

REPORT ON MACHINERY.

No. 46992. New
No. 21756 Sld

WED. 18 MAY 1904

Port of Sunderland.

Received at London Office 19

No. in Survey held at Sunderland. Date, first Survey 17th Sept 03 Last Survey May 4 1904
Reg. Book. S. S. "Cranford" NOW S/S FURTOR (Number of Visits 21)

Master B. Thompson Built at Newcastle By whom built Northumberland S. S. Co. Ltd. When built 1904
Engines made at Sunderland. By whom made Richardsons, Westgarth & Co. Ltd. when made 1904
Boilers made at Sunderland. By whom made " when made 1904

Registered Horse Power 281. Owners R. H. Holman Port belonging to London.
Nom. Horse Power as per Section 28 281 Is Refrigerating Machinery fitted No. Is Electric Light fitted No.

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 24-40-64 Length of Stroke 42 Revs. per minute 67 Dia. of Screw shaft as per rule 12.74 Material of W.S.
 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 No 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 Yes If two
 liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 4'-9"
 Dia. of Tunnel shaft as per rule 11.36 Dia. of Crank shaft journals as per rule 11.93 Dia. of Crank pin 12.0 Size of Crank webs 17x8 1/2 Dia. of thrust shaft under
 collars 13 1/2 Dia. of screw 15'-6" Pitch of screw 16'-0" No. of blades 4 State whether moveable No Total surface 70 sq ft
 No. of Feed pumps 2 Diameter of ditto 3 1/2 Stroke 27 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4 Stroke 27 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Two Sizes of Pumps 8x10x10 & 6 1/2 x 4 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 4 of 3 1/2 In Holds, &c. 2 of 3 1/2 in each

No. of bilge injections 1 sizes 5" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room & size Yes 4"
 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 Yes How are they protected Yes
 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 Nov. 1903 Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from Upper Platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 4450 sq ft Is forced draft fitted No.
 No. and Description of Boilers Single ended, cylindrical, multitubular Working Pressure 180 Tested by hydraulic pressure to 320
 Date of test 17/3/04 Can each boiler be worked separately Yes Area of fire grate in each boiler 55 sq ft No. and Description of safety valves to
 each boiler 2 Spring Area of each valve 8.3 sq in Pressure to which they are adjusted 165 lbs. Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 2'-0" Mean dia. of boilers 15'-3" Length 10'-6" Material of shell plates S
 Thickness 1/32 Range of tensile strength 28 1/2/32 Are they welded or flanged Yes Descrip. of riveting: cir. seams D.R.L. long. seams S.P.R.D.B.S.
 Diameter of rivet holes in long. seams 1/32 Pitch of rivets 8 1/4 Lap of plates or width of butt straps 15"
 Per centages of strength of longitudinal joint rivets 86.26 Working pressure of shell by rules 180.6 Size of manhole in end 16x12
 Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 Morrison Material S Outside diameter 48 3/4
 Length of plain part top 9 1/16 Thickness of plates bottom 9 1/16 Description of longitudinal joint Welded No. of strengthening rings Yes
 Working pressure of furnace by the rules 181 Combustion chamber plates: Material S Thickness: Sides 19/32 Back 19/32 Top 19/32 Bottom 3/4
 Pitch of stays to ditto: Sides 8x8 Back 8x8 Top 8x8 If stays are fitted with nuts or riveted heads N & W Working pressure by rules 190
 Material of stays S Area Diameter at smallest part 1.5" Area supported by each stay 64 sq in Working pressure by rules 187 End plates in steam space:
 Material S Thickness 3/32 Pitch of stays 16x16 How are stays secured D.R. Working pressure by rules 164.3 Material of stays S
 Diameter at smallest part 5.05 Area supported by each stay 256 sq in Working pressure by rules 197 Material of Front plates at bottom S
 Thickness 3/4 Material of Lower back plate S Thickness 3/4 Greatest pitch of stays 16x8 Working pressure of plate by rules 244
 Diameter of tubes 3 1/4 Pitch of tubes 4 1/2 x 4 1/4 Material of tube plates S Thickness: Front 3/4 Back 3/4 Mean pitch of stays 9x8 1/2
 Pitch across wide water spaces 14 Working pressures by rules 206 Girders to Chamber tops: Material S Depth and
 thickness of girder at centre 8 x 1 1/2 Length as per rule 28 1/8 Distance apart 8 Number and pitch of Stays in each 2 of 8"
 Working pressure by rules 183 Superheater or Steam chest; how connected to boiler — 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. *One* Description *Cylindrical multitubular 2 plain furnaces.*
 Made at *Stockton* By whom made *Anderson + Co. Ltd.* When made *1903* Where fixed *on deck*
 Working pressure *80 lb.* tested by hydraulic pressure to *160 lb.* No. of Certificate *3073* Fire grate area *275* Description of safety valves *direct-acting*
 No. of safety valves *1* Area of each *12.5* Pressure to which they are adjusted *80 lb.* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *9'-0"* Length *9'-0"* Material of shell plates *steel* Thickness *1/2"* Range of tensile strength *27-32* Descrip. of riveting long. seams *T.R.L.* Dia. of rivet holes *13/16"* Whether punched or drilled *drilled* Pitch of rivets *3 3/8"*
 Lap of plating *6"* Per centage of strength of joint Rivets *77.5* Thickness of *shell* and *cover* plates *5/8"* Pitch of stays *17 1/2" x 17"* No. of Stays to do. *4*
 Dia. of stays. *2 1/4"* Diameter of furnace *Top 33" Bottom 7'-9"* Length of furnace *6'-0"* Thickness of furnace plates *3 1/2"* Description of joint *Old butt.* Thickness of *furnace* *cover* plates *7/32" Top 7/16"* Stayed by *1 1/4" - 1 3/8" up dia.* Working pressure of shell by rules *82 lb.*
 Working pressure of furnace by rules *87.5 lb.* Diameter of *uptake* tubes *3"* Thickness of *uptake* plates *F 5/8" B 9/8"* Thickness of *uptake* tubes *7/16"*

SPARE GEAR. State the articles supplied:— *Propeller, two connecting rods top + bottom end bolts + nuts, two main bearing bolts + nuts, one set of coupling bolts, set of helix + feed pump valves, assorted bolts nuts + iron.*

The foregoing is a correct description, **RICHARDSONS, WESTGARTH & CO., LTD**

Manufacturer *Frederic S. Russell* CHIEF DRAUGHTSMAN

Dates of Survey while building	During progress of work in shops -	1903- Sep 17 Oct 16 - 1904- Jan 8. 14. 27 Feb 1. 3. 9. 16. 20. 29	Is the approved plan of main boiler forwarded herewith <i>yes.</i>	
		During erection on board vessel -		Mar 4. 8. 17. 21. 22. 24. 28. 29. <i>Nov. Apr. 28. May 4. = 2 Visits.</i>
		Total No. of s		<i>19</i>

General Remarks (State quality of workmanship, opinions as to class, &c.)
*The machinery of this vessel has been constructed under special survey, the materials + workmanship being good + efficient, boiler + main steam pipes tested by hydraulic to double the working pressure. Engines + boiler examined under steam, found satisfactory + the safety valves adjusted as stated above. In our opinion the machinery of this vessel is eligible for the notation of **L.M.C. 504** in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD L.M.C. 504.

GMS
18.5.04
18.5.04

Shutland

Certificate (if required) to be sent to
 (The Surveyors are requested not to write on or return the space for Committee's Minute.)

The amount of Entry Fee. £ <i>3</i> :	When applied for,
Special £ <i>34</i> :	<i>8. 4. 1904</i>
Donkey Boiler Fee £ :	When received,
Travelling Expenses (if any) £ :	<i>25/5/04</i>

G. Williamson + G. A. Hake
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. 20 MAY 1904**
 Assigned *+ L.M.C. 504*

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