

MAR 1944

## REPORT ON WATER TUBE BOILERS.

Mob. 17701

No. 18528

Received at London Office

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Date of writing Report 16/3/1944 When handed in at Local Office 16/3/1944 Port of *W. Hartlepool*  
No. in Survey held at *Hartlepool* Date, First Survey 24th May, 1943 Last Survey 15th March, 1944  
Reg. Bk. *1/5 "EMPIRE PALADIN"* (Number of Visits 59) Tons Gross 8141 Net 4604  
on the  
Built at *Haverton Hill* By whom built *Jumess S.B. Co. (359)* When built 1944  
Engines made at *Hartlepool* By whom made *Richardsons Westgate 46 (2445)* When made "  
Boilers made at *"* By whom made *"* (2445) When made "  
Nominal Horse Power *1215* 1210 *Ministry of War Transport* Port belonging to *Huddersfield*

## WATER TUBE BOILERS—MAIN, AUXILIARY, OR DONKEY.—Manufacturers of Steel

Date of Approval of plan 18/6/44 Number and Description or Type of Boilers *2 Foster Wheeler D Type* Working Pressure *480 lb./sq. in.* Tested by Hydraulic Pressure to *740 lb./sq. in.* Date of Test 28/2/44  
No. of Certificate *4021* Can each boiler be worked separately *Yes* Total Heating Surface of Boilers *6840 sq. ft.*  
Is forced draught fitted *Yes* Area of fire grate (coal) in each Boiler *3 Wallbank Howden* No. and description of safety valves on each boiler *1-2" Single Spring S.H.L.* Area of each set of valve *11.1 sq. in.* Pressure to which they are adjusted *490 lb.*  
Are they fitted with easing gear *Yes* In case of donkey boilers state whether steam from main boilers can enter the donkey boiler *No*  
Smallest distance between boilers or uptakes and bunkers or woodwork *3'-6"* Height of boiler *15'-9" Centre* Width and Length *17'-5 3/4" x 11'-7 9/16"*  
Steam Drums:—Number in each boiler *one* Inside diameter *3'-6"* Thickness of plates *1 5/8"*  
Range of Tensile Strength *28/32* Are drum shell plates welded or flanged *welded* Description of riveting:—  
Cir. seams *long. seams* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *2"*  
Lap of plate or width of butt straps *2" x 1 1/4"* Thickness of straps *4 1/2" + 3 1/2"* Percentage strength of long. joint:—Plate *55.5* Rivet *50.0*  
Diameter of tube holes in drum *2 1/4"* Pitch of tube holes *2 1/4" x 1 5/8"* Percentage strength of shell in way of tubes *1 1/2" = 44.4* 50.0 mean  
Working pressure by rules *as app.* Steam Drum Heads or Ends:—Range of tensile strength *26/30* Thickness of plates *1 7/8" x 1 3/4"*  
Radius or how stayed *3'-6"* Size of manhole or handhole *16" x 12"* Working pressure by rules *as app.* Water Drums:—Number in each boiler *one* Inside Diameter *2'-9"* Thickness of plates *1 9/32"* Range of tensile strength *28/32* Are drum shell plates welded or flanged *welded* Description of riveting:—Cir. seams *long. seams* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *2"*  
Lap of plates or width of butt straps *2" x 1 1/4"* Thickness of straps *4 1/2" + 3 1/2"*  
Percentage strength of long. joint:—Plate *55.5* Rivet *50.0* Diameter of tube holes in drum *2 1/4"* Pitch of tube holes *2 1/4" x 1 5/8"*  
Percentage strength of drum shell in way of tubes *1 1/2" = 44.4* Working pressure by rules *as app.* Water Drum Heads or Ends:—Range of Tensile strength *26/30* Thickness of plates *1 9/16"* Radius or how stayed *2'-9"*  
Size of manhole or handhole *16" x 12"* Working pressure by rules *as app.* Headers or Sections:—Number *3* Tubes:—Diameter *1 1/4"*  
Material *Steel* Thickness *7/8"* Tested by Hydraulic Pressure to *740 lb./sq. in.* Steam Dome or Collector:—Description of Joint to Shell *1040*  
Thickness *7/8"* Number *384* Range of tensile strength *1040*  
Inside diameter *11 1/2"* Thickness of shell plates *1040*  
Description of longitudinal joint *1040* Diameter of rivet holes *1040* Pitch of rivets *1040* Lap of plate or width of butt straps *1040* Thickness of straps *1040* Percentage strength of long. joint *1040* Plate *1040* Rivet *1040*  
Working Pressure of shell by rules *1040* Crown or End Plates:—Range of tensile strength *1040* Working pressure by rules *1040*  
Thickness *1040* Radius or how stayed *1040*  
SUPERHEATER. Drums or Headers:—Number in each boiler *2* Inside Diameter *6 1/4" x 6 1/4"*  
Thickness *1 1/8"* Material *Steel* Range of tensile strength *28/32* Are drum shell plates welded or flanged *weldless* Description of riveting:—Cir. seams *long. seams* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *2"* Lap of plates or width of butt straps *2" x 1 1/4"* Thickness of straps *2 1/2" x 1 3/8"*  
Percentage strength of long. joint:—Plate *55.5* Rivet *50.0* Diameter of tube holes in drum *1 1/4"* Pitch of tube holes *2 1/4" x 1 5/8"*  
Percentage strength of drum shell in way of tubes *1 1/2" = 44.4* Working pressure by rules *as app.* Drum Heads or Ends:—*flat*  
Thickness *1 1/8"* Range of tensile strength *28/32* Radius or how stayed *2"* Size of manhole or handhole *2"*  
Working pressure by rules *as app.* Number, diameter, and thickness of tubes *300-1 1/4" x 11 1/2"* Tested by Hydraulic Pressure to *740 lb./sq. in.*  
Date of Test *9/2/44* Is a safety valve fitted to each section of the superheater which can be shut off from the boiler *Yes*  
No. and description of Safety Valves *1-2 1/4" double Spring S.H.L.* Area of each set of valves *7.96 sq. in.*  
Pressure to which they are adjusted *480 lb.* Is easing gear fitted *Yes*

Spare Gear. Has the spare gear required by the rules been supplied

FOR RICHARDSON, WESTGARTH &amp; CO. LIMITED.

The foregoing is a correct description,

DIRECTOR Manufacturer.

Dates of Survey During progress of work in shops - 1943 May 24-28 June 21-23 July 12-14-22 Aug 2-15-23 Sept 9-16-17-20 Oct 4-7-28-29 Nov 5-24  
while building During erection on board vessel - 1944 Jan 4-5-6-7-10-11-13-14-15-17-18-20-24-25-27-28-31 Feb 3-4-8-9-10-11-12-14-21-28-29 March 3-6-9-15  
Is the approved plan of boiler forwarded herewith *No*  
Total No. of visits *59*

Is this boiler a duplicate of a previous case *Yes* If so, state vessel's name and report No. *R.W. 2442*

## GENERAL REMARKS (State quality of workmanship, opinions as to class, &amp;c.)

*These boilers with their superheaters & economisers have been constructed under Special Survey & in accordance with the approved plans & specifications for a working pressure of 480 lb./sq. in. The workmanship & materials have been found good.*

Survey Fee ... £ *Sack 44* When applied for, *19*  
Travelling Expenses (if any) £ *Sack 44* When received, *19*

Committee's Minute

Assigned

*see minute on J.E. Rpt.*

Engineer Surveyor to Lloyd's Register of Shipping.

Lloyd's Register Foundation

004275-004284-0289



Upon completion the boilers, superheaters & economizers were hydraulically  
✓ tested to 740 lb/sq" & found sound & tight.

The boilers have been despatched to Haverton Hill for fitting on  
board Furness S.S. Co. Vessel No 359

Rpt. 4a will be forwarded when the engines are completed.

These boilers have now been securely fitted on board & examined under working  
conditions & found satisfactory.

✓ On completion the SV's of both boilers were adjusted under steam, the SV's of the drums  
to 490 lb/sq" & those of the superheaters to 480 lb/sq"

L. Norman Stuart

### Drums fitted in these boilers

one steam drum marked FW 83	} See Mch. C. 2221 (retained here)
" water " " FW 100	
" " " " EW 1452	See Brm. C. 2831 (copy attached)
" steam " " EW 1423	See Brm. C. 2869 ( " " )