

# REPORT ON WATER TUBE BOILERS.

Mo. 17701  
No. 18528

MAR 1944

Received at London Office

17 MAR 1944

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

Built at Haverton Hill By whom built Furness S.B. Co. (359) When built 1944  
Engines made at Hartlepool By whom made Richardsons Westgarth 46 (2445) When made ""  
Boilers made at "" By whom made "" (2445) When made ""  
Nominal Horse Power (1215) 1210 Owners 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 Working Pressure 480 lb./sq. in. Tested by Hydraulic Pressure to 740 lb./sq. in. Number and Description or Type of Boilers 2 Foster Wheeler D Type 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 Wallsend 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 3/8" 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 2 1/4" Pitch of rivets 2 1/2"

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 1/2" Percentage strength of shell in way of tubes 26/30 Thickness of plates 1 7/8" + 1 1/4"

Working pressure by rules as app. Steam Drum Heads or Ends: - Range of tensile strength 26/30 Thickness of plates 1 7/8" + 1 1/4"

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 2 1/4" Pitch of rivets 2 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 1/2"

Percentage strength of drum shell in way of tubes 26/30 Working pressure by rules as app. Water Drum Heads or Ends: - Range of Tensile strength 26/30 Thickness of plates 1 9/32" 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

Material Steel Thickness 7/8" Tested by Hydraulic Pressure to 740 lb./sq. in. Tubes: - Diameter 1 1/2"

Thickness 7/8" Number 384 Steam Dome or Collector: - Description of Joint to Shell 1040

Inside diameter 3'-6" Thickness of shell plates 1 9/32" Range of tensile strength 26/30

Description of longitudinal joint long. seams Diameter of rivet holes 2 1/4" Pitch of rivets 2 1/2" 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

Working Pressure of shell by rules as app. Crown or End Plates: - Range of tensile strength 26/30 Working pressure by rules as app.

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 1/4" Pitch of rivets 2 1/8" x 1 1/8"

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 1/8" x 1 1/8"

Percentage strength of drum shell in way of tubes 28/32 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 11/16" 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 Yes

The foregoing is a correct description, W. J. Wainwright DIRECTOR Manufacturer.

Dates of Survey while building: During progress of work in shops - 1943 May 24-28, June 21, July 12-13, 16-22, Aug 7, 15, 23, Sept 9, 16, 17, 20, Oct 4, 7, 28, 29, 30, 31, 1944 Jan 4, 5, 6, 7, 10, 11, 13, 14, 15, 17, 18, 20, 24, 27, 28, 29, 30, 31, Feb 3, 4, 8, 9, 10, 11, 12, 14, 21, 28, 29, March 3, 7, 9, 15

During erection on board vessel - - -

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, &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 ... £ See Rpt 4a When applied for, 19

Travelling Expenses (if any) £ See Rpt 4a When received, 19

Committee's Minute TUES. 19 SEP 1944

Assigned see minute on J.O. Rpt.

Clive Bell 2020  
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 470 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 superheater 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 Bm. C. 2831 (copy attached)
" steam " " EW 1423	See Bm. C. 2869 ( " " )



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