

REPORT ON MACHINERY.

Port of Belfast

1 MAY 94

Received at London Office

18

No. in Survey held at Belfast Date, first Survey 19 Sept 1893 Last Survey 28 April 1894
 Reg. Book. on the Steel Screw Steamer "Phoebe" (Number of Visits 35)
 Master Samuel Bell Built at Belfast By whom built MacIlwain & MacCallum When built 1894
 Engines made at Belfast By whom made MacIlwain & MacCallum when made 1894
 Boilers made at Belfast By whom made " when made 1894
 Registered Horse Power 88 Owners W. A. Grainger Port belonging to Belfast
 Nom. Horse Power as per Section 28 88

ENGINES, &c.— Description of Engines Triple Expansion No. of Cylinders 3
 Diameter of Cylinders 13; 23; 38 Length of Stroke 33 Revolutions per minute 80 Diameter of Screw shaft 7.6
 Diameter of Tunnel shaft 7.25 Diameter of Crank shaft journals 7 3/4 Diameter of Crank pin 7 3/4 Size of Crank webs 9 1/2 x 4 1/2
 Diameter of screw 10' 3" Pitch of screw 14' 6" No. of blades 4 State whether moveable yes Total surface 32 f
 No. of Feed pumps 2 Diameter 2 1/2 Stroke 16 1/2 Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto 3 Stroke 16 1/2 Can one be overhauled while the other is at work yes
 No. of Donkey Engines Two Sizes of Pumps Horizontal duplex 3 1/2 x 5 1/2 x 5 1/2 No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room Two 2" wings, & one 2 1/4" centre In Holds, &c. Forehold 2 1/4" centre & two 2" wings
 After hold well, one 2 1/4"
 No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump yes Is a separate donkey suction fitted in Engine room & size yes 2 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 yes
 Are all cocks with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves & cocks
 Are they 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 Forward bilge & tank suction How are they protected strong 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 launch Is the screw shaft tunnel watertight yes
 Is it fitted with a watertight door yes worked from deck level

OILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 1382
 No. and Description of Boilers One single ended. Two flues. Working Pressure 200 Tested by hydraulic pressure to 400
 Date of test 10/3/94 Can each boiler be worked separately yes Area of fire grate in each boiler 41 f No. and Description of safety valves to
 each boiler Two. Adam's design Area of each valve 4.9 Pressure to which they are adjusted 200 lbs Are they fitted
 with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 3 feet Mean diameter of boilers 12' 7"
 Length 10' 3 7/8" Material of shell plates steel Thickness 1 3/16 Description of riveting: circum. seams treble round bottom long. seams double butt
 Diameter of rivet holes in long. seams 1 3/16 Pitch of rivets 10.895 seven rivs per pitch 19 1/2 x 1 3/16
 Percentages of strength of longitudinal joint 89.3 Working pressure of shell by rules 200 lb Size of manhole in shell 16 x 12"
 Diameter of compensating ring 27 1/2 x 23 1/2 x 1 3/16 No. and Description of Furnaces in each boiler Two 'Morison' Material steel Outside diameter 45"
 Length of plain part top 19 1/32 Thickness of plates bottom 19 1/32 Description of longitudinal joint welded No. of strengthening rings ✓
 Working pressure of furnace by the rules 210 Combustion chamber plates: Material steel Thickness: Sides 11/16 Back 19/32 Top 47/64 Bottom 11/16
 Pitch of stays to ditto: Sides 8 1/2 Back 7 3/4 Top 8 x 9 1/2 If stays are fitted with nuts or riveted heads nuts inside Working pressure by rules 203
 Material of stays steel Diameter at smallest part 1 1/8 sides & top Area supported by each stay 72.2 sides Working pressure by rules 229 End plates in steam space:
 Material steel Thickness 7/8 x 7/8 Pitch of stays 19 x 19 1/2 How are stays secured double nuts Working pressure by rules 202 Material of stays steel
 Diameter at smallest part 3 3/8 Area supported by each stay 19 x 17 Working pressure by rules 249 Material of Front plates at bottom steel
 Thickness 3/4 Material of Lower back plate steel Thickness 11/16 Greatest pitch of stays as approved Working pressure of plate by rules 200
 Diameter of tubes 3 1/2 Pitch of tubes 4 3/4 Material of tube plates steel Thickness: Front 23/32 Back 23/32 Mean pitch of stays 9 1/2"
 Pitch across wide water spaces 14 1/2" Working pressures by rules 200 Girders to Chamber tops: Material steel Depth and
 Thickness of girder at centre two 9 1/4 x 3/4 Length as per rule 27 1/2 Distance apart 9 1/2 Number and pitch of Stays in each two at 8"
 Working pressure by rules 250 Superheater or Steam chest; how connected to boiler - Can the superheater be shut off and the boiler worked
 safely ✓ Diameter - Length - Thickness of shell plates - Material - Description of longitudinal joint - Diam. of rivet
 Pitch of rivets - Working pressure of shell by rules - Diameter of flue - Material of flue plates - Thickness -
 Fitted 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— Description Vertical.
Made at Belfast By whom made William McCallum & Workman When made 1894 Where fixed In stored
Working pressure 75 tested by hydraulic pressure to 150 No. of Certificate 189 Fire grate area 15 Description of safety valves Adam
No. of safety valves One Area of each 7 Pressure to which they are adjusted 75 If fitted with easing gear Yes If steam from
enter the donkey boiler No Diameter of donkey boiler 4' 9" Length 9' 9" Material of shell plates steel
Description of riveting long. seams lap double riveted Diameter of rivet holes 3/4 Whether punched or drilled drilled
Lap of plating 3 5/8 Per centage of strength of joint Rivets 79 Thickness of shell crown plates 7/16 Radius of do. 4' 9" No. of
Dia. of stays, 2 1/4 four Diameter of furnace Top 45 Bottom 52 Length of furnace 6' 3 Thickness of furnace plates 15/32
joint lap riveted Thickness of furnace crown plates 7/16 Stayed by four 2 1/4" stays Working pressure of shell by rules 90
Working pressure of furnace by rules 77 Diameter of uptake 14" ex. Thickness of uptake plates 7/16 Thickness of water tubes 3/8 x 10 in.

SPARE GEAR. State the articles supplied:— 2 main bearing bolts & nuts. 2 connecting rod bolts & nuts.
2 crosshead bolts & nuts. 5 coupling bolts & nuts. 6 junk ring bolts.
24 assorted bolts. 2 feed pump valves. 2 bilge pump valves. 3 air pump valves.
3 propeller studs & nuts. Eccentric strap complete.

The foregoing is a correct description,
THE WORKMAN, CLARK & CO., LIMITED; Manufacturer.
M. H. Bell.

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery has been
constructed & fitted under special survey & the workmanship is good.
The vessel run a trial trip under full steam on the 24" test race
parts worked well. The slide valves are worked by 'Wackworth' gear.
A separate centrifugal circulating pump is fitted.
The main steam pipe has been tested to double the working pressure.
The pumping arrangements are fitted in accordance with
approved tracings.

The stern tube is of MacCall & Marton's patent design.
The following drawings accompany this report. Photoprint main boiler.
Photoprint donkey boiler. Tracings pumping arrangements.

The machinery in my opinion renders the vessel eligible for the
record + LMC 4.94 in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD + LMC 4.94
1-5-94

Certificate (if required) to be sent to
The amount of Entry Fee.. £ 1-0-0 :
Special £ 13-4-0 :
Donkey Boiler Fee £ :
Travelling Expenses (if any) £ :
When applied for,
30th Apr 1894
When received,
2.5.1894
HC 23

Committee's Minute FRI 4 MAY 1894

Assigned

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



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Lloyd's Register
Foundation