

REPORT ON MACHINERY.

No. 5816

(Received at London Office 4th SEP. 82.)

No. in Survey held at Glasgow Date, first Survey March 23rd 1881 Last Survey Sept 3rd 1882
 Reg. Book. G. S. "Glan Forbes" Tons 1591
 on the G. S. "Glan Forbes"
 Master Wm Ellwood Built at Glasgow When built 1882
 Engines made at Glasgow By whom made A. Stephen & Sons when made 1882
 Boilers made at do By whom made do when made 1882
 Registered Horse Power 300 Owners Cayzer, Irvine & Co Port belonging to Glasgow

ENGINES, &c.—

Description of Engines Compound Inverted Direct acting Surface Condensing.
 Diameter of Cylinders 38" + 68" Length of Stroke 45" No. of Rev. per minute 54 Point of Cut off, High Pressure 9/16" Low Pressure 9/16"
 Diameter of Screw shaft 13" Diameter of Tunnel shaft 12 1/4" Diameter of Crank shaft journals 13" Diameter of Crank pin 13 1/2" size of Crank webs 4 1/4" x 8 1/4"
 Diameter of screw 17-6 Pitch of screw 21-6 No. of blades 4 state whether moveable yes total surface 69 sq ft
 No. of Feed pumps Two diameter of ditto 4 1/2" Stroke 26" Can one be overhauled while the other is at work yes
 No. of Bilge pumps do diameter of ditto 4 1/2" Stroke 26" Can one be overhauled while the other is at work yes
 Where do they pump from Connected to all parts of vessel
 No. of Donkey Engines Two Size of Pumps 5" Burying Where do they pump from Connected to all parts of vessel
5" pumps 10" stroke
 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 5" Are they connected to condenser, or to circulating pump Circulating 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
 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 + donkey steam pipes 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 Before launching.
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from Engine room. Upper deck.

BOILERS, &c.—

Number of Boilers Two Description Cylindrical Multitubular
 Working Pressure 85 lbs Tested by hydraulic pressure to 170 lbs Date of test June 8th 1882.
 Description of ~~superheating apparatus~~ steam chest Horizontal
 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 72 sq ft Description of safety valves Direct springs.
 No. to each boiler Two area of each valve 19.6 sq ins 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 ins
 Diameter of boilers 11-9" Length of boilers 15-0" description of riveting of shell long. seams Welded. circum. seams Double rivet
 Thickness of shell plates 1 3/8" diameter of rivet holes 1 3/16" whether punched or drilled Drilled pitch of rivets 4 3/4"
 Lap of plating 6" per centage of strength of longitudinal joint Weld 70% working pressure of shell by rules 97 lbs
 Size of manholes in shell 15 x 11 1/2" size of compensating rings 4 x 5 1/8"
 No. of Furnaces in each boiler Four outside diameter 3-7 + 3-3 length, top 5-9" bottom do
 Thickness of plates 1/2" steel description of joint Double butt if rings are fitted Not required greatest length between rings —
 Working pressure of furnace by the rules 90 lbs
 Combustion chamber plating, thickness, sides 7/16" back — top 7/16"
 Pitch of stays to ditto sides 7 x 8" back — top 7 x 7"
 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 3/8" screw working pressure of ditto by rules 110 lbs
 End plates in steam space, thickness 13/16" pitch of stays to ditto 14 1/2" x 15" how stays are secured Nuts
 Working pressure by rules 105 lbs diameter of stays at smallest part 2 3/16" working pressure by rules 100 lbs
 Front plates at bottom, thickness 13/16" Back plates, thickness — greatest pitch of stays — working pressure by rules —



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Diameter of tubes $3\frac{1}{4}$ " pitch of tubes $4\frac{7}{8} \times 4\frac{1}{2}$ " thickness of tube plates, front $\frac{13}{16}$ " back $\frac{11}{16}$ "
 How stayed *Stay tubes* pitch of stays $15\frac{1}{4} \times 4\frac{1}{2}$ " width of water spaces $5\frac{1}{4} \times 7$ "
 Diameter of ~~Superheater~~ Steam chest $3-0$ length $10-0$
 Thickness of plates $\frac{7}{16}$ " description of longitudinal joint *Lap* diameter of rivet holes $\frac{3}{4}$ " pitch of rivets $2\frac{1}{2}$ "
 Working pressure of shell by rules 120lbs 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 $\frac{1}{2}$ " How stayed *Stay in centre $1\frac{3}{4}$ " dia*
 Superheater or steam chest; how connected to boiler *Double riveted neck. 15 " dia*

DONKEY BOILER— Description *Vertical with cross tubes.*
 Made at *Glasgow* By whom made *A. Stephen & Sons* when made *1882*.
 Where fixed *Main deck* working pressure 60lbs Tested by hydraulic pressure to 120lbs No. of Certificate *867*.
 Fire grate area *27sq ft.* Description of safety valves *Direct spring* No. of safety valves *Two* area of each *7sq ins*
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *No*.
 Diameter of donkey boiler $7-0$ " length $11-3$ " description of riveting *Double lap.*
 thickness of shell plates $\frac{1}{2}$ " diameter of rivet holes $\frac{3}{4}$ " whether punched or drilled *Punched.*
 pitch of rivets $2\frac{1}{2}$ " lap of plating $3\frac{3}{4}$ " per centage of strength of joint 70
 thickness of crown plates $\frac{9}{16}$ " stayed by *Eight stays 2 " dia*
 Diameter of furnace, top $5-6$ " bottom $6-4$ " length of furnace $5-3$ "
 thickness of plates $\frac{1}{2}$ " description of joint *Lap*
 thickness of furnace crown plates $\frac{1}{2}$ " stayed by *Eight stays 2 " dia*
 Working pressure of shell by rules 64lbs working pressure of furnace by rules 60lbs *$1\frac{1}{8}$ per stay 13 " pitch*
 diameter of uptake $1-4$ thickness of plates $\frac{1}{2}$ " thickness of water tubes $\frac{3}{8}$ " *[from shell to furnace]*

The foregoing is a correct description,
A. C. Stephen & Sons Manufacturer.

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

These engines & boilers have been constructed under special survey they are of good material & workmanship - they have been well fitted on board & satisfactorily tested under steam. I am therefore of opinion that they are eligible to be noted "LLOYD'S M.C." 9-82 in the Register book.

No submitted that this vessel is eligible to have the M.C. recorded M 4/9/82

Walter E. Polson
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 Glasgow

The amount of Entry Fee .. £ $3 : 0 : 0$ received by me,
 Special .. £ $35 : 0 : 0$
 Certificate (if required) .. £ $0 : 0 : 0$ 19/1882
 To be sent as per margin. $£38 : 0 : 0$
 (Travelling Expenses, if any, £ ..)

Committee's Minute 18

