

## REPORT ON BOILERS.

No. 115811.

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

31 MAR 1941

Received at London Office

APR 10 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 MV. EMPIRE STEEL.*

(Number of Visits 67) Gross 8138 Tons Net 4774.

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

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

Boilers made at Birkenhead By whom made Cammell Laird &amp; 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 &amp; 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 as fitted 4.94

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 85.5

Percentage of strength of longitudinal joint {plate 83 rivets 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" 19/32" 208 lb

Mean pitch of stay tubes in nests 10.25"

Pitch across wide water spaces 13 3/4"

Working pressure {front back

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 &amp; riveted

Working pressure by Rules 159 lb

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.

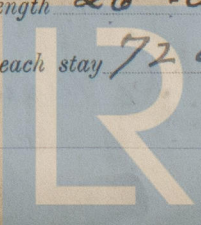
Screw stays: Material Steel

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. 78.6



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Working pressure by Rules *144 lb* Are the stays drilled at the outer ends *no* Margin stays: Diameter { At turned off part or Over threads *1 3/4" Corners 1 7/8"*  
No. of threads per inch *9* Area supported by each stay *11.6 x 9 1/8"* Working pressure by Rules *170 lb margin Corners 188 lb*  
Tubes: Material *B.B. Iron L.W.* External diameter { Plain *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 lb* 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 1/16"* 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 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 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  
DAMMELL 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 sent 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 lb.*

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.*