

REPORT ON MACHINERY.

No. 184

No. in Survey held at Reg. Book.

Dundee

Date, first Survey 3/6/81

(Received at London Office 2nd OCT. 82.

Last Survey 9th September 1882

on the T.S.S. "Empress."

Master J. Shouman

Built at Middlebro'

When built

Tons 775.41
1205.23
1864

Engines made at Dundee

By whom made W.B. Thompson when made 1882

Boilers made at Do

By whom made " " Do when made 1882

Registered Horse Power 130

Owners W.B. Thompson

Port belonging to Dundee

ENGINES, &c.—

Description of Engines Compound Int. Cyls direct acting surface Condensing
Diameter of Cylinders 28" x 55" Length of Stroke 36" No. of Rev. per minute 70 Point of Cut off, High Pressure $\frac{2}{3}$ Low Pressure $\frac{2}{3}$
Diameter of Screw shaft 9 $\frac{7}{8}$ " Diameter of Tunnel shaft 9 $\frac{1}{2}$ " Diameter of Crank shaft journals 9 $\frac{7}{8}$ " Diameter of Crank pin 9 $\frac{7}{8}$ " size of Crank webs 11" x 6 $\frac{1}{2}$ "
Diameter of screw 13" 0" Pitch of screw 16" 0" No. of blades 4 state whether moveable 20 total surface 45 feet
No. of Feed pumps two diameter of ditto 3 $\frac{1}{2}$ " Stroke 18" Can one be overhauled while the other is at work yes
No. of Bilge pumps two diameter of ditto 4" Stroke 18" Can one be overhauled while the other is at work yes
Where do they pump from all compartments
No. of Donkey Engines one Size of Pumps 7" x 9" x 4" Where do they pump from sea tanks all -

Compartments Hotwell = 6 boiler through ship side on deck when vessel not down
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
How are the pumps worked by levers from piston crossheads

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 none How are they protected
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 in dry dock 11th Novr 1881

Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from top of cylinders

OILERS, &c.—

Number of Boilers one Description Circular Tubular
Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 27th September 1881

Description of ~~superheating apparatus~~ steam chest vertical drum
Can each boiler be worked separately Can the superheater be shut off and the boiler worked separately

To. of square feet of fire grate surface in each boiler 45 feet Description of safety valves direct spring load W.B.T.
To. to each boiler two area of each valve 19.63" Are they fitted with easing gear yes

To. of safety valves to superheater area of each valve are they fitted with easing gear
Smallest distance between boilers and bunkers or woodwork 9"

Diameter of boilers 44" 2" Length of boilers 10" 0" description of riveting of shell long. seams Lap Rivet. R. circum. seams Lap Rivet. R.
Thickness of shell plates 1" diameter of rivet holes 1 $\frac{3}{8}$ " x 1 $\frac{1}{2}$ " whether punched or drilled drilled pitch of rivets 5 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ "

Gap of plating 10" x 5 $\frac{5}{8}$ " per centage of strength of longitudinal joint 76" x 72% working pressure of shell by rules 80 lbs
Size of manholes in shell 16" x 13" size of compensating rings 4" x 4" x 3/4"

To. of Furnaces in each boiler three outside diameter 45" length, top 7" 0" bottom 7" 0"
Thickness of plates 7/16" description of joint Butt S. R. if rings are fitted flanges in centre greatest length between rings 3" 9"

Working pressure of furnace by the rules 101 lbs whole length 62 lbs
Combustion chamber plating, thickness, sides 1/2" back 1/2" top 1/2"

Pitch of stays to ditto sides 9 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ " back 9 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ " top 9 $\frac{1}{2}$ " x 7 $\frac{3}{8}$ "
Stays are fitted with nuts or riveted heads nuts both ends working pressure of plating by rules 85 lbs

Diameter of stays at smallest part 1 $\frac{1}{2}$ " B.T. working pressure of ditto by rules 4247 lbs
End plates in steam space, thickness 3/4" pitch of stays to ditto 14 $\frac{3}{4}$ " x 14 $\frac{3}{4}$ " how stays are secured this ends nuts

Working pressure by rules 92 lbs diameter of stays at smallest part 2 $\frac{1}{2}$ " working pressure by rules 4461 lbs
Front plates at bottom, thickness 5/8" Back plates, thickness 5/8" greatest pitch of stays 9 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ " working pressure by rules 4247 lbs

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Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " thickness of tube plates, front $\frac{5}{8}$ " back $\frac{5}{8}$ "
 How stayed *tubes shut* pitch of stays $9\frac{1}{2} \times 9\frac{1}{2}$ " width of water spaces $1\frac{1}{4}$ "
 Diameter of ~~Superheater~~ Steam chest $3\frac{1}{2}$ " length $7\frac{1}{2}$ "
 Thickness of plates $\frac{3}{8}$ " description of longitudinal joint *Lap S.R.* diameter of rivet holes $\frac{3}{4}$ " pitch of rivets $2\frac{1}{2}$ "
 Working pressure of shell by rules 111 lb Diameter of flue ☒ thickness of plates ☒
 If stiffened with rings ☒ distance between rings ☒ Working pressure by rules ☒
 End plates of ~~superheater~~ steam chest; thickness $\frac{5}{8}$ " How stayed *by 4 bolt stays $2\frac{1}{2}$ " dia*
~~Superheater~~ or steam chest; how connected to boiler *by malleable neck riveted to shell*
DONKEY BOILER— Description *one circular vertical*
 Made at *Dundee* By whom made *W. B. Thompson* when made *1882*
 Where fixed *Stokehold* working pressure *50 lb* Tested by hydraulic pressure to *100 lb* No. of Certificate *131*
 Fire grate area *12 feet* Description of safety valves *Direct S.Z* No. of safety valves *one* area of each *9.62* sq.
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
 Diameter of donkey boiler *4.7* length *10.1* description of riveting *vertical seams Lap S.R. Culph*
 thickness of shell plates $\frac{3}{8}$ " diameter of rivet holes $\frac{3}{4}$ " whether punched or drilled *punched*
 pitch of rivets $2\frac{1}{2}$ " lap of plating $4\frac{1}{2} \times 2\frac{1}{2}$ " per centage of strength of joint *70-95 %*
 thickness of crown plates $\frac{9}{16}$ " stayed by *6 bolt stays through crown plates $1\frac{3}{8}$ " diam*
 Diameter of furnace, top 3.9 bottom 4.2 length of furnace $5.4\frac{1}{2}$
 thickness of plates $\frac{1}{2}$ " description of joint *Lap S.R.*
 thickness of furnace crown plates $\frac{1}{2}$ " stayed by *bolt stays through crown of boiler*
 Working pressure of shell by rules 72 lb working pressure of furnace by rules 84 lb
 diameter of uptake *13" mean* thickness of plates $\frac{7}{16}$ " thickness of water tubes $\frac{3}{8}$ "

The foregoing is a correct description,

W. B. Thompson

Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The boilers and machinery*
of this vessel have been built in accordance with the requirements
of the Rules and to plan of boiler submitted for the
Committee's approval dated 8/6/81. The material and work-
manship are of the best description. The machinery and
boilers have been tested by steam and found satisfactory
and the safety valves tested and set to a working pressure
of 80 lb and donkey valves 50 lb per square inch respectively.
And in my opinion all are in good and safe working
order - and eligible to be entered into the Register Book
with the distinctive mark \times Lloyds M.C in red 9.82

It is submitted that
this vessel is eligible to have
the registration mark
entered M 2/10/82

The amount of Entry Fee ... £ 2 : 0 : 0 received by me,
 Special ... £ 19 : 10 : 0
 Certificate (if required) ... £ : 2 : 6 27 Sep 1882.
 To be sent as per margin.
 (Travelling Expenses, if any, £)

Committee's Minute

Tuesday, 3rd October, 18 82

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

Dundee District

Lloyd's Register Foundation