Rpt. 5a.

REPORT ON BOILERS.

No. 30377

Received at London Office 6 JUN 1930

Date of writing Report 192 When handed in at Local Office 5 JUNE 1930 Port of Sunderland

No. in Reg. Book. Survey held at Sunderland Date, First Survey Last Survey June 5 1930

(Number of Visits) Tons Gross 4585 Net 2728

on the S.S. "HARBERTON"

Master Built at Sunderland. By whom built Short Bros Ltd. Yard No. 442 When built 1930

Engines made at Sunderland. By whom made Geo. Clark Ltd Engine No. 1188 When made 1930

Boilers made at do By whom made do Boiler No. 1188½ When made 1930.

Nominal Horse Power 417 Owners National Shipping Co Ltd Port belonging to London.

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

Manufacturers of Steel Thyssens Mulheim. (Letter for Record A (1))

Total Heating Surface of Boilers 1787 ft Is forced draught fitted No Coal or Oil fired coal

No. and Description of Boilers One S.E. Sgl Ends. **Working Pressure** 180 lbs

Tested by hydraulic pressure to 320 lbs Date of test 7/5/30 No. of Certificate 4096 Can each boiler be worked separately Yes.

Area of Firegrate in each Boiler 48 ft. No. and Description of safety valves to each boiler 2 S.L. Pickburn high lift.

Area of each set of valves per boiler { per Rule 2.864 x 2 = 5.7" as fitted 6.28 = 2½" dia. Pressure to which they are adjusted 185 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 6'-0" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 2'-0" Is the bottom of the boiler insulated No.

Largest internal dia. of boilers 13'-3 7/8" Length 11'-0" **Shell plates:** Material Steel Tensile strength 29 TO 33 TONS

Thickness 1 1/16" Are the shell plates welded or flanged No Description of riveting: circ. seams { end D.R.L inter.

long. seams T.R. DBS. Diameter of rivet holes in { circ. seams 1 1/8" long. seams 1 1/8" Pitch of rivets { 3 5/16" 7 3/4"

Percentage of strength of circ. end seams { plate 65 rivets 44.2 Percentage of strength of circ. intermediate seam { plate rivets

Percentage of strength of longitudinal joint { plate 85.48 rivets 89.8 combined 89. Working pressure of shell by Rules 180 lbs "

Thickness of butt straps { outer 13/16" inner 15/16" **No. and Description of Furnaces in each Boiler** 3 Corrugated Deighton's.

Material Steel. Tensile strength 26 TO 30 TONS Smallest outside diameter 2'-11 9/32"

Length of plain part { top bottom Thickness of plates { crown 33/64" bottom Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 210 lbs "

End plates in steam space: Material Steel Tensile strength 26 TO 30 TONS Thickness 17/32" Pitch of stays 20 3/8" x 18"

How are stays secured DN & Washers. Working pressure by Rules 186 lbs "

Tube plates: Material { front Steel back Steel Tensile strength { 26 TO 30 TONS Thickness { F 27/32" B 13/16" Working pressure { front 191 lbs back 188 "

Mean pitch of stay tubes in nests 11¼" x 11¼" Pitch across wide water spaces 14¼" Tensile strength 29 TO 33 TONS

Girders to combustion chamber tops: Material Steel Depth and thickness of girder at centre 8" x 1 3/4" Length as per Rule 33" Distance apart 10" No. and pitch of stays in each 2 @ 10" Working pressure by Rules 182 lbs "

Combustion chamber plates: Material Steel Tensile strength 26 TO 30 TONS Thickness: Sides 23/32" Back 11/16" Top 23/32" Bottom 23/32"

Pitch of stays to ditto: Sides 10" x 10" Back 10" x 9 11/16" Top 10" x 10" Are stays fitted with nuts or riveted over Nuts.

Working pressure by Rules 180 **Front plate at bottom:** Material Steel Tensile strength 26 to 30 Tons

Thickness 27/32" **Lower back plate:** Material Steel. Tensile strength 26 to 30 Tons Thickness 7/8"

Pitch of stays at wide water space 16" x 9 11/16" Are stays fitted with nuts or riveted over Nuts

Working Pressure 185 lbs **Main stays:** Material Steel Tensile strength 28 to 32 Tons.

Diameter { At body of stay, 2 3/4" & 2 7/8" Over threads 3 1/8" & 3 1/4" No. of threads per inch 6 Area supported by each stay 18" x 19"

Working pressure by Rules 190 lbs **Screw stays:** Material Iron Tensile strength 21½ to 25½ Tons

Diameter { At turned off part, 1 7/8" Over threads No. of threads per inch 9 Area supported by each stay 10" x 10"

Working pressure by Rules 214 *Are the stays drilled at the outer ends* Yes *Margin stays: Diameter* {*At turned off part, or Over threads* 2 & 2¼ /

No. of threads per inch 9 *Area supported by each stay* 13" × 9 5/8" *Working pressure by Rules* 210

Tubes: *Material* S D Steel *External diameter* {*Plain* 3¼ / *Stay* 3¼ } *Thickness* {Plain 8 WG / Stay ¼" 5/16 & 3/8} *No. of threads per inch* 9

Pitch of tubes 4½" × 4½" / *Working pressure by Rules* 209. / **Manhole compensation:** *Size of opening in shell plate* 16" × 12" / *Section of compensating ring* 7½" × 1⅛" / *No. of rivets and diameter of rivet holes* 4 @ 1⅛" /

Outer row rivet pitch at ends 7 3/4" / *Depth of flange if manhole flanged* – **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 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* –, *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* Yes.

The foregoing is a correct description,

W S Bruce *Manufacturer.*

Dates of Survey while building {*During progress of work in shops* – Please see Mchy. Rpt. *During erection on board vessel* –}

Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

Total No. of visits

GENERAL REMARKS (*State quality of workmanship, opinions as to class, &c.*) This boiler has been built under Special Survey & the materials & workmanship are good on completion. The boiler was satisfactorily fitted in the vessel & the safety valves adjusted under steam. For notation see machinery report.

Survey Fee ... ... £ : ✓ : / When applied for, 192

Travelling Expenses (if any) £ : : When received, 192

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 6 JUN 1930

Assigned See attached T.E. Rpt