

# REPORT ON MACHINERY.

Port of Belfast

Received at London Office \_\_\_\_\_

No. in Survey held at \_\_\_\_\_  
eg. Book \_\_\_\_\_

Date first Survey 27<sup>th</sup> Oct 1903 Last Survey 21<sup>st</sup> June 1904

(Number of Visits 62)

on the

P.S. "Parana"

Gross 1897  
Net 1503  
Tons

Master

Built at Belfast By whom built Norkman Clark & Co

Engines made at

Belfast By whom made Norkman Clark & Co when made 1904

Boilers made at

By whom made \_\_\_\_\_ when made \_\_\_\_\_

Registered Horse Power

Owners Royal Mail S<sup>rs</sup> P<sup>ost</sup> Coy L<sup>td</sup> Port belonging to Belfast

Com. Horse Power as per Section 28 430

Is Refrigerating Machinery fitted Yes Is Electric Light fitted Yes

## ENGINES, &c.—Description of Engines

Triple Expansion. No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 24-39-67 Length of Stroke 48 Revs. per minute 68 Dia. of Screw shaft as per rule 14.28 as fitted 14.75 Lgth. of stern bush 59

Dia. of Tunnel shaft as per rule 12.96 as fitted 12.5 Dia. of Crank shaft journals as per rule 13.55 as fitted 14.0 Dia. of Crank pin 14 Size of Crank webs 25 1/2 x 9 1/2 Dia. of thrust shaft under

rollers 14 Dia. of screw 17-0 Pitch of screw 18-3 No. of blades 4 State whether moveable Yes Total surface 84 ft.

No. of Feed pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work Yes

No. of Donkey Engines 4 Sizes of Pumps General 7 1/2 x 4 1/2 x 6 Duplex No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 4-3 1/2 In Holds, &c. 7-3 1/2 + 1-2 1/2

No. of bilge injections 2 sizes 5 1/2 Connected to condenser, or to circulating pump Pump Is a separate donkey suction fitted in Engine room & size Yes-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 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 None

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 For 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 Upper Platform Engine Room

## BOILERS, &c.—

(Letter for record S) Total Heating Surface of Boilers 6000 sq ft Is forced draft fitted Yes-Flour

No. and Description of Boilers 3 Single End Cylind<sup>rs</sup> Working Pressure 205 Tested by hydraulic pressure to 410 lbs

Date of test 13-4-04 Can each boiler be worked separately Yes Area of fire grate in each boiler 500 sq ft No. and Description of safety valves to

each boiler 2 Direct Spring Area of each valve 8.29 sq in pressure to which they are adjusted 275 lbs Are they fitted with easing gear Yes

Smallest distance between boilers on uptakes and bunkers or woodwork 21 Mean dia. of boilers 13'-6" Length 11'-6" Material of shell plates Steel

Thickness 1/32 Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap Dr. Trade butt seams Cuts & Treble

Diameter of rivet holes in long. seams 1 1/32 Pitch of rivets 9 1/2 Lap of plates or width of butt straps 20 3/8

Per centages of strength of longitudinal joint rivets 87.8 Working pressure of shell by rules 233 lbs Size of manhole in shell 16" x 12"

Size of compensating ring McNeil No. and Description of Furnaces in each boiler 3-Drigh-ton Material Steel Outside diameter 42 1/4"

Length of plain part top 5 bottom 9 Thickness of plates crown 3/32 bottom 5/32 Description of longitudinal joint Weld No. of strengthening rings 0

Working pressure of furnace by the rule 230 lbs Combustion chamber plates: Material Steel Thickness: Sides 5/8 Back 5/8 + 1/16 Top 5/8 Bottom 1/16

Pitch of stays to ditto: Sides 8 x 7 1/2 Back 8 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 223 lbs

Material of stays Steel Diameter at smallest part 1 1/2 / 1 3/8 / 2 1/8 ea supported by each stay 60 sq in Working pressure by rule 251 lbs End plates in steam space:

Material Steel Thickness 1/32 Pitch of stays 16 1/2 x 15 1/2 How are stays secured Nuts & Rivets Working pressure by rules 275 lbs Material of stays Steel

Diameter at smallest part 2 1/2 / 2 1/8 / 2 1/4 ea supported by each stay 255 sq in Working pressure by rules 217 lbs Material of Front plates at bottom Steel

Thickness 1 Material of Lower back plate Steel Thickness 4/8 Greatest pitch of stays 13 1/2 Working pressure of plate by rule 254 lbs

Diameter of tubes 2 1/2 Pitch of tubes 32 x 35 Material of tube plates Steel Thickness: Front 1 Back 1 1/16 Mean pitch of stays 7 1/2 x 7 1/4

Pitch across wide water spaces 3 1/2 / 3 3/4 / 3 1/2 Working pressures by rules 211 lbs Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 9 x (5 x 2) Length as per rule 29 1/8 Distance apart 7 1/2 x 7 1/8 Number and pitch of Stays in each 3-7 1/2

Working pressure by rules 246 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 \_\_\_\_\_



W649-0211

**DONKEY BOILER** - No. 10 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: - *3" Crank Shaft; 1 Propeller shaft; bronze propeller blade; 1 pair bushes for main bearings; sets top & bottom end bushes; eccentric rod & trap complete; eccentric pulley; air pump bucket, rod, guide, & head valve; slide valve spindle; piston packing rings; centrifugal pump impeller, set; and all gear to Lloyd's Rules extra.*  
 The foregoing is a correct description,  
 for **WORKMAN, CLARK & CO. LIMITED** Manufacturer.  
*M. H. Bell*

Dates of Survey while building  
 During progress of work in shops - *1903. Oct 27. Nov 4, 6, 9, 13, 17, 23, 26, 30 Dec 3, 7, 12, 14, 17, 1904. Jan 5, 13.*  
 During erection on board vessel - *15, 18, 22, 26. Feb. 1, 4, 10, 12, up to June 21st*  
 Total No. of visits *62*  
 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 *Ingot 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 ✓  
 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, and in accordance with the Rules. The materials used in its construction, and the workmanship throughout, are of good description. On trial under steam in Belfast Lough the machinery worked satisfactorily. In my opinion, it is eligible to have record + L.M.C. 6-04, Fresh draft & Electric Light. Separate Reports on the Electric Light, and on the Refrigerating Machinery, will be forwarded later.*

It is submitted that this vessel is eligible for THE RECORD **L.M.C. 6.04 F.D. ELEC. LIGHT REF. MCHY.**

*24.6.04*  
*24.6.04*

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

The amount of Entry Fee. £ 3 : - : When applied for.  
 Special . . . . . £ 41 10 : } 10-6-1904  
 Donkey Boiler Fee . . . . . £ ✓ : :  
 Travelling Expenses (if any) £ ✓ : : } 14-6-1904

Committee's Minute **TUES. 28 JUN 1904**  
 Assigned *+ L.M.C. 6.04*  
*F.D. Elec. Light*

MACHINERY CERTIFICATE WRITTEN.



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Certificate (if registered) to be sent to the Registrar of Shipping in the name of the Registrar of Shipping.