

REPORT ON MACHINERY.

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No. 5634
 No. in Survey held at Glasgow Date, first Survey October 1880 Last Survey March 6th 1882
 Reg. Book. 3910-29
 on the Screw Steamer "James" Tons 2131.41
 Master W. D. Anderson Built at Glasgow When built 1881
 Engines made at Glasgow By whom made J. & G. Thomson when made 1881-2
 Boilers made at " By whom made " " " when made 1881-2
 Registered Horse Power 800 Owners Peninsular & Oriental Company Port belonging to Glasgow

ENGINES, &c.

Description of Engines Compound Inverted Direct Acting
 Diameter of Cylinders 08" + 101" Length of Stroke 60" No. of Rev. per minute 60 Point of Cut off, High Pressure 6 Low Pressure 6
 Diameter of Screw shaft 19" Diameter of Tunnel shaft 14 1/4" Diameter of Crank shaft journals 19" Diameter of Crank pin 19" size of Crank webs 18 1/2"
 Diameter of screw 18.6" Pitch of screw 28.6" No. of blades Four state whether moveable Yes total surface 102 ft
 No. of Feed pumps Two diameter of ditto 6" Stroke 3 1/2" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps Two diameter of ditto 6" Stroke 3 1/2" Can one be overhauled while the other is at work Yes
 Where do they pump from All the compartments
 No. of Donkey Engines Two Size of Pumps 12" cyl. 6" x 12" stroke Where do they pump from From the sea Hotwell & Bilge

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 1/2" Are they connected to condenser, or to circulating pump To Condenser
 How are the pumps worked By Levers Gummie's Centrifugal Air Circulating
 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 Main Steam pipe How are they protected Iron casing
 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 On Slip previous to being launched
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Upper platform

BOILERS, &c.

Number of Boilers Four Description Round Horizontal double ended, and One Auxiliary single ended
 Working Pressure 85 lbs Tested by hydraulic pressure to 140 lbs Date of test 23rd Sept. 1881
 Description of ~~main~~ steam chest Round Longitudinal Receivers
 Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately Yes
 No. of square feet of fire grate surface in each boiler 110 ft² 31.6 ft² Description of safety valves Direct Spring Direct Spring
 No. to each boiler Three area of each valve 18.66" Are they fitted with easing gear Yes
 No. of safety valves to superheater Two area of each valve 8.29" are they fitted with easing gear Yes
 Smallest distance between boilers and bunkers or woodwork about 12"
 Diameter of boilers 10.9" Length of boilers 14.3" description of riveting of shell long. seams Double riveted circum. seams double riveted
 Thickness of shell plates 11.3" diameter of rivet holes 9.6" whether punched or drilled Drilled pitch of rivets 5 1/8"
 Lap of plating Double butt straps percentage of strength of longitudinal joint 48% & 82% working pressure of shell by rules 102 lbs
 Size of manholes in shell 16" x 12" size of compensating rings A.S. rings 4" x 4" x 1/16"
 No. of Furnaces in each boiler Six outside diameter 3' 5" length, top 5' 4" bottom Through Furnaces
 Thickness of plates 1 1/2" Steel crown plates description of joint Double butt straps rings are fitted Half ring greatest length between rings 6"
 Working pressure of furnace by the rules 111 lbs Crown plates steel Chambers
 Combustion chamber plating, thickness, sides 8/16" 8/16" back 9/16" top 8/16" 8/16"
 Pitch of stays to ditto sides 9" x 9" 9" x 8" back 9" x 9 1/2" top 8" x 9" Radial top
 If stays are fitted with nuts or riveted heads Nuts nuts working pressure of plating by rules 94 lbs
 Diameter of stays at smallest part 1 3/8" 1 1/8" working pressure of ditto by rules 115 lbs
 End plates in steam space, thickness 1/16" 1/16" pitch of stays to ditto 18" x 16" 19 1/2" x 15 1/2" how stays are secured By double nuts
 Working pressure by rules 102 lbs diameter of stays at smallest part 2 9/16" 2 9/16" working pressure by rules 104 lbs
 Front plates at bottom, thickness 1 1/16" Back plates, thickness 1" greatest pitch of stays 104 lbs working pressure by rules 104 lbs

Dimensions of Auxiliary Boilers given in red

Lloyd's Register Foundation

563782

Diameter of tubes $3\frac{1}{2}$ " $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " $4\frac{3}{4}$ " thickness of tube plates, front $\frac{1}{16}$ " $\frac{11}{16}$ " back $\frac{10}{16}$ " $\frac{10}{16}$ "
 How stayed *by tubes* pitch of stays $9\frac{1}{2}$ " $10\frac{1}{2}$ " width of water spaces 6 "
 Diameter of ~~boiler~~ Steam chest $4\frac{1}{2}$ " 6 " $9\frac{1}{2}$ " $13\frac{1}{2}$ " length 20 " 10 " (6 " 6 " high)
 Thickness of plates $\frac{9}{16}$ " $\frac{9}{16}$ " description of longitudinal joint *Double riveted* diameter of rivet holes $\frac{15}{16}$ " bare pitch of rivets $3\frac{3}{4}$ "
 Working pressure of shell by rules 138 lbs Diameter of flue $4\frac{1}{2}$ " thickness of plates $\frac{10}{16}$ " bare $3\frac{3}{4}$ "
 If stiffened with rings distance between rings Working pressure by rules
 End plates of ~~boiler~~ steam chest; thickness $\frac{9}{16}$ " How stayed *No stays they are top shape*
~~boiler~~ steam chest; how connected to boiler *By two such pieces 18" dia $\frac{10}{16}$ " thick*

DONKEY BOILER— Description *Round vertical*
 Made at *Glasgow* By whom made *James Thomson* when made *1881*
 Where fixed *in place above* working pressure *60 lbs* Tested by hydraulic pressure to *120 lbs* No. of Certificate *607*
 Fire grate area *12 sq ft* Description of safety valves *Direct Spring* No. of safety valves *One* 23.9.81 SM area of each *4"*
 If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No*
 Diameter of donkey boiler *5 ft* length *11 ft 6"* description of riveting *Double girth*
 thickness of shell plates *$\frac{1}{16}$ " iron* diameter of rivet holes *$\frac{3}{4}$ "* whether punched or drilled *punched & rimmed*
 pitch of rivets *3"* lap of plating *$5\frac{1}{2}$ "* per centage of strength of joint *75%*
 thickness of crown plates *$\frac{1}{16}$ " steel* stayed by *4 bar stays & lashed*
 Diameter of furnace, top *3 ft 10"* bottom *4 ft 5"* length of furnace *5 ft*
 thickness of plates *$\frac{1}{16}$ "* description of joint *Lap & double riveted*
 thickness of furnace crown plates *$\frac{1}{16}$ "* stayed by *Uptake & 4 stays*
 Working pressure of shell by rules *41 lbs* working pressure of furnace by rules
 diameter of uptake *$\frac{1}{16}$ "* thickness of plates *$\frac{1}{16}$ "* thickness of water tubes *$\frac{1}{16}$ "*

The foregoing is a correct description,
 J. James & Co. Thomson Manufacturer.
 J. Grant

General Remarks (State quality of workmanship, opinions as to class, &c. *These Engines & Boilers are of good workmanship and now in good order and safe working condition and eligible in my opinion to be noted in the Register Book*
 + Lloyd's M.C. 3.82

The construction of this vessel has been examined and found to be eligible to be noted in the Register Book
 J. Mollison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 Clyde District

The amount of Entry Fee .. £ 3: 0: 0 received by me,
 Special .. £ 60: 0: 0
 Certificate (if required) .. £ 0: 0: 0 25 Feb 1882
 To be sent as per margin. £ 63: 0: 0
 (Travelling Expenses, if any, £

Committee's Minute Friday, March 10th. 1882.
 + Lloyd's