{1}{2}'' \end{cases}$  Thickness  $\begin{cases} 9 \text{ W.G. } \\ 3\frac{3}{8}'' \\ 5\frac{1}{16}'' \\ 1\frac{1}{4}'' \end{cases}$  No. of threads per inch *9*

Pitch of tubes  $3\frac{3}{4}'' \times 3\frac{5}{8}''$  Working pressure by Rules  $210 \frac{lb}{sq. in.}$  Manhole compensation: Size of opening in shell plate  $20'' \times 16''$  Section of compensating ring  $19'' \times 1\frac{1}{8}''$  No. of rivets and diameter of rivet holes  $32 - 1\frac{1}{16}''$

Outer row rivet pitch at ends  $11''$  Depth of flange if manhole flanged *-* Steam Dome: Material *Rone*

Tensile strength *-* Thickness of shell *-* Description of longitudinal joint *-*

Diameter of rivet holes *-* Pitch of rivets *-* Percentage of strength of joint  $\begin{cases} \text{Plate } - \\ \text{Rivets } - \end{cases}$

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 *Lugdun's Uptake Type* Manufacturers of *The British Mannesman Tube Co. Ltd., London*

Number of elements *116* Material of tubes *40 Steel* Internal diameter and thickness of tubes  $4\frac{1}{4}'' \times 10 \text{ W.G.}$

Material of headers *40 Steel* Tensile strength  $28.9 \text{ tons/sq. in.}$  Thickness  $3/4''$  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  $3.14 \text{ sq. in.}$  Are the safety valves fitted with easing gear *yes* Working pressure as per Rules  $200 \frac{lb}{sq. in.}$  Pressure to which the safety valves are adjusted  $200 \text{ lb}$  Hydraulic test pressure: tubes  $1000 \frac{lb}{sq. in.}$  Headers  $600 \frac{lb}{sq. in.}$  castings  $400 \frac{lb}{sq. in.}$  and after assembly in place  $600 \frac{lb}{sq. in.}$  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*

FOR HUNTER & WIGHAM RICHARDSON, LTD.  
The foregoing is a correct description,  
*G. J. Tweedy* Manufacturer

Dates of Survey  $\begin{cases} \text{During progress of work in shops - -} \\ \text{while building } \begin{cases} \text{During erection on board vessel - - -} \end{cases} \end{cases}$  *See Inly Report* Are the approved plans of boiler and superheater forwarded herewith *yes* (If not state date of approval.)

Total No. of visits *-*

Is this Boiler a duplicate of a previous case *no* If so, state Vessel's name and Report No. *-*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *These boilers have been constructed under special survey in accordance with the Rules and approved plan; the materials and workmanship are good.*

Survey Fee *See Rpt on Machinery* When applied for, *19*

Travelling Expenses (if any) *See Rpt on Machinery* When received, *19*

*A. G. Forster*  
Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute *FRL 7 SEP 1934*

Assigned *See other F.E. Rpt hwc 91707*

