

## REPORT ON BOILERS.

No. 66683.

Liverpool F.E. Report No. 119669.

Received at London Office

18 FEB 1943

Date of writing Report 19 When handed in at Local Office 15.2.43 Port of Glasgow.

No. in Survey held at Reg. Book. Barfin Date, First Survey 15.7.1942 Last Survey 10.2.1943

on the "EMPIRE BILLOW" (Number of Visits 6) Gross Tons 215 Net Tons 74

Master Built at Northwich By whom built W J Yarwood & Son Yard No. 718 When built

Engines made at By whom made Engine No. When made

Boilers made at Barfin By whom made Alan Anderson & Sons Ltd. Boiler No. 3733 When made 1943.

Nominal Horse Power Owners Port belonging to

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Colville & Co. (Letter for Record (S) ✓)

Total Heating Surface of Boilers 991 ft<sup>2</sup> Is forced draught fitted No. Coal or Oil fired Coal.

No. and Description of Boilers 1 - Marine Working Pressure 140.

Tested by hydraulic pressure to 260. Date of test 10.2.43. No. of Certificate 21327. Can each boiler be worked separately ✓

Area of Firegrate in each Boiler 31.75 ft<sup>2</sup>. No. and Description of safety valves to each boiler 1 - 2 1/2" Double Spring.

Area of each set of valves per boiler {per Rule 7.99 as fitted 9.8. Pressure to which they are adjusted 140 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 14" Is oil fuel carried in the double bottom under boilers None

Smallest distance between shell of boiler and tank top plating Open floor Is the bottom of the boiler insulated

Largest internal dia. of boilers 9' 10 5/8". Length 10' 6". Shell plates: Material Steel. Tensile strength 28-32.

Thickness 1 1/16". Are the shell plates welded or flanged No. Description of riveting: circ. seams {end DR lat. inner 2 1/4".

long. seams TR DBS. Diameter of rivet holes in {circ. seams 13/16". long. seams 13/16". Pitch of rivets {5.46.

Percentage of strength of circ. end seams {plate 70.5 rivets 45.0. Percentage of strength of circ. intermediate seam {plate ✓ rivets

Percentage of strength of longitudinal joint {plate 84.75 rivets 106.2 combined 91.35. Working pressure of shell by Rules ✓

Thickness of butt straps {outer 9/16". inner 1/16". No. and Description of Furnaces in each Boiler 2 - Leighton

Material Steel. Tensile strength 26-30. Smallest outside diameter 2' 11 1/4"

Length of plain part {top ✓ bottom Thickness of plates {crown 7/16". bottom Description of longitudinal joint Welded.

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

End plates in steam space: Material Steel. Tensile strength 26-30. Thickness 7/8". Pitch of stays 18 1/2" x 13"

How are stays secured Double Nut & bone washer. Working pressure by Rules 7/8.

Tube plates: Material {front steel. back Tensile strength {26-30. Thickness {7/8. 25/32.

Mean pitch of stay tubes in nests 12" Pitch across wide water spaces 14" Working pressure {front ✓ back

Girders to combustion chamber tops: Material Steel. Tensile strength 28-32. Depth and thickness of girder

at centre 20 7" x 5/8". Length as per Rule 2' 1 3/32". Distance apart 10 1/4". No. and pitch of stays

in each 2 - 8" Working pressure by Rules ✓ Combustion chamber plates: Material Steel.

Tensile strength 26-30. Thickness: Sides 5/8". Back 9/16". Top 5/8". Bottom 3/4".

Pitch of stays to ditto: Sides 8 x 9 3/8". Back 8 1/4 x 8 1/2". Top 10 1/4 x 8". Are stays fitted with nuts or riveted over Yes.

Working pressure by Rules ✓ Front plate at bottom: Material Steel. Tensile strength 26-30.

Thickness 7/8". Lower back plate: Material Steel. Tensile strength 26-30. Thickness 7/8".

Pitch of stays at wide water space 14" Are stays fitted with nuts or riveted over Yes.

Working Pressure ✓ Main stays: Material Steel. Tensile strength 28-32.

Diameter {At body of stay, 2 1/2". No. of threads per inch 6. Area supported by each stay

Over threads 2 1/2". Screw stays: Material Steel. Tensile strength 26-30.

Working pressure by Rules ✓ Diameter {At turned off part, 1 1/2". No. of threads per inch 9. Area supported by each stay

Over threads 1 1/2".



Working pressure by Rules ☒ Are the stays drilled at the outer ends *No* Margin stays: Diameter { At turned off part, or Over threads *1 7/8" - 1 1/4" corner*  
No. of threads per inch *9* Area supported by each stay *3"* Working pressure by Rules *100 lb*  
Tubes: Material *Ref. welded iron* External diameter { Plain *3"* Stay *3"* Thickness { *5/16"* No. of threads per inch *9*  
Pitch of tubes *4" x 4"* Working pressure by Rules *✓* Manhole compensation: Size of opening in shell plate *19 1/2" x 15 1/2"* Section of compensating ring *7" x 3/4"* No. of rivets and diameter of rivet holes *44 - 1/16"*  
Outer row rivet pitch at ends *5 1/2"* Depth of flange if manhole flanged *3"* 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.  
Per *W. B. Fleming* Manufacturer.

Dates of Survey { During progress of work in shops - - *1942 July 15 Aug 27 Sep 9 1943 Jan 7* Are the approved plans of boiler and superheater forwarded herewith *Yes*  
while building { During erection on board vessel - - - *20 Feb 10* (If not state date of approval.)  
Total No. of visits *6*

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.) *This boiler has been constructed under Special Survey in accordance with the Approved Plans and the Society Rules. The materials and workmanship are good. The boiler has been despatched to Messrs W J Yarwood & Sons for fitting on board their No 718.*

Survey Fee ... £ 6 : 12 : } When applied for, *16 FEB 1943*  
Travelling Expenses (if any) £ : : } When received, *10*

*J. R. Dale*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *GLASGOW 16 FEB 1943*

Assigned *Transmit to*  
*Liverpool*



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