

# REPORT ON MACHINERY.

3594

Port of Belfast

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No. 3594

No. in Survey held at Belfast

Date, first Survey Oct 21<sup>st</sup>. 88 Last Survey 6<sup>th</sup> Aug<sup>th</sup> 1889.

Reg. Book.

45 on the Machinery of the Steer S.S. Lancashire

(Number of Visits 36)

Net 2507  
Tons up 2687  
Down 3871

Master B.R.W. Williams Built at Belfast By whom built Harland & Wolff When built 1889

Engines made at Belfast By whom made Harland & Wolff when made 1889

Boilers made at Belfast By whom made Harland & Wolff when made 1889

Registered Horse Power Estimated 12800  
Lloyd's M.P. 513 Owners Bibby Bros. & Co. Port belonging to Liverpool  
Total heating surface in 3 boilers = 8316 Sq. feet

## ENGINES, &c.—

Description of Engines Triple Compound 3 cylinders, 3 cranks. (I.D.)

Diameter of Cylinders 28" 47 7/8 Length of Stroke 60 No. of Rev. per minute 62 Point of Cut off, High Pressure .66 Low Pressure .61

Diameter of Screw shaft 16" Diam. of Tunnel shaft 15 1/4" Diam. of Crank shaft journals 16" Diam. of Crank pin 16" size of Crank webs 21" x 11 1/4"

Diameter of screw 19-0 Pitch of screw 22-0 true screws. of blades 4 state whether moveable yes total surface 96

No. of Feed pumps 2 diameter of ditto 4" Stroke 34" Can one be overhauled while the other is at work Yes  
Wires fit feed 9 1/2 cyl. 7 1/2 pump 21" stroke 3" suet and 1 pair of Worthington pt. feed 9" cyl. 6" pump 6" stroke 3 1/2 suet.

No. of Bilge pumps 2 diameter of ditto 5" Stroke 34" Can one be overhauled while the other is at work Yes

Where do they pump from Feed from hotwell Bilge from E.P.B. space, tunnel & all cargo compartments

No. of Donkey Engines Three Size of Pumps Gal. 10" cyl. 10" pump 10" stroke 6" suet Where do they pump from Sea, all bilges ballast,

fresh water and exhaust tanks, F.W. Condenser and boilers.

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 8" Are they connected to condenser, or to circulating pump Cir. Cent. pump

How are the pumps worked by links and levers from after engine crosshead.

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Valves & Cocks

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 below  
{Carried above by swan neck on air pipe.

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 fore hold bilge suction How are they protected cased in with wood

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 April 27<sup>th</sup> just before launching

Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from upper deck.

## BOILERS, &c.—

Number of Boilers 3 Description Dble End. Cir. Mult<sup>l</sup> Whether Steel or Iron Steel.

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 28<sup>th</sup> May, 1889.

Description of superheating apparatus or steam chest None fitted.

Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately ✓

No. of square feet of fire grate surface in each boiler 99 Description of safety valves D. Cockburns No. to each boiler Two

Area of each valve 17.72 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 6-6" Diameter of boilers 12-8"

Length of boilers 17-6" description of riveting of shell long. seams dble B.S. 3/16 circum. seams Triple & double lap thickness of shell plates 1 1/4"

Diameter of rivet holes 1 5/16" whether punched or drilled drilled pitch of rivets 8 3/8" Lap of plating 19" x 3 1/2" B.S.

Per centage of strength of longitudinal joint 84.3 working pressure of shell by rules 180 lbs. size of manholes in shell 12" x 15"

Size of compensating rings 27" x 24" x 1 1/4" rectangular Steel plate No. of Furnaces in each boiler Six

Outside diameter 37 1/4" length, top 7-1" bottom 8-6" thickness of plates 5" description of joint Purves P<sup>l</sup> with rings are fitted Yes

Greatest length between rings 9" working pressure of furnace by the rules 215 lbs combustion chamber plating, thickness, sides 19/32 bot 5/8" top 5/8"

Pitch of stays to ditto, sides 7 3/4" back top 7 1/4" 8 1/4" if stays are fitted with nuts or riveted heads Nuts on inside working pressure of plating by rules 180 lbs twisted in shell

Diameter of stays at smallest part 1 3/8" working pressure of ditto by rules 188 & 197 plates in steam space, thickness 1 1/16"

Pitch of stays to ditto 19" x 17 1/2" how stays are secured 2 nuts and 14" dia washers fixed to plates working pressure by rules 192 lbs with 2 1/2" diameter of stays at smallest part 3" working pressure by rules 184 lbs Front plates at bottom, thickness 13/16" Back plates, thickness ✓

Greatest pitch of stays ✓ working pressure by rules ✓ Diameter of tubes 3 1/2" - 7 1/2" pitch of tubes 4 1/2" x 4 1/2" thickness of tube 6 let. bones

plates, front 2 1/8" back 3/4" how stayed Stay tubes pitch of stays 9" x 9" width of water spaces 6" sides of bones 1 3/4" bet. tube nuts

Diameter of Superheater or Steam chest ✓ length ✓ thickness of plates ✓ description of longitudinal joint ✓ diam. of rivet holes ✓

Pitch 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 ✓

Lloyd's Register Foundation  
BELSS-0389

**DONKEY BOILER**— Description *Cylindrical vertical with water tubes*  
 Made at *Liverpool* by whom made *J. H. Wilson & Co.* when made *1889* where fixed *Upper deck*  
 Working pressure *70 lbs.* tested by hydraulic pressure to *100 lbs.* No. of Certificate *1* fire grate area *10* description of safety valves *2* No. of safety valves *2* area of *ch* if fitted with easing gear *if steam from main boilers can enter the donkey boiler*  
 diameter of donkey boiler \_\_\_\_\_ length \_\_\_\_\_ description of riveting \_\_\_\_\_  
 Thickness of shell plates \_\_\_\_\_ diameter of rivet holes \_\_\_\_\_ whether punched or drilled \_\_\_\_\_ pitch of rivets \_\_\_\_\_ lap of plating \_\_\_\_\_  
 per centage of strength of joint \_\_\_\_\_ thickness of crown plate \_\_\_\_\_ stayed by \_\_\_\_\_  
 Diameter of furnace, top \_\_\_\_\_ bottom \_\_\_\_\_ length of furnace \_\_\_\_\_ thickness of plates \_\_\_\_\_ description of joint \_\_\_\_\_  
 Thickness of furnace crown plates \_\_\_\_\_ stayed by \_\_\_\_\_ working pressure of shell by rules \_\_\_\_\_  
 Working pressure of furnace by rules \_\_\_\_\_ diameter of uptake \_\_\_\_\_ thickness of plates \_\_\_\_\_ thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— *2 steel propeller blades; 1 pair crank pin brasses; 1 S. valve spindle; 1 set of coupling bolts; 2 main bearing bolts; a set of connect. rod bolts for one rod; 12 pin ring bolts; 1 set of Ram rings for each piston; 4 feed pump & 2 bilge values & seats; 1 set of metallic & rubber valves for pumps; 1 air pump rod; 1 set of prop. blade studs; 100 furnace bars; 3 safety valve springs 7 1/2 7 1/2 7 1/2.*  
 The foregoing is a correct description, *Horland & Co. Manufacturers.*

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

The machinery of this steamer has been constructed in accordance with the approved plan of main boiler, the amended plan of attaching C.C. to shell at bottom, the Secretary's letter of 22<sup>nd</sup> Aug. 1888, the Rules of the Society or equal thereto and to the satisfaction of the undersigned.

The steel used in the construction of Boilers has been tested as required by the Rules and endorsed copies of invoices received at this office.

The Boilers and main steam pipes were tested to 360 lbs. per sq. inch by hydraulic without shewing any signs of weakness or leakage and the machinery was tested under steam, the engines working full speed and the safety valves adjusted to a working pressure of 180 lbs. per sq. inch on main & 70 lbs. on D. Boiler.

The material used in the construction of the machinery and the workmanship throughout are good and satisfactory; I would therefore respectfully recommend that the Special Notification **+LMC 889** be granted as in my opinion the machinery is eligible for same.

It is submitted that this vessel is eligible to have + LMC 889 recorded

*Mld*  
12. 8. 89

The amount of Entry Fee . . . £ 3 : 0 : 0 received by me,  
 Special . . . £ 45 : 0 : 0  
 Donkey Boiler Fee . . . £ : :  
 Certificate (if required) . . . £ gratis: 9. 8. 18 89  
 Printing Expenses, if any, £ \_\_\_\_\_

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

**AUG 13 1889**

**+ LMC 889**

