

REPORT ON BOILERS.

No. 94000.

Received at London Office

11 JUL 1928

Date of writing Report *July 6th 1928* When handed in at Local Office *12 JULY 1928* Port of *LIVERPOOL*

No. in Survey held at *Birkenhead* Date, First Survey *Sept 16th /27* Last Survey *July 2nd 1928*

1035 on the *S. S. 'Tactician'* (Number of Visits *101*) Tons { Gross *5887* Net *3683*

Master *Birkenhead* Built at *Birkenhead* By whom built *Cammell Laird & Co. Ltd.* Yard No. *935* When built *1928*

Engines made at *Birkenhead* By whom made *Cammell Laird & Co. Ltd.* Engine No. *935* When made *1928*

Boilers made at *N^o* By whom made *Cammell Laird & Co. Ltd.* Boiler No. *935* When made *1928*

Nominal Horse Power *524* Owners *Charente S.S. Co. Ltd.* Port belonging to *Liverpool*

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel *David Colville & Sons Ltd.* (Letter for Record *2 (T)*)

Total Heating Surface of Boilers *8208 sq. ft.* Is forced draught fitted *No* Coal or Oil fired *Coal*

Description of Boilers *Two double ended multitubular return tube* Working Pressure *210 lb. sq. in.*

Tested by hydraulic pressure to *365 lb. sq. in.* Date of test *29.3.28* No. of Certificate *2307* Can each boiler be worked separately *Yes*

Area of Firegrate in each Boiler *215 sq. ft.* No. and Description of safety valves to each boiler *Two spring loaded*

Area of each set of valves per boiler { per Rule *21.10* as fitted *25.12* Pressure to which they are adjusted *210 lb. 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 *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *14 1/2"* Is oil fuel carried in the double bottom under boilers *No*

Smallest distance between shell of boiler and tank top plating *3'-3"* Is the bottom of the boiler insulated *Yes*

Largest internal dia. of boilers *15'-8 7/16"* Length *17'-8"* Shell plates: Material *Steel* Tensile strength *28-32 tons sq. in.*

Thickness *1 1/2" End plates* Are the shell plates welded or flanged *No* Description of riveting: circ. seams { end *DR lap* inter. *2 R. lap*

Long. seams *Hel. Riv. & Butts* Diameter of rivet holes in { circ. seams *1 1/2"* Pitch of rivets *circ. 4'-4 1/8" end. 4'-2 1/8" each*

Percentage of strength of circ. end seams { plate *63.87* rivets *47.77* Percentage of strength of circ. intermediate seam { plate *64.42* rivets *68.97*

Percentage of strength of longitudinal joint { plate *85.67* rivets *88.77* Working pressure of shell by Rules *211 lb. sq. in.*

Thickness of butt straps { outer *1 1/8"* inner *1 1/4"* No. and Description of Furnaces in each Boiler *Six-Harrison Corrugated*

Material *Steel* Tensile strength *26-30 tons sq. in.* Smallest outside diameter *3'-8 3/32"*

Length of plain part { top *4'-1"* bottom *3'-6"* Description of longitudinal joint *Weld*

Dimensions of stiffening rings on furnace or c.c. bottom *None* Working pressure of furnace by Rules *212 lb. sq. in.*

End plates in steam space: Material *Steel* Tensile strength *26-30 tons sq. in.* Thickness *1 1/32"* Pitch of stays *22" x 21 3/4"*

How are stays secured *Double nuts & washers* Working pressure by Rules *212 lb. sq. in.*

End plates: Material { front *Steel* back *Steel* Tensile strength { front *26-30 tons sq. in.* back *26-30 tons sq. in.* Thickness { front *1"* back *1 1/32"*

Pitch of stay tubes in nests *12-18"* Pitch across wide water spaces *14 1/2"* Working pressure { front *221 lb. sq. in.* back *262 lb. sq. in.*

Stays to combustion chamber tops: Material *Steel* Tensile strength *28-32 tons sq. in.* Depth and thickness of girder

Centre *Two plates 12 3/8" x 7 1/8"* Length as per Rule *3'-9 15/16"* Distance apart *9 1/4"* No. and pitch of stays

Each *Four at 9"* Working pressure by Rules *215 lb. sq. in.* Combustion chamber plates: Material *Steel*

Tensile strength *26-30 tons sq. in.* Thickness: Sides *23/32"* Back *23/32"* Top *23/32"* Bottom *23/32"*

Pitch of stays to ditto: Sides *9 x 9 1/4"* Back *9 x 9 1/4"* Top *9 x 9 1/4"* Are stays fitted with nuts or riveted over *Nuts*

Working pressure by Rules *218 lb. 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 *14 1/2" x 9 3/4"* Are stays fitted with nuts or riveted over *Nuts*

Working Pressure *221 lb. sq. in.* Main stays: Material *Steel* Tensile strength *28-32 tons sq. in.*

At body of stay, or Over threads *3 1/2" x 3 1/4"* No. of threads per inch *6* Area supported by each stay *478 sq. in.*

Working pressure by Rules *225 lb. sq. in.* Screw stays: Material *Iron* Tensile strength *21 1/2 tons sq. in.*

At turned off part, or Over threads *13/16"* No. of threads per inch *9* Area supported by each stay *83.25 sq. in.*

Working pressure by Rules $218\frac{1}{2}$ Are the stays drilled at the outer ends h_0 Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. \checkmark$

No. of threads per inch \checkmark Area supported by each stay \checkmark Working pressure by Rules \checkmark

Tubes: Material $B.B. Iron$ External diameter $\left\{ \begin{array}{l} \text{Plain } 3\frac{1}{2}'' \\ \text{Stay } 3\frac{1}{2}'' \end{array} \right. \checkmark$ Thickness $\left\{ \begin{array}{l} \text{hwy } 3\frac{1}{8}'' \\ \text{stay } 3\frac{1}{8}'' \end{array} \right. \checkmark$ No. of threads per inch $9 \checkmark$

Pitch of tubes $4\frac{7}{8} \times 4\frac{3}{4}''$ Working pressure by Rules $240\frac{1}{2}$ Manhole compensation: Size of opening \checkmark

shell plate $18 \times 2\frac{1}{2}''$ Section of compensating ring $12 \times 1\frac{1}{2}''$ (flanged) No. of rivets and diameter of rivet holes $40 - 1\frac{1}{2}''$ dia \checkmark

Outer row rivet pitch at ends $10\frac{5}{8}''$ Depth of flange if manhole flanged $3\frac{1}{4}''$ Steam Dome: Material \checkmark

Tensile strength \checkmark Thickness of shell \checkmark Description of longitudinal joint \checkmark

Diameter of rivet holes \checkmark Pitch of rivets \checkmark Percentage of strength of joint $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. \checkmark$

Internal diameter \checkmark Working pressure by Rules \checkmark Thickness of crown \checkmark No. and diameter \checkmark

stays \checkmark Inner radius of crown \checkmark Working pressure by Rules \checkmark

How connected to shell \checkmark Size of doubling plate under dome \checkmark Diameter of rivet holes and p \checkmark

of rivets in outer row in dome connection to shell \checkmark

Type of Superheater $Superheater Co. R. 24pc$ Manufacturers of $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right. \checkmark$ Supplied from $Manufacturer$

Number of elements 64 per boiler Material of tubes $steel solid drawn$ Internal diameter and thickness of tubes $17\frac{1}{2}'' - 3\frac{3}{4}''$ thick \checkmark

Material of headers $Cast steel$ Tensile strength $26-35 tons$ Thickness $as per approved plan$ Can the superheater be shut off \checkmark

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 1.76 Are the safety valves fitted with easing gear Yes Working pressure as \checkmark

Rules \checkmark Pressure to which the safety valves are adjusted $215\frac{1}{2}$ Hydraulic test press \checkmark

tubes $1000\frac{1}{2}$ castings $630\frac{1}{2}$ and after assembly in place $420\frac{1}{2}$ Are drain cocks or valves \checkmark

to free the superheater from water where necessary Yes

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

CAMMELL LAIRD AND COMPANY LIMITED
The foregoing is a correct description,

W. H. McNeeney Manufact \checkmark
ENGINEERING MANAGER

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

See McHy report Total No. of visits 101

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

These boilers have been constructed under special survey, and the material & workmanship are good. They have been satisfactorily fitted on board, examined under steam & their safety valves adjusted.

Survey Fee \pounds : : When applied for, 192
Travelling Expenses (if any) \pounds : : When received, 192

J. D. Milton & W. S. Shirlas
Engineer Surveyor to Lloyd's Register of Ships

Committee's Minute $LIVERPOOL$ 13 JULY 1928

Assigned

*See accompanying
machinery survey.*



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Foundation