

REPORT ON BOILERS.

Received at London Office 6 JUN 1930

Date of writing Report *1930* When handed in at Local Office *5 JUNE 1930* Port of *Sunderland*

No. in Survey held at *Sunderland* Date, First Survey *June 5 1930* Last Survey *June 5 1930*

Reg. Book. *S.S. "HARBERTON"* (Number of Visits *1*) Gross *4585* Tons Net *2718*

Master *Sunderland* Built at *Sunderland* By whom built *Short Bros Ltd.* Yard No. *442* When built *1930*

Engines made at *Sunderland* By whom made *Geo Hawk Ltd.* Engine No. *1188* When made *1930*

Boilers made at *do* By whom made *do* Boiler No. *1188* When made *1930*

Nominal Horse Power *417* Owners *National Shipping Co Ltd* Port belonging to *London*

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel *Thyssen's Muhlheim* (Letter for Record *At (+)*)

Total Heating Surface of Boilers *5764 sq ft* Is forced draught fitted *No* Coal or Oil fired *Coal*

No. and Description of Boilers *Two S.E. of 1st mouth* Working Pressure *180 lbs*

Tested by hydraulic pressure to *320 lbs* Date of test *7/5/30* No. of Certificate *4095* Can each boiler be worked separately *Yes*

Area of Firegrate in each Boiler *69.25 sq ft* No. and Description of safety valves to each boiler *Two lock-burns High lift S.L.*

Area of each set of valves per boiler *per Rule 9.235 as fitted 9.8 (2 1/2 dia)* Pressure to which they are adjusted *185 lbs* 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 *2'-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 *No*

Largest internal dia. of boilers *16'-9 1/2"* Length *11'-6"* Shell plates: Material *Steel* Tensile strength *29 to 33 tons*

Thickness *1 1/8"* Are the shell plates welded or flanged *No* Description of riveting: circ. seams *and TR2*

long. seams *TR. D.B.S* Diameter of rivet holes in *circ. seams F 1 5/16, 2 1/8" long. seams 1 3/8"* Pitch of rivets *F 3 3/4, B 4 1/8" 9 1/2"*

Percentage of strength of circ. end seams *plate F 65, B 66.6 rivets F 43.2, B 43.1* Percentage of strength of circ. intermediate seam *plate 85.13 rivets 89.5*

Percentage of strength of longitudinal joint *combined 88.1* Working pressure of shell by Rules *180 lbs*

Thickness of butt straps *outer 1 1/2" inner 1 1/2"* No. and Description of Furnaces in each Boiler *3 Con. Straight*

Material *Steel* Tensile strength *26 to 30 tons* Smallest outside diameter *4'-2 1/8"*

Length of plain part *top bottom* Thickness of plates *crown 4/8" bottom 4/8"* Description of longitudinal joint *Welded*

Dimensions of stiffening rings on furnace or c.c. bottom *Working pressure of furnace by Rules 198 lbs*

End plates in steam space: Material *Steel* Tensile strength *26 to 30 tons* Thickness *1 1/2"* Pitch of stays *24 1/4 x 19 3/4*

How are stays secured *DN & W.* Working pressure by Rules *184 lbs*

Tube plates: Material *Steel* Tensile strength *26 to 30 tons* Thickness *F 1 1/8" B 1 1/8" 1 1/8"*

Mean pitch of stay tubes in nests *10 1/4" x 10 1/4"* Pitch across wide water spaces *14 1/4"* Working pressure *front 185 lbs back 192"*

Girders to combustion chamber tops: Material *Steel* Tensile strength *29 to 33 tons* Depth and thickness of girder *at centre 8 1/8" x 1 3/4" Length as per Rule 35" Distance apart 9 1/2"* No. and pitch of stays *in each 2 @ 10 3/4" Working pressure by Rules 186 lbs*

Tensile strength *26 to 30 tons* Thickness: Sides *25/32" Back 4/8" Top 23/32" Bottom 25/32"* Combustion chamber plates: Material *Steel*

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

Working pressure by Rules *180 lbs* Front plate at bottom: Material *Steel* Tensile strength *26 to 30 tons*

Thickness *13/16" 13/16"* Lower back plate: Material *Steel* Tensile strength *26 to 30 tons* Thickness *15/16"*

Pitch of stays at wide water space *16" x 9 1/8"* Are stays fitted with nuts or riveted over *Nuts*

Working Pressure *208 lbs* Main stays: Material *Steel* Tensile strength *28 to 32 tons*

Diameter *At body of stay 3" x 3 1/8" No. of threads per inch 6 Area supported by each stay 20 1/8" x 20 1/2"*

Over threads 3 3/8" x 3 1/2" Screw stays: Material *Steel* Tensile strength *21 1/2 to 25 1/2 tons*

Working pressure by Rules *187 lbs* Diameter *At turned off part 1 7/8" No. of threads per inch 9 Area supported by each stay 10 3/4" x 9 1/4"*

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Working pressure by Rules $214 \frac{1850}{100}$ Are the stays drilled at the outer ends *No* Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 2 \frac{1}{4} \times 2 \frac{1}{4}$

No. of threads per inch *9* Area supported by each stay $12 \frac{13}{16} \times 9 \frac{1}{4}$ Working pressure by Rules $208 \frac{1850}{100}$

Tubes: Material *S J STEEL* External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 3 \frac{1}{4}$ Thickness $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 8 \text{ W.G. } 5 \frac{1}{8}$ No. of threads per inch *9*

Pitch of tubes $4 \frac{1}{2} \times 4 \frac{3}{8}$ Working pressure by Rules $216 \frac{1850}{100}$ Manhole compensation: Size of opening in shell plate 16×12 Section of compensating ring $8 \frac{1}{2} \times 1 \frac{1}{2}$ No. of rivets and diameter of rivet holes $30 \times 1 \frac{3}{8}$

Outer row rivet pitch at ends $9 \frac{1}{4}$ Depth of flange if manhole flanged *-* Steam Dome: Material *-*

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 *-*

How connected to shell *-* Inner radius of crown *-* Working pressure by Rules *-*

of rivets in outer row in dome connection to shell *-* Size of doubling plate under dome *-* Diameter of rivet holes and pitch *-*

Type of Superheater *-* Manufacturers of $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right. *-*$

Number of elements *-* Material of tubes *-* Internal diameter and thickness of tubes *-*

Material of headers *-* Tensile strength *-* Thickness *-* Can the superheater be shut off and the boiler be worked separately *-*

Area of each safety valve *-* Are the safety valves fitted with easing gear *-* Working pressure as per Rules *-*

Pressure to which the safety valves are adjusted *-* Hydraulic test pressure: tubes *-*, castings *-* and after assembly in place *-* Are drain cocks or valves fitted to free the superheater from water where necessary *-*

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with *Yes*

The foregoing is a correct description,
 FOR GEORGE CLARK LIMITED
 W. G. P. M. Manufacturer.

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

Total No. of visits *-*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *These boilers have been built under Special Survey & the materials & workmanship are good. On completion they were satisfactorily fitted in the vessel & the safety valves adjusted under steam. For notation see machinery report.*

Survey Fee £ *✓* : : When applied for, 192

Travelling Expenses (if any) £ *✓* : : When received, 192

W. G. P. M.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 6 JUN 1930*

Assigned *See attached J. G. Oph*



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