

REPORT ON BOILERS.

No. 120372

23 DEC 1943

Received at London Office

Date of writing Report 24/11/43 When handed in at Local Office 24 DEC 1943 to Port of Liverpool

No. in Reg. Book. Survey held at Birkenhead Date, First Survey 26/11/41 Last Survey 25/11/43

on the M.A.C. EMPIRE MACCOLL (Number of Visits 96) Gross 9133 Tons Net 4830

Master Birkenhead Built at Birkenhead By whom built Cammell Laird & Co Yard No. 1106 When built 1943

Engines made at Glasgow By whom made Harland Wolff & Co Engine No. 8457 When made 1943

Boilers made at Birkenhead By whom made Cammell Laird & Co Boiler No. 1106 When made 1943

Nominal Horse Power Owners Port belonging to

MULTITUBULAR BOILERS ~~MAIN~~, AUXILIARY, OR ~~DONKEY~~.

Manufacturers of Steel Colvilles Ltd (Letter for Record (S))

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

No. and Description of Boilers 2 SE Exhaust Gas - oil fired Working Pressure 150 lb

Tested by hydraulic pressure to 275 lb Date of test 3/12/42 No. of Certificate 2584/5 Can each boiler be worked separately yes

Area of Firegrate in each Boiler 7.94 sq ft No. and Description of safety valves to each boiler 2 spring loaded Imp. H. Lift

Area of each set of valves per boiler 7.94 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 yes

Smallest distance between boilers or uptakes and bunkers or woodwork will clear Is oil fuel carried in the double bottom under boilers no

Smallest distance between shell of boiler and tank top plating on upper 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 Tons

Thickness 27/32 Are the shell plates welded or flanged NO Description of riveting: circ. seams end D.R.

long. seams T.B. - D.B.S. Diameter of rivet holes in 15" Pitch of rivets 6-50

Percentage of strength of circ. end seams plate 64 rivets 49 Percentage of strength of circ. intermediate seam plate 85.5 rivets 93

Percentage of strength of longitudinal joint plate 89 combined 89 Working pressure of shell by Rules 151 lb

Thickness of butt straps outer 11/16 inner 13/16 No. and Description of Furnaces in each Boiler 2 Morrison Section

Material Steel Tensile strength 26/30 Tons Smallest outside diameter 3' 8 1/2"

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

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

End plates in steam space: Material Steel Tensile strength 26/30 Tons Thickness 31/32 Pitch of stays 17 1/2" x 15"

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

Tube plates: Material Steel Tensile strength 26/30 Tons Thickness 27/32 25/32

Mean pitch of stay tubes in nests 13 3/4" Working pressure front 195 lb back 208 lb

Girders to combustion chamber tops: Material Steel Tensile strength 28/32 Tons Depth and thickness of girder 9" x 23/32 double

at centre 3 @ 8" Length as per Rule 34 1/2" Distance apart 9" No. and pitch of stays 168 lb

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

Tensile strength 26/30 Tons 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 at back

Working pressure by Rules 152 lb Front plate at bottom: Material Steel Tensile strength 26/30 Tons

Thickness 27/32 Lower back plate: Material Steel Tensile strength 26/30 Tons 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 Tons

Diameter 2 1/2" No. of threads per inch 6 Area supported by each stay 17 1/2" x 15"

Working pressure by Rules 168 lb Screw stays: Material Steel Tensile strength 26-30 Tons

Diameter 1 1/2" 1 3/4" 1 7/8" No. of threads per inch 9 Area supported by each stay 9 1/2" x 8 5/8" max

Working pressure by Rules $159\frac{1}{4}$ Are the stays drilled at the outer ends no Margin stays: Diameter { At turned off $1\frac{3}{4}$ corners $1\frac{7}{8}$
Over threads }
No. of threads per inch 9 Area supported by each stay 106.60 Working pressure by Rules $170\frac{1}{4}$
Tubes: Material Iron External diameter { Plain $2\frac{3}{4}$ Thickness { $5\frac{1}{16}$ $3\frac{1}{8}$ No. of threads per inch 9
Pitch of tubes $4" \times 3\frac{7}{8}"$ Working pressure by Rules $177\frac{1}{4}$ Manhole compensation: Size of opening in
shell plate $21\frac{1}{4} \times 17\frac{1}{4}$ Section of compensating ring $2-10 \times 2-4\frac{1}{2} \times \frac{15}{16}$ No. of rivets and diameter of rivet holes $54 @ \frac{15}{16}$
Outer row rivet pitch at ends $6\frac{1}{2}$ Depth of flange if manhole flanged $3\frac{1}{2}$ 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

The foregoing is a correct description,
W. H. Ingham Manufacturers

Dates of Survey { During progress of
work in shops - -)
while building { During erection on
board vessel - - -)

See Meby report.

Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) *Yes.*
Total No. of visits

Is this Boiler a duplicate of a previous case *Yes* If so, state Vessel's name and Report No. *British Restraint n° 119793*

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 are installed in the 'Empire MacColl' tried under working conditions found satisfactory. Safety valves adjusted to $150\frac{1}{2}$ lbs.*

Survey Fee *NB.* £ $24/12/0$
Travelling Expenses (if any) £

When applied for, **15 DEC 1913**
When received, 19

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

Committee's Minute

Assigned *See Minute on Liverpool I.E. Machinery Report.*



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Foundation