

## REPORT ON MACHINERY.

Port of

TUES. 4 OCT 1904

No. in Survey held at  
Reg. Book.

Date, first Survey

Received at London Office

Last Survey

(Number of Visits 48)

on the

Master

Built at

By whom built

Gross 4365

Tons Net 2791

When built 1904

Engines made at

By whom made

when made 1904

Boilers made at

By whom made

when made

Registered Horse Power

Owners

Part belonging to

Nom. Horse Power as per Section 28

Is Refrigerating Machinery fitted

Is Electric Light fitted

## ENGINES, &amp;c.—Description of Engines

Diagrams of Engines: Triple Expansion, Single Screw Cylinders 3, No. of Cranks 3  
 Dia. of Cylinders 23"-39"-64" Length of Stroke 51" Revs. per minute 68 Dia. of Screw shaft as per rule 14.225" as fitted 14.375" gth. of stern bush 57"  
 Dia. of Tunnel shaft as per rule 12.935" as fitted 13.25" Dia. of Crank shaft journals as per rule 13.585" as fitted 14.0" Dia. of Crank pin 14.5" Size of Crank webs 26 1/2" x 10" Dia. of thrust shaft under collars 14" Dia. of screw 17'-0" Pitch of screw 17'-6" No. of blades 4 State whether moveable Yes Total surface 75 sq ft.  
 No. of Feed pumps 2 Diameter of ditto 4" Stroke 28" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 Diameter of ditto 4" Stroke 28" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines 2 Sizes of steam chest  
 In Engine Room 5-32 1/2 No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Holds, &c. 7-32 1/2

No. of bilge injections / sizes 8" 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 in 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 Above  
 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 casing  
 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 Plated steel  
 Is it fitted with a watertight door Yes worked from Upper Deck

## BOILERS, &amp;c.—

(Letter for record)

Total Heating Surface of Boilers

Is forced draft fitted

No. and Description of Boilers 3- Single End Cylinders Working Pressure 285 lbs tested by hydraulic pressure to 410 lbs  
 Date of test 4-7-04 Can each boiler be worked separately Yes Area of fire grate in each boiler 57 1/2 sq ft. and Description of safety valves to each boiler Two- Direct Spring each valve 8.29 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 16" Mean dia. of boilers 14'-5" Length 11'-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 Rivet long. seams Cutt. Rivet  
 Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Lap of plates or width of butt straps 22 1/2"  
 Per centages of strength of longitudinal joint rivets 92.8 plate 85.8 Working pressure of shell by rules 231 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring No. and Description of Furnaces in each boiler 3- Morrison material Steel Outside diameter 45" bottom 8.6" bottom 2 1/2" in  
 Length of plain part top 10" Thickness of plates crown 3/8" bottom 3/8" Description of longitudinal joint Welded No. of strengthening rings 2 1/2" in  
 Working pressure of furnace by the rules 223 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/2" Back 3/2" Top 3/2" Bottom 3/4"  
 Pitch of stays to ditto: Sides 7 1/2" x 7 1/2" Back 8 1/2" x 6 1/2" op 8" x 7" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 211 lbs  
 Material of stays Steel Diameter at smallest part 1 1/8" x 1 1/8" Area supported by each stay 58 1/2" Working pressure by rules 212 lbs and plates in steam space:  
 Material Steel Thickness 3/2" Pitch of stays 16 1/2" x 15" How are stays secured Nuts & Rivets Working pressure by rules 213 lbs Material of stays Steel  
 Diameter at smallest part 2 3/4" Area supported by stay 247 1/2 sq in Working pressure by rules 240 lbs Material of Front plates at bottom Steel with 1/2" doubler  
 Thickness 5/16" Material of Lower back plate Steel Thickness 5/16" Greatest pitch of stays 12" Working pressure of plate by rules 211 lbs  
 Diameter of tubes 3" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plate Steel Thickness: Front 7" Back 7" Mean pitch of stays 8 1/2" x 8 1/2"  
 Pitch across wide water spaces 14" Working pressures by rules 235 lbs with 1/2" doubler Girders to Chamber tops: Material Iron Depth and thickness of girder at centre 9 x 8 x 2 Length as per rule 30 Distance apart 8 Number and pitch of Stays in each 3-7"  
 Working pressure by rules 231 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  
 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—

*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 other sheet*

The foregoing is a correct description,

*Harland & Wolff* Manufacturer.

Dates of Survey  
 During progress of work in shops—  
 During erection on board vessel—  
 Total No. of visits  
*1913-10-2, 20, 24, 27, Dec 2, 5, 9, 14, 17, 21, 1904-1-13, 14, 19, 22, 24, Feb 3, 4, 9, 15, 23, 25, 29, March 2, 4, 16, 25, 30 up to 1 October 1904*  
*48*

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 *Input 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 *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 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 for record + L.M.C. 10-04 + Report on the Electric Lighting Installation, and one on the Refrigerating Machinery, will be forwarded later on.*

It is submitted that this vessel is eligible for THE RECORD

L.M.C. 10 04 ELEC. LIGHT. REF. MCHY.

*5-10-04*

*5-10-04*

The amount of Entry Fee... £ 3 : 0 :  
 Special ... £ 38 : 10 :  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, *5-10-04*  
 When received, *5-10-04*

Committee's Minute

FRI. 7 OCT 1904

MACHINERY CERTIFICATE WRITTEN.

Assigned

+ Lmc 10.04

Rpt. 9a.

Port of *Belfast* Continuation of Report No. *5798* dated *3<sup>rd</sup> October* on the

*P.S. Vards*

*Donkey Pumps.*  
*Wgts & Double Feed 9 1/2 x 4 x 21*  
*Donkey Feed Pump 4 x 5 x 15*  
*Belfast Donkey 10 x 10 1/2 x 10*  
*General 8 x 4 x 8*

*Spare Gear*

*Set H.P. & L.P. piston packing rings.*

*H.P. M.P. & top piston valve packing rings.*

*1 Crank Shaft.*

*1 Propeller Shaft.*

*1 Blade & set steady & nuts.*

*Set of top & bottom braces for connecting rod*

*Even two rod & strap complete.*

*2 Pulley bolts & 2 studs*

*Set main bearing bushes*

*Slide valve rod complete*

*Centrifugal pump impeller, piston rod, loose head with braces & bolts complete*  
*valve spindle, piston & crank pin braces.*

*Fix Pump bushes, rod, head & foot valves set.*  
*Have escape valve springs, every size, & Safety valve springs.*

*50 Condenser tubes, boiler tubes, set and all*  
*Spare gear as per Rules additional.*