

# REPORT ON MACHINERY.

Port of Belfast

MON. 16 JAN 1895

Received at London Office

No. in Survey held at Belfast

Date, first Survey October 23<sup>rd</sup> 1894 Last Survey January 9<sup>th</sup> 1895

g. Book.

85 on the Iron screw steamer "Belfast" ex "Caracas Nova"

(Number of Visits 21)

Master J. Brown Built at Newcastle By whom built Palmer's Co.

Tons { Gross 1638  
Net 1293  
When built 1870

Engines made at Newcastle By whom made Palmer's Co.

when made 1870

Boilers made at Belfast By whom made Worlman Clark & Co. Ltd.

when made 1894

Registered Horse Power 120 Owners Thos. Dixon & Sons

Port belonging to Belfast

2. Horse Power as per Section 28

## New Main Boilers & Special Survey

ENGINES, &c.— Description of <sup>old</sup> Engines Compound. No. of Cylinders Two

Diameter of Cylinders 30 x 54 Length of Stroke 33" Revolutions per minute \_\_\_\_\_ Diameter of Screw shaft <sup>as per rule</sup> \_\_\_\_\_ <sup>as fitted</sup> 9 3/8

Diameter of Tunnel shaft <sup>as per rule</sup> \_\_\_\_\_ <sup>as fitted</sup> 9 3/8 Diameter of Crank shaft journals 9 1/2 Diameter of Crank pin 9" Size of Crank webs \_\_\_\_\_

Diameter of screw \_\_\_\_\_ Pitch of screw \_\_\_\_\_ No. of blades \_\_\_\_\_ State whether moveable \_\_\_\_\_ Total surface \_\_\_\_\_

Diameter of Feed pumps \_\_\_\_\_ Diameter of ditto \_\_\_\_\_ Stroke \_\_\_\_\_ Can one be overhauled while the other is at work \_\_\_\_\_

Diameter of Bilge pumps \_\_\_\_\_ Diameter of ditto \_\_\_\_\_ Stroke \_\_\_\_\_ Can one be overhauled while the other is at work \_\_\_\_\_

Sizes of Donkey Engines \_\_\_\_\_ Sizes of Pumps \_\_\_\_\_ No. and size of Suctions connected to both Bilge and Donkey pumps \_\_\_\_\_

Engine Room \_\_\_\_\_ In Holds, &c. \_\_\_\_\_

Bilge injections \_\_\_\_\_ sizes \_\_\_\_\_ Connected to condenser, or to circulating pump \_\_\_\_\_ Is a separate donkey suction fitted in Engine room & size \_\_\_\_\_

Are all the bilge suction pipes fitted with roses \_\_\_\_\_ Are the roses in Engine room always accessible \_\_\_\_\_ Are the sluices on Engine room bulkheads always accessible \_\_\_\_\_

Are all connections with the sea direct on the skin of the ship \_\_\_\_\_ Are they Valves or Cocks \_\_\_\_\_

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates \_\_\_\_\_ Are the discharge pipes above or below the deep water line \_\_\_\_\_

Are they each fitted with a discharge valve always accessible on the plating of the vessel \_\_\_\_\_ Are the blow off cocks fitted with a spigot and brass covering plate \_\_\_\_\_

How are the pipes carried through the bunkers \_\_\_\_\_ How are they protected \_\_\_\_\_

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

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

Are the stern tube, propeller, screw shaft, and all connections examined in dry dock \_\_\_\_\_ Is the screw shaft tunnel watertight \_\_\_\_\_

Is the door fitted with a watertight door \_\_\_\_\_ worked from \_\_\_\_\_

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 2276 <sup>by Rule</sup> \_\_\_\_\_

Description of Boilers Two single ended Working Pressure 90 lb Tested by hydraulic pressure to 180 lb

Can each boiler be worked separately yes Area of fire grate in each boiler 36 No. and Description of safety valves to \_\_\_\_\_

Area of each valve 9.62 Pressure to which they are adjusted 75 lb Are they fitted \_\_\_\_\_

Smallest distance between boilers or uptakes and bunkers or woodwork 3 ft Mean diameter of boilers 11' 0"

Material of shell plates steel Thickness 21/32 Description of riveting: circum. seams middle double end single long. seams Arb. riv. lap

Pitch of rivets 4 1/4 (four per pitch) Lap of plates or width of butt straps 6 13/16

Working pressure of shell by rules 91 1/2 lb Size of manhole in shell 16 x 12

No. and Description of Furnaces in each boiler Two, plain Material steel Outside diameter 37"

Description of longitudinal joint double butt straps No. of strengthening rings none

Combustion chamber plates: Material steel Thickness: Sides 1/2 Back 15/32 Top 1/2 Bottom 1/2

Working pressure by rules 95 lb

Area supported by each stay 68 Working pressure by rules 91 End plates in steam space: \_\_\_\_\_

Working pressure by rules 109 lb Material of stays steel

Material of Front plates at bottom steel

Greatest pitch of stays as approx. Working pressure of plate by rules 90 lb

Material of tube plates steel Thickness: Front 5/8 Back 3/4 Mean pitch of stays 11 1/8"

Girders to Chamber tops: Material steel Depth and \_\_\_\_\_

Number and pitch of Stays in each two 7 3/8

Can the superheater be shut off and the boiler worked \_\_\_\_\_

Material of longitudinal joint \_\_\_\_\_ Diam. of rivet \_\_\_\_\_

Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_

End plates: Thickness \_\_\_\_\_ How stayed \_\_\_\_\_

Area of safety valves to superheater \_\_\_\_\_ Are they fitted with easing gear \_\_\_\_\_



BEL64-0170(1/2)

**DONKEY BOILER—** Description

Made at	By whom made	When made	Where fixed
Working pressure	tested by hydraulic pressure to	No. of Certificate	Fire grate area
No. of safety valves	Area of each	Pressure to which they are adjusted	If fitted with easing gear
enter the donkey boiler	Diameter of donkey boiler	Length	Material of shell plates
Description of riveting long seams	Diameter of rivet holes	Whether punched or drilled	Pitch of rivets
Lap of plating	Per centage of strength of joint	Thickness of shell crown plates	Radius of do.
Dia. of stays.	Diameter of furnace Top	Bottom	Length of furnace
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:—

The foregoing is a correct description,

Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c.) The new main boilers described above

have been made & fitted under special survey & in accordance with the approved photoprint now forwarded. The first boiler made to this drawing was intended as a donkey boiler for the S.S. "Moniston Grange" but has been fitted instead as a main boiler for this vessel. The two new lengths of main steam pipe have been fished to 180 lbs per sq in water pressure. The boilers are designed for 90 lbs working pressure, but this being too high for the old engines the safety valves have been set to 75 lbs for a working pressure of 70 lbs. The crank shaft is 9 1/2" diam. The tail shaft is 9 3/8" & where reduced by corrosion near the after liner 9 1/4" dia. The intermediate shaft is over 9" diam. The pressure allowed by the rule for a 9 1/4" tail shaft is 76 lbs. The whole of the shafting has now been examined & a portion of the after brass liner on the tail shaft cut away to avoid the corroded part. The wood in the stern bush & the outer bearing in the rudder post was found good.

The engines have been overhauled. Cyls, pistons, slide valves examined. Longue pie in packing rings rescaued. Air, circulating feed, & bilge pumps examined & the oil renewed where necessary, & bucket of air pump repacked. Condensers examined found in good condition. Main & bilge injection valves overhauled. Large sea cock for sea inlet to tanks removed, ships plating found corroded & bolts connecting to skin defective. A 20" square doubling plate riveted outside the ships skin & the joint remade with new bolts. All the other (five) sea cocks overha. New safety & stop valves fitted to boilers. The old water gauge mountings refilled. Donkey Boiler (Cochran's) examined. Some bracket stays somewhat waste & dome of fire box fitted on water side; boiler otherwise good. Boiler stamped 160 lbs pressure. Valves now examined & set to 75 lbs pressure per sq in. for a working pressure of 70 lbs. (Continued on other sheet)

Certificate (if required) to be sent to

The amount of Entry Fee.	When applied for,
Special .. £ 9 : 0	11 <sup>th</sup> Jan 1895
Donkey Boiler Fee .. £ 4 : 0	When received,
Travelling Expenses (if any) £ 7/6	21/1/95

Committee's Minute

TUES. 15 JAN 1895

Assigned

LMC 1,95 + NB 1,95 subject to.

of Belfast

Continuation of Report No. 4454 dated 12<sup>th</sup> Jan 1895 on the

70 lbs as the boiler is in my opinion quite safe in its present condition for this pressure. The engines were tried under steam before the vessel left & worked smoothly. The engines & boilers are now in good condition & in my opinion under the present regulations for the records LMC 1.95 + N.B. 95 & to have a working pressure of 70 lbs recorded for both the main & donkey boilers.

A. L. Jones

(See Limit List)

On account of Wear & Tear

Slight repairs effected to the machinery. It is submitted that this vessel is eligible for the RECORDS, LMC-1.95 + NB.95 subject to the donkey boiler being examined annually; and working pressures of both main and donkey boilers entered in the Register Book at 70 lbs also to have vessel's name (Cartago Nova) expunged from the Limited List for Boilers (to be renewed)

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

A. L. Jones  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping