

# REPORT ON BOILERS.

No. 20041

Received at London Office

MAR 1 1940

of writing Report 29-2-1940 When handed in at Local Office 29-2-1940 Port of Leith

in Survey held at Leith Date, First Survey 4-12-39 Last Survey 24-2-1940

on the S.S. "EMPIRE WARRIOR" ex "BIANCA." (Number of Visits \_\_\_\_\_) Gross 1306 Tons Net 721

Built at Hamburg By whom built Hamburg Elbe Schiffbau Yard No. \_\_\_\_\_ When built 1921  
Plates made at Oberhausen By whom made Gute Hoffnungshütte Engine No. \_\_\_\_\_ When made 1921  
Boilers made at Hamburg By whom made Teutsche Werft Boiler No. \_\_\_\_\_ When made 1921  
Nominal Horse Power 125 Owners Ministry of Shipping Port belonging to London

## WATER TUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel \_\_\_\_\_ (Letter for Record S)

Heating Surface of Boilers 274 m<sup>2</sup> = 2949 ft<sup>2</sup> Is forced draught fitted No Coal or Oil fired coal

Kind and Description of Boilers Two cylindrical, single ended Working Pressure 180 lbs/sq. in. 185 lb.

Tested by hydraulic pressure to 250 lbs Date of test PORT 12-2-40 No. of Certificate STAR 13-2-40 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 37.7 sq. ft. No. and Description of safety valves to each boiler Two spring loaded

Number of each set of valves per boiler per Rule Pressure to which they are adjusted 180 lbs/sq. in. Are they fitted with easing gear Yes

Use of donkey boilers, state whether steam from main boilers can enter the donkey boiler Yes  
Least distance between boilers or uptakes and bunkers or woodwork BACK OF BOILER TO HOLD 2'-0" FRONT OF BOILER TO E. ROOM 10'-6" SIDE OF BOILER TO SIDE BUNKER = 15" Is oil fuel carried in the double bottom under boilers No

Least distance between shell of boiler and tank top plating 12" Is the bottom of the boiler insulated YES

Least internal dia. of boilers 11'-7 3/4" Length 10'-7 13/16" Shell plates: Material Steel Tensile strength Assumed 28/32 Tons.

Thickness .95" Are the shell plates welded or flanged No Description of riveting: circ. seams Double riveted

Seams hitched double butt strap Diameter of rivet holes in circ. seams 1.142" long. seams 1.23" Pitch of rivets 3.71" 9.055" in 3rd (circ.) row

Percentage of strength of circ. end seams plate 69 rivets 47 Percentage of strength of circ. intermediate seam plate rivets

Percentage of strength of longitudinal joint plate 86 rivets combined 93 Working pressure of shell by Rules 181 lbs/sq. in.

Thickness of butt straps outer .787" inner .787" No. and Description of Furnaces in each Boiler Two Corrugated

Material Steel Tensile strength Assumed 26/30 Tons Smallest outside diameter 41.339" 42.5"

Thickness of plain part top bottom Thickness of plates crowns .591" bottoms .591" Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom \_\_\_\_\_ Working pressure of furnace by Rules 209 lbs.

Plates in steam space: Material Steel Tensile strength Assumed 26/30 Tons Thickness .866" Pitch of stays 15.354" x 14.449"

Are stays secured Nuts & riveted washers Working pressure by Rules 210 lbs.

Plates: Material front back Steel Tensile strength Assumed 26/30 Tons Thickness .866" .827"

Pitch of stay tubes in nests 8.661" x 8.661" Pitch across wide water spaces 14.252" Working pressure front 276 lbs back 266 lbs.

Plates to combustion chamber tops: Material Steel Tensile strength Assumed 28/32 Tons Depth and thickness of girder

Centre 7.874" .591" double Length as per Rule 2'-4" Distance apart 7.874" No. and pitch of stays

Each 2-7.874" Working pressure by Rules 214 lbs Combustion chamber plates: Material Steel

Tensile strength Assumed 26/30 Tons Thickness: Sides .669" Back .669" Top .669" Bottom .787"

Pitch of stays to ditto: Sides 7.874" x 7.874" Back 7.874" x 7.874" Top 7.874" x 7.874" Are stays fitted with nuts or riveted over Nuts

Working pressure by Rules 271 lbs Front plate at bottom: Material Steel Tensile strength Assumed 26/30 Tons

Thickness .866" Lower back plate: Material Steel Tensile strength Assumed 26/30 Tons Thickness .866"

Pitch of stays at wide water space 14.173" Are stays fitted with nuts or riveted over Nuts

Working Pressure 249 lbs Main stays: Material Steel Tensile strength Assumed 28/32 Tons

Pitch of stays At body of stay, 2.756" Over threads No. of threads per inch \_\_\_\_\_ Area supported by each stay 221.84 sq. in.

Working pressure by Rules 249 lbs Screw stays: Material Steel Tensile strength Assumed 26/30 Tons

Pitch of stays At turned off part, 1.625" Over threads No. of threads per inch \_\_\_\_\_ Area supported by each stay 62 sq. in.



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Working pressure by Rules 245 lbs. Are the stays drilled at the outer ends No. Margin stays: Diameter At turned off part, 1.875  
or Over threads

No. of threads per inch ✓ Area supported by each stay ✓ Working pressure by Rules over 250 lbs.

Tubes: Material Steel External diameter Plain 3 1/4" Thickness 3/16" No. of threads per inch ✓  
Stay 3 1/4"

Pitch of tubes 8.661" Plain 4.331" Working pressure by Rules over 250 lbs Manhole compensation: Size of open  
 shell plate 16.536" x 12.599" Section of compensating ring 6.299" wide x 1" thick No. of rivets and diameter of rivet holes 28 - 1.26"

Outer row rivet pitch at ends 5" Depth of flange if manhole flanged ✓ Steam Dome: Material Steel  
 Tensile strength Assumed 24/30 Tnd Thickness of shell .630" Description of longitudinal joint Double riveted lap  
 Diameter of rivet holes .906 Pitch of rivets 2.913" Percentage of strength of joint Plaid 68  
Rivets 67

Internal diameter 33.465" Working pressure by Rules over 300 lbs Thickness of crown .630" No. and diam  
 stays None Inner radius of crown 35.433 Working pressure by Rules 220 lbs

How connected to shell knitted Size of doubling plate under dome none Diameter of rivet holes and  
 of rivets in outer row in dome connection to shell 92 rivets .906" dia, 2.835"

Type of Superheater W. Schmidt Manufacturers of ✓  
Tubes Steel castings

Number of elements ✓ Material of tubes Steel Internal diameter and thickness of tubes ✓  
 Material of headers Steel Tensile strength ✓ Thickness ✓ Can the superheater be shut  
 the boiler be worked separately yes Is a safety valve fitted to every part of the superheater which can be shut off from the boiler yes  
 Area of each safety valve 2.07 sq" Are the safety valves fitted with easing gear yes Working pressure  
 Rules 180 lbs/sq" Pressure to which the safety valves are adjusted 180 lbs/sq" Hydraulic test pre  
 tubes ✓, castings ✓ and after assembly in place 400 lbs/sq" Are drain cocks or valves  
 to free the superheater from water where necessary yes

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with ✓

The foregoing is a correct description,  
 ✓ Manuf

Dates of Survey During progress of work in shops - - Are the approved plans of boiler and superheater forwarded herewith  
while building During erection on board vessel - - - (If not state date of approval.)  
 Total No. of visits ✓

Is this Boiler a duplicate of a previous case ✓ If so, state Vessel's name and Report No. ✓

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
The above information is forwarded for the consideration of the Committee.  
See report 9.

Survey Fee ... .. £ See rpt. 9. When applied for, 19  
 Travelling Expenses (if any) £ : : When received, 19

J. Campbell  
 Engineer Surveyor to Lloyd's Register of Ships

Committee's Minute TUE. 12 MAR 1940

Assigned amb. 2.40  
5.12.39 C.S.  
2.5.40 (Spt) 185/6

