

REPORT ON BOILERS.

Received at London Office **MAR 30 1939**

Date of writing Report 192 When handed in at Local Office **29 MAR 1939** Port of **SUNDERLAND.**

No. in Survey held at **SUNDERLAND** Date, First Survey Last Survey **March 25 1939**

on the **S.S. BRETWALDA** (Number of Visits) Gross **4906** Tons Net **2766**

Master Built at **Sunderland** By whom built **J. Thompson & Co., Ltd. No. 691** When built **1939**

Engines made at **Sunderland** By whom made **R. E. Marine Eng. Co. (1938) Ltd. Engine No. 2920** When made **1939**

Boilers made at **do** By whom made **do** Boiler No. **do** When made **do**

Nominal Horse Power **365** Owners **Hall Bros** Port belonging to **Newcastle**

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

Manufacturers of Steel **The Steel Company of Scotland.** (Letter for Record **S**)

Total Heating Surface of Boilers **3840 sq ft** Is forced draught fitted **yes** Coal or Oil fired **coal**

No. and Description of Boilers **2. Cylindrical multitubular** Working Pressure **220 lbs.**

Tested by hydraulic pressure to **380 lbs** Date of test **12/10/38** No. of Certificate **4286/7/8** Can each boiler be worked separately **yes**

Area of Firegrate in each Boiler **41 sq ft** No. and Description of safety valves to each boiler **2 direct spring**

Area of each set of valves per boiler (per Rule **10.38 sq"** as fitted **11.88 sq"**) 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 **24"** Is oil fuel carried in the double bottom under boilers **no**

Smallest distance between shell of boiler and tank top plating **30"** Is the bottom of the boiler insulated **yes**

Largest internal dia. of boilers **13'-6 3/8"** Length **12'-4 1/2"** Shell plates: Material **Steel** Tensile strength **29/33 tons/sq"**

Thickness **1 5/16"** Are the shell plates welded or flanged **no** Description of riveting: circ. seams (end **D.R.L.**)

long. seams **T.R.D.B.S.** Diameter of rivet holes in (circ. seams **1 3/8"** long. seams **1 3/8"**) Pitch of rivets (**4"**)

Percentage of strength of circ. end seams (plate **65.6** rivets **44.5**) Percentage of strength of circ. intermediate seam (plate **—** rivets **—**)

Percentage of strength of longitudinal joint (plate **85.52** rivets **88.54** combined **88.76**) Working pressure of shell by Rules **222 lbs.**

Thickness of butt straps (outer **1"** inner **1 1/8"**) No. and Description of Furnaces in each Boiler **3 Slighton Stephen Gurney nests.**

Material **Steel** Tensile strength **26/30 tons/sq"** Smallest outside diameter **3'-2 7/16"**

Length of plain part (top **—** bottom **—**) Thickness of plates (crown **1 9/32"** bottom **1 9/32"**) Description of longitudinal joint **weld**

Dimensions of stiffening rings on furnace or c.c. bottom **—** Working pressure of furnace by Rules **224 lbs.**

End plates in steam space: Material **Steel** Tensile strength **26/30 tons/sq"** Thickness **1 1/4"** Pitch of stays **19 3/8" x 16 3/4"**

How are stays secured **double nuts** Working pressure by Rules **222 lbs.**

Tube plates: Material (front **Steel** back **Steel**) Tensile strength (**26/30 tons/sq"**) Thickness (**7/8"**)

Mean pitch of stay tubes in nests **10 1/4"** Pitch across wide water spaces **14" x 7 3/8"** Working pressure (front **228 lbs.** back **243 lbs.**)

Girders to combustion chamber tops: Material **Steel** Tensile strength **29/33 tons/sq"** Depth and thickness of girder

at centre **10 5/8" x 2 1/2"** Length as per Rule **46 1/2"** Distance apart **9 1/4"** No. and pitch of stays

in each **3 @ 11 1/8"** Working pressure by Rules **228 lbs.** Combustion chamber plates: Material **Steel**

Tensile strength **26/30 tons/sq"** Thickness: Sides **27/32"** Back **19/16"** Top **27/32"** Bottom **27/32"**

Pitch of stays to ditto: Sides **11 1/8" x 10"** Back **11 1/2" x 8 3/8"** Top **11 1/8" x 9 1/4"** Are stays fitted with nuts or riveted over **nuts fitted.**

Working pressure by Rules **225 lbs.** Front plate at bottom: Material **Steel** Tensile strength **26/30 tons/sq"**

Thickness **7/8"** Lower back plate: Material **Steel** Tensile strength **26/30 tons/sq"** Thickness **3/32"**

Pitch of stays at wide water space **14 1/4" x 11 1/2"** Are stays fitted with nuts or riveted over **nuts fitted.**

Working Pressure **224 lbs.** Main stays: Material **Steel** Tensile strength **28/32 tons/sq"**

Diameter (At body of stay **3 1/8"** or **2 7/8"** Over threads **3 1/2"** or **3 1/4"**) No. of threads per inch **6** Area supported by each stay **16 3/4" x 19 3/8"**

Working pressure by Rules **262 lbs.** Screw stays: Material **Steel** Tensile strength **26/30 tons/sq"**

Diameter (At turned off part **1 7/8"** or **1 3/4"** Over threads **1 7/8"**) No. of threads per inch **9** Area supported by each stay **11 1/2" x 8 3/8"**

Working pressure by Rules 222-lb. Are the stays drilled at the outer ends no Margin stays: Diameter ^{At turned off part} 2" or _{Over threads}

No. of threads per inch 9 Area supported by each stay 11 1/16" x 10 1/4" Working pressure by Rules 220-lb.

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

Pitch of tubes 4" x 3 1/16" Working pressure by Rules 234-lb. Manhole compensation: Size of opening ---

Shell plate 16" x 12" Section of compensating ring --- No. of rivets and diameter of rivet holes ---

Outer row rivet pitch at ends --- Depth of flange if manhole flanged 3 7/8" 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 stays ---

How connected to shell --- Inner radius of crown --- Working pressure by Rules ---

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 Manufacturers of ^{Tubes} Stewarts & Lloyd ^{Steel castings} Stewarts & Lloyd

Number of elements 26 Material of tubes S.D. Steel Internal diameter and thickness of tubes 1.023", 7.N.G.

Material of headers 4, S.D. Steel Tensile strength 26/38 tons/in² Thickness 1" Can the superheater be shut off at any time 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 3.14 sq" Are the safety valves fitted with easing gear yes Working pressure as per Rules 220-lb.

Pressure to which the safety valves are adjusted 230-lb. Hydraulic test pressure ---

tubes 1500-lb. castings 660-lb. and after assembly in place 500-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,
 THE NORTH EASTERN MARINE ENGINEERING CO. (1938) LTD.
 J. R. H. [Signature] Manufacturer

Dates of Survey ^{During progress of work in shops - - -} Please see Mech. Rpt. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

^{while building} _{board vessel - - -} 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 plans, Secretary's letters and the requirements of the Rules. Workmanship and materials are good. In recommendation plan on Rpt 4.

J. R. H. [Signature]

Survey Fee £ See Rpt 4 When applied for, 192

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

Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute WED 12 APR 1939

Assigned See Std. 76, 32601

