

## REPORT ON BOILERS.

No. 19090.

Date of writing Report **8.4.29** When handed in at Local Office **4-9-1929** Port of **Greenock**  
 No. in Survey held at **Greenock** Date, First Survey **12th September 1929** Last Survey **3rd Sept 1929**  
 Reg. Book. **S/S "Gryferale"** (Number of Visits ☒) Tons Gross **423.88** Net **276.39**  
 on the  
 Master **P. Elongor** By whom built **Lithgow & Co.** Yard No. **826** When built **1929**  
 Engines made at **Greenock** By whom made **Raukin & Blackmore & Co.** Engine No. **433** When made **1929**  
 Boilers made at **ditto** By whom made **ditto** Boiler No. **433** When made **1929**  
 Nominal Horse Power **2600** Owners **A. Crawford & Co. Ltd.** Port belonging to **Glasgow**

## MULTITUBULAR BOILERS - MAIN,

Manufacturers of Steel **Vereenigte Staalwerke A.G. Aarden Heren**  
**Sevettill 2081° Stal Co. of Scotland Dorman Long**  
 Total Heating Surface of Boilers **6171 sq ft** Is forced draught fitted **yes** Coal **Oil-fired** **coal**  
 No. and Description of Boilers **3 single ended 3SB** Working Pressure **200**  
 Tested by hydraulic pressure to **350** Date of test **30.4.29** No. of Certificate **1868** Can each boiler be worked separately **yes**  
 Area of Firegrate in each Boiler **50 sq ft** No. and Description of safety valves to each boiler **2 Boehm's Improved High Lift**  
 Area of each set of valves per boiler **per Rule 4.15 sq ft** Pressure to which they are adjusted **205** 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 **1-10"** 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 **yes**  
 Largest internal dia. of boilers **13' 4 3/4"** Length **11-3"** Shell plates: Material **S** Tensile strength **28-32**  
 Thickness **1 1/4"** Are the shell plates welded or flanged ☒ Description of riveting: circ. seams **end** **DR**  
 long. seams **TR & DBS** Diameter of rivet holes in **circ. seams 1 5/16"** **long. seams 1 5/16"** Pitch of rivets **4-11"** **9 1/8"**  
 Percentage of strength of circ. end seams **plate 68.2** **rivets 43.2** Percentage of strength of circ. intermediate seam **plate 85.61** **rivets 91.5**  
 Percentage of strength of longitudinal joint **combined 89.39** Working pressure of shell by Rules **202**  
 Thickness of butt straps **outer 1"** **inner 1 1/8"** No. and Description of Furnaces in each Boiler **3 Deightons 3C**  
 Material **S** Tensile strength **26-30** Smallest outside diameter **3' 4 1/8"**  
 Length of plain part **top** **bottom** ☒ Thickness of plates **crown 9 1/16"** **bottom 9 1/16"** Description of longitudinal joint **weld**  
 Dimensions of stiffening rings on furnace or c.c. bottom ☒ Working pressure of furnace by Rules **203**  
 End plates in steam space: Material **S** Tensile strength **26-30** Thickness **17/32"** Pitch of stays **1-6 1/2" 1-5 1/2"**  
 How are stays secured **DN** Working pressure by Rules **208**  
 Tube plates: Material **front** **back** **steel** Tensile strength **26-30** Thickness **3/4"**  
 Mean pitch of stay tubes in nests **9' 68"** Pitch across wide water spaces **13 1/2"** Working pressure **front 243** **back 214**  
 Girders to combustion chamber tops: Material **S** Tensile strength **28-32** Depth and thickness of girder **front 243** **back 214**  
 centre **9 5/8" x 11 1/2"** Length as per Rule **2'-4 1/2"** Distance apart **10"** No. and pitch of stays  
 each **3 at 8"** Working pressure by Rules **204** Combustion chamber plates: Material **S**  
 Tensile strength **26-30** Thickness: Sides **11/16"** Back **21/32"** Top **11/16"** Bottom **3/4"**  
 Pitch of stays to ditto: Sides **8' 10"** Back **9' 8 1/4"** Top **8' 10"** Are stays fitted with nuts or riveted over **nuts**  
 Working pressure by Rules **202** Front plate at bottom: Material **S** Tensile strength **26-30**  
 Thickness **1"** Lower back plate: Material **S** Tensile strength **26-30** Thickness **27/32"**  
 Pitch of stays at wide water space **13 1/2"** Are stays fitted with nuts or riveted over **nuts**  
 Working Pressure **209** Main stays: Material **S** Tensile strength **28-32**  
 diameter **At body of stay, 2 3/4" x 3"** **Over threads** ☒ No. of threads per inch **6** Area supported by each stay **332.5 sq in**  
 Working pressure by Rules **202** Screw stays: Material **S** Tensile strength **26-30**  
 diameter **At turned off part, 1 5/8"** **Over threads** ☒ No. of threads per inch **9** Area supported by each stay **74-25 sq in**



Working pressure by Rules **204** Are the stays drilled at the outer ends ☒ Margin stays: Diameter **1 7/8"**  
 No. of threads per inch **9** Area supported by each stay **93.2 sq. in.** Working pressure by Rules **228**  
 Tubes: Material **Iron** External diameter **2 3/4"** Thickness **9/16"** No. of threads per inch **9**  
 Pitch of tubes **37/8" x 37/8"** Working pressure by Rules **209** Manhole compensation: Size of opening in  
 shell plate **16" x 12"** Section of compensating ring **2.83/4 x 2.43/4 x 1/4"** No. of rivets and diameter of rivet holes **28 - 15/16"**  
 Outer row rivet pitch at ends **10 5/8"** 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**  
 Internal diameter Working pressure by Rules Thickness of crown Rivets  
 stays Inner radius of crown Working pressure by Rules No. and diameter of  
 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**  
 Number of elements Material of tubes Manufacturers of Tubes  
 Material of headers Tensile strength Steel castings  
 the boiler be worked separately Thickness Can the superheater be shut off and  
 Area of each safety valve Is a safety valve fitted to every part of the superheater which can be shut off from the boiler  
 Rules Are the safety valves fitted with easing gear Working pressure as per  
 tubes Pressure to which the safety valves are adjusted Hydraulic test pressure:  
 to free the superheater from water where necessary and after assembly in place Are drain cocks or valves fitted

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

The foregoing is a correct description,  
**RANKIN & BLACKMORE, LTD.,**  
 Manufacturers,  
 Director

Dates of Survey { During progress of work in shops - - }  
 while building { During erection on board vessel - - }  
 Are the approved plans of boiler ☒ 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 built under special survey in accordance with the approved plans and the workmanship & material are of good quality & they are now securely fitted on board.**  
**This Report accompanies that of the Machinery**

Survey Fee **£**  
 charged on Machinery Report  
 When applied for, 192  
 When received, 192

**Wm Gordon-Mitchell**  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 10 SEP 1929**

Assigned **See accompanying report.**