

REPORT ON BOILERS.

No. 21458.

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Date of writing Report 23rd JUNE 1941. When handed in at Local Office 27th JUNE 1941. Port of GREENOCK

No. in Reg. Book. *Suppl* 90954 on the *GREENOCK* Survey held at *GREENOCK* Date, First Survey 8th OCTOBER 1940 Last Survey 20th JUNE 1941

SINGLE SCREW "EMPIRE SPRING" (Number of Visits) Tons *Gross 6946.46. Net 4147.30*

Master *GREENOCK* Built at *PORT GLASGOW* By whom built *LITHGOWS LTD* Yard No. *944* When built *1941*

Engines made at *GREENOCK* By whom made *JOHN G. KINCAID & CO LTD* Engine No. *1141* When made *1941*

Boilers made at *GREENOCK* By whom made *JOHN G. KINCAID & CO LTD* Boiler No. *1141* When made *1941*

Nominal Horse Power *490* Owners *MINISTRY OF SHIPPING* Port belonging to *GREENOCK.*

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

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

Total Heating Surface of Boilers *22464* Is forced draught fitted *Yes* Coal or Oil fired *One oil or gas One oil.*

No. and Description of Boilers *Two cylindrical* Working Pressure *150 lb.*

Tested by hydraulic pressure to *275 lb.* Date of test *12-2-41* No. of Certificate *2228* Can each boiler be worked separately *Yes*

Area of Firegrate in each Boiler *4.28* No. and Description of safety valves to each boiler *1 3/4" double opening 1HL*

Area of each set of valves per boiler *4.80* Pressure to which they are adjusted *150 lb.* 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* Is oil fuel carried in the double bottom under boilers *Yes*

Smallest distance between shell of boiler and tank top plating *2'-6"* Is the bottom of the boiler insulated *Yes*

Largest internal dia. of boilers *10'-8 7/32"* Length *10'-6.9375"* Shell plates: Material *S* Tensile strength *29/33 ton*

Thickness *25/32"* Are the shell plates welded or flanged *No* Description of riveting: circ. seams *DR*

long. seams *T.P. DBS.* Diameter of rivet holes in *3 1/32"* Pitch of rivets *3.2948"*

Percentage of strength of circ. end seams *70.6* Percentage of strength of circ. intermediate seam *46.7*

Percentage of strength of longitudinal joint *86.23* Working pressure of shell by Rules *163.1*

Thickness of butt straps *5/8"* No. and Description of Furnaces in each Boiler *Two Deighton*

Material *S* Tensile strength *26/30* Smallest outside diameter *3'-1 1/4"*

Length of plain part *13/32"* Thickness of plates *13/32"* Description of longitudinal joint *Weld*

Dimensions of stiffening rings on furnace or c.c. bottom *152.3 lb.* Working pressure of furnace by Rules *152.3 lb.*

End plates in steam space: Material *S* Tensile strength *26/30 ton* Thickness *15/16"* Pitch of stays *16x16"*

How are stays secured *D.N.* Working pressure by Rules *157.7 lb.*

Tube plates: Material *S* Tensile strength *26/30 ton* Thickness *5/8"*

Mean pitch of stay tubes in nests *9.5"* Pitch across wide water spaces *14"* Working pressure *164 lb.*

Girders to combustion chamber tops: Material *S* Tensile strength *29/33* Depth and thickness of girder *152 lb.*

at centre *8x1 3/8"* Length as per Rule *29 3/4"* Distance apart *10"* No. and pitch of stays *Two @ 9"*

Tensile strength *26/30 ton* Thickness: Sides *5/8"* Back *5/8"* Top *5/8"* Bottom *5/8"*

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

Working pressure by Rules *149.5 lb.* Front plate at bottom: Material *S* Tensile strength *26/30 ton*

Thickness *15/16"* Lower back plate: Material *S* Tensile strength *26/30 ton* Thickness *15/16"*

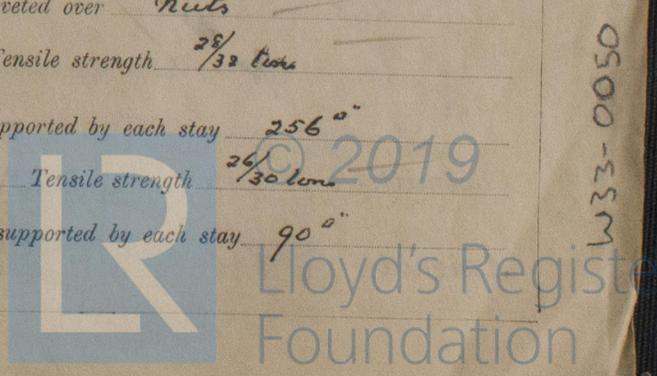
Pitch of stays at wide water space *14" x 9 1/2"* Are stays fitted with nuts or riveted over *Nuts*

Working Pressure *253 lb.* Main stays: Material *S* Tensile strength *28/32 ton*

Diameter *2 3/8"* No. of threads per inch *6* Area supported by each stay *256"*

Working pressure by Rules *153.6 lb.* Screw stays: Material *S* Tensile strength *26/30 ton*

Diameter *1 5/8"* No. of threads per inch *9* Area supported by each stay *90"*



W33-0050

Working pressure by Rules 1694 Are the stays drilled at the outer ends No Margin stays: Diameter ^{At turned off part} 1 3/4 or ^{Over threads} 1 3/4

No. of threads per inch 9 Area supported by each stay 109.25 Working pressure by Rules 1664

Tubes: Material S External diameter ^{Plain} 3 ^{Stay} 3 Thickness ^{9wg} 1/4 ^{5/16} 3/16 No. of threads per inch 9

Pitch of tubes 4 1/4 x 4 3/16 Working pressure by Rules 2094 Manhole compensation: Size of opening in shell plate 16 x 20 Section of compensating ring 32 1/2 x 28 1/2 x 1 5/16 No. of rivets and diameter of rivet holes 38 - 1 1/4

Outer row rivet pitch at ends 8" 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 ^{Plate} ✓ ^{Rivets} ✓

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 ✓ Manufacturers of ✓ Tubes ✓ Steel forgings ✓ Steel castings ✓

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 ✓

Is a safety valve fitted to every part of the superheater which can be shut off from the boiler ✓

Area of each safety valve ✓ Are the safety valves fitted with easing gear ✓ Working pressure as per Rules ✓ Hydraulic test pressure: tubes ✓ forgings and 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 JOHN G. KINCAID & CO. LIMITED.
W. Cairns Director, Manufacturer.

Dates of Survey ^{During progress of work in shops - -} ✓ Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval) ✓

^{while building} ^{During erection on board vessel - - -} SEE MACHINERY REPORT Total No. of visits ✓

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. EMPIRE RAINBOW GRK N° 21433

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been made under Special Permit in accordance with the Rules & approved plans. The safety valves have been adjusted under steam, accumulation oil. The materials and workmanship are sound & good. These boilers are eligible in my opinion to be fitted in a vessel classed in the Society's Register book.

Survey Fee ... £ : : } When applied for, 10

Travelling Expenses (if any) See Machinery Report : : } When received, 10

Charles J. Hunter
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 1 JUL 1941

Assigned SEE ACCOMPANYING MACHINERY REPORT.



For S.S.O.F. See