Rpt. 5a.

REPORT ON BOILERS.

No. 18181.

Received at London Office 13 AUG 1941

Date of writing Report 12/8/1941 When handed in at Local Office 12/8/1941. Port of W. Hartlepool

No. in Reg. Book. 91049 Survey held at Hartlepool & Haverton Hill, Date, First Survey 10th June, 1940. Last Survey 8th August 1941 (Number of Visits 102.)

Name of Ship S/S "EMPIRE AMETHYST" Tons Gross 8032.20 Net 4675.62

Built at Haverton Hill By whom built Furness Shipbuilding Co Ltd. Yard No. 330 When built 1941

Engines made at Hartlepool By whom made Richardsons Westgarth & Co. Engine No. 2704 When made 1941

Boilers made at " By whom made " " " Boiler No. 2704 When made 1941

Nominal Horse Power 674 Owner Ministry of War Transport Port belonging to Middlesbrough

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

Manufacturers of Steel Steel Co. of Scotland & Colvilles Ltd. (Letter for Record S

Total Heating Surface of Boilers 10020 ☐ft. Is forced draught fitted Yes Coal or Oil fired Oil

No. and Description of Boilers 3 S.E. Multitubular **Working Pressure** 220 lbs/☐"

Tested by hydraulic pressure to 380 lbs/☐" Date of test 8.7.41 No. of Certificate 3938 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 2-2½" Spring loaded Light lift

Area of each set of valves per boiler {per Rule 8.65 ☐" / as fitted 9.8 ☐"} Pressure to which they are adjusted 220 lbs 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 3'-9" Is oil fuel carried in the double bottom under boilers Yes

Smallest distance between shell of boiler and tank top plating 2'-6" Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 16'-2 31/32" Length 12'-6" **Shell plates:** Material Steel Tensile strength 30/34 tons/☐"

Thickness 1 33/64" Are the shell plates welded or flanged No Description of riveting: circ. seams {end D.R.L. / inter. none}

long. seams T.R.D.B.S. Diameter of rivet holes in {circ. seams 1½" / long. seams 1 9/16"} Pitch of rivets {4" / 10½"}

Percentage of strength of circ. end seams {plate 62.5% / rivets 44.7%} Percentage of strength of circ. intermediate seam {plate ✓ / rivets ✓}

Percentage of strength of longitudinal joint {plate 85.1 / rivets 86.7 / combined 87.5}

Thickness of butt straps {outer 1 5/32" / inner 1 9/32"} **No. and Description of Furnaces in each Boiler** 3 Deighton Gourley necks

Material Steel Tensile strength 26/30 tons/☐" Smallest outside diameter 3'-11 25/32"

Length of plain part {top ✓ / bottom ✓} Thickness of plates {crown / bottom} 47/64" Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom ✓

End plates in steam space: Material Steel Tensile strength 26/30 tons/☐" Thickness 1 13/32" Pitch of stays 22½" x 18½"

How are stays secured double nuts

Tube plates: Material {front Steel / back "} Tensile strength {26/30 tons/☐" / "} Thickness {15/16" / 7/8"}

Mean pitch of stay tubes in nests 9 5/8" Pitch across wide water spaces 14½" x 14¼"

Girders to combustion chamber tops: Material Steel Tensile strength 29/33 tons/☐" Depth and thickness of girder at centre 2 — 11¾" x 1" Length as per Rule 3'—10½" Distance apart 9" No. and pitch of stays in each 3 @ 11½"

Combustion chamber plates: Material Steel

Tensile strength 26/30 tons/☐" Thickness: Sides 13/16" Back 23/32" Top 13/16" Bottom 29/32"

Pitch of stays to ditto: Sides 9" x 11½" Back 9" x 8" Top 9" x 11½" Are stays fitted with nuts or riveted over nuts

Front plate at bottom: Material Steel Tensile strength 26/30 tons/☐"

Thickness 15/16" **Lower back plate:** Material Steel Tensile strength 26/30 tons/☐" Thickness 15/16"

Pitch of stays at wide water space 15 3/8" x 8" Are stays fitted with nuts or riveted over nuts

Main stays: Material Steel Tensile strength 28/32 tons/☐"

Diameter {At body of stay, & Over threads 3½"} No. of threads per inch 6

Screw stays: Material Steel Tensile strength 26/30 tons/☐"

Diameter {At turned off part, & Over threads 2" & 1 3/4"} No. of threads per inch 9

Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, 2" & 1 3/4" Over threads

No. of threads per inch 9

Tubes: Material Steel External diameter { Plain / Stay } 2 1/2" Thickness { 8 L.S.G. / 5/16" 3/8" 7/16" } No. of threads per inch 9

Pitch of tubes 4" x 3 5/8" **Manhole compensation:** Size of opening in

shell plate 16 1/2" x 20 1/2" Section of compensating ring 18 3/8" x 1 33/64" No. of rivets and diameter of rivet holes 34 - 1 9/16"

Outer row rivet pitch at ends 10 1/2" Depth of flange if manhole flanged 3 1/4" **Steam Dome:** Material none

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 — Thickness of crown — No. and diameter of

stays — Inner radius of crown —

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 Combustion Chamber Type Manufacturers of { Tubes Stewart & Lloyds / Steel forgings " / Steel castings — }

Supplied N.S. Monie (1938) Ltd.

Number of elements 36 Material of tubes S.D. Steel Internal diameter and thickness of tubes 1.273" x 7 N.G.

Material of headers S.D. Steel Tensile strength 26/28 tons/□" Thickness 1" Can the superheater be shut off and

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 3.1416 □" Are the safety valves fitted with easing gear Yes

Pressure to which the safety valves are adjusted 220 lbs/□" Hydraulic test pressure

tubes 1500 lb/□" ~~forgings and castings~~ Header 660 lb/□" and after assembly in place 660 lb/□" Are drain cocks or

valves fitted to free the superheater from water where necessary Yes.

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

The foregoing is a correct description,

for RICHARDSONS, WESTGARTH & Co. LIMITED.

W. E. Lonsdale DIRECTOR Manufacturer

Dates of Survey while building { During progress of work in shops - - } See Rpt. 4. Are the approved plans of boiler and superheater forwarded herewith 16/10/39

(If not state date of approval.)

{ During erection on board vessel - - - } Total No. of visits

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. R.W. 2703 "EMPIRE SAP

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

The boilers have been constructed under Special Survey & in accordance with the approved plans for a working pressure of 220 lb/

The materials & workmanship have been found good.

Upon completion the boilers were tested in the presence of the undersigned with hydraulic pressure of 380 lb/□" & found sound & tight.

These boilers have been forwarded to Haverton Hill.

The boilers securely fitted on board, & found in orde

Safety valves adjusted under steam to 220 lb/□" on comp

Survey Fee ... ... £ See Rpt 4 When applied for, 19

Travelling Expenses (if any) £ : : When received, 19

Clive Bell & J. A. Fastl

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 23 SEP 1941

Assigned See Mdse. T.E. 17097