

REPORT ON MACHINERY.

Port of *Belfast*

No. in Survey held at *Belfast*
Reg. Book.

Date, first Survey *20th Nov 1902* Last Survey *19th Sep 1903*
(Number of Visits *67*)

on the *P.P. Star of Ireland*

Master *Belfast* Built at *Belfast* By whom built *Workman Clark & Co* When built *1903*
Tons: Gross *4330* Net *2743*

Engines made at *Belfast* By whom made *"* when made *1903*

Boilers made at *"* By whom made *"* when made *"*

Registered Horse Power *"* Owners *Star Line Limited* Port belonging to *Belfast*

Nom. Horse Power as per Section 28 *452* Is Refrigerating Machinery fitted *Yes* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Triple Expansion, Direct Acting* No. of Cylinders *3* No. of Cranks *3*

Dia. of Cylinders *25"-43"-72"* Length of Stroke *48"* Revs. per minute *70* Dia. of Screw shaft as per rule *14.67"* as fitted *15.0"* Lgth. of stern bush *60"*

Dia. of Tunnel shaft as per rule *13.29"* as fitted *13.5"* Dia. of Crank shaft journals as per rule *13.95"* as fitted *14.0"* Dia. of Crank pin *14"* Size of Crank webs *24" x 9 1/2"* of thrust shaft under collars *14"* Dia. of screw *17'-6"* Pitch of screw *19'-3"* No. of blades *4* State whether moveable *Yes* Total surface *90 sq ft.*

No. of Feed pumps *2* Diameter of ditto *4"* Stroke *27"* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* Diameter of ditto *4 1/2"* Stroke *27"* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *6* Sizes of Pumps *Ballast 7 x 9 x 9 Duplex* No. and size of Suctions connected to both Bilge and Donkey pumps
Water 4 1/2 x 5 1/2" In Holds, &c. *7-3 1/2 and 1-2 1/2"*

In Engine Room *4-3 1/2"* *Water 4 1/2 x 5 1/2"* *Refrigerate 8 x 9 x 8"*

No. of bilge injections *1* sizes *7 1/2"* Connected to condenser, or to circulating pump *Pumps a separate donkey suction fitted in Engine room & size 7 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 *Above & 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 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* Is the screw shaft tunnel watertight *Yes*

Is it fitted with a watertight door *Yes* worked from *Upper deck*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *6000 sq ft* Is forced draft fitted *Yes - Handled*

No. and Description of Boilers *3 Cylind^r Single End* Working Pressure *200 lbs* Tested by hydraulic pressure to *400 lbs*

Date of test *23-6-03* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *50 sq ft* No. and Description of safety valves to each boiler *Two Direct Spring* Area of each valve *8.29 sq in* Pressure to which they are adjusted *200 lbs* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers *on woodwork* *about 1 ft* Mean dia. of boilers *13'-6"* Length *11'-6"* Material of shell plates *Steel*

Thickness *1 3/8"* Range of tensile strength *28-32* Are they welded or flanged *No* Descrip. of riveting: cir. seams *Lap. or Double* seams *Butt Beble*

Diameter of rivet holes in long. seams *1 7/16"* Pitch of rivets *9 1/8"* Lap of plates or width of butt straps *2 1/16"*

Per centages of strength of longitudinal joint rivets. *88.1* plate *85.5* Working pressure of shell by rules *229 lbs* Size of manhole in shell *16 x 12"*

Size of compensating ring *M. Keils* No. and Description of Furnaces in each boiler *3 Morrison* Material *Steel* Outside diameter *42 1/4"*

Length of plain part top *5"* bottom *6"* Thickness of plates crown *19"* bottom *32"* Description of longitudinal joint *Weld* No. of strengthening rings *✓*

Working pressure of furnace by the rules *223* Combustion chamber plates: Material *Steel* Thickness: Sides *3 7/8"* Back *5"* Top *3 7/8"* Bottom *5"*

Pitch of stays to ditto: Sides *8 x 7"* Back *8 1/2 x 7 1/2"* top *7 1/2 x 7"* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *204 lbs*

Material of stays *Steel* Diameter at smallest part *3 1/2, 3 1/4, 3 1/2"* Area supported by each stay *56 sq in* Working pressure by rules *211 lbs* End plates in steam space:

Material *Steel* Thickness *1 7/16"* Pitch of stays *16 1/2 x 15 1/2"* How are stays secured *2 Nuts & Washers* Working pressure by rules *261 lbs* Material of stays *Steel*

Diameter at smallest part *2 5/16 x 2 1/4"* supported by each stay *255 3/4"* Working pressure by rules *217 lbs* Material of Front plates at bottom *Steel*

Thickness *1"* Material of Lower back plate *Steel* Thickness *3/4"* Greatest pitch of stays *13 1/2"* Working pressure of plate by rules *358 lbs*

Diameter of tubes *2 1/2"* Pitch of tubes *3 5/8 x 3 3/4"* Material of tube plates *Steel* Thickness: Front *7/8"* Back *1 1/16"* Mean pitch of stays *11 1/4 x 7 1/4"*

Pitch across wide water spaces *13 1/2"* Working pressures by rules *379 lbs with Double* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *9 x (3/4 x 2)* Length as per rule *29 7/16"* Distance apart *7 1/2"* Number and pitch of Stays in each *3-7"*

Working pressure by rules *267 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— No. *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 _____ Plates _____ 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 Steel Propeller blades; pair Crank pin bushes; pair piston rod bushes; 2 slide valve spindles; air pump rod nut; impeller shaft for Circulating pump; air pump rod & guards; H.P. piston packing rings; condenser tubes & fernules; 2 cylr escape valves; circulating pump gear; set of and all gear to Lloyd's Rules extra.*

The foregoing is a correct description,
 FOR WORKMAN, CLARK & CO., LIMITED.
 Manufacturer.

Dates of Survey while building
 During progress of work in shops - *1903. Nov 20, 24, 29. Dec 9, 18, 19, 1903, 7 Jan 14, 16, 23, 26, 28. Feb 3, 4, 13*
 During erection on board vessel - *19, 24, 29, March 3, 10, 13, 17, 25, 30. April 2, 7, 14, 16, 20, 23, 24, 28, 28. May 1, 6, 12, 15, 19*
 Total No. of visits *any up to report 19*

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 *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 workmanship, and the materials used in construction, are of good description throughout. On trial under steam in Belfast Lough, the machinery worked in a very satisfactory manner. In my opinion, it merits the approval of the Committee for Record of Classification + L.M.C. 8.03, Forced Draft Electric Lights. Separate Reports on the Refrigerating Machinery, and on the Electric Light will be forwarded later.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 8.03. Elec. light. FD. Ref. mech. *25.8.03*

Certificate (if required) to be sent to the Surveyors and requested not to write on or below the space for Committee's Minute.

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|--------------------------------|-------------|---------------------------|
| The amount of Entry Fee.. | £ 3 : 0 : | When applied for, 19-8-03 |
| Special | £ 42 : 12 : | When received, 25-8-03 |
| Donkey Boiler Fee .. . | £ : : | |
| Travelling Expenses (if any) £ | : : | 25-8-03 |

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

Committee's Minute
 Assigned

TUES. 25 AUG 1903

+ L.M.C. 8.03 7D

