

# REPORT ON MACHINERY.

3546

No. 3546  
No. 34320

Port of LIVERPOOL.

No. in Survey held at *Liverpool*  
Reg. Book. *Liverpool*  
on the *S. S. "Brandenburg"*

Date, first Survey *Jan 25<sup>th</sup> - 88* Last Survey *May 1<sup>st</sup> 1889*  
(Number of Visits *27*) Tons *999.13*  
*1567.54*

Master *Hoach* Built at *Londonderry* By whom built *C. J. Biggin*  
Engines made at *Liverpool* By whom made *D. Rollo & Sons*  
Boilers made at *Do* By whom made *Do*

When built *1889*

when made *1889*

when made

Registered Horse Power *250*

Owners *Liverpool & Manchester D.C. Co.* Port belonging to *Liverpool*

## ENGINES, &c.—

Description of Engines *Triple expansion, direct acting, surface condensing.*  
Diameter of Cylinders *23-37-59* Length of Stroke *42* No. of Rev. per minute *75* Point of Cut off, High Pressure *2* Low Pressure *2*  
Diameter of Screw shaft *12* Diam. of Tunnel shaft *11 1/2* Diam. of Crank shaft journals *12* Diam. of Crank pin *12* size of Crank webs *20 1/2 x 8*  
Diameter of screw *14-0* Pitch of screw *17-0* No. of blades *4* state whether moveable *No* total surface *5507 ft.*  
of Feed pumps *2* diameter of ditto *6* Stroke *18* Can one be overhauled while the other is at work *Yes*  
of Bilge pumps *2* diameter of ditto *3 3/4* Stroke *27* Can one be overhauled while the other is at work *Yes*  
Where do they pump from *Engine room bilges, stoke hole, All holds & after well*  
of Donkey Engines *One* Size of Pumps *9 x 7* Where do they pump from *All holds, tanks*  
*Engine & stoke hole bilges, after well & sea*

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*  
of bilge injections *1* and sizes *4 3/4* Are they connected to condenser, or to circulating pump *Circulating pump*  
Are the pumps worked *Let down from after engine*

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  
Are pipes carried through the bunkers *Suction pipes to fore holds* How are they protected *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 *See Belfast report*  
Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes* worked from *Top platform*

## BOILERS, &c.—

Number of Boilers *One* Description *Cylindrical, double ended* Whether Steel or Iron *Steel*  
Working Pressure *150 lb* Tested by hydraulic pressure to *300 lb* Date of test *31-12-88*

Description of superheating apparatus or steam chest *None*  
Can each boiler be worked separately *—* Can the superheater be shut off and the boiler worked separately *—*

Area of square feet of fire grate surface in each boiler *115 sq ft* Description of safety valves *Spring* No. to each boiler *Two*  
Area of each valve *15.04* 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 *11"* Diameter of boilers *15-0*

Length of boilers *17-0* description of riveting of shell long. seams *Double butt strap* circum. seams *Lap, tube & drum* Thickness of shell plates *1 1/4*  
Diameter of rivet holes *1 1/4* whether punched or drilled *Drilled* pitch of rivets *3 3/8 x 7 3/4* Lap of plating *17 3/4 straps*  
Percentage of strength of longitudinal joint *83* working pressure of shell by rules *151 lb* size of manholes in shell *16 x 12*

Number of compensating rings *6 x 1 3/8* No. of Furnaces in each boiler *6*  
Side diameter *3-10* length, top *5-9* bottom *5-9* thickness of plates *9/16* description of joint *Welded, Triple Patent* if rings are fitted *No*  
Greatest length between rings *—* working pressure of furnace by the rules *152 lb* combustion chamber plating, thickness, sides *1/2* back *—* top *9/16*

Number of stays to ditto, sides *7 x 7* back *—* top *Plate stays* If stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *150 lb*  
Diameter of stays at smallest part *1 1/8* working pressure of ditto by rules *150 lb* end plates in steam space, thickness *1 1/2 doubled 3/4*  
Number of stays to ditto *16 x 16 1/2* how stays are secured *Nuts & Washers* working pressure by rules *154 lb* diameter of stays at smallest part *2 1/2*

working pressure by rules *162 lb* Front plates at bottom, thickness *3/8* Back plates, thickness *—*  
Greatest pitch of stays *—* working pressure by rules *—* Diameter of tubes *3 1/2* pitch of tubes *4 3/4 x 4 3/4* thickness of tube plates, front *7/8* back *3/4* how stayed *Stay tubes* pitch of stays *9 1/2 x 9 1/2* width of water spaces *1 1/4*

Number of Superheater or Steam chest *—* length *—* thickness of plates *—* description of longitudinal joint *—* diam. of rivet holes *—*  
Number of rivets *—* working pressure of shell by rules *—* 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 *—* how stayed *—*  
Superheater or steam chest; how connected to boiler *—*



DONKEY BOILER— Description *Vertical & cylindrical. Blake's Patent.*  
Made at *Manchester* by whom made *J Blake* when made *1889* where fixed *Stoke hole*  
Working pressure *80 lb* tested by hydraulic pressure to *160 lb* No. of Certificate *774* fire grate area description of safe  
valves *Spring* No. of safety valves *Two* area of each *4.9* if fitted with easing gear *Yes* if steam from main boilers  
enter the donkey boiler *No* diameter of donkey boiler *6.0* length *14.6* description of riveting *Lap donkey riv*  
Thickness of shell plates *13* diameter of rivet holes *7/8* whether punched or drilled *Drill* pitch of rivets *2 3/4* lap of plating *4 1/4*  
per centage of strength of joint *60* thickness of crown plates *1 1/2* stayed by *Hemifpherical*  
Diameter of furnace, top *2.1* bottom *4.10* length of furnace *3.4* thickness of plates *1/2* description of joint *Lap riv riv.*  
Thickness of ~~furnace~~ crown plates *1/4 back 7/8* stayed by *Stay tubes* working pressure of shell by rules *82*  
Working pressure of furnace by rules *80 lb* diameter of uptake *1.10* thickness of plates thickness of water tubes

SPARE GEAR. State the articles supplied:— *Propeller, crank shaft, connecting and bel*  
*v nuts, two main bearing bolts, set of coupling bolts, spare set of*  
*feed and bilge pump valves, two valve spindles &c &c.*

The foregoing is a correct description,  
*David Rolton & Sons* Manufacturer. of main engines & boiler.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been constructed under  
special survey. the materials and workmanship have been  
found good and efficient.

The engines and boilers have been tested under steam  
and found satisfactory, and in my opinion they are in  
good order and safe working condition, and eligible for  
the notification *+ L.M.C. 5.89.* in the Register Book.

*Torque connections and fastenings, see Belfast Report No 3547.*  
*attached.*

It is submitted that this vessel is  
eligible to have *+ L.M.C. 5.89,*  
recorded *N.A.*  
*6.5.89*

The amount of Entry Fee .. £ *2 : 0 : 0* received by me, *2 MAY 89*

Special .. £ *32 : 10 : 0*

Donkey Boiler Fee .. £

Certificate (if required) .. £

To be sent as per margin.

Travelling Expenses, if any, £

Committee's Minute

LIVERPOOL

*May 3. 1889*

*+ Rule 5/89*

*Geo. A. Milner*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

*Liverpool*  
Transmit Report to London.  
*9/5/89*