

258 08

No. in
Reg. Book.

(Received in London Office..... 24/7/84)

Master Sanderson Built at Port Glasgow When built 1880

Boilers made at Glasgow By whom made Wallace & Co when made 1880

Registered Horse Power 130 Owners Carron & Co. Horwich Port belonging to Self

Description of Engines *Compound, Inverted, Direct-Acting, Surface condensing*

Diameter of Cylinders 29" & 56" Length of Stroke 39" No. of Rev. per minute 65 Point of Cut off, High Pressure Variable Low Pressure 5/8 stroke

Diameter of Screw shaft 10 Diameter of Tunnel shaft $9\frac{1}{2}$ Diameter of Crank shaft journals 10 Diameter of Crank pin 10" size of Crank webs $12 \times 6\frac{1}{2}$

No. of Feed pumps 2 diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is running Yes state whether moveable Yes total surface not ascertained.

No. of Bilge pumps 2 diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work: Yes, by shutting coals

Where do they pump from? See d pumps from Hotwell. Bridge pumps from sea below tank.

No. of Donkey Engines *One* / Size of Pumps *4 1/2" x 10"* Where do they pump from *Same as Main bridge &*

Hand pumps in Engine Room, which can be worked by main engines. ^{Enculging pump.}

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

How are the pumps worked By levers inside the boiler

Are all connections with the sea direct on the skin of the ship *Yes* Are they Valves or Cocks *From down below*

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates *As high* Are the discharge pipes above or below the deen water line *Just*

Are they each fitted with a discharge valve always accessible on the plating of the vessel *Yes* *as matters will admit*
Are the blow off cocks fitted with a spigot and brass covering plate *deep covered*

What pipes are carried through the bunkers _____

How are they protected _____

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the boiler and the engine? Yes

When were stern tube, propeller, screw shaft, and all connections examined in dry dock *new ship*

Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Upper Station

BOILERS, &c.—

Number of Boilers	1000	Description	1 round, horizontal, tubular
Working Pressure	45 lb	Tested by hydraulic pressure to	150 lb

Working Pressure 100 lbs Tested by hydraulic pressure to 250 lbs Date of test 7th Jan^y 1880.
Description of superheating apparatus or steam chest Longitudinal steam separator

Can each boiler be worked separately Yes Can the superheaters be shut off and the boiler worked separately No

No. of square feet of fire grate surface in each boiler 58 sq. ft. Description of safety valves Two direct spring 15.9 each ^{Area}

No. to each boiler *Two* area of each valve *15.4 sq"* Are they fitted with easing gear *Yes*

No. of safety valves to superheater One area of each valve 4.59 are they fitted with casing gear Yes

Smallest distance between boilers and bunkers or woodwork 6 to bunkers (iron), 16 to boilers partly seated on wood joisting

Diameter of boilers 19 1/2" Length of boilers 16' description of riveting of shell longitudinal triple-riveted 1 1/2" 1 1/2"

Thickness of shell plates $4/8"$ diameter of rivet holes $4/8"$ whether punched or drilled punched pitch of rivets $1 3/8"$

Lap of plating ✓ per centage of strength of longitudinal joint 80.0 working pressure of shell by rules 88 lb.

Size of manholes in shell as ✓ size of compensating rings 1 1/4 ✓

No. of Furnaces in each boiler Three outside diameter 3' 1" length, top 4' 9" bottom 9' 0"

Thickness of plates $1/2$ to $5/8$ description of joint Double shape if rings are fitted no greatest length between rings _____

Working pressure of furnace by the rules 89 lbs at 1/2 thickness of top

Combustion chamber plating thickness sides 15/16" back 1/2" top 15/16"

Pitch of stays to ditto $8\frac{3}{4} \times 8\frac{1}{2}$ sides $8\frac{3}{4} \times 8\frac{1}{2}$ back $8\frac{1}{2} \times 8\frac{1}{2}$ top *riders 5×7 $8\frac{3}{4}$ cent*

if stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *five bolts 8 1/2" center
100 lbs at 1/2" thick*

Diameter of stays at smallest part $1\frac{3}{8}$ " top low $1\frac{1}{2}$ "

End plates in steam space, thickness 13/16" pitch of stays to ditto 1 1/2 x 15 how stays are secured Buckle into knees

Working pressure by rules 99 lbs diameter of stays at smallest part 2 3/8 in working pressure by rules 44.05 lbs per sq in

Back plate thickness 3/4" stay thickness 1 1/4" working pressure by rules 159 lbs per sq in

front plates at bottom, thickness $\frac{1}{4}$ Back plates, thickness $\frac{1}{4}$ greatest pitch of stys $1\frac{1}{2}$ working pressure of rails $12,500$

IRON 490-0435

25808 Jm

Diameter of tubes $3\frac{3}{4}$ " pitch of tubes $5 \times 4\frac{1}{8}$ " thickness of tube plates, front $\frac{3}{4}$ " back $\frac{1}{16}$ "
How stayed *Tubes* pitch of stays *About 14×10 g. steel* width of water spaces $5\frac{1}{2}$ "
Diameter of Superheater or Steam chest $4' 0"$ length $9' 0"$
Thickness of plates $\frac{1}{16}$ & $\frac{1}{2}$ " description of longitudinal joint *Double riveted* diameter of rivet holes $1"$ front $4"$ front $3\frac{1}{4}"$ back pitch of rivets $3"$ back
Working pressure of shell by rules 120 lbs. Diameter of flue $4\frac{1}{2}"$ thickness of plates $\frac{1}{4}"$
If stiffened with rings distance between rings Working pressure by rules
End plates of superheater, or steam chest; thickness $\frac{1}{2}"$ & $\frac{1}{16}"$ How stayed *Four through stays*
Superheater or steam chest; how connected to boiler *Copper steam pipes*
DONKEY BOILER— Description *Round, vertical, cross tubes*
Made at *Glasgow* By whom made *Wallace & Co* when made *1849*
Where fixed *In stockhold* working pressure 45 lbs Tested by hydraulic pressure to 150 lbs No. of Certificate *✓*
Fire grate area 108 sq ft Description of safety valves *One direct spring* of safety valves *One* area of each $4"$
If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *Yes, by opening cocks.*
Diameter of donkey boiler $4' 6"$ length $9' 9"$ description of riveting *Double riveted*
thickness of shell plates $\frac{7}{16}"$ diameter of rivet holes $\frac{3}{4}"$ whether punched or drilled *Punched*
pitch of rivets $3"$ lap of plating $4"$ *approx* per centage of strength of joint 68
thickness of crown plates $\frac{7}{16}"$ stayed by *Four stays*
Diameter of furnace, top $3' 3"$ bottom $3' 10"$ length of furnace *Extreme height $5' 9"$ with cross tubes*
thickness of plates $\frac{7}{16}"$ description of joint *Single riveted, lap.*
thickness of furnace crown plates $\frac{7}{16}"$ stayed by *Keptake & four stays*
Working pressure of shell by rules 83 lbs working pressure of furnace by rules 81 lbs *approx.*
diameter of uptake $12-14"$ thickness of plates $\frac{3}{8}"$ thickness of water tubes $\frac{3}{8}"$

The foregoing is a correct description,
Amelia Donall No. Manufacturer's.

General Remarks (State quality of workmanship, opinions as to class, &c. *Workmanship generally good.*)
Pumping arrangements more than ordinarily elaborate, as circulation pump is arranged to pump from tank & bilges if required, and lead of piping very intricate.
Pumping arrangements as approved by Secy's letter of 14th Feb. 1880, have been satisfactorily carried out.
The machinery & boilers of this vessel have been constructed under special survey, eligible in my opinion to be classed Lloyd's M.C.

The amount of Entry Fee .. £ 0: 0: 0 received by me,
Special .. £ 19: 10: 0
Certificate (if required) .. £ 0: 0: 0 14th Feb 1880
To be sent as per margin.
(Travelling Expenses, if any, £)

Committee's Minute

Alfred H. Alchin
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Greenock
It is submitted that the vessel appear eligible to be classed as recommended
M 24/1/80 + Lloyd's M 6 280