

REPORT ON MACHINERY.

Port of Belfast

TUES. 4 OCT 1904

No. in Survey held at Belfast Date, first Survey Nov. 1903 Last Survey 7th October 1904
Reg. Book. on the S.S. "Ardo" (Number of Visits 48)

Master J. Thomas Built at Belfast By whom built Harland & Wolff L^{td} Tons { Gross 4365
Engines made at Belfast By whom made Harland & Wolff L^{td} Net 2791 When built 1904
Boilers made at _____ By whom made _____ when made _____
Registered Horse Power ✓ Owners Royal Mail Steam P^{ost} Co. L^{td} when made _____
Nom. Horse Power as per Section 28 378 Is Refrigerating Machinery fitted Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion Triple 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"
Dia. of Tunnel shaft as per rule 12.935" Dia. of Crank shaft journals as per rule 13.585" Dia. of Screw shaft as fitted 14.375" Length of stern bush 57"
collars 14" Dia. of screw 17'-0" Pitch of screw 17'-6" Dia. of Crank pin 14.5" Size of Crank webs 26 1/2" x 10" Dia. of thrust shaft under
No. of Feed pumps 2 Diameter of ditto 4" Stroke 28" No. of blades 4 State whether moveable Yes Total surface 75 sq ft.
No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 28" Can one be overhauled while the other is at work Yes
No. of Donkey Engines 2 Sizes of chest Can one be overhauled while the other is at work Yes
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 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 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 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 to the
Is it fitted with a watertight door Yes worked from Upper Deck

BOILERS, &c.— (Letter for record 3) Total Heating Surface of Boilers 6359 sq ft Is forced draft fitted No
No. and Description of Boilers 3- Single End Cylin Working Pressure 280 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 7/8" Range of tensile strength 29-32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap Riv long. seams Butt Double
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 92.0 Working pressure of shell by rules 231 lbs Size of manhole in shell 16" x 12"
Size of compensating ring McNeil's No. and Description of Furnaces in each boiler 3- Morrison's material Steel Outside diameter 45"
Length of plain part top 10" Thickness of plates crown 3 5/8" Description of longitudinal joint Weld No. of strengthening rings 2 1/2 in
bottom 10" bottom 3 5/8" Working pressure of furnace by rules 223 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/2" Back 1 1/2" Top 1 1/2" Bottom 1 1/2"
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 in side Working pressure by rules 211 lbs
Material of stays Steel Diameter at smallest part 1 1/8" + 1 1/8" Area supported by each stay 58 sq in Working pressure by rules 212 lbs and plates in steam space:
Material Steel Thickness 3/32" Pitch of stays 16 1/2" x 15" How are stays secured Nuts & Riv Wash Working pressure by rules 213 lbs Material of stays Steel
Diameter at smallest part 2 3/4" Area supported by one stay 247 1/2 sq in Working pressure by rules 240 lbs Material of Front plates at bottom Steel
Thickness 1 5/16" Material of Lower back plate Steel Thickness 5/16" Greatest pitch of stays 12" Working pressure of plate by rules 211 lbs with 1 1/2" diameter
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 7 1/2" Working pressures by rules 235 lbs with 8" girders 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 _____

If not, state whether, and when, one will be sent? In a Report also sent on the Hull of the Ship?



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 while building: During progress of work in shops— 1913-10-9, 20, 24, 27, Dec 2, 5, 9, 14, 17, 21, 1904— Jan 7, 13, 14, 19, 22, 24, Feb 3, 4, 9, 15, 23, 25, 29, March 2, 4, 16, 25, 30 up to 1 October 1904
 Total No. of visits 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 *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 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
 A 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**

Assigned + L.M.C. 10.04

MACHINERY CERTIFICATE WRITTEN.

Port of *Belfast* Continuation of Report No. *5798* dated *3rd October* on the

R. P. Woods

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

Spare Gear

1 *Set H.P. & L.P. piston packing rings.*
 1 *H.P. M.P. & top piston valve packing rings.*
 1 *Crank Shaft.*
 1 *Propeller Shaft.*
 1 *Blade & set steady & nuts.*
 1 *Set of top & bottom braces for connecting rod*
 1 *Excentric rod & strap complete.*
 1 *Puller*
 2 *Balls & 2 studs*
 1 *Set main bearing live has*
 1 *Slide valve rod complete*
 1 *Centrifugal pump impeller, piston rod, loose head*
 1 *with braces & bolts complete*
 1 *valve spindle, piston & crank*
 1 *pin braces.*
 1 *Fix Pump bucket, rod, head & foot valves set.*
 1 *Have escape valve springs, every size, & Safety valve*
 1 *Spring.*
 50 *Cylinder tubes, boiler tubes, set and all*
 1 *Spare gear as per Rules additional.*



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