

## REPORT ON MACHINERY.

Port of SunderlandReceived at London Office 10 SEP 1902No. in Survey held at Sunderland Date, first Survey 7th Feb Last Survey 4th Sept 1902  
Reg. Book.✓ on the S. S. "Gracechurch" (Number of Vials 25)Tons { Gross 2107  
Net 1834Master S. W. H. Jeffery Built at Sunderland By whom built W. Pickering & Sons When built 1902Engines made at Sunderland By whom made Geo. Clark, Ltd. when made 1902Boilers made at Sunderland By whom made Geo. Clark, Ltd. when made 1902Registered Horse Power \_\_\_\_\_ Owner H. S. Holland Henry Adamson Port belonging to LondonNom. Horse Power as per Section 28 277 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Tri Compound No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 23" - 38" - 64" Length of Stroke 42" Revs. per minute 70 Dia. of Screw shaft 13" Lgth. of stern bush 5' 0"  
 Dia. of Tunnel shaft 11 1/8" Dia. of Crank shaft journals 12 1/8" Dia. of Crank pin 12 1/2" Size of Crank webs 17 1/2" x 8 1/2" Dia. of thrust shaft under collars 12 1/2" Dia. of screw 16.0 Pitch of screw 16. 1/2" No. of blades 4 State whether moveable No Total surface 46.2 sq  
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 4 1/4" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines two Sizes of Pumps BALL 7 3/4" x 9 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room Two 3" dia & one in centre 3 1/2" dia In Holds, &c. Two in each 3" dia & one in after well 3 1/2"  
 No. of bilge injections 1 size 5 1/2" Connected to condenser, or to circulating pump G.P. Is a separate donkey suction fitted in Engine room & size yes 3 1/2"  
 Are all the bilge suction pipes fitted with roses yes Are the roses in Engine-room always accessible yes Are the sluices on Engine room bulkheads always accessible yes  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the discharge pipes above or below the deep water line above  
 Are they each fitted with a discharge valve always accessible on the plating of the vessel yes Are the blow off cocks fitted with a spigot and brass covering plate yes  
 What pipes are carried through the bunkers None How are they protected ✓  
 Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times yes  
 Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges yes  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock New Vessel Is the screw shaft tunnel watertight yes  
 Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.— (Letter for record R) Total Heating Surface of Boilers 4143 Is forced draft fitted No  
 No. and Description of Boilers 2 single ended ord. marine type Working Pressure 180 Tested by hydraulic pressure to 360  
 Date of test 15-7-02 Can each boiler be worked separately yes Area of fire grate in each boiler 62.5 sq No. and Description of safety valves to each boiler 2 direct Spring Area of each valve 8.29 sq Pressure to which they are adjusted 180 Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 2-6 Mean dia. of boilers 15-1 1/2" Length 10-10 1/2" Material of shell plates S  
 Thickness 1 1/32 Range of tensile strength 28 1/2-32 shell-ends flanged Descrip. of riveting: cir. seams D.R.L long. seams T.R.D.B.S.  
 Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 3/8" width of butt straps 1' 7"  
 Per centages of strength of longitudinal joint rivets 90 Working pressure of shell by rules 182 Size of manhole in shell 16" x 13"  
 Size of compensating ring 9" x 1 1/4" No. and Description of Furnaces in each boiler 3 Adamson Material S Outside diameter 3-10 3/32  
 Length of plain part 2-11 1/2" Thickness of plates 5/8" & 3/4" Description of longitudinal joint weld No. of strengthening rings 2  
 Working pressure of furnace by the rules 180 Combustion chamber plates: Material S Thickness: Sides 1/16 Back 1/16 Top 1/16 Bottom 1/16  
 Pitch of stays to ditto: Sides 9 1/4" x 9 Back 9 x 10 Top 9 1/2" If stays are fitted with nuts or riveted heads NUTS Working pressure by rules 181  
 Material of stays Iron Diameter at smallest part 1.73 Area supported by each stay 89 Working pressure by rules 185 End plates in steam space: Material S Thickness 1 1/32 Pitch of stay 18 1/4" x 16 How are stays secured NUTS Working pressure by rules 183 Material of stays S  
 Diameter at smallest part 2.78 Area supported by each stay 300 Working pressure by rules 186 Material of Front plates at bottom S  
 Thickness 3/4" Material of Lower back plate S Thickness 5/16" Greatest pitch of stays 14 Working pressure of plate by rules 181  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 3/8" Material of tube plates S Thickness: Front 1 1/6" Back 1 1/16" Mean pitch of stays 9  
 Pitch across wide water spaces 14 1/4" Working pressures by rules 182 Girders to Chamber tops: Material S Depth and thickness of girder at centre 11 1/2" x 7/4" x 2 Length as per rule 3-1 Distance apart 9 1/2" Number and pitch of Stays in each 3 stay 8 5/8" p  
 Working pressure by rules 181 Superheater or Steam chest; how connected to boiler NONE Can the superheater be shut off and the boiler worked separately \_\_\_\_\_  
 Diameter \_\_\_\_\_ Length \_\_\_\_\_ Thickness of shell plates \_\_\_\_\_ Material \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ Diam. of rivet holes \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Diameter of flue \_\_\_\_\_ Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_  
 If stiffened with rings \_\_\_\_\_ Distance between rings \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ End plates: Thickness \_\_\_\_\_ How stayed \_\_\_\_\_  
 Working pressure of end plates \_\_\_\_\_ Area of safety valves to superheater \_\_\_\_\_ Are they fitted with easing gear \_\_\_\_\_



**DONKEY BOILER—** No. 1 Description 1 cyl Multat. 2 plain furnaces  
 Made at Stockton By whom made Sudron & Co When made 19.7.02 Where fixed On deck  
 Working pressure 90 tested by hydraulic pressure to 180 No. of Certificate 2798 Fire grate area 290 Description of safety valves direct spring  
 No. of safety valves 2 Area of each 4.07 Pressure to which they are adjusted 90 Is fitted with easing gear yes If steam from main boilers can enter the donkey boiler No Dia. of donkey boiler 9' 6" Length 9' 0" Material of shell plates S Thickness 1/2" Range of tensile strength 28-32 Descrip. of riveting long. seams d. butt str Dia. of rivet holes 1 1/16 Whether punched or drilled dr Pitch of rivet 4 1/2 x 2 1/2  
 Lap of plating — Per centage of strength of joint 103 Rivets 81.9 Thickness of shell end 23 one wash Radius of do. Pitch No. of Stays to do 18 1/2 x 12 1/2  
 Dia. of stays 2 1/16 eff. Diameter of furnace Top 36" Bottom — Length of furnace 5' 11 1/2" Thickness of furnace plate 1 1/32" top Description of joint d. butt str Thickness of 6. chs 1 1/32" top 9/16 Stayed by 1 1/2" x 1 1/4" eff. stay Working pressure of shell by rules 90.5  
 Working pressure of furnace by rules 90 lb Diameter of tubes 3 1/2 Thickness of update plates 2 3/32 13 3/8 Thickness of stay tubes 5/16

**SPARE GEAR.** State the articles supplied:— Top and bottom end connecting rod, bolts and nuts, two main bearing bolts and nuts, one set coupling bolts, feed and bilge pump valves, bolts, nuts and iron assorted propeller &c.

The foregoing is a correct description,

FOR GEORGE CLARK LIMITED.

Manufacturer.

J. Mann, Rogers & Doolee

Dates of Survey: During progress of work in shops — 1902.— Feb 7. Apr. 4. 15. May 29. June 3. 6. 13. July 4. 8. 11. 12. 15. 22. 23. 26. 28. 30. 31. Aug. 1. 7. 1902.  
 During erection on board vessel — 15. 19. Sept. 1.  
 Total No. of visits 25

Is the approved plan of main boiler forwarded herewith No

" " " donkey " " " No

**General Remarks** (State quality of workmanship, opinions as to class, &c.)

Material of screw shaft Scrap iron Is the screw shaft fitted with a continuous liner the whole length of the stern tube yes  
 Is the after end of the liner made water tight in the propeller boss yes If the liner is in more than one length are the joints burned ✓  
 If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓ If two liners are fitted, is the shaft lapped or protected between the liners yes

The machinery of this vessel has been constructed under Special Survey, the material & workmanship being good and efficient, and the engines when tried under steam worked satisfactorily.

The pumps, watertight doors, and steam steering gear are in good working order, and the main steam pipes have been tested by hydraulic pressure to 400 lb per square inch.

In my opinion this vessel is eligible for the notification in the Register Book of 1. L.M.C. 9.02.

It is submitted that this vessel is eligible for THE RECORD.

1. L.M.C. 9.02

The amount of Entry Fee. £ 2 : : When applied for, 9.9.02  
 Special .. £ 33 17 : : 17.9.02  
 Donkey Boiler Fee .. £ : : When received, 17.9.02  
 Travelling Expenses (if any) £ : : 17.9.02

Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRI. 12 SEP 1902

Assigned

1. L.M.C. 9.02



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