

# REPORT ON MACHINERY.

4099

No. 4099

Received at London Office THURS 10 SEPT 1885

No. in Survey held at Glasgow Date, first Survey 24<sup>th</sup> Feb<sup>y</sup> Last Survey 5<sup>th</sup> Sept<sup>r</sup> 1885  
 Reg. Book. S. S. Pearl (Number of Visits 29) 430.58  
 on the S. S. Pearl Tons 198.54  
 Master Duncan McIndoe Built at Paisley By whom built J. Fullerton & Co When built 1885  
 Engines made at Glasgow By whom made W. King & Co when made 1885  
 Boilers made at G By whom made J when made 1885  
 Registered Horse Power 70 Owners W. Robertson Port belonging to Glasgow

**ENGINES, &c.—**

Description of Engines Inverted Direct acting compound Surface Condensing  
 Diameter of Cylinders 22 & 42 Length of Stroke 30 No. of Rev. per minute 95 Point of Cut off, High Pressure 18<sup>5</sup> Low Pressure 17<sup>2</sup>  
 Diameter of Screw shaft 8 Diam. of Tunnel shaft 7<sup>3</sup>/<sub>4</sub> Diam. of Crank shaft journals 8 Diam. of Crank pin 8 size of Crank webs 5<sup>1</sup>/<sub>4</sub> x 11<sup>1</sup>/<sub>4</sub>  
 Diameter of screw 9-9 Pitch of screw 15<sup>1</sup>/<sub>4</sub> No. of blades Four state whether moveable Yes total surface 31 sq ft  
 No. of Feed pumps One diameter of ditto 3<sup>1</sup>/<sub>4</sub> Stroke 17 Can one be overhauled while the other is at work —  
 No. of Bilge pumps One diameter of ditto 3<sup>1</sup>/<sub>4</sub> Stroke 17 Can one be overhauled while the other is at work —  
 Where do they pump from Bilges, Hold, Fore & Aft Peak Tanks.  
 No. of Donkey Engines one pump Size of Pumps high 3<sup>1</sup>/<sub>4</sub> pump 6 stroke Where do they pump from Bilges, Sea, Hold, Fore & Aft Peak Tanks & Hold. Centimeter from Main Tank. Fore Peak Tank & sea.  
 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 2<sup>1</sup>/<sub>2</sub> Are they connected to condenser, or to circulating pump Circulating  
 How are the pumps worked By levers from Low Pressure engine.  
 Are all connections with the sea direct on the skin of the ship To united blocks 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 Before launching.  
 Is the screw shaft tunnel watertight No tunnel and fitted with a sluice door — worked from —

**BOILERS, &c.—**

Number of Boilers One Description Cylindrical. Mult<sup>l</sup> Whether Steel or Iron Steel.  
 Working Pressure 90 lbs Tested by hydraulic pressure to 180 lbs Date of test July 3<sup>rd</sup> 1885.  
 Description of superheating apparatus or steam chest Vertical.  
 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 51<sup>3</sup>/<sub>4</sub> sq ft Description of safety valves Direct springs No. to each boiler Two  
 Area of each valve 9.6 sq ins 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 9<sup>1</sup>/<sub>2</sub> Diameter of boilers 12-6  
 Length of boilers 9-10<sup>1</sup>/<sub>2</sub> description of riveting of shell long. seams Double butt circum. seams other double Thickness of shell plates 3/4  
 Diameter of rivet holes 1/16 whether punched or drilled Rimmed pitch of rivets 5<sup>1</sup>/<sub>8</sub> Lap of plating 13<sup>3</sup>/<sub>4</sub> x 9/16 butt  
 Per centage of strength of longitudinal joint 79 working pressure of shell by rules 99 lbs size of manholes in shell 16 x 12  
 Size of compensating rings 6 x 3/4 double riveted. No. of Furnaces in each boiler Three  
 Outside diameter 37 length, top 6-9 bottom 9-0 thickness of plates 1/2 description of joint Butt. if rings are fitted Yes  
 Greatest length between rings 6-6 working pressure of furnace by the rules 90 lbs combustion chamber plating, thickness, sides 1/2 back 1/2 top 1/2  
 Pitch of stays to ditto, sides 9 x 7 back 9 x 9 top 8 x 7<sup>1</sup>/<sub>2</sub> If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 95 lbs  
 Diameter of stays at smallest part 1<sup>1</sup>/<sub>2</sub> x 1<sup>1</sup>/<sub>2</sub> working pressure of ditto by rules 95 lbs end plates in steam space, thickness 3/4  
 Pitch of stays to ditto 15 x 15 how stays are secured Nuts & washers working pressure by rules 90 lbs diameter of stays at smallest part 2<sup>1</sup>/<sub>2</sub> screw working pressure by rules 120 lbs Front plates at bottom, thickness 5/8 Back plates, thickness 5/8  
 Greatest pitch of stays 12<sup>1</sup>/<sub>2</sub> x 9 working pressure by rules 90 lbs Diameter of tubes 3<sup>1</sup>/<sub>2</sub> pitch of tubes 4<sup>1</sup>/<sub>2</sub> thickness of tube plates, front 5/8 back 5/8 how stayed Tubes pitch of stays 15<sup>1</sup>/<sub>2</sub> x 9 width of water spaces 6  
 Diameter of Superheater or Steam chest 3-0 length 4-10 thickness of plates 7/16 description of longitudinal joint Lap, double diam. of rivet holes 3/4  
 Pitch of rivets 3<sup>1</sup>/<sub>2</sub> working pressure of shell by rules 150 lbs 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 1/2 how stayed Three stays  
1<sup>3</sup>/<sub>4</sub> dia<sup>r</sup> Superheater or steam chest; how connected to boiler Double riveted to shell

Form No. 8-700-974



7099 g.s.

**DONKEY BOILER**— Description *Vertical - All iron*  
 Made at *Glasgow* by whom made *W. King & Co* Commenced when made *1881* where fixed *In stokehold*  
 Working pressure *50 lb* tested by hydraulic pressure to *100 lb* No. of Certificate *1603* fire grate area *8.7 sq ft* description of safety valves *Direct spring* No. of safety valves *One* area of each *4.9 sq in* if fitted with easing gear *yes* if steam from main boilers can enter the donkey boiler *No* diameter of donkey boiler *4-0* length *9-0* description of riveting *Lap single*  
 Thickness of shell plates *3/8* diameter of rivet holes *13/16* whether punched or drilled *Punched* pitch of rivets *2 1/8* lap of plating *2 1/2*  
 per centage of strength of joint *56* thickness of crown plates *7/16* stayed by *Four stays*  
 Diameter of furnace, top *3-2* bottom *3-4 1/2* length of furnace *4-9* thickness of plates *3/8* description of joint *Lap*  
 Thickness of furnace crown plates *7/16* stayed by *As above* working pressure of shell by rules *66 lb*  
 Working pressure of furnace by rules *65 lb* diameter of uptake *11* thickness of plates *7/16* thickness of water tubes *3/8*

**SPARE GEAR.** State the articles supplied:— *Two connecting rod top + bottom end bolts + nuts*  
*Two main bearing bolts. One set of coupling bolts. Two feed + bilge pump*  
*valves. also one propeller complete with moveable blades.*

The foregoing is a correct description,  
*McCannan & W. King & Co.* Manufacturer.

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

*These Engines & Boilers have been constructed under special survey - they are of good material & workmanship - they have been well fitted on board - satisfactorily tested under steam & I am of opinion they are eligible to be classed "LLOYD'S LIST" in the Register Book.*  
*Crank shaft & shafting finished in Engineers works.*  
*The cuts are appended the Reports on Steel Yards.*

*It is submitted that this vessel is eligible to have the notification of L.M.C. recorded M 10/9/85*

The amount of Entry Fee .. £ *1* : *0* : *0* received by me,  
 Special .. .. £ *10* : *10* : *0*  
 Donkey Boiler Fee .. .. £ *0* : *0* : *0*  
 Certificate (if required) .. £ *0* : *0* : *0* *8/9/1885*  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ .. ..)

*Walter E. Wilson*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *FRIDAY 11 SEPT 1885*  
*[Signature]*

