

# REPORT ON MACHINERY.

362

Port of Belfast

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No. 3621

No. in Survey held at Belfast

Date, first Survey 21<sup>st</sup> Dec. 1889 Last Survey 1<sup>st</sup> Oct. 1889

Reg. Book.

(Number of Visits 26)

Net 2507

Tons 2507

6 on the Steet S.S. Yorkshire

Master Henry 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 - do - By whom made - do - when made - do -

Registered Horse Power 500 Owners Bilby Bros & Co Port belonging to Liverpool

ENGINES, &c.—

Description of Engines Triple expansion 3 Cyl. 3 cranks. (1 D.S.C.)

Diameter of Cylinders 28.47 & 78 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 1/2"

Diameter of screw 19-0" Pitch of screw 22-0" No. of blades 4 state whether moreable Yes total surface 96 sq. ft.

No. of Feed pumps 2 diameter of ditto 4 Stroke 34 Can one be overhauled while the other is at work Yes

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 Engine Space, Tunnel & all Cargo Compart.

No. of Donkey Engines Three Size of Pumps 10" Cyl. 10" pump, 10" Cyl. 6" pump, 10" Cyl. 3" pump Where do they pump from Sea, wells in all Cargo

Compartments & 4th space; ballast & fresh water tanks. Exhaust tank. F.W. Cond. & 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 size 8 dia. Are they connected to condenser, or to circulating pump Cir. pump.

How are the pumps worked Through 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 Cocks and Valves.

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.

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 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 Three Description Double ended. Cir. Mult. Whether Steel or Iron Steel.

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 Date of test 4<sup>th</sup> July, 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 6. Cockburnis sps. to each boiler Two

Area of each valve 17.72 square 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 Double B.S. Triple B.S. seams Thickness of shell plates 1 1/4"

Diameter of rivet holes 1 1/8" 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 1/2" rectangular steel plate No. of Furnaces in each boiler Six.

Outside diameter 37 1/2" length, top 7'-1" bottom 8'-6" thickness of plates 5" description of joint Welded if rings are fitted ribs

Greatest length between ribs 9' working pressure of furnace by the rules 215 lbs. combustion chamber plating, thickness, sides 19" bot 5" top 5"

Pitch of stays to ditto, sides 7 1/2" back ✓ top 7 1/2" x 8 1/2" If stays are fitted with nuts or riveted heads Nuts on Comb. working pressure of plating by rules 180 lbs.

Diameter of stays at smallest part 1 1/2" working pressure of ditto by rules 180 lbs. end plates in steam space, thickness 1 1/8"

Pitch of stays to ditto 19.17 1/2" how stays are secured 2 nuts & 1 1/4" dia. washers riveted to plates. working pressure by rules 192 lbs with 240 constant. diameter of stays at smallest part 3"

Greatest pitch of stays ✓ working pressure by rules ✓ Diameter of tubes 3 1/4" 7 in. pitch of tubes 4" x 4 1/2" thickness of tube plates, front 7/8" back 3/4" how stayed Stay tubes & solid stays. pitch of stays 9" x 9" width of water spaces 6" bot. 1 1/2" tubes.

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 ✓

Description of furnaces Purvis Patent Ribbed

*Particulars of Machinery Supplied from Liverpool*

**DONKEY BOILER—** Description *Vertical 3 water tubes.*  
Made at *Syde* by whom made *Linker Bros.* when made *1889* where fixed *upper deck*  
Working pressure *40 lbs* tested by hydraulic pressure to *140 lbs.* No. of Certificate *807* fire grate area *20.0 sq ft* description of safety valves *Cockburns 807* No. of safety valves *2* 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 *9-6"* description of riveting *Laps joints*  
Thickness of shell plates *7/16"* diameter of rivet holes *3/4"* whether punched or drilled *drilled* pitch of rivets *3"* lap of plating *4 1/4"*  
per centage of strength of joint *68* thickness of crown plates *5/16"* stayed by *bished 44 stays 2" dia.*  
Diameter of furnace, top *4-7"* bottom *5-1"* length of furnace *4-6"* thickness of plates *5/16"* description of joint *welded*  
Thickness of furnace crown plates *15/32"* stayed by *same as shell crown* working pressure of shell by rules *87 lbs*  
Working pressure of furnace by rules *66 lbs* diameter of uptake *1-10"* thickness of plates *7/16"* thickness of water tubes *1/2"*  
*4 row of 4 row stays.*

**SPARE GEAR.** State the articles supplied:— *2 steel propeller blades; 1 pair of Crank pin brasses; slide valve spindle; 1 set of coupling bolts; 2 main bearing bolts; a set of connecting rod bolts for one rod; 12 joint king bolts; 1 set of Ramsbottom rings for each piston; 4 feet 12 bilge pump valves & seats; one set of metallic rubber valves for air pump; 1 The foregoing is a correct description, Air pump rod; 1 set of prop. blade studs; 100 furnace bar*  
*Hauland & Co. Ltd.* Manufacturer. *3 safety valve springs 7c. 7c. 7c. 7c.*

**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 Boilers of S.S. "Lancashire" Bel. Rep. N<sup>o</sup> 3594 which see. the amended plan shewing attachment of C.C. bottom to shell of boiler; 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 & endorsed copies of invoices received.

The Boilers and Main steam pipes were tested to twice the working pressure without shewing any signs of weakness or leakage; the machinery was tested under steam; the engines working full speed and the safety valves adjusted to 180 lbs. W.P. on main and 70 lbs. W.P. on donkey boiler.

All 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 1089* be granted.

It is submitted that this vessel is eligible to have +LM.C. 1089 recorded.

*N.A. 7-10-89*

The amount of Entry Fee .. £ *3:0:0* received by me,

Special .. £ *45:0:0* 5.10.89

Donkey Boiler Fee .. £

Certificate (if required) .. £ *Gratis* 1889

To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

*+ Sme 10, 89*

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

TUES 6 OCT 1889