

# REPORT ON MACHINERY.

No. 183

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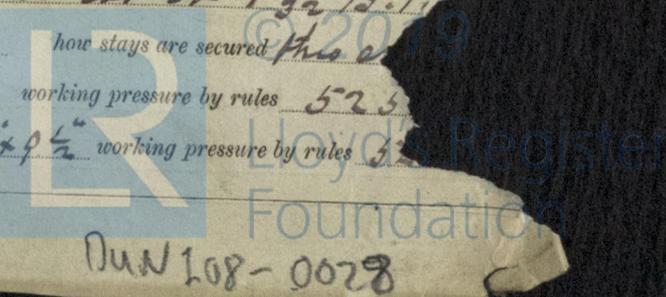
No. in Survey held at Dundee Date, first Survey 2<sup>nd</sup> January Last Survey 11<sup>th</sup> September 1882  
 Reg. Book. on the ISS "Ayrshire" Tons 48608  
 Master J. B. Smith Built at Dundee When built 1882  
 Engines made at Dundee By whom made Pearce Bros when made 1882  
 Boilers made at Dundee By whom made Pearce Bros when made 1882  
 Registered Horse Power 90 Owners Ayrshire Steam Navigation Co Port belonging to Androssan

**ENGINES, &c.—**

Description of Engines Compound Suct Cylr direct acting surface condensing  
 Diameter of Cylinders 23" + 45" Length of Stroke 30" No. of Rev. per minute 80 Point of Cut off, High Pressure 1/2 Low Pressure 1/2  
 Diameter of Screw shaft 8 1/2" Diameter of Tunnel shaft 8 1/2" Diameter of Crank shaft journals 8 1/2" Diameter of Crank pin 8 1/2" size of Crank webs 6x9"  
 Diameter of screw 11" 0" Pitch of screw 14" 0" No. of blades 4 state whether moveable Sol total surface 34 feet  
 No. of Feed pumps two diameter of ditto 4 1/2" Stroke 16" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps two diameter of ditto 4 1/2" Stroke 16" Can one be overhauled while the other is at work Yes  
 Where do they pump from all compartments out one from sea and Tanks  
 No. of Donkey Engines one Size of Pumps 8 1/2" x 10" x 5" Where do they pump from Tanks, sea and  
all compartments Hotwell to boilers on Deck this ship side +  
 Are all the bilge suction pipes fitted with roses Yes Are the roses always accessible Yes when not load (Condenser)  
 No. of bilge injections one and sizes 3 1/2" Are they connected to condenser, or to circulating pump Circulating  
 How are the pumps worked by levers from after engine crosshead  
 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 before launch  
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Top of cylinders

**BOILERS, &c.—**

Number of Boilers one Description Circular Tubular  
 Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 18<sup>th</sup> July 1882  
 Description of superheating apparatus or steam chest horizontal dome  
 Can each boiler be worked separately — Can the superheater be shut off and the boiler worked separately —  
 Area of square feet of fire grate surface in each boiler 62 feet Description of safety valves Direct spring load 9.16  
 No. of safety valves to each boiler two area of each valve 14.19" Are they fitted with easing gear Yes  
 Area of safety valves to superheater — area of each valve — are they fitted with easing gear —  
 Smallest distance between boilers and bunkers or woodwork 6"  
 Diameter of boilers 12" 6" Length of boilers 9" 9" description of riveting of shell long. seams Lap Heble R circum. seams Lap D. R  
 Thickness of shell plates 7/8" diameter of rivet holes 1/8" whether punched or drilled drilled pitch of rivets 4 1/2"  
 Thickness of plating 7 3/4" x 5 1/4" per centage of strength of longitudinal joint 73 + 72% working pressure of shell by rules 79 lbs  
 Diameter of manholes in shell 12" x 16" size of compensating rings 4" x 4" x 3 1/2"  
 No. of Furnaces in each boiler three outside diameter 36" length, top 6" 9" bottom 9" 0"  
 Thickness of plates 7 1/2" description of joint welded if rings are fitted flanged greatest length between rings 4" 6"  
 Working pressure of furnace by the rules 105 between flanges  
 Thickness of combustion chamber plating, thickness, sides 7 1/2" back 7 1/2" Centre box 1/2" top 7 1/2"  
 Diameter of stays to ditto sides 8" x 8" back 8" x 8" Centre box 9 1/2" x 9 1/2" top 8" x 8"  
 Are stays fitted with nuts or riveted heads Nuts both ends working pressure of plating by rules 84 lbs Centre 85 lbs  
 Diameter of stays at smallest part 1 1/2" x 1 1/2" working pressure of ditto by rules 5/20 lbs or 1 1/2" B.T.  
 Thickness of plates in steam space, thickness 7 1/2" pitch of stays to ditto 16" x 16" how stays are secured Flange  
 Working pressure by rules 92 lbs diameter of stays at smallest part 2 1/2" working pressure by rules 52 lbs  
 Thickness of plates at bottom, thickness 4" Back plates, thickness 4" greatest pitch of stays 10" x 9 1/2" working pressure by rules 52 lbs



Diameter of tubes  $3\frac{1}{2}$ " pitch of tubes  $4\frac{1}{2} \times 4\frac{1}{2}$ " thickness of tube plates, front  $4\frac{1}{16}$ " back  $4\frac{1}{16}$ "  
 How stayed *tubes nut* pitch of stays  $13\frac{1}{2} \times 13\frac{1}{2}$ " width of water spaces  $1\frac{1}{2}$ "  
 Diameter of ~~Superheater~~ Steam chest  $3\text{ ft } 0\text{ in}$  length  $6\text{ ft } 6\text{ in}$   
 Thickness of plates  $\frac{1}{2}$ " description of longitudinal joint *lap D.R.* diameter of rivet holes  $\frac{7}{8}$ " pitch of rivets  $3\frac{1}{2}$ "  
 Working pressure of shell by rules  $171\text{ lbs}$  Diameter of flue  $\text{---}$  thickness of plates  $\text{---}$   
 If stiffened with rings  $\text{---}$  distance between rings  $\text{---}$  Working pressure by rules  $\text{---}$   
 End plates of ~~superheater~~ steam chest; thickness  $4\frac{1}{16}$ " How stayed *3 bolt stays  $1\frac{1}{2}$ " thro ends nuts*  
~~Superheater~~ steam chest; how connected to boiler *by malleable neck riveted to shells*

**DONKEY BOILER**— Description *one round vertical*  
 Made at *Dundee* By whom made *Pearce Bros* when made *1882*  
 Where fixed *Shophold* working pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate *191*  
 Fire grate area *11 feet* Description of safety valves *Direct S.Z.* No. of safety valves *one* area of each *7"*  
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*  
 Diameter of donkey boiler *4 ft 6"* length *10 ft 0"* description of riveting *lap double riveted*  
 thickness of shell plates *7/16"* diameter of rivet holes *3/4"* whether punched or drilled *punched*  
 pitch of rivets *2 1/2"* lap of plating *4" x 2 1/2"* per centage of strength of joint *70 & 82 %*  
 thickness of crown plates *5/8"* stayed by *5 lussel stays from sides of boiler*  
 Diameter of furnace, top *3 ft 4"* bottom *3 ft 9"* length of furnace *5 ft 10"*  
 thickness of plates *7/16"* description of joint *lap single riveted*  
 thickness of furnace crown plates *7/16"* stayed by *dished*  
 Working pressure of shell by rules *86 lbs* working pressure of furnace by rules *81 lbs*  
 diameter of uptake *13 1/2"* thickness of plates *3/8"* thickness of water tubes *5/16"*

The foregoing is a correct description,  
*Pearce Brothers* Manufacturer.

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The Machinery of this boiler has been built in accordance with the requirements of the Rules and to plans of boilers submitted for the for the Committee's approval, dated 12/1/82. The material and workmanship are of the best description. The safety valves have been tested by steam and to a working pressure of 80 lbs per square inch. and the machinery seen at work, and all found satisfactory and in my opinion are in good and safe working order and eligible to be entered with the distinctive mark of Lloyd's M.C. in red.*

*It is submitted that this vessel is eligible to have the certificate of Lloyd's M.C. recorded on 2/10/82*

The amount of Entry Fee .. £ 2 : 0 : 0 received by me,  
 Special *W.M.C.* .. £ 13 : 10 : 0  
 Certificate (if required) .. £ : 2 : 6 15.9 1882  
 To be sent as per margin.  
 Expenses, if any, £ .. ..

*John Sturrock*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping  
*Dundee & District*

Travelling Committee's Minute Tuesday, 31 October, 1882.