

REPORT ON BOILERS.

No. 115811.

APR 10 1941

Received at London Office

Date of writing Report 17-3-40 when handed in at Local Office

31 MAR 1941

Port of Liverpool

No. in Reg. Book. Survey held at Birkenhead

Date, First Survey 5/4/40

Last Survey 21-3-1941

on the *auxy*: Boilers for M.V. EMPIRE STEEL.

(Number of Visits 67) Tons {Gross 8138 Net 4774}

Master Built at Birkenhead By whom built Cammell Laird & Co Ltd Card No. 1053 When built 1941

Engines made at Belfast By whom made Harland & Wolff Engine No. 2086 When made 1941

Boilers made at Birkenhead By whom made Cammell Laird & Co Ltd Boiler No. 1053 When made 1941

Nominal Horse Power Owners See Machinery Report Port belonging to London.

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel B. Colville & Co Steel Co of Scotland (Letter for Record (5))

Total Heating Surface of Boilers 3700 sq. ft. Is forced draught fitted Coal or Oil fired oil

No. and Description of Boilers 2 S.E. Working Pressure 150 lbs

Tested by hydraulic pressure to 275 lb. Date of test 18-7-40. No. of Certificate 2521. Can each boiler be worked separately

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler 2 Spring loaded H.L.

Area of each set of valves per boiler per Rule 4.94 sq. ft. 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

Smallest distance between boilers or uptakes and bunkers or woodwork well clear. Is oil fuel carried in the double bottom under boilers

Smallest distance between shell of boiler and tank top plating on flat. Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 12'-6" Length 11'-6" Shell plates: Material Steel Tensile strength 29.33 Ton

Thickness 27/32" Are the shell plates welded or flanged no. Description of riveting: circ. seams end D.R. inter. T.R. D.B.S.

long. seams T.R. D.B.S. Diameter of rivet holes in circ. seams } 15/16 Pitch of rivets { 2.632" 6.50"

Percentage of strength of circ. end seams plate 64 rivets 49. Percentage of strength of circ. intermediate seam plate rivets

Percentage of strength of longitudinal joint plate rivets 85.5 combined 89. Working pressure of shell by Rules 157 lb

Thickness of butt straps outer 11/16" inner 13/16" No. and Description of Furnaces in each Boiler Two Morrison Section

Material Steel Tensile strength 26.30 Ton Smallest outside diameter 3'-8 1/2"

Length of plain part top bottom Thickness of plates crown 1/2" bottom Description of longitudinal joint weld

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 162 lb

End plates in steam space: Material Steel Tensile strength 26.30 Ton Thickness 3/32" Pitch of stays 14 1/2" x 15"

How are stays secured D.N. Working pressure by Rules 162 lb

Tube plates: Material front back Steel Tensile strength 26.30 Ton Thickness 27/32" 25/32" 195 lb

Mean pitch of stay tubes in nests 10.25" Pitch across wide water spaces 13 3/4" Working pressure front back 208 lb

Girders to combustion chamber tops: Material Steel Tensile strength 28.32 Ton Depth and thickness of girder

at centre 9" x 23/32" dble Length as per Rule 2'-10 1/2" Distance apart 9" No. and pitch of stays

in each 3 @ 8" Working pressure by Rules 168 lb. Combustion chamber plates: Material Steel

Tensile strength 26.30 Ton Thickness: Sides 11/16" Back 23/32" Top 11/16" Bottom 7/8"

Pitch of stays to ditto: Sides 9" x 8" Back 9 1/8" x 8 5/8" Top 9" x 8" Are stays fitted with nuts or riveted over nuts & riveted

Working pressure by Rules 159 min Front plate at bottom: Material Steel Tensile strength 26.30 Ton

Thickness 27/32" Lower back plate: Material Steel Tensile strength 26.30 Ton Thickness 13/16"

Pitch of stays at wide water space 14 3/4" Are stays fitted with nuts or riveted over nuts

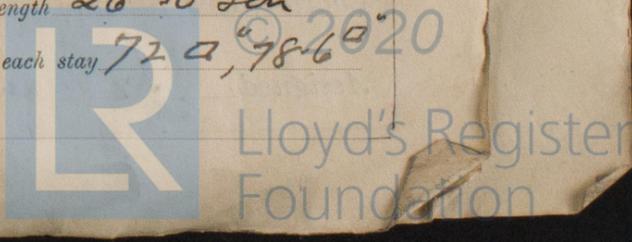
Working Pressure 178 lb. Main stays: Material Steel Tensile strength 28.32 Ton

Diameter At body of stay, or Over threads 2 1/2" No. of threads per inch 6. Area supported by each stay 17.5 x 15"

Working pressure by Rules 168 lb. Screw stays: Material Steel Tensile strength 26.30 Ton

Diameter At turned off part, or Over threads 1 1/2" No. of threads per inch 9. Area supported by each stay 72 sq. in.

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Working pressure by Rules 144 Are the stays drilled at the outer ends no Margin stays: Diameter 1 3/4" Corners 1 7/8"
 No. of threads per inch 9 Area supported by each stay 11.6 x 9 1/2" Working pressure by Rules 170 lbs margin
 Tubes: Material B.B. Iron L.W. External diameter 2 3/4" Thickness 9.454 No. of threads per inch 9
 Pitch of tubes 4" x 3 7/8" Working pressure by Rules 177 lbs Manhole compensation: Size of opening in
 shell plate 2 1/4" x 17 1/4" Section of compensating ring 2'-10" x 2'-4 1/2" x 1 5/16" No. of rivets and diameter of rivet holes 54 @ 1 5/16" holes.
 Outer row rivet pitch at ends 6 1/2" Depth of flange if manhole flanged 3 1/2" 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
 Internal diameter _____ Working pressure by Rules _____ Thickness of crown _____ Rivets _____
 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 _____ Pressure to which the safety valves are adjusted _____ 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 _____

FOR AND ON BEHALF OF **GAMMELL LAIRD & Co. LIMITED** The foregoing is a correct description,
J.P. Underwood Manufacturer.

Dates of Survey During progress of work in shops - - - See Mech rpt. Are the approved plans of boiler and superheater forwarded herewith NO
while building During erection on board vessel - - - Plans held up for duplicate send. 15-1-40. (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 built under Special Survey, to approved plans in accordance with the Society's Rules. Materials and workmanship are good. They have been properly fitted on board the M.V. Empire Steel, and their safety valves adjusted to 150 lbs.

Survey Fee on Machinery Rpt. When applied for, 19
 Travelling Expenses (if any) £ _____ When received, 19

H. Sutherland
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **LIVERPOOL** - 8 APR 1941

Assigned See Minute on I.E. Machinery Report. J.P.R.

