

REPORT ON MACHINERY.

Port of Belfast

Received at London Office MUN. FEB 24 1902

No. in Survey held at Belfast Date, first Survey 9th March 1901 Last Survey 20th Feb 1902

Reg. Book. S.S. "Walmer Castle" (Number of Visits 63)

on the Master Belfast Built at Belfast By whom built Laurand & Wolff L^{ds} Tons { Gross 12545 Net 6463 When built 1902

Engines made at Belfast By whom made Laurand & Wolff L^{ds} when made 1902

Boilers made at " By whom made " when made "

Registered Horse Power 2040 Owners Union Castle Mail S.S. Coy L^{ds} Port belonging to London

Nom. Horse Power as per Section 28 2040 Is Refrigerating Machinery fitted No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Quadruple Expansion, Turbine Screw No. of Cylinders 4 each No. of Cranks 4 each

Dia. of Cylinders 32"-46"-66"-95" Length of Stroke 60 Revs. per minute 75 Dia. of Screw shaft as per rule 18.35 as fitted 19.0 Lgth. of stern bush 78"

Dia. of Tunnel shaft as per rule 16.99 as fitted 17.75 Dia. of Crank shaft journals as per rule 17.84 as fitted 19.0 Dia. of Crank pin 19 1/2" Size of Crank webs 35 1/2" x 13 1/2" Dia. of thrust shaft under rollers 18 3/4" Dia. of screws 8"-9" Pitch of screws 26"-6" No. of blades 3 each State whether moveable Yes Total surface 86 1/2 sq ft each

No. of Feed pumps 1 each Diameter of ditto 6" Stroke 30" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 1 each 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 (See other sheet) No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Two - 3 1/2" Stroke hold 4 - 3 1/2" + 4 - 2 1/2" In Holds, &c. Eight - 3 1/2" Two - 3" Six - 2 1/2" Four - 2"

No. of bilge injections Two sizes 10 1/2" Connected to condenser, or to circulating pump Pump Is a separate donkey suction fitted in Engine room & size Yes - 4"

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 bilge 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 Refuse launching Is the screw shaft tunnel watertight Stated to be

Is it fitted with a watertight door Yes worked from Upper Deck

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 35964 sq ft Is forced draft fitted No

No. and Description of Boilers Eight Double & Two Single End Working Pressure 216 lbs Tested by hydraulic pressure to 432 lbs

Date of test 30-8-01 Can each boiler be worked separately Yes Area of fire grate in each boiler 112 x 108 in Double End 56 in Single End No. and Description of safety valves to each boiler Two - Relief Spring Area of each valve 2.56 sq in Pressure to which they are adjusted 216 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes on woodwork 3'-4" Mean dia. of boilers 4'-2" Length 19'-6" Material of shell plates Steel

Thickness 1 1/8" Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap. Riv. Sublg. seams Butt. Sublg.

Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 10" Lap of plates on width of butt straps 22 3/4"

Per centages of strength of longitudinal joint rivets 91.4 Working pressure of shell by rules 247 lbs Size of manhole in shell 16" x 12" plate 84.3

Size of compensating ring McNeil's No. and Description of Furnaces in each boiler 6 - Morrison's material Steel Outside diameter 44 1/2"

Length of plain part top 4" bottom 7" Thickness of plates crown 3 1/2" bottom 3 3/8" Description of longitudinal joint Weld No. of strengthening rings 37 on S.D. bottom

Working pressure of furnace by the rules 238 lbs Combustion chamber plates: Material Steel Thickness: Sides 5" Back 5" Top 5" Bottom 3 1/2"

Pitch of stays to ditto: Sides 8 x 7 1/4" Back 8 x 7 1/4" Top 8 x 7 1/4" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 214 lbs

Material of stays Steel Diameter at smallest part 1 1/2" / 1 1/8" Area supported by each stay 62 sq in Working pressure by rules 190 lbs End plates in steam space:

Material Steel Thickness 1" Pitch of stays 16 1/4" x 15 1/4" How are stays secured Nuts & Washers Working pressure by rules 227 lbs Material of stays Steel

Diameter at smallest part 2 1/2" / 2 3/8" Area supported by each stay 248 sq in Working pressure by rules 242 lbs Material of Front plates at bottom Steel

Thickness 4 1/8" Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓

Diameter of tubes 2 1/2" Pitch of tubes 4" x 4" Material of tube plates Steel Thickness: Front 1 1/8" Back 1 1/8" Mean pitch of stays 8" x 8"

Pitch across wide water spaces 14" Working pressures by rules 370 lbs with 2" doubler Chamber tops: Material Iron Depth and thickness of girder at centre 6 1/2" x (8" x 2) Length as per rule 44" Distance apart 7 1/4" Number and pitch of Stays in each 4 - 8"

Working pressure by rules 282 lbs Superheater or Steam chest; how connected to boiler ✓ Can the superheater be shut off and the boiler worked separately ✓

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

If 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



DONKEY BOILER— *Name* Description

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 casing gear _____ If steam from main boilers _____
 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 _____ Thickness of shell crown plates _____ Radius of do. _____ No. of Stays to do. _____
 Dia. of stays _____ Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace 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 uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— 2 Bronze propeller blades & set studs & nuts for 1 set
 Set connecting rod & braces; H.P. eccentric strap complete; L.P. eccentric strap complete; Centrif. circulating pump spindle & impeller; air pump work & buckets complete; air pump head valve; sets piston valve rings for H.P. 1P. 1P₂; set piston rings for H.P. 1P. 1P₂ & L.P. & valve spindle
 The foregoing is a correct description, *Harland & Wolff* Manufacturer. and all gear to Lloyd's Rules Extra.

During progress of work in shops— 1901— March 9, 14, 15, 16, 19, 29 April 4, 13, 18, 25, May 2, 10, 14, 17, 23, 24, 27, 30, June 5, 6, 10, 12, 14, 17, 19, 21, 24, 27, July 2, 3, 8, 9, 16, 24, 25, 26, 29, Aug 7, 13, 21, Sept 19, 24, 30 Oct 2, 10, 22, 31, Nov 11, 26, Dec 7, 9, 11, 14, 19
 During erection on board vessel—
 Total No. of visits 63
 Is the approved plan of main boiler forwarded herewith *Yes*

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

Material of screw shaft *Hydr. Pressed Super Steel* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *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 and non-corrosive If two liners are fitted, is the shaft lapped or protected between the liners

The machinery of this vessel has been constructed under Special Survey, in accordance with the Rules, and as per Secretary's letter dated 26th March 1901.
 The material used in its construction, and the workmanship is of good description throughout.
 On the occasion of the trial trip in Belfast Lough, the machinery worked most satisfactorily.
 In my opinion, it is eligible to be classed + L.M.C. 2-02, "Electric Light".

It is submitted that this vessel is eligible for THE RECORD - L.M.C. 2,02. Elec. Light.

The amount of Entry Fee. £ 3 : - : When applied for, 19-2-02
 Special .. £ 122 : - : When received, 25/2/02
 Donkey Boiler Fee .. £ : :
 Travelling Expenses (if any) £ : :
 25/2/02

R. J. Pennington
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUES. FEB 25 1902
 Assigned

