

# REPORT ON MACHINERY.

No. 291

Received at London Office 29<sup>th</sup> Dec 1883

No. in Survey held at Dundee Date, first Survey 13/1/83 Last Survey 28<sup>th</sup> Nov 1883  
 Reg. Book. (Number of Visits) 827.39  
 on the S.S. "Inverlay" Tons 1288.64  
 Master Craig Built at Dundee By whom built Gourlay Bros. Co When built 1883  
 Engines made at Dundee By whom made Gourlay Bros. Co when made 1883  
 Boilers made at Dundee By whom made Gourlay Bros. Co when made 1883  
 Registered Horse Power 140. Owners Charles Barrie Esq Port belonging to Dundee

**ENGINES, &c.—**

Description of Engines Direct Acting Compound Int. Cyls Surface Condensing  
 Diameter of Cylinders 28" + 54" Length of Stroke 36" No. of Rev. per minute 80 Point of Cut off, High Pressure 7/8 Low Pressure 1/2  
 Diameter of Screw shaft 9 3/4" Diam. of Tunnel shaft 9 1/2" Diam. of Crank shaft journals 9 3/4" Diam. of Crank pin 9 3/4" size of Crank webs 7" x 11 1/4"  
 Diameter of screw 13.6" Pitch of screw 14.3" No. of blades 4 state whether moveable sd total surface 50 feet  
 No. of Feed pumps two diameter of ditto 3 3/4" Stroke 20" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes  
 Where do they pump from all compartments  
 No. of Donkey Engines two Size of Pumps 8" x 8" x 4 1/2" Leak 6" x 7" x 3 1/2" Where do they pump from Sea Tanks & all compartments  
thro ship side (Leak) from Sea Hotwell to boilers and on Deck  
 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 1/2" Are they connected to condenser, or to circulating pump Circulating  
 How are the pumps worked by levers from after 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 before being launched  
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from top of cylinders

**BOILERS, &c.—**

Number of Boilers Two Description Circular Tubular Whether Steel or Iron Steel  
 Working Pressure 85 lbs Tested by hydraulic pressure to 170 lbs Date of test 1<sup>st</sup> August 1883  
 Description of ~~superheating apparatus or~~ steam chest Horizontal dome  
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately ✓  
 No. of square feet of fire grate surface in each boiler 34.7 feet Description of safety valves Direct-Spring 7 No. to each boiler Two  
 Area of each valve 9.62" 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 - Diameter of boilers 11.6"  
 Length of boilers 9' 6" description of riveting of shell long. seams Lap, heble R circum. seams Lap D.R. Thickness of shell plates 4/8"  
 Diameter of rivet holes 1 1/8" whether punched or drilled drilled pitch of rivets 4 1/2" Lap of plating 7 3/8" + 5"  
 Per centage of strength of longitudinal joint 75 + 76 % working pressure of shell by rules 84.9 lbs size of manholes in shell 17" x 13"  
 Size of compensating rings angle 4" x 4" x 3/4" No. of Furnaces in each boiler Two  
 Outside diameter 41 1/2" length, top 6' 8" bottom 6' 8" thickness of plates 7/8" description of joint butt S.R. if rings are fitted flanged  
 Greatest length between rings 3' 3" working pressure of furnace by the rules 131 1/4 combustion chamber plating, thickness, sides 3/8" back 1/2" top 1/2"  
 Pitch of stays to ditto, sides 8 1/2" x 8 1/2" back 8 1/2" x 8 1/2" top round If stays are fitted with nuts or riveted heads Nuts both ends working pressure of plating by rules 93 lbs Diameter of stays at smallest part 1 7/32" 1187/32 round sides 2 1/2" working pressure of ditto by rules 5582 lbs end plates in steam space, thickness 7/8"  
 Pitch of stays to ditto 19" x 19" how stays are secured thro ends Nuts working pressure by rules 86 lbs diameter of stays at smallest part 2 3/16" working pressure by rules 5114 lbs Front plates at bottom, thickness 9/16" Back plates, thickness 9/16"  
 Greatest pitch of stays 3 1/2" x 8 1/2" working pressure by rules 5950 lbs Diameter of tubes 3 1/2" pitch of tubes 4 3/4" x 4 3/4" thickness of tube plates, front 3/4" back 7/8" how stayed Tubes Nuts pitch of stays 9 1/2" x 9 1/2" width of water spaces 1 1/2"  
 Diameter of ~~Superheater or~~ Steam chest 3' 3" length 8' 0" thickness of plates 1/2" description of longitudinal joint Lap D.R. diam. of rivet holes 3/4"  
 Pitch of rivets 2 1/2" working pressure of shell by rules 192 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 4" how stayed by 4 bolts thro  
each end bolts 2 3/4" diameter Superheater or steam chest; how connected to boiler by two malleable necks

**DONKEY BOILER**— Description *Round Vertical 3 Cross Tubes*  
 Made at *Dundee* by whom made *Gourlay Bros & Co* when made *1883* where fixed *on Deck*  
 Working pressure *50 lbs* tested by hydraulic pressure to *100 lbs* No. of Certificate *274* fire grate area *16 feet* description of safety  
 valves *Direct Spring load* No. of safety valves *one* area of each *8.3* if fitted with easing gear *yes* if steam from main boilers can  
 enter the donkey boiler *no* diameter of donkey boiler *5.6* length *11.0* description of riveting *Lap D.R. Line Lap S.R.*  
 Thickness of shell plates *7/16* diameter of rivet holes *3/4* whether punched or drilled *Punched* pitch of rivets *2 7/8* lap of plating *3/8 & 2 1/2*  
 per centage of strength of joint *73 0/100* thickness of crown plates *9/16* stayed by *5 curved stays to sides of boiler*  
 Diameter of furnace, top *3.1 1/2* bottom *4.8 1/2* length of furnace *5.6* thickness of plates *3/8* description of joint *Lap S.R.*  
 Thickness of furnace crown plates *1/2* stayed by *Dished* working pressure of shell by rules *73 lbs*  
 Working pressure of furnace by rules *50 lbs* diameter of uptake *1.5 1/2* thickness of plates *3/8* thickness of water tubes *5/16*

SPARE GEAR. State the articles supplied:— *2 bolts each for top & bottom ends of connecting rods, 8 coupling bolts, 112 lbs bolts assorted, 1 set connecting rod brasses, piston springs, safety valve springs, spare valves for all pumps, 2 boiler tubes, lot boiler plate bolt iron assorted, &c &c*

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

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines and Boilers of this vessel have been built special survey. The material and workmanship are of the best description.*

*The Engines and Boilers have been tested under steam and the safety valves set to 85 lbs per square inch working pressure, and in my opinion all are in good and safe working order and eligible to be entered into the Register Book with the distinctive mark ✠ L.M.C. 11.83.*

It is submitted that this vessel is eligible to have the notification + S.M.C. 11.83 recorded

*29/11/83*

*[Large blue signature]*

The amount of Entry Fee .. £ 2 : 0 : 0 received by me,  
 Special .. .. £ 21 : 0 : 0  
 Donkey Boiler Fee .. .. £ : : :  
 Certificate (if required) .. £ : : : *20th Nov 1883*  
To be sent as per margin.  
 (Travelling Expenses, if any, £ .. ..)

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

Committee's Minute  
 FRIDAY 30 NOV 1883  
*[Signature]*

