

REPORT ON BOILERS.

No. 32480

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Date of writing Report 16 Sep 1938 Port of Sunderland.

No. in Survey held at Reg. Book. Sunderland. Date, First Survey Last Survey 8 Sep. 1938

on the S.S. "GRAYBURN" (Number of Visits) Gross 6342 Tons Net 3439.

Master Built at Sunderland By whom built Sir J. Laing & Sons Ltd. Yard No. 421. When built 1938

Engines made at Sunderland By whom made G. Black (1938) Ltd. Engine No. 1211 When made 1938

Boilers made at Sunderland By whom made G. Black (1938) Ltd. Boiler No. 1211 When made 1938.

Nominal Horse Power 523. Owners Waller & Co Ltd. Port belonging to London.

MULTITUBULAR BOILERS - MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Messrs. Colville's Ltd. (Letter for Record S.)

Total Heating Surface of Boilers 4,49 sq. ft. Is forced draught fitted Yes. Coal or Oil fired Both.

No. and Description of Boilers Three Single ended multitubular marine Working Pressure 220.

Tested by hydraulic pressure to 380 Date of test 18/5/38 No. of Certificate 4243 Can each boiler be worked separately Yes.

Area of Firegrate in each Boiler 48.4 sq. ft. No. and Description of safety valves to each boiler Two Cockburn Imp. High Lift. 4245

Area of each set of valves per boiler (per Rule 6.93 sq. ft. as fitted 4.94 sq. ft. Pressure to which they are adjusted 220 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 1'-9" Is oil fuel carried in the double bottom under boilers No.

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 15'-6 1/16" Length 12'-0" Shell plates: Material Steel Tensile strength 30/34

Thickness 1 15/32" Are the shell plates welded or flanged No. Description of riveting: circ. seams end D.R. Lap. F. 1 1/16" B. 1 1/2"

long. seams T.R.D.B.S. Diameter of rivet holes in (circ. seams F. 1 1/16" B. 1 1/2" long. seams 1 1/2" Pitch of rivets F. 3 1/2" B. 4 1/4"

Percentage of strength of circ. end seams (plate F. 63.6 B. 64.8 rivets F. 43.0 B. 43.2 Percentage of strength of circ. intermediate seam (plate 85.26 rivets 84.0

Percentage of strength of longitudinal joint (plate 84.0 rivets 84.54 Working pressure of shell by Rules 221.8

Thickness of butt straps (outer 1 1/8" inner 1 1/4" No. and Description of Furnaces in each Boiler Three Corrugated (Heighten)

Material Steel Tensile strength 26/30 Smallest outside diameter 3'-8 9/32"

Length of plain part (top 1' bottom 1' Thickness of plates (crown 43/64" Description of longitudinal joint Weld.

Dimensions of stiffening rings on furnace or p.c. bottom ✓ Working pressure of furnace by Rules 220

End plates in steam space: Material Steel Tensile strength 26/30 Thickness 1 15/32" Pitch of stays 18" x 24"

How are stays secured Double nuts. Working pressure by Rules 225.

Tube plates: Material (front Steel back Steel Tensile strength 26/30 Thickness 1 1/32" 7/8"

Mean pitch of stay tubes in nests 12 3/4" x 8 1/4" Pitch across wide water spaces 14" x 4 1/8" Working pressure (front 346 back 264

Girders to combustion chamber tops: Material Steel Tensile strength 29/33. Depth and thickness of girder

at centre 10 1/8" x 1 3/4" Length as per Rule 3'-2 1/2" Distance apart 8 3/4" No. and pitch of stays

in each 3 @ 9 1/4" Working pressure by Rules 229. Combustion chamber plates: Material Steel

Tensile strength 26/30. Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 1/8"

Pitch of stays to ditto: Sides 9" x 9 1/8" Back W. 9 1/2" x 8 1/4" Top 9 1/4" x 8 3/4" Are stays fitted with nuts or riveted over nuts.

Working pressure by Rules 220 229 224. Front plate at bottom: Material Steel Tensile strength 26/30.

Thickness 1 1/32" Lower back plate: Material Steel Tensile strength 26/30 Thickness 1"

Pitch of stays at wide water space 15 1/2" x 9 1/2" Are stays fitted with nuts or riveted over nuts.

Working Pressure 249. Main stays: Material Steel Tensile strength 28/32.

Diameter (At body of stay, 3 1/8" 3 3/8" No. of threads per inch 6 Area supported by each stay 19 1/2" x 19" 19" x 22 1/2"

(Over threads 3 1/2" 3 3/4" Working pressure by Rules 230 233. Screw stays: Material Steel Tensile strength 26/30.

Diameter (At turned off part, 1 3/4" No. of threads per inch 9. Area supported by each stay 9" x 9 1/8" 9 1/4" x 8 3/4"

(Over threads 1 3/4" 9 1/2" x 8 1/4"

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Working pressure by Rules ²²⁰ ~~224~~ ²³¹ Are the stays drilled at the outer ends *No.* Margin stays: Diameter { At turned off part, or Over threads *1 1/8", 2", 2 1/8", 2 3/8"*

No. of threads per inch *9.* Area supported by each stay *12 5/16" x 9"* Working pressure by Rules *223 233.*

Tubes: Material *S.D. Steel* External diameter { Plain *3"* Stay *3"* Thickness { *1/4" 5/16" 3/8"* No. of threads per inch *9.*

Pitch of tubes *4 1/4" x 4 1/8"* Working pressure by Rules *247, 248, 296* Manhole compensation: Size of opening in shell plate *In 2nd plate* Section of compensating ring *✓* No. of rivets and diameter of rivet holes *✓*

Outer row rivet pitch at ends *✓* Depth of flange if manhole flanged *4 1/4"* 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 *North Eastern Mar. Eng Co Ld. (Smoke tube)* Manufacturers of { Tubes *Messrs Tubes Ld.* Steel castings *Bedfordham Steel Co Ld.*

Number of elements *141.* Material of tubes *S.D. Steel* Internal diameter and thickness of tubes *1 7/8" x 2.5"*

Material of headers *Forged Steel* Tensile strength *26/30* Thickness *1/8"* 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 *3.54 sq"* Are the safety valves fitted with easing gear *Yes.* Working pressure as per Rules *220 lbs/sq"* Pressure to which the safety valves are adjusted *220 lbs/sq"* Hydraulic test pressure: tubes *1500 lbs/sq"* castings *660 lbs/sq"* and after assembly in place *440 lbs/sq"* 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 GEORGE CLARK (1938) LTD.
H. Mackenzie Manufacturer.

Dates { During progress of work in shops - - }
of Survey { During erection on board vessel - - }
while building

Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) *Yes.*
Total No. of visits

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

These boilers have been Constructed under Special Survey in accordance with the approved plan & the Rules of the Society. The materials & workmanship are good. On completion they have been Subjected to test by hydraulic pressure in accordance with Rule requirements & found to be tight & sound. They have been fitted to burn oil fuel (F.O. above 150°F) Section 20 of the Rules has been Complied with. They have been Securely fixed on board the vessel. Examined under Steam & safety valves of boilers & superheater adjusted as per Rules. For recommendation please see Inchn. Rpt.

Survey Fee ... £ *See Inchn. Rpt.* When applied for, 192
Travelling Expenses (if any) £ *Rpt.* When received, 192

J. H. Fraser
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI 30 SEP 1938*

Assigned *See F.B. Rpt.*



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