

# REPORT ON MACHINERY.

No. 6488

Received at London Office THURSDAY 1 JAN 1885

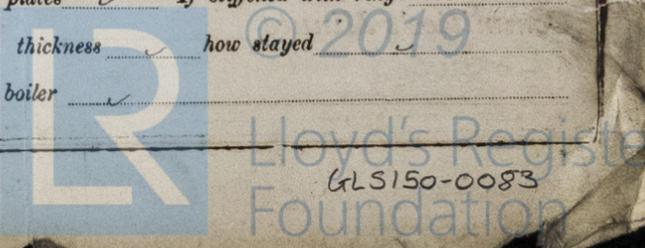
No. in Survey held at Glasgow Date, first Survey 15<sup>th</sup> Novem<sup>r</sup> 1883 Last Survey 20<sup>th</sup> Decem<sup>b</sup> 1884  
 Reg. Book. \_\_\_\_\_ (Number of Visits 32) 3451.42  
 on the S. S. "River Indus" Tons 2255.33  
 Master Murray Built at Belfast By whom built Messrs Workman, Clark & Co. When built 1884  
 Engines made at Glasgow By whom made Messrs Muir & Houston when made 1884  
 Boilers made at \_\_\_\_\_ By whom made \_\_\_\_\_ when made 1884  
 Registered Horse Power 360 Owners Messrs J. Little & Co. Port belonging to Glasgow

**No ENGINES, &c.—**

Description of Engines Compound Inverted direct acting Surface Condensing Twin Screw  
 Diameter of Cylinders 26" & 52" Length of Stroke 42" No. of Rev. per minute 62 Point of Cut off, High Pressure 23<sup>3</sup>/<sub>4</sub>" Low Pressure 23<sup>1</sup>/<sub>4</sub>"  
 Diameter of Screw shaft 9<sup>3</sup>/<sub>4</sub>" Diam. of Tunnel shaft 9<sup>1</sup>/<sub>2</sub>" Diam. of Crank shaft journals 9<sup>3</sup>/<sub>4</sub>" Diam. of Crank pin 9<sup>3</sup>/<sub>4</sub>" size of Crank webs 12<sup>1</sup>/<sub>4</sub>" x 6<sup>1</sup>/<sub>4</sub>"  
 Diameter of screw 12<sup>1</sup>/<sub>2</sub>" Pitch of screw 16<sup>1</sup>/<sub>2</sub>" No. of blades 4 state whether moveable yes total surface 42<sup>1</sup>/<sub>2</sub> sq ft  
 No. of Feed pumps 2 to each diameter of ditto 3<sup>1</sup>/<sub>2</sub>" Stroke 2<sup>1</sup>/<sub>2</sub>" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 to each diameter of ditto 3<sup>1</sup>/<sub>2</sub>" Stroke 2<sup>1</sup>/<sub>2</sub>" 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 10" - 8" - 9" str. Where do they pump from the Sea, hotwell bilges  
of each compartment and Ballast tanks  
 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 two and sizes 3<sup>1</sup>/<sub>2</sub>" dia Are they connected to condenser, or to circulating pump circ. pump  
 How are the pumps worked By levers  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both Valves and Cocks  
 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 bilge suction to forehold How are they protected by the ceiling  
 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. M. Pitie.  
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door yes worked from upper platform

**OILERS, &c.—**

Number of Boilers Two Description Cyl. Mult double ended Whether Steel or Iron Steel  
 Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test Sep. 10<sup>th</sup> 1884  
 Description of superheating apparatus or steam chest ✓  
 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 46 sq ft Description of safety valves direct Spring No. to each boiler two  
 Area of each valve 19.63 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 12" Diameter of boilers 13" 10<sup>1</sup>/<sub>2</sub>"  
 Length of boilers 16 ft description of riveting of shell long. seams treb riv lap circum. seams dbl riv lap Thickness of shell plates 25<sup>1</sup>/<sub>32</sub>"  
 Diameter of rivet holes 1<sup>5</sup>/<sub>16</sub>" whether punched or drilled drilled pitch of rivets 5" Lap of plating 8<sup>1</sup>/<sub>2</sub>"  
 Percentage of strength of longitudinal joint 73% working pressure of shell by rules 82 lbs size of manholes in shell 16<sup>1</sup>/<sub>2</sub>" x 11<sup>1</sup>/<sub>2</sub>"  
 Size of compensating rings 5<sup>1</sup>/<sub>2</sub>" x 11<sup>1</sup>/<sub>16</sub>" No. of Furnaces in each boiler four  
 Outside diameter 4<sup>3</sup>/<sub>8</sub>" length, top 6 ft bottom 6 ft thickness of plates 3<sup>1</sup>/<sub>16</sub>" description of joint corrugated if rings are fitted ✓  
 Greatest length between rings ✓ working pressure of furnace by the rules 98 lbs combustion chamber plating, thickness, sides 7<sup>1</sup>/<sub>16</sub>" back ✓ top 7<sup>1</sup>/<sub>16</sub>"  
 Pitch of stays to ditto, sides 8 x 8 back ✓ top 8<sup>1</sup>/<sub>4</sub>" x 8<sup>1</sup>/<sub>4</sub>" If stays are fitted with nuts or riveted heads nuts working pressure of plating by rules 84 lbs Diameter of stays at smallest part 1<sup>1</sup>/<sub>4</sub>" working pressure of ditto by rules 93 lbs end plates in steam space, thickness 3<sup>1</sup>/<sub>4</sub>"  
 Pitch of stays to ditto 15<sup>1</sup>/<sub>2</sub>" x 15<sup>1</sup>/<sub>2</sub>" how stays are secured dbl nuts working pressure by rules 84 lbs diameter of stays at smallest part 2<sup>1</sup>/<sub>8</sub>" working pressure by rules 115 lbs Front plates at bottom, thickness 9<sup>1</sup>/<sub>16</sub>" Back plates, thickness ✓  
 Greatest pitch of stays ✓ working pressure by rules ✓ Diameter of tubes 3<sup>3</sup>/<sub>4</sub>" pitch of tubes 5<sup>1</sup>/<sub>8</sub>" thickness of tube plates, front 11<sup>1</sup>/<sub>16</sub>" back 11<sup>1</sup>/<sub>16</sub>" how stayed stay tubes pitch of stays 14" width of water spaces 4"  
 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 2019  
 Superheater or steam chest; how connected to boiler ✓



0788 J

**DONKEY BOILER**— Description *Cyl. Mult.*  
 Made at *Glasgow* by whom made *Messrs Muir & Houston* when made *1884* where fixed *Stokehold*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *1420* fire grate area *23.5 sq ft* description of safety  
 valves *direct spring* No. of safety valves *one* area of each *12.56 sq* if fitted with easing gear *yes* if steam from main boilers can  
 enter the donkey boiler *no* diameter of donkey boiler *8 11* length *9 0* description of riveting *long tub riv lap*  
 Thickness of shell plates *9/16* diameter of rivet holes *1 3/16* whether punched or drilled *punched* pitch of rivets *4 1/2* lap of plating *8 1/2*  
 per centage of strength of joint *72%* thickness of <sup>fire box</sup> crown plates *7/16* stayed by *Screw Stays 1 1/4 dia pitched 8 x 8 with nuts*  
 Diameter of furnace, top *2 9/16* bottom *✓* length of furnace *5 10* thickness of plates *7/16* description of joint *butt & riv*  
 Thickness of furnace crown plates *5/8* stayed by *stay tubes* working pressure of shell by rules *80 lbs*  
 Working pressure of furnace by rules *89 lbs* diameter of uptake *✓* thickness of plates *11/16* <sup>end</sup> *stayed* with 2 stays 1 1/4 pitch thickness of water tubes

**SPARE GEAR.** State the articles supplied:— *2 con rod top end bolts & nuts 2 con rod bottom end bolts and*  
*nuts 2 main bearing bolts 1 set of coupling bolts 1 set of feed & bilge pump valves & propeller*  
*blades right & left 1 set of crank pin braces 1 half crank shaft 12 condenser tubes & boiler tubes*  
*assorted bolts & nuts and iron of various sizes*

The foregoing is a correct description,  
*Muir & Houston* Manufacturer.

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

*The Engines and Boilers of this vessel have been constructed under special survey; they are of good material & workmanship and are now in good order and safe working condition, and eligible in our opinion to be noted in the Register Book \* L.M.S. 12-84*

*The Shafting was examined at Messrs Muir & Houston's works when rough turned & afterwards, when they appeared to be sound & satisfactory*

*It is submitted that this vessel is eligible to have the notification of class recorded*  
*M 1/1885*

*Handwritten signature or initials in blue ink.*

The amount of Entry Fee .. £ 3 : - : - received by me,  
 Special .. £ 38 : - : -  
 Donkey Boiler Fee .. £ 2 : - : -  
 Certificate (if required) .. £ - : - : - *24/12/84*

(Travelling Expenses, if any, £ 2 - 2 - *To be paid to Messrs Muir & Houston Glasgow*)  
 Committee's Minute

FRIDAY 2 JAN 1885

*G. L. Hindmarsh & John Underwood*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

*Glasgow*