

REPORT ON MACHINERY.

WED. 21 SEP 1904

Port of Belfast
 Received at London Office _____
 No. in Survey held at Belfast Date first Survey 1903 Aug 13 Last Survey Sept 17 1904
 Reg. Book. _____ (Number of Visits 76)
 on the S.P.S. Worcesterhire
 Master _____ Built at Belfast By whom built Harland & Wolff L^{td} Gross 7160 Tons
 Engines made at Belfast By whom made Harland & Wolff L^{td} when made 1904 Net 4279
 Boilers made at _____ By whom made _____ when made _____
 Registered Horse Power _____ Owners Robt & Co. Steamship Coy L^{td} Port belonging to Liverpool
 Nom. Horse Power as per Section 28 819 Is Refrigerating Machinery fitted No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Twin Screw Quadruple Expans^o of Cylinders 8 No. of Cranks 8
 Dia. of Cylinders 22-3 1/2 - 46 - 65 1/2 Length of Stroke 48 Revs. per minute 76 Dia. of Screw shaft as per rule 13.45 Lgth. of stern bush 4-0
 Dia. of Tunnel shaft as per rule 12.3 Dia. of Crank shaft journals as per rule 12.9 as fitted 14.5 Dia. of Crank pin 13 1/2 Size of Crank webs 25 1/2 x 9 1/2 Dia. of thrust shaft under collars 13 1/2 Dia. of screw 15-10 Pitch of screw 20-6 No. of blades 3 State whether moveable Yes Total surface 6 1/2 sq ft each
 No. of Feed pumps 1 Diameter of ditto 4 1/2 Stroke 28 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 1 Diameter of ditto 5 Stroke 28 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines See other page No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 6-3 1/2 x 4-2 1/2 In Holds, &c. 8-3 1/2 x 4-5-2 1/2
 No. of bilge injections 2 sizes 8 Connected to condenser, or to circulating pump Pump Is a separate donkey suction fitted in Engine room & size 2-3 1/2
 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 Both
 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 screw shaft tunnel watertight Stated to be
 Is it fitted with a watertight door Yes worked from Engine Room Top platform

BOILERS, &c.— (Letter for record 2) Total Heating Surface of Boilers 13972 sq ft Is forced draft fitted No
 No. and Description of Boilers 2 Single End Cylinders Working Pressure 15 lbs tested by hydraulic pressure to 430 lbs
 Date of test 17-5-04 each boiler be worked separately Yes Area of fire grate in each boiler 14 sq ft Description of safety valves to each boiler Two - Direct Spring Area of each valve 2.5 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 7-6 Mean dia. of boilers 15-3 Length 10-3 Material of shell plates Steel
 Thickness 1 1/8 Range of tensile strength 29-32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap Double longitudinal seams Butt Double
 Diameter of rivet holes in long. seams 1 1/8 Pitch of rivets 10 Top of plates or width of butt straps 2 3/8
 Per centages of strength of longitudinal joint rivets 85.7 Working pressure of shell by rules 247 lbs Size of manhole in shell 16 x 12
 Size of compensating ring McNeill No. and Description of Furnaces in each boiler 4 - Morrison Material Steel Outside diameter 42 3/4
 Length of plain part top 3 bottom 13 Thickness of plates crown 1 1/8 bottom 1 1/8 Description of longitudinal joint Weld No. of strengthening rings 2 to one
 Working pressure of furnace by the rules 235 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/2 Back 5/8 Top 5/8 x 1/2 Bottom 3/4
 Pitch of stays to ditto Sides 7 1/2 x 7 1/2 Back 4 1/2 x 4 1/2 Top 8 x 4 1/2 Bottom 8 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 226 lbs
 Material of stay Steel Diameter at smallest part 1 1/8 Area supported by one stay 54 1/2 Working pressure by rules 218 lbs and plates in steam space:
 Material Steel Thickness 1 1/2 Pitch of stays 7 x 5 1/2 How are stays secured Nuts & Washers Working pressure by rules 284 lbs Material of stays Steel
 Diameter at smallest part 2 1/8 Area supported by one stay 259 1/2 sq in Working pressure by rules 250 lbs Material of Front plates at bottom Steel
 Thickness 1 1/2 Material of Lower back plate Steel Thickness 1 1/2 Greatest pitch of stays 13 1/2 Working pressure of plate by rules 389 lbs
 Diameter of tubes 2 3/4 Pitch of tubes 4 x 4 Material of tube plates Steel Thickness: Front 1 1/2 Back 1 1/2 Mean pitch of stays 8 x 8
 Pitch across wide water spaces 14 Working pressures by rules 337 lbs with 7/8" doubler Orders to Chamber tops: Material Iron Depth and thickness of girder at centre 8 1/2 x (8 1/2 x 2) Length as per rule 288 Distance apart 9 1/2 Number and pitch of Stays in each 3 - 7 1/2
 Working pressure by rules 236 lbs Superheater or Steam chest; how connected to boiler Weld 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
 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

If not, state whether

In a Report also sent as

DONKEY BOILER— *None* 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 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 _____ 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:—
See others sheet.

The foregoing is a correct description,

Harland & Wolff Ltd Manufacturer.

Dates of Survey while building
 During progress of work in shops—
 During erection on board vessel—
 Total No. of visits

1903 July 13, Sept. 10, 11, 23, 28, Oct. 2, 6, 10, 19, 26, 28, Nov. 2, 5, 10, 13, 18, 20, 25, 27
Dec. 1, 4, 15, 18, 1904—Jan. 6, 12, 15, 20 up to 17th Sept^r 1904
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Is the approved plan of main boiler forwarded herewith *Yes*
 " " " donkey " " " *Yes*

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

Material of screw shaft *Soft 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 projected between the liners *✓*

The machinery of this vessel has been constructed under special survey, and in accordance with the Rules, the materials and the workmanship are of good description throughout, and on trial under steam, in Belfast Lough, the machinery worked satisfactorily.

In my opinion, it is eligible to have record of **+ L.M.C. 9-04** in the Register Book.
 A Report on the Electric Light installation will be forwarded later.

It is submitted that this vessel is eligible for THE RECORD. **+ L.M.C. 9-04. ELECT LIGHT**

ll *Sal*
 21.9.04 21.9.04

The amount of Entry Fee... £ 3 : - : When applied for.
 Special... £ 80 : 19 : 19-9-04
 Donkey Boiler Fee... £ : : When received.
 Travelling Expenses (if any) £ : : 5-10-04

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

Committee's Minute **FRI. 23 SEP 1904**

Assigned **+ L.M.C. 9.04**
elec. light

MACHINERY CERTIFICATE WRITER.

F.S.P. - Worcester hire
Spare Gear

- 2 Bronze Propeller blades*
- 7 Set Crank Pin braces.*
- 1 Eccentric Strap & frame complete*
- 2 Valve Spindles (H.P. & M.P. and 1, L.P.)*
- 1 Air Pump rod, complete,*
- 1 Main bearing bush*
- 8 White metal strips for guide*
- 2 Valve spindle neck bushes for H.P.*
- 1 Piston rod flange*
- 1 Set Piston rings for M.P. & M.P.²*
- 2 - - - - H.P.*
- Spare spindles for each side stop valves on boiler*
- Set & title for cylinder & casing cover, propellers, valve flange, pumps set.*
- Complete sets valves, piston rings, bucket rings*
- Pump bucket, piston rod, set for New's Pump.*
- 2 Sets suction & delivery valves, piston rings & bucket rings for General Service duplex donkey pumps*
- Set spare gear for other donkey pumps, & for auxiliary condenser air pump.*
- Main boiler, spare fine bar, clow set & all gear & Lloyd's Rules additional.*

Donkey Pumps.

General Service	9" x 8" x 10"	Duplex
Ballast	12" x 10" x 14"	2 Acting Watsons
New's Feed	11" x 8" x 24"	Double
2 Fire	4 1/2" x 5" x 10"	Duplex
Fresh Water	5 1/2" x 4" x 5"	-
Wash Feed	4" x 5" x 12"	-

Certificate (if required) to be sent to this office

The Surveyors are requested not to write on or below the space for Committee's Minute.