

# REPORT ON MACHINERY.

No. 461 (Awe)

(Received in London Office)

1/11/81

No. in Survey held at Newcastle & Sunderland Date, first Survey 16 August 1880 Last Survey 16 March 1881

Reg. Book.

on the Iron Screw Steamer "Gordonia"

Tons 2056  
1352

Master — Ross Built at Sunderland When built 1881

Engines made at Newcastle By whom made Black Hawthorn when made 1881

Boilers made at Do By whom made Do when made 1881

Registered Horse Power 200 Owners Gordon & Stamps Port belonging to London

**ENGINES, &c.—**

Description of Engines Inverted Compound Surface Condensing

Diameter of Cylinders 37 & 68 Length of Stroke 45 No. of Rev. per minute 60 Point of Cut off, High Pressure 3/8 Low Pressure 1/2

Diameter of Screw shaft 12 1/4 Diameter of Tunnel shaft 11 3/4 Diameter of Crank shaft journals 12 1/4 Diameter of Crank pin 12 1/4 size of Crank webs 15 1/2 x 8 1/2

Diameter of screw 15-0 Pitch of screw 18-0 No. of blades 4 state whether moveable No total surface 66 Sq ft

No. of Feed pumps Two diameter of ditto 4 1/2 Stroke 22 1/2 Can one be overhauled while the other is at work yes

No. of Bilge pumps Two diameter of ditto 4 1/2 Stroke 22 1/2 Can one be overhauled while the other is at work yes

Where do they pump from Fore hold (1), Engine space (4), Well in tunnel (1), & all tanks

No. of Donkey Engines Two Size of Pumps 10 x 14 & 8 x 6 Where do they pump from Fore hold (1), Engine space (4), Well in tunnel (1), Fore tank (3), After tank (3), Aftermost tank (1), Sea, 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 1 and sizes 5 dia Are they connected to condenser, or to circulating pump no

How are the pumps worked Lever over Condenser

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves & 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 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 new

Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from Top platform of Engine Room

**BOILERS, &c.—**

Number of Boilers Two Description Cylindrical return tubes

Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 15th Feb 1881

Description of ~~superheating apparatus~~ steam chest None, contracted neck

Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately —

Area of square feet of fire grate surface in each boiler 48 Description of safety valves Spring, Cockburns Patent

No. of safety valves to each boiler Two area of each valve 12.5" 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 10"

Diameter of boilers 14-6" Length of boilers 10-6" description of riveting of shell long. seams Triple Cap circum. seams Double Cap

Thickness of shell plates 1" diameter of rivet holes 1 1/8" whether punched or drilled Drilled pitch of rivets 5 1/4"

Width of plating 9" percentage of strength of longitudinal joint 73 working pressure of shell by rules 80 lbs

Number of manholes in shell 10 x 12 size of compensating rings 6 x 8"

Number of Furnaces in each boiler 3 outside diameter 40" length, top 7-0" bottom 9-9"

Thickness of plates 1/2 & 3/16 description of joint welded if rings are fitted half greatest length between rings —

Working pressure of furnace by the rules 80 lbs

Thickness of combustion chamber plating, thickness, sides 1/2" back 1/16" top 1/16"

Thickness of stays to ditto sides 8 1/2 x 8 1/2 back 7 3/8 x 7 3/8 top curved

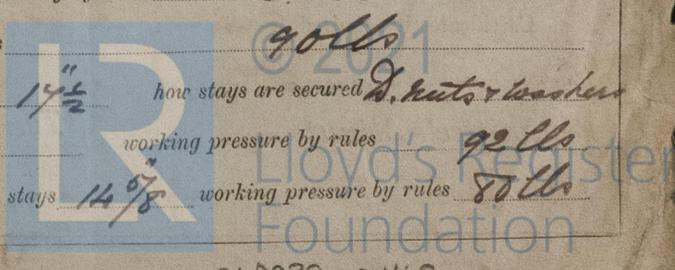
Are stays fitted with nuts or riveted heads Riveted heads working pressure of plating by rules 80 lbs

Diameter of stays at smallest part 1 1/16" working pressure of ditto by rules 90 lbs

Shipping plates in steam space, thickness 3/32 & 1/8" pitch of stays to ditto 14 1/2" x 14 1/2" how stays are secured with nuts & washers

Working pressure by rules 96 lbs diameter of stays at smallest part 2 3/8" working pressure by rules 92 lbs

Thickness of plates at bottom, thickness 3/16" Back plates, thickness 3/16 & 3/4" greatest pitch of stays 14 7/8" working pressure by rules 80 lbs



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Diameter of tubes  $3\frac{1}{2}$  pitch of tubes  $5\frac{1}{2} \times 4\frac{3}{4}$  thickness of tube plates, front  $\frac{3}{4}$  back  $\frac{3}{4}$   
 How stayed *Tubes* pitch of stays  $15\frac{3}{4}$  width of water spaces  $11\frac{1}{2}$   
 Diameter of Superheater or Steam chest  $3-6$  length  $6-0$   
 Thickness of plates  $\frac{7}{16}$  description of longitudinal joint *Double Lap* diameter of rivet holes  $\frac{7}{8}$  pitch of rivets  $5\frac{3}{8}$   
 Working pressure of shell by rules  $120\text{ lbs}$  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  $\frac{9}{16}$  How stayed *Drilled to 3 ft 6 in radius*  
 Superheater or steam chest; how connected to boiler *Contracted neck 18 x 15 x  $\frac{1}{8}$*

**DONKEY BOILER**— Description *Vertical grate tubes in furnace*  
 Made at *Middlesbrough* By whom made *J. Johnson* when made *1881* Tested *12.1.81*  
 Where fixed *Stokehold* working pressure *Rated 80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate *469*  
 Fire grate area *30.5 sq ft* Description of safety valves *1 down weight 1 dead weight* No. of safety valves *Two* area of each *9.6 sq in*  
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*  
 Diameter of donkey boiler *4.6* length *14.0* description of riveting *Lap. Double riveted*  
 thickness of shell plates  $\frac{9}{16}$  diameter of rivet holes  $1\frac{1}{16}$  whether punched or drilled *Punched*  
 pitch of rivets  $3\frac{1}{4}$  lap of plating  $4\frac{3}{4}$  per centage of strength of joint *67*  
 thickness of crown plates  $\frac{11}{16}$  stayed by *Iron stays 1 $\frac{1}{2}$  dia*  
 Diameter of furnace, top *5.10* bottom *6.11* length of furnace *7.2* *Furnace plating supported by 4 rows secured stays 1 $\frac{1}{2}$  dia punched.*  
 thickness of plates  $\frac{9}{16}$  description of joint *Lap. Single riveted*  
 thickness of furnace crown plates  $\frac{9}{16}$  stayed by *Iron stays 1 $\frac{1}{2}$  dia*  
 Working pressure of shell by rules *84 lbs* working pressure of furnace by rules *88 lbs*  
 diameter of uptake *20* thickness of plates  $\frac{11}{16}$  thickness of water tubes  $\frac{3}{8}$

The foregoing is a correct description,

for *Black Hawthorn & Co* Manufacturer of engines & marine boilers only  
*Jacob Mallan*

**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 satisfactory, and eligible in my opinion to have the notation + Lloyds M.C. in the Society's Register Book.*

*It is submitted that this vessel is eligible to have the notation + Lloyds M.C. 3,81. recorded in the Register Book.*  
*C.S.P.*  
*4/4 81.*

**Fees**  
 Sunderland account *Advising on specification previous to contract* £ 2-2-0 *Expenses to Gateshead*  
 Shields account.  
 The amount of Entry Fee .. £ 3 : - : - received by me, *Received. H. Wardrop*  
 Special .. .. £ 30 : - : - *and remitted to Shields office*  
 Certificate (if required) *gratis* - : - : *31<sup>st</sup> March 1881.*  
 (Travelling Expenses, if any, £ 2-2-0)

Committee's Minute *Tuesday April, 5th 1881*  
*+ Lloyds M.C.*  
*John Brockat*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.