

REPORT ON MACHINERY.

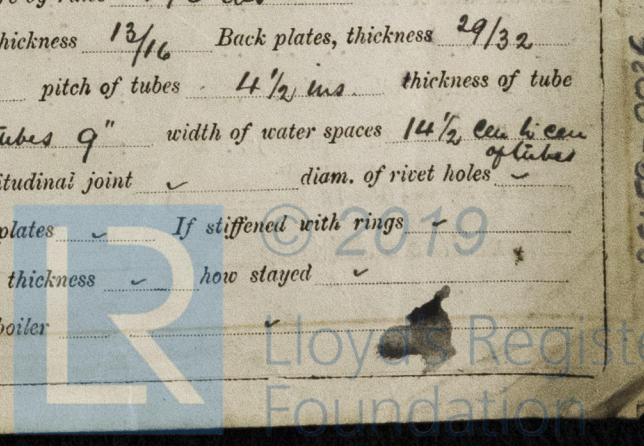
No. 3940
 Port of Belfast
 Date, first Survey Nov 5th 1890 Last Survey 3rd Sept 1891
 No. in Survey held at Belfast
 Reg. Book. MS 6 SEP 1891
 1. 3. 4. on the Steel Twin screw Steamer Cheshire
 Master George Harris Built at Belfast By whom built Harland & Wolff Lim.
 Engines made at Belfast By whom made Harland & Wolff Lim when made 1891
 Boilers made at Belfast By whom made Harland & Wolff Lim when made 1891
 Registered Horse Power 630 Owners Bibby Bros & Co Port belonging to Liverpool

ENGINES, &c.—

Description of Engines Triple Expansion Twin screws No. of Cylinders Six
 Diam. of Cylinders 23 x 34 x 64 Length of Stroke 48 Rev. per minute abt 75 Point of Cut off, High Pressure .66 Low Pressure .552
 Diameter of Screw shaft 13 1/2 Diam. of Tunnel shaft 12 1/2 Diam. of Crank shaft journals 13 1/2 Diam. of Crank pin 13 1/2 size of Crank webs 10" shaped
 Diameter of screw 15" 6" Pitch of screw 20" 0" No. of blades 3 state whether moveable yes total surface 63 each screw
 No. of Feed pumps two diameter of ditto 4 1/2" Stroke 2.8" Can one be overhauled while the other is at work Weir & Worthington pumps
 No. of Bilge pumps two diameter of ditto 5" Stroke 2.8" Can one be overhauled while the other is at work Worthington & Ballast pumps
 Where do they pump from Weir's pump (10 x 8 x 24). Westminster Ballast pump (10 x 10 x 10). Worthington pump (9 x 6 x 6)
 No. of Donkey Engines Five Size of Pumps Where do they pump from Cameron fire pump (8 1/2 x 6 x 6)
 Carnation's duplex pump. (6 x 6 x 6) drawing from fresh water tanks &c., discharging on deck.
 Are all the bilge suction pipes fitted with roses yes except Are the roses always accessible yes Are the cocks on Engine room bulkheads always accessible yes for clearing purposes
 No. of bilge injections two and sizes 5/2 ins Are they connected to condenser, or to circulating pump at main injection
 Are the pumps worked side levers on middle engines. Centrifugal circulating pump.
 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
 Are pipes carried through the bunkers Lead bilge pipes to fore hold How are they protected 2 inch wood casing
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times yes
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges yes
 Were stern tube, propeller, screw shaft, and all connections examined in dry dock before launching; vessel not afterwards docked.
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from main deck

BOILERS, &c.—

Boilers Four Description 2 double ended & 2 sing. end. Material Steel Letter (for record) S
 Working Pressure 176 lbs Tested by hydraulic pressure to 352 lbs Date of test Double ended 6.6.91 Sing. ended 29.5.91
 Is there any superheating apparatus or steam chest None
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately yes
 Square feet of fire grate surface in each boiler 112 double end 56 sing. end Description of safety valves Cockburn's No. to each boiler two
 Area of each valve 5" diam. Are they fitted with easing gear yes No. of safety valves to superheater yes area of each valve yes
 Are they fitted with easing gear yes Smallest distance between boilers and bunkers or woodwork 20" from ship's skin Diameter of boilers 14" 0"
 Length of boilers 17' 6" double end 10' 0" sing. description of riveting of shell long. seams lob. riv. double end. circum. seams Thickness of shell plates 1 1/2"
 Diameter of rivet holes 1 3/8" whether punched or drilled drilled pitch of rivets 9" 9 1/2" Lap of plating strips 20 1/2" x 1 1/8"
 Percentage of strength of longitudinal joint 84 1/2 working pressure of shell by rules 176 lbs size of manholes in shell 16" x 12"
 Size of compensating rings McNeil's 2 1/2" x 2 1/2" No. of Furnaces in each boiler 6 & 3 Description of Furnaces Patent Ribbed Flues
 Outside diameter 3' 6" length 7' 0" over tube plates thickness of plates 1 1/2" description of joint welded if rings are fitted yes
 Greatest length between rings 9" working pressure of furnace by the rules 179 combustion chamber plating, thickness, sides 19/32 back 19/32 top 2 1/32
 Pitch of stays to ditto, sides 7 3/4 back 7 3/4 top 8 1/4" If stays are fitted with nuts or riveted heads nuts used c.e. working pressure of plating by rules 202 1/2 Diameter of stays at smallest part 1 3/5 working pressure of ditto by rules 190 end plates in steam space, thickness 1 3/32
 Pitch of stays to ditto 1' 8 1/2" how stays are secured double nuts & washers working pressure by rules 176 lbs diameter of stays at smallest part 2 7/8 working pressure by rules 178 Front plates at bottom, thickness 13/16 Back plates, thickness 29/32
 Greatest pitch of stays yes working pressure by rules yes Diameter of tubes 3 1/4 pitch of tubes 4 1/2 ins thickness of tube plates, front 7/8 back 3/4 how stayed yes stays like pitch of stays tubes 9" width of water spaces 14 1/2 diam. of rivet holes yes
 Diameter of Superheater or Steam chest yes length yes thickness of plates yes description of longitudinal joint yes diam. of rivet holes yes
 Pitch of rivets yes working pressure of shell by rules yes diameter of flue yes thickness of plates yes If stiffened with rings yes
 Distance between rings yes working pressure by rules yes end plates of superheater, or steam chest; thickness yes how stayed yes
 Superheater or steam chest; how connected to boiler yes



DONKEY BOILER— Description *Single ended main boiler to be used as donkey boiler.*

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 _____ if fitted with easing gear _____ if steam from main boilers can
enter the donkey boiler _____ diameter of donkey boiler _____ length _____ description of riveting _____
Thickness of shell plates _____ diameter of rivet holes _____ whether punched or drilled _____ pitch of rivets _____ lap of plating _____
per centage of strength of joint _____ thickness of crown plates _____ stayed by _____
Diameter of furnace, top _____ bottom _____ length of furnace _____ thickness of 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 plates _____ thickness of water tubes _____

SPARE GEAR. State the articles supplied:— 2 cast iron blades. 1 set crank pin brasses. 3 safety valve springs
8 coupling bolts & nuts for crank shaft. 1 set of 9 propeller blade studs. 1 eccentric strap & shawl. 1 valve spindle
18 boiler tubes. 50 condenser tubes. 2 main bearing bolts. 2 top & 2 bottom end connecting rod bolts. 12 bolts &
nuts for pistons. 6 doz. assorted bolts & nuts. 100 furnace bars. 2 brass guards for air pump. 1 air pump rod.
24 studs for cyl. 1 easing covers. 5 escape valve springs. 4 feed pump valve seats. 2 bilge ditto. 1 main bearing bush
The foregoing is a correct description, 1 centrif. pump spindle. 4 white metal strips for guides. 9 patent lube stops.

Harland & Wolff Ltd Manufacturer.
per [Signature]

General Remarks (State quality of workmanship, opinions as to class, &c.) *These engines & boilers have been constructed under special survey & in accordance with the approved plans of boilers herewith returned. The material & workmanship are good throughout. The boiler steel has been tested as the Rules require & each of the boilers tested by hydraulic pressure to 352 lbs per sq in. The safety valves have been adjusted under steam to blow off at 176 lbs per sq in. & the engines & boilers worked under full steam for several hours in the Belfast Lough with satisfactory result, each engine developing about nineteen hundred horse power at 77 revolutions.*

The vessel is lighted by electricity the installment being fitted by W. H. Allen of London, & the currents generated by two Kapps No 132 dynamos (245 revs per 145 Amps; 62 volts at the terminals)

All the main steam pipes have been tested to twice the working pressure as the Rules require

The machinery & boilers in my opinion render the vessel eligible for the record + L. M. C. 991 in the Society's Register Book.

The amount of Entry Fee .. £ 3 : 0 : 0 ^{not} received by me,

Special .. £ 26 : 16 : 0

Donkey Boiler Fee .. £ 51 : 16 : 0

Certificate (if required) .. £ (per bel attached 8/9/91) 18 91

To be sent as per margin.

(Travelling Expenses, if any, £ ..)

Committee's Minute

TUES. 8 SEP 1891

+ Lmb 9/91

It is submitted that this vessel is eligible for the record + L. M. C. 991
A. Newlyn Jones
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Lloyd's Register Foundation