

# REPORT ON MACHINERY.

Port of Belfast

Received at London Office SAI. 14 MAY 1904

No. in Survey held at Belfast Date first Survey 4 Dec 1902 Last Survey 14 May 1904  
Reg. Book. U.S.S. Kenilworth Castle (Number of Visits 102)

Master Joseph Norton Built at Belfast By whom built Laurance & Wolff L<sup>rs</sup> When built 1904  
Engines made at Belfast By whom made - when made -

Boilers made at - By whom made - when made -

Registered Horse Power ✓ Owners Union Castle Mail S.S. Coy L<sup>ts</sup> Port belonging to London

Nom. Horse Power as per Section 28 2174 Is Refrigerating Machinery fitted No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engine Twin Screw Triple Expansion Cylinders No. of Cranks 8

Dia. of Cylinders 32-46-66-96 Length of Stroke 60 Revs. per minute 80 Dia. of Screw shaft 18.31 as per rule 18.31 as fitted 19.0 Lgth. of stern bush 78

Dia. of Tunnel shaft 17.95 as per rule 17.95 as fitted 17.95 Dia. of Crank shaft journals 19.0 as per rule 19.0 as fitted 19.0 Dia. of Crank pin 20 Size of Crank web 35 1/2 x 3 1/2 of thrust shaft under collars 18 3/4 Dia. of screw 18-9 Pitch of screw 26-6 No. of blades 3 State whether moveable Yes Total surface 86 1/2 sq ft.

No. of Feed pumps None Diameter of dipper - Stroke ✓ Can one be overhauled while the other is at work ✓

No. of Bilge pumps 2 Diameter of ditto 6 Stroke 30 Can one be overhauled while the other is at work Yes

No. of Donkey Engines See other sheet Sizes of Pumps ✓ No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 4-4" in Stokeholds 6-4" 2-2 1/2" In Holds, &c. 9-1 1/2" 6-2 1/2"

No. of bilge injections 2 sizes 18" Connected to condenser ✓ to circulating pump ✓ Pumps separate donkey suction fitted in Engine room & size Yes 8"

Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible None

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 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 suction How are they protected Wood casings

Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes

When were stern tube, propeller, screw shaft, and all connections examined in dry dock Before launching Is the screw shaft tunnel watertight States to be

Is it fitted with a watertight door Yes worked from Upper deck.

BOILERS, &c.— (Letter for record ✓) Total Heating Surface of Boilers 38982 sq ft Is forced draft fitted No

No. and Description of Boilers 4 Single End Cylindrical - Muller Working Pressure 220 lbs Tested by hydraulic pressure to 440 lbs

Date of test 22/3/03 Can each boiler be worked separately Yes Area of fire grate in each boiler 3.6 No. and Description of safety valves to each boiler 2 - Direct Spring Area of each valve 7.56 sq in Pressure to which they are adjusted 220 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or plates and bunkers on woodwork 15" Mean dia. of boilers 14-2" Length 28-9" Material of shell plates Steel

Thickness 3/32 Range of tensile strength 31-34 Are they welded or flanged No Descrip. of riveting: cir. seams lap, R. & S. seams Butt Joints Cut Joints

Diameter of rivet holes in long. seams 7/16 Pitch of rivets 10" Top of plates width of butt straps 22 1/2"

Percentages of strength of longitudinal joint 88 1/2 Working pressure of shell by rules 253 lbs Size of manhole in shell 16" x 12"

Size of compensating ring No Nails No. and Description of Furnaces in each boiler 4 - Material Steel Outside diameter 45 1/2"

Length of plain part top 3" Thickness of plates bottom 3/16 Description of longitudinal joint Weld No. of strengthening rings 4 Transverse 275 - 180

Working pressure of furnace by the rule 249 lbs Combustion chamber plates: Material Steel Thickness: Sides 5/16 Back 5/16 Top 5/16 Bottom 5/16

Pitch of stays to ditto: Sides 7 1/2 x 7 1/2 Back 8 1/2 x 7 1/2 Top 7 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 238

Material of stays Steel Diameter at smallest part 1 1/2 x 1 1/8 Area supported by 1 stay 6 1/2 Working pressure by rules 225 lbs End plates in steam space: Material Steel Thickness 1/2 Pitch of stays 17 1/2 x 15 How are stays secured Loosened into plates Working pressure by rules 269 lbs Material of stays Steel

Diameter at smallest part 2 1/2 Area supported by 1 stay 240 sq in Working pressure by rules 247 lbs Material of Front plates at bottom Steel

Thickness 1/2 Material of Lower back plate Steel Thickness 1/2 Greatest pitch of stays 10 1/2 Working pressure of plate by rules 156 lbs with 18 flanges

Diameter of tubes 2 1/2 Pitch of tubes 4 x 4 Material of tube plate Steel Thickness: Front 7/16 Back 3/4 Mean pitch of stays 8 x 8

Pitch across wide water spaces 14" Working pressures by rules 200 lbs with 18 flanges to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/2 x 7 1/2 Length as per rule 4'-6" Distance apart 7 1/2 Number and pitch of Stays in each 3-7 1/2

Working pressure by rules 223 lbs Superheater or Steam chest; how connected to boiler ✓ Can the superheater be shut off and the boiler worked separately ✓

Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness

Stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed Working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear



Port of Belfast Continuation of Report No. 5738 dated 18<sup>th</sup> May 1904 on the

DONKEY BOILER—		No.	Description <i>Name</i>	
Made at	By whom made	When made	Where fixed	
Working pressure	tested by hydraulic pressure to	No. of Certificate	Fire grate area	Description of safety valves
No. of safety valves	Area of each	Pressure to which they are adjusted	If fitted with easing gear	If steam from main boilers can enter the donkey boiler
Dia. of donkey boiler	Length	Material of shell plates	Thickness	Range of tensile strength
Descrip. of riveting long seams	Dia. of rivet holes	Whether punched or drilled	Pitch of rivets	
Lap of plating	Per centage of strength of joint	Rivets Plates	Thickness of shell crown plates	Radius of do.
Dia. of stays	Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates
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 uptake plates	Thickness of water tubes	

SPARE GEAR. State the articles supplied:— *See Separate Sheet*

The foregoing is a correct description, *Farland & Wolff* Manufacturer.

Dates of Survey while building	During progress of work in shops—	1912 Dec 4, 8, 10, 15, 1903 Jan 2, 9, 30, Feb 2, 18, 25, March 2, 9, 12, 16, 24, 27
	During erection on board vessel	April 6, 6, 10, 20, 29 May 11, 13, 20, 25, 29 and up to 14 <sup>th</sup> May 1904.
Total No. of visits	102	Is the approved plan of main boiler forwarded herewith <i>Yes</i>

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

Material of screw shaft *Hyd. Press* *Yes* Is the after end of the liner made water tight in the propeller boss *Yes* If the liner is in more than one length are the joints burned *Yes*

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water non-corrosive *Yes* If two liners are fitted, is the shaft lapped or protected between the liners *Yes*

The machinery of this vessel has been constructed under special license, and in accordance with the Rules. The workmanship and the materials are of the best description throughout, and on trial under steam, the machinery worked satisfactorily. In my opinion it is eligible for record + L.M.C. 5-04.

A Report on the Electric Light installation, will be forwarded later.

It is submitted that this vessel is eligible for THE BROOD L.M.C. 5-04 ELEC. LIGHT.

The amount of Entry Fee	£ 3 : 0	When applied for, 12-5-1904
Special	£ 128 : 14	When received, 20-5-04
Donkey Boiler Fee	£	
Travelling Expenses (if any)	£	

Committee's Minute FRI. 20. MAY 1904 + L.M.C. 5. 04 Elec. Light. Assigned

*Share Gear*

- 2 Bronze Propeller blades
- 2 Propeller boss & nuts & nuts
- 2 Main bearing bolts & nuts
- 2 Sets Connecting rod top & bottom end braces
- 1 Head eccentric strap complete for H.P.
- 1 L.P.
- 1 Main Centrifugal pump impeller & spindle
- 1 Air pump body & bucket with valves set complete head & valve complete.
- 2 Sets piston packing rings H.P. piston
- 1 set - Springs for one set of engines complete.
- 1 H.P. valve spindle with nuts, cap & braces set
- 1 L.P.
- 1 Glad bush & rock bush in valves for piston rod
- 1 Set coils for evaporator
- 2 Sets spare gear for all Auxiliary Feed, Fresh water pumps, General Service pumps, Feed Fitters, Electric Light Engines, Refrigerating Engines, Boiler mountings, Main Engine pumps, etc. etc. and all spare gear as required by the Rules in addition

Donkey Pumps

- 2 New's Double Feed Pumps 12" x 8 1/2" x 26"
- 1 Farland & Wolffs Feed - Duplex 10 1/2" x 4" x 12"
- 1 Clarke Chapman's Harbour - Single 9" x 7" x 21"
- 1 Westminster Ballast 12" x 12" x 14"
- 3 Coruhers Duplex General Pumps 10" x 6 1/2" x 10"
- 1 - Fresh Water 4" x 3" x 5"

*R. L. Bewidge*

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