

REPORT ON MACHINERY.

No. 4846 (Received in London Office 23/8/80)
 No. in Survey held at Glasgow & Port-Glasgow Date, first Survey Dec. -79 Last Survey 18 Aug 1880
 Reg. Book. 1116.
 on the S.S. "Arctanban" Tons 440
 Master Couth Built at Port Glasgow When built 1880
 Engines made at Glasgow By whom made M^r King & Co when made 1880
 Boilers made at Glasgow By whom made M^r King & Co when made 1880
 Registered Horse Power 98 Owners M^r Laren Cum & Co Port belonging to Glasgow

ENGINES, &c.—

Description of Engines Compound, Inverted, Direct-acting.
 Diameter of Cylinders 28" x 50" Length of Stroke 36" No. of Rev. per minute 80 Point of Cut off, High Pressure 1/16 Low Pressure 1/16
 Diameter of Screw shaft 9 1/2" Diameter of Tunnel shaft 9" Diameter of Crank shaft journals 9 1/2" Diameter of Crank pin 9 1/2" size of Crank webs 6" x 13"
 Diameter of screw 13 ft Pitch of screw 15'-0" No. of blades 4 state whether moveable yes total surface 480 ft
 No. of Feed pumps 2 diameter of ditto 3 1/4" Stroke 29" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 diameter of ditto 3 1/4" Stroke 18" Can one be overhauled while the other is at work yes
 Where do they pump from all holds, engine room & stokehold bilges.
 No. of Donkey Engines two ^{Ballast 8" x 9" pump 12 Stroke} _{Size of Pumps 8" 4" 9"} Where do they pump from Ballast donkey pumps from tank, sea, & bilge, & Eng. room donkey from bilge, sea, tank, & stokehold.
 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 2 1/2" Are they connected to condenser, or to circulating pump Circulating Pump.
 How are the pumps worked levers. Stoch for main injection, & filling valve.
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks yes 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 below.
 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 pipes How are they protected cased in.
 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 top platform.

OILERS, &c.—

Number of Boilers one Description All steel but tubes & screwed stays
 Working Pressure 70 lbs Tested by hydraulic pressure to 140 lbs Date of test 23rd June 1880
 Description of ~~superheating apparatus on~~ steam chest Upright bonnet.
 Can each boiler be worked separately — Can the superheater be shut off and the boiler worked separately —
 No. of square feet of fire grate surface in each boiler 630 ft Description of safety valves Direct spring, Cockburns.
 No. to each boiler two area of each valve 17.720" 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 about 16 ins
 Diameter of boilers 15'-0" Length of boilers 10'-6" description of riveting of shell long. seams hellebuted butt circum. seams double lap.
 Thickness of shell plates 3/4" ^{steel} diameter of rivet holes 1" whether punched or drilled punched pitch of rivets 4 3/4"
 Lap of plating 6 1/2" per centage of strength of longitudinal joint 80% working pressure of shell by rules 80 lbs
 Size of manholes in shell 16 1/2" x 12 1/2" size of compensating rings 5 1/2" x 7 1/2"
 No. of Furnaces in each boiler 3 outside diameter 3'-6" length, top 6'-9" bottom 9'-7"
 Thickness of plates 1/2" ^{steel} description of joint double butt if rings are fitted a.s. at bottom greatest length between rings 6'-6"
 Working pressure of furnace by the rules 79 lbs
 Combustion chamber plating, thickness, sides 1/2" ^{steel} back 1/2" ^{steel} top 1/2"
 Pitch of stays to ditto sides 9" x 7" back 8" x 8" top 8" x 7"
 Are stays fitted with nuts or riveted heads nuts (inside) working pressure of plating by rules 9" x 9" taken 95 lbs
 Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 74 lbs.
 End plates in steam space, thickness 7/8" pitch of stays to ditto 14" x 14" how stays are secured double nuts & washers.
 Working pressure by rules 70 lbs diameter of stays at smallest part 1 1/8" ^{steel} working pressure by rules 110 lbs.
 Front plates at bottom, thickness 7/8" Back plates, thickness 7/8" greatest pitch of stays 9" x 9" working pressure by rules 170 lbs.

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Diameter of tubes $3\frac{1}{4}$ " *id.* pitch of tubes $4\frac{1}{4} \times 4\frac{1}{4}$ " thickness of tube plates, front $\frac{7}{16}$ " back $\frac{7}{16}$ "
How stayed *Stay tubes* pitch of stays $16\frac{1}{2} \times 9\frac{1}{2}$ " width of water spaces $1\frac{1}{4}$ tube & 6" furnace.
Diameter of ~~Superheater~~ Steam chest $3'6"$ length $5'6"$
Thickness of plates $\frac{1}{2}$ " description of longitudinal joint *single lap* diameter of rivet holes $\frac{7}{8}$ " pitch of rivets $2\frac{1}{8}$ "
Working pressure of shell by rules $60\frac{1}{2}$ 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 *two stays 2" dia over threads.*
Superheater or steam chest; how connected to boiler *flanged & riveted.*

DONKEY BOILER— Description *Upright*
Made at *Glasgow* By whom made *M^r King & Co* when made *1880*
Where fixed *Stockholm* working pressure *60 lbs* Tested by hydraulic pressure to *120 lbs* No. of Certificate *323*
Fire grate area *8'5" x 11'* Description of safety valves *direct spring* No. of safety valves *two* area of each *40"*
If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *cock on each boiler*
Diameter of donkey boiler $4'0"$ length $9'6"$ description of riveting *single lap.*
thickness of shell plates $\frac{7}{16}$ " diameter of rivet holes $1\frac{3}{16}$ " whether punched or drilled *punched.*
pitch of rivets $2\frac{3}{16}$ " lap of plating $2\frac{1}{2}$ " per centage of strength of joint *54 & 62*
thickness of crown plates $\frac{1}{2}$ " stayed by *4 stays 1\frac{1}{2}" dia over threads.*
Diameter of furnace, top $3'3"$ bottom $3'6"$ length of furnace $4'8"$
thickness of plates $\frac{7}{16}$ " description of joint *single*
thickness of furnace crown plates $\frac{7}{16}$ full *stayed* by *4 stays 1\frac{1}{2}" dia over threads.*
Working pressure of shell by rules 76 lbs working pressure of furnace by rules —
diameter of uptake $10"$ thickness of plates $\frac{1}{2}$ " thickness of water tubes $\frac{7}{16} \times 9"$ *dia*

The foregoing is a correct description,

M^r King & Co

Manufacturers: *per L. Cameron*



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

It is submitted that this vessel is eligible for entry in the Register Book & the notation should be made. Recorded in the Register Book 23/8/80

The amount of Entry Fee £ 2 : 0 : 0 received by me, *(Signature)*
Special £ 14 : 14 : 0
Certificate (if required) £ 0 : 0 : 0 *20th Aug 1880*
To be sent as per margin.
(Travelling Expenses, if any, £ 1 : 1 : 0)

Committee's Minute

Tuesday, August 24th, 1880.

(Signature)
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Glasgow District.