

# REPORT ON MACHINERY.

No. 20533

TUESDAY 9 AUGUST 1887  
Received at London Office

No. in Survey held at Newcastle Date, first Survey 1<sup>st</sup> April Last Survey 29<sup>th</sup> July 1887  
 Reg. Book. on the Steel S.S. Starling (Number of Visits 17) Tons 491  
 Master ✓ Built at Newcastle By whom built Palmer S & Co. When built 1887  
 Engines made at Newcastle By whom made Palmer S & Co. when made 1887  
 Boilers made at — By whom made — when made 1887  
 Registered Horse Power 120 Owners General Steam Nav. Co. Port belonging to London

**ENGINES, &c.—**

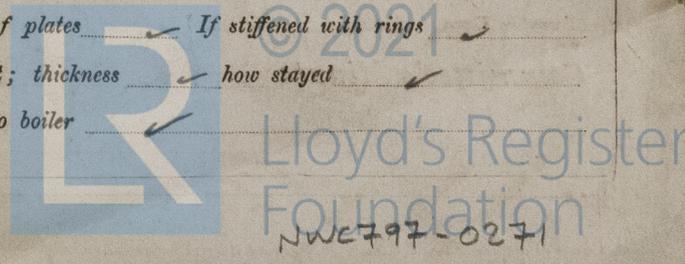
Description of Engines Triple expansion in three cranks  
 Diameter of Cylinders 18.29.47 Length of Stroke 33 No. of Rev. per minute 75 Point of Cut off, High Pressure .6 Low Pressure .6  
 Diameter of Screw shaft 9 3/4 Diam. of Tunnel shaft 9 3/4 Diam. of Crank shaft journals 9 3/4 Diam. of Crank pin 9 3/4 size of Crank webs 6 1/2 x 13 1/4  
 Diameter of screw 12.6 Pitch of screw 13.6 No. of blades 4 state whether moveable no total surface 45 sq  
 No. of Feed pumps 2 diameter of ditto 3 Stroke 16 1/2 Can one be overhauled while the other is at work no  
 No. of Bilge pumps 2 diameter of ditto 3 1/2 Stroke 16 1/2 Can one be overhauled while the other is at work no  
 Where do they pump from Engine bilges, tunnel & after hold.  
 No. of Donkey Engines Two Size of Pumps 11 x 11 + 8 x 3 1/2 Where do they pump from Both pumps from bilge hold, tunnel, tanks and sea - feed donkey from hotwell.  
 Are all the bilge suction pipes fitted with roses yes Are the roses always accessible yes Are the sluices on Engine room bulkheads always accessible yes  
 No. of bilge injections one and sizes 4 Are they connected to condenser, or to circulating pump circ pumps  
 How are the pumps worked by levers over condenser from middle engine  
 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 accessible at all times yes  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges yes  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock never  
 Is the screw shaft tunnel watertight ✓ and fitted with a sluice door yes worked from top platform.

**OILERS, &c.—**

Number of Boilers One Description single ended multitubular Whether Steel or Iron steel  
 Working Pressure 150 Tested by hydraulic pressure to 300 Date of test 9.7.87 No 2290  
 Description of superheating apparatus or steam chest none  
 Can each boiler be worked separately ✓ Can the superheater be shut off and the boiler worked separately ✓  
 No. of square feet of fire grate surface in each boiler 65.2 sq Description of safety valves sprung No. to each boiler two  
 Area of each valve 8.3 sq Are they fitted with easing gear yes No. of safety valves to superheater — area of each valve —  
 Are they fitted with easing gear ✓ Smallest distance between boilers and bunkers or woodwork 13 Diameter of boilers 14.6  
 Length of boilers 10.9 description of riveting of shell long. seams double butt circum. seams double butt Thickness of shell plates 1 1/2  
 Diameter of rivet holes 1 3/8 whether punched or drilled drilled pitch of rivets 7 1/4 Lap of plating 1 1/8 x 1 1/8  
 Percentage of strength of longitudinal joint 83 working pressure of shell by rules 150 size of manholes in shell 12 x 15  
 Size of compensating rings ✓ No. of Furnaces in each boiler four  
 Outside diameter 38 length, top ✓ bottom ✓ thickness of plates 1/2 description of joint cross flue if rings are fitted —  
 Greatest length between rings ✓ working pressure of furnace by the rules 157 combustion chamber plating, thickness, sides 3/16 back 3/16 top 3/16  
 Pitch of stays to ditto, sides 7 1/2 back 8 top 2nd If stays are fitted with nuts or riveted heads nuts working pressure of plating, by rules 152 Diameter of stays at smallest part 1 1/2 working pressure of ditto by rules 166 end plates in steam space, thickness 1  
 Pitch of stays to ditto 16 how stays are secured draw working pressure by rules 150 diameter of stays at smallest part 2 3/8 working pressure by rules 150 Front plates at bottom, thickness 3/8 Back plates, thickness 3/8  
 Greatest pitch of stays 12 working pressure by rules 150 Diameter of tubes 3 1/4 pitch of tubes 4 1/2 thickness of tube plates, front 3/8 back 3/4 how stayed tubes pitch of stays 9 width of water spaces 6  
 Diameter of Superheater or Steam chest — length ✓ thickness of plates ✓ description of longitudinal joint — diam. of rivet holes —  
 Pitch of rivets ✓ working pressure of shell by rules ✓ diameter of flue ✓ thickness of plates ✓ If stiffened with rings —  
 Distance between rings ✓ working pressure by rules ✓ end plates of superheater, or steam chest; thickness ✓ how stayed ✓  
 Superheater or steam chest; how connected to boiler ✓

Report recd 2/8/87 sent to Com. 8/8/87

forwarded to Com. 8/8/87



**DONKEY BOILER**— Description *Stub - Vertical*  
 Made at *Gatshhead* by whom made *Clark Chapman Furnace Co.* when made *18.6.87* where fixed *Stockholm*  
 Working pressure *70 lb* tested by hydraulic pressure to *140* No. of Certificate *2282* fire grate area *28 sq* description of safety  
 valves *spruy* No. of safety valves *two* area of each *8.32* if fitted with easing gear *78* if steam from main boilers can  
 enter the donkey boiler *no* diameter of donkey boiler *7.0* length *14.0* description of riveting *double lap*  
 Thickness of shell plates *7/16* diameter of rivet holes *3/8* whether punched or drilled *no* pitch of rivets *3 3/16* lap of plating *4 1/4*  
 per centage of strength of joint *70* thickness of crown plates *9/16* stayed by *7 steel sleep 1 3/8 eff. dia.*  
 Diameter of furnace, top *5.0* bottom *6.0* length of furnace *5.6* thickness of plates *5/8* description of joint *sl*  
 Thickness of furnace crown plates *1/2* stayed by *same as crown* working pressure of shell by rules *78*  
 Working pressure of furnace by rules *70* diameter of uptake *18* thickness of plates *7/16* thickness of water tubes *3/8*

**SPARE GEAR.** State the articles supplied:— *An pump bucket, Circulating pump, bucket, eccentric strap, 2 main bearing bolts, valve spindle, 2 top end bolts, pair of main bearing brasses, 2 bottom end brasses, 6 coupling bolts, 2 bottom end bolts, feed helpe pump valves + ordinary engine room*

The foregoing is a correct description,  
*Palmer's Shipyard & Engine Works* Manufacturer.

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The machinery of this vessel has been constructed under special survey the materials and workmanship are sound and good and eligible, in my opinion to be classed L.M.C. 7.87 in the Register Book.*)

It is submitted that this vessel is eligible to have the classification L.M.C. 7.87 recorded  
 9/8/87  
 J. H. Waller

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The amount of Entry Fee .. £ 2 : - : - *48 48 at Nav received by me.*  
 Special .. .. £ 18 : - : -  
 Donkey Boiler Fee .. .. £ - : - : -  
 Certificate (if required) .. £ gratis - *18 87*  
 (To be sent as per margin.)  
 (Travelling Expenses, if any, £ .. ..)

*John H. Waller*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRIDAY 12 AUGUST 1887**

*J. H. Waller*

