

# REPORT ON MACHINERY.

4525

No. 184

(Received at London Office 2nd OCT. 1882)

No. in Survey held at Dundee

Date, first Survey 3/6/81

Last Survey 9th September 1882

on the T.S.S. "Empress"

Tons 775.41  
1205.23  
1864

Master J. Shouman

Built at Middlebro'

When built

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 2/6 Low Pressure 2/6  
 Diameter of Screw shaft 9 3/8" Diameter of Tunnel shaft 9 1/2" Diameter of Crank shaft journals 9 3/8" Diameter of Crank pin 9 3/8" size of Crank webs 11" x 6 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 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  
 Are all the bilge suction pipes fitted with roses yes Are the roses always accessible yes when vessel not load 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 crosshead  
 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 Nov 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 double  
 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 14" 2" Length of boilers 10" 0" description of riveting of shell long. seams Lap Rivet. R. circum. seams Lap Rivet.  
 Thickness of shell plates 1" diameter of rivet holes 1 3/8" & 1 1/2" whether punched or drilled drilled pitch of rivets 5 1/2" x 4 1/2"  
 Gap of plating 10" x 5 5/8" per centage of strength of longitudinal joint 76" - 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 7/8" 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 52 lbs  
 Combustion chamber plating, thickness, sides 1/2" back 1/2" top 1/2"  
 Pitch of stays to ditto sides 9 1/2" x 9 1/2" back 9 1/2" x 9 1/2" top 9 1/2" x 7 3/8"  
 Are stays fitted with nuts or riveted heads Nuts both ends working pressure of plating by rules 85 lbs  
 Diameter of stays at smallest part 1 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 3/4" x 14 3/4" how stays are secured two ends nuts  
 Working pressure by rules 92 lbs diameter of stays at smallest part 2 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 1/2" x 9 1/2" working pressure by rules 4247 lbs

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 thru* pitch of stays  $9\frac{1}{2} \times 9\frac{1}{2}$ " width of water spaces  $1\frac{1}{2}$ "  
 Diameter of ~~Superheater~~ Steam chest  $3.0$ " length  $7.3$ "  
 Thickness of plates  $\frac{3}{8}$ " description of longitudinal joint *Lap S.N.* 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 in  
 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.N.  $\frac{3}{4}$ "*  
 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  $1\frac{3}{8}$ " dia*  
 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.N.*  
 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  $1\frac{3}{8}$ " 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 lbs and donkey valves 50 lbs 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  $\times$  Lloyd's M.C in red 9.82*

*This vessel is eligible to have*  
*the registration of Lloyd's M.C*  
*received 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, 1882

*John Starvoth*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
*Dundee District*