

REPORT ON MACHINERY.

Port of Glasgow

Received at London Office 1UES. 24 NOV 1903

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No. in Survey held at Govan Date, first Survey 23rd Sept 02 Last Survey 16th Nov 1903
 Reg. Book. Linn S.S. Armadale Castle (Number of Visits 60)
 on the Linn S.S. Armadale Castle Tons { Gross 12970
 Master J. Robinson Built at Govan By whom built Fairfield S.B. & Co. Ltd When built 1903
 Engines made at Govan By whom made Fairfield S.B. & Co. Ltd when made 1903
 Boilers made at do By whom made do when made 1903
 Registered Horse Power 2212 Owners Armadale Castle S.S. Co. Ltd Port belonging to London
 Nom. Horse Power as per Section 28 2212 Is Refrigerating Machinery fitted yes Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Quadruple Expansion No. of Cylinders Eight No. of Cranks 8
 Dia. of Cylinders 32, 46, 66 1/2, 96 Length of Stroke 60 Revs. per minute 80 Dia. of Screw shaft 18.3 Material of Steel
 as fitted 19 screw shaft
 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
 liners are fitted, is the shaft lapped or protected between the liners yes Length of stern bush 6-6 If two 3-0
 Dia. of Tunnel shaft as per rule 17.1 Dia. of Crank shaft journals as per rule 17.95 Dia. of Crank pin 19 Size of Crank webs 36 x 13 1/2 Dia. of thrust shaft under
 collars 18 3/4 Dia. of screw 19-0 Pitch of screw 26-6 No. of blades 3 State whether moveable yes Total surface 92 sq
 No. of Feed pumps 4 Diameter of ditto 4 1/2 Stroke 26 Can one be overhauled while the other is at work yes
 No. of Bilge pumps four Diameter of ditto 6 Stroke 30 Can one be overhauled while the other is at work yes
 No. of Donkey Engines one Sizes of Pumps 12 x 12 x 14 No. and size of Suctions connected to both Bilge and Donkey pumps
 in Engine Room water spec, and mech spec & tunnel, 11, 3 1/2 in Holds, &c two 3 1/2 in on 1, two 3 1/2 in
 No. of bilge injections 2 sizes 18 Connected to condenser, or to circulating pump Is a separate donkey suction fitted in Engine room & size yes, 8"
 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 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
 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 none How are they protected yes
 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 before launch Is the screw shaft tunnel watertight yes
 Is it fitted with a watertight door yes worked from top platform in engine room

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 4000 sq ft Is forced draft fitted no
 No. and Description of Boilers 6 D. Ended and 4 Single Ended Working Pressure 220 lb Tested by hydraulic pressure to 440 lb
 Date of 26/10/03 2/11/03 13/11/03 8/1/03 Can each boiler be worked separately yes Area of fire grate in each boiler DE 121.8 No. and Description of safety valves to
 each boiler two, direct spring Area of each valve SE 7.07 Pressure to which they are adjusted 225 lb Are they fitted with easing gear yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 8" Mean dia. of boilers DE 14.2 Length DE 20-0 Material of shell plates Steel
 Thickness DE 1 1/2 Range of tensile strength SE 31 Are they welded or flanged no Descrip. of riveting: cir. seams Double Butt
 Diameter of rivet holes in long. seams DE 1 1/2 Pitch of rivets 10" Lap of plates or width of butt strap DE 2 1/2
 Per centages of strength of longitudinal joint SE 1 2/3 Working pressure of shell by rules DE 254 lb Size of manhole in 16" x 12"
 Size of compensating ring flanges No. and Description of Furnaces in each boiler SE 4 Material Steel Outside diameter DE 45 1/2
 Length of plain part top Thickness of plates bottom 11/16" Description of longitudinal joint Welded No. of strengthening rings SE one
 Working pressure of furnace by the rules DE 250 Combustion chamber plates: Material Steel Thickness: Sides DE 1 1/2 Back SE 5/8 Top DE 1 1/2 Bottom DE 1 1/2
 Pitch of stays to ditto: Sides DE 7 1/2 Back SE 7 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules DE 224 End plates in steam space:
 Material of stays Steel Area supported by each stay SE 176 x 2.070 Working pressure by rules DE 242 Material of stays Steel
 Material Steel Thickness DE 1 3/16" Pitch of stays DE 14 1/2 x 14 How are stays secured Nuts outside Working pressure by rules DE 310 Material of stays Steel
 Diameter DE 5 1/4 supported by each stay SE 225 Working pressure by rules DE 266 Material of Front plates at bottom Steel
 Thickness 13/16 Material of Lower back plate Steel Thickness 1/16" Greatest pitch of stays 12 1/2" Working pressure of plate by rules 340
 Diameter of tubes 2 3/4 Pitch of tubes 4" Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 9"
 Pitch across wide water spaces 13 3/4 Working pressures by rules DE 227 lb Girders to Chamber tops: Material DE Steel Depth and
 thickness of girder at centre DE 8 1/2 x 1 1/2 Length as per rule DE 30 Distance apart SE 25 1/2 Number and pitch of Stays in each SE Iron 7 1/2"
 Working pressure by rules 220 lb Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked
 separately yes 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. _____ Description None

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 _____

Lat. 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: Two top & two bottom end bolts & nuts. 2 main bearing bolts and nuts, one set of coupling bolts & nuts. 1 set of feed & bilge pump valves, a quantity of assorted bolts, nuts & iron bars of various sizes, circulating pump cone, eccentric straps, air pump rod, bucket & head valves, slide valve spindle, pump plunger, top and bottom end brasses &c.

The foregoing is a correct description.

Manufacturer. **SHIPBUILDING ENGINEERING CO., LIMITED**

Dates of Survey while building: During progress of work in shops - 1902: Sep 23, 30 Oct 4, 11, 15, 22 Nov 2, 6, 11, 24, 26 Dec 1, 3, 8, 11, 13, 19, 20

During erection on board vessel - Jan 6, 11, 16 Apr 4, 11, 20 May 2, 18, 26 June 2, 15, 23, 26 July 2, 6, 13, 23 Aug 5, 3, 29 Sep 10, 17, 18, 24, 30 Oct 4, 12, 21, 27, 28 Nov 10, 16

Total No. of _____ 60

Is the approved plan of main boiler forwarded herewith Yes

donkey " " " None.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been built under special survey, the materials and workmanship are of good quality, it has been securely fitted on board and a full speed trial run which was in every way satisfactory. (Speed 19 knots).

The machinery of this vessel is now in my opinion eligible for record of **L.M.C. 11-03** (mud) in Register book.

- Plans now attached
- 2 Boiler Plans
- 12 forging reports
- 2 feed heater do
- 1 Condenser do
- 1 Evaporator do
- 6 plans of stop valves, steam pipes &c.

It is submitted that this vessel is eligible for **THE RECORD, L.M.C. 11-03, ELECLIGHT**

Bale.

24.11.03

24.11.03

The amount of Entry Fee. £ 3: : When applied for, 23.11.03

Special £ 130: 12: : When received, 27.11.03

Donkey Boiler Fee £ : : 26.11.03

Travelling Expenses (if any) £ : : 26.11.03

Committee's Minute

George Murdoch
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Glasgow 23 NOV 1903

Assigned L.M.C. 11.03.

When fee is paid

MACHINERY CERTIFICATE
WRITTEN 27.11.03



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Foundation