

REPORT ON MACHINERY.

No. 5428 (Received in London Office 1881)
 No. in Survey held at Glasgow Date, first Survey July 1880 Last Survey July 4th 1881
 Reg. Book. on the Screw Steamer "Julian Monarch" Tons 3915.70
 Master Constable Built at Dumbarton When built 1881
 Engines made at Glasgow By whom made David Rowan when made 1881
 Boilers made at " By whom made " when made 1881
 Registered Horse Power 500 Owners Royal Exchange Port belonging to London

ENGINES, &c.—

Description of Engines Compound Inverted Direct Acting
 Diameter of Cylinders 46" & 84" Length of Stroke 54" No. of Rev. per minute 54 Point of Cut off, High Pressure 38" Low Pressure 32"
 Diameter of Screw shaft 16" Diameter of Tunnel shaft 15" Diameter of Crank shaft journals 16" Diameter of Crank pin 16" size of Crank webs 11 1/2" x 19"
 Diameter of screw 18 1/2" Pitch of screw 2 1/4 feet No. of blades Four state whether moveable Yes total surface 82 ft²
 No. of Feed pumps Two diameter of ditto 6" Stroke 28 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 28 1/2" Can one be overhauled while the other is at work Yes
 Where do they pump from From the bells in each compartment
 No. of Donkey Engines Two Size of Pumps 9" x 4 1/2" x 10" stroke Where do they pump from The Sea bells & Holdwell & 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 One and sizes 4 1/2" Are they connected to condenser, or to circulating pump To circulating
 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 Valves
 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 Near 5' load line
 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 to Stokehold How are they protected By wood 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 launching and in Dry Dock June 1881
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Upper platform

BOILERS, &c.—

Number of Boilers Three Description Round Horizontal Double ended
 Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 5th October 1880
 Description of ~~superheating apparatus~~ steam chest Round Longitudinal Receiver to each Boiler
 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 91 ft² Description of safety valves Direct Spring
 No. to each boiler Two area of each valve 21.64" 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 4 ft to Bunkers (At throat ship's stokeholds)
 Diameter of boilers 12 ft Length of boilers 18.6" description of riveting of shell long. seams Double riveted circum. seams Double riveted
 Thickness of shell plates 1 1/8" diameter of rivet holes 1 1/8" whether punched or drilled Drilled pitch of rivets 4 1/2"
 Lap of plating 1 1/2" x 1 1/8" butt straps per centage of strength of longitudinal joint 70% working pressure of shell by rules 86.5 lbs
 Size of manholes in shell 16" x 12" size of compensating rings Double plate fitted
 No. of Furnaces in each boiler Two (one in each end) outside diameter 4' 1" length, top 4 ft 1/2" bottom 8' 10"
 Thickness of plates 8/16" description of joint Corrugated if rings are fitted — greatest length between rings —
 Working pressure of furnace by the rules —
 Combustion chamber plating, thickness, sides 8/16" back 8/16" top 8/16"
 Pitch of stays to ditto sides 8 1/2" x 8" back 8 1/2" x 8" top Radial
 If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 130 lbs
 Diameter of stays at smallest part 1 3/8" & 1 1/4" working pressure of ditto by rules 108 lbs
 End plates in steam space, thickness 1 1/16" pitch of stays to ditto 14" x 14" mean how stays are secured By 4 palms with 4 nuts
 Working pressure by rules 224 lbs diameter of stays at smallest part 2 1/2" with 1 1/2" nuts in palms working pressure by rules 101 lbs
 Front plates at bottom, thickness 1 3/16" Back plates, thickness — greatest pitch of stays — working pressure by rules —

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Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " thickness of tube plates, front $\frac{1}{16}$ " back $\frac{1}{16}$ "
How stayed *By Tubes* pitch of stays $9\frac{1}{4} \times 9\frac{1}{4}$ " width of water spaces $9" \times 6"$
Diameter of ~~Superheater~~ Steam chest $3\frac{1}{2}$ ft length $18'6"$
Thickness of plates $\frac{1}{16}$ " description of longitudinal joint *Double riveted* diameter of rivet holes $\frac{13}{16}$ " pitch of rivets $5"$
Working pressure of shell by rules $153\frac{1}{2}$ lbs Diameter of flue $\frac{1}{16}$ " thickness of plates $\frac{1}{16}$ "
If stiffened with rings $\frac{1}{16}$ " distance between rings $\frac{1}{16}$ " Working pressure by rules $\frac{1}{16}$ "
End plates of ~~superheater~~ steam chest; thickness $\frac{1}{16}$ " How stayed *By angle iron & web plates*
~~Superheater~~ steam chest; how connected to boiler *By two neck pieces*
DONKEY BOILER— Description *Round Vertical Multitubular (Cochrane's patent)*
Made at *Birkenhead* By whom made *Cochrane* when made *1881*
Where fixed *On Upper Deck* working pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate $\frac{1}{16}$ "
Fire grate area $18\frac{1}{2}$ ft² Description of safety valves *Sweet Spring* No. of safety valves *two* 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 $5'9"$ length $11'2"$ description of riveting *Double & Single*
thickness of shell plates $\frac{1}{8}$ " diameter of rivet holes $\frac{13}{16}$ " whether punched or drilled *punched*
pitch of rivets $3\frac{1}{2}$ " lap of plating $3\frac{1}{2}$ " per centage of strength of joint 46%
thickness of crown plates $\frac{1}{16}$ " stayed by *5 Gussut plates*
Diameter of furnace, top $4\frac{1}{2}$ ft bottom $\frac{1}{16}$ " length of furnace $1'6"$
thickness of plates $\frac{1}{16}$ " description of joint *lap*
thickness of furnace crown plates $\frac{1}{16}$ " stayed by *Uptake & Dish*
Working pressure of shell by rules 90 lbs working pressure of furnace by rules $\frac{1}{16}$ "
diameter of uptake $15"$ thickness of plates $\frac{1}{16}$ " thickness of water tubes *no water tubes*
The foregoing is a correct description,
Davies Rowan Manufacturer. *Donkey Boilers made by Messrs Cochrane Birkenhead*

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines & Boilers are of good workmanship and now in good order & safe working condition and eligible in my opinion to be noted in the Register Book*—
Lloyd's M.C. 7.81

I have submitted that this is a correct description of the boiler & is eligible for entry in the Register Book
Recorded J.M. 8/7/81

The amount of Entry Fee $\pounds 3$: : : received by me,
Special $\pounds 45$: : :
Certificate (if required) $\pounds 1$: : : 7/7/1881
To be sent as per margin.
(Travelling Expenses, if any, $\pounds 2$: : :)
Committee's Minute *Friday, July, 8th 1881.*
James Morrison
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping
Clyde District