

REPORT ON MACHINERY.

Port of Glasgow.

THUR, 3 FEB 1898

Received at London Office

No. in Survey held at Glasgow.

Date, first Survey 29th Decr. 1896 Last Survey 28th January 1898.

Reg. Book. 28

(Number of Visits 53)

on the Screw Steamer "Lodes"

Tons { Gross 396
Net 123

Master Built at Workington By whom built R. Williamson & Son When built 1898.

Engines made at Glasgow By whom made Ross & Duncan when made 1898.

Boilers made at Glasgow By whom made Ross & Duncan when made 1898.

Registered Horse Power Owners Casbourne, Fowler & Co^y Port belonging to Middlebro'

Nom. Horse Power as per Section 28 74. Is Electric Light fitted No.

ENGINES, &c.—Description of Engines Compound Surface Condensing No. of Cylinders Two No. of Cranks Two.

Diameter of Cylinders 19" - 38" Length of Stroke 24" Revolutions per minute 110 Diameter of Screw shaft as per rule 4" 4"

Diameter of ^{Thrust} Tunnel shaft as per rule 4" 1" Diameter of Crank shaft journals 4 1/2" Diameter of Crank pin 4 1/2" Size of Crank webs 14 x 5 built

Diameter of screw 9" 2" Pitch of screw 12" 1 1/2" No. of blades 4 State whether moveable No Total surface 32 1/2 sq ft.

No. of Feed pumps One Diameter of ditto 3" Stroke 13 1/2" Can one be overhauled while the other is at work ✓

No. of Bilge pumps One Diameter of ditto 3" Stroke 13 1/2" Can one be overhauled while the other is at work ✓

No. of Donkey Engines One Sizes of Pumps 6 x 4 x 6 duplex. No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Two: 2" dia. In Holds, &c. Two: 2" dia.

No. of bilge injections 1 sizes 3 1/2" Connected to condenser, or to circulating pump cp. Is a separate donkey suction fitted in Engine room & size Yes: 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 ✓

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 ✓

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 never. Is the screw shaft tunnel watertight No tunnel.

Is it fitted with a watertight door ✓ worked from ✓

BOILERS, &c.— (Letter for record B.) Total Heating Surface of Boilers 1300 sq. ft. Is forced draft fitted No.

No. and Description of Boilers one: cyl. mult. single ended. Working Pressure 115 lbs. Tested by hydraulic pressure to 230 lbs.

Date of test 10/1/94 Can each boiler be worked separately ✓ Area of fire grate in each boiler 49 sq. ft. No. and Description of safety valves to each boiler Two: direct spring Area of each valve 4.64 sq. in. Pressure to which they are adjusted 120 lbs. Are they fitted with easing gear Yes. Smallest distance between ^{orales} boilers uptakes and bunkers or woodwork 9" Mean diameter of boilers 12" 4 1/2"

Length 10' 0" Material of shell plates Steel Thickness 3/32" Description of riveting: circum. seams Lap double long. seams 0.13.8"

Diameter of rivet holes in long. seams 28" Pitch of rivets 5 1/2" ^{2 Rows} 2 3/4" ^{1 Row} 2 3/4" Lap of plates width of butt straps 14 3/4"

Per centages of strength of longitudinal joint ^{rievets} 83.5% Working pressure of shell by rules 118 lbs. Size of manhole in shell 12" x 16"

Size of compensating ring 6" x 3/16" No. and Description of Furnaces in each boiler 3: plain Material Steel Outside diameter 34"

Length of plain part ^{top} 6 1/4" ^{bottom} 9" Thickness of plates ^{crown} 3/16" ^{bottom} 3/16" Description of longitudinal joint welded. No. of strengthening rings one partial.

Working pressure of furnace by the rules 123 lbs. Combustion chamber plates: Material Steel Thickness: Sides 1/2" Back 1/2" Top 1/2" Bottom 1/2"

Pitch of stays to ditto: Sides 8" x 8" Back 8" x 8" Top 8" x 7 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 120 lbs.

Material of stays Steel Diameter at smallest part 1 1/8" Area supported by each stay 64 sq. in. Working pressure by rules 126 lbs. End plates in steam space:

Material Steel Thickness 1/16" Pitch of stays 16" x 16" How are stays secured to nut & washers Working pressure by rules 118 lbs. Material of stays Steel

Diameter at smallest part 2 7/16" Area supported by each stay 260 sq. in. Working pressure by rules 116 lbs. Material of Front plates at bottom Steel

Thickness 1/16" Material of Lower back plate Steel Thickness 1/16" Greatest pitch of stays 12 1/2" Working pressure of plate by rules 194 lbs.

Diameter of tubes 3 1/2" Pitch of tubes 4 1/2" Material of tube plates Steel Thickness: Front 1/16" Back 2/32" Mean pitch of stays 11 1/4"

Pitch across wide water spaces 14" Working pressures by rules 161 lbs. ^{Front} 125 lbs. ^{Back} 125 lbs. Girders to Chamber tops: Material Iron Depth and thickness of girder at centre 6" x 1 1/2" Length as per rule 26 1/2" Distance apart 4 1/2" Number and pitch of Stays in each 2: 8"

Working pressure by rules 128 lbs. Superheater or Steam chest; how connected to boiler None. Can the superheater be shut off and the boiler worked separately

holes	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

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— Description *Vertical with 3 cross water tubes.*
 Made at *Glasgow* By whom made *Marriott & Graham* When made *1894* Where fixed *In Stokenold.*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *4283* Fire grate area *9 1/2* Description of safety valves *Direct Spring.*
 No. of safety valves *one* Area of each *4 9/16* Pressure to which they are adjusted *85 lbs* If fitted with easing gear *Yes.* If steam from main boilers can enter the donkey boiler *No.* Diameter of donkey boiler *4 1/2* Length *9 0* Material of shell plates *Steel* Thickness *3/8*
 Description of riveting long. seams *Lap Double riveted* Diameter of rivet holes *1 1/16* Whether punched or drilled *Drilled* Pitch of rivets *2 3/4*
 Lap of plating *3 7/8* Per centage of strength of joint Rivets *85-5* Thickness of shell crown plates *1/2* Radius of do. *5 ft* No. of Stays to do. *none*
 Dia. of stays. *-* Diameter of furnace Top *44* Bottom *47* Length of furnace *5 3/4* Thickness of furnace plates *1 5/16* Description of joint *Lap Double* Thickness of furnace crown plates *1/2* Stayed by *Sashed* Working pressure of shell by rules *96 lbs*
 Working pressure of furnace by rules *83 lbs* Diameter of uptake *13* Thickness of uptake plates *1/2* Thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:— *Two main Bearing Bolts & nuts, Two Crank pin Bolts & nuts, Two Crosshead Bolts & nuts, one set Coupling Bolt & nut, 1 set Feed & Bilge pump valves, 6 Boiler tubes; Bolts, nuts & Iron of various sizes, Spare propeller.*

The foregoing is a correct description,
Loss & Duncan Manufacturer.

Dates of Survey while building } During progress of work in shops - - } 1896 Decr. 29. 1897 Jan'y. 13. 21. 25. 29. Feby. 3. 5. 10. 11. 12. 16. 17. 23. 26. Mar. 2. 4. 8. 11. 12. 17. 24. 31.
 } During erection on board vessel - - } April. 5. 7. 13. 20. 22. 26. 28. May. 19. 25. 27. 31. Jun. 2. 8. 10. 17. 26. 29. July. 7. 12. 28. Aug. 4. 11. 17. 18. 24. 1898 Jan. 18. 27.
 Total No. of visits *53*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The engine and Boiler of this vessel have been built under special survey and the materials and workmanship are good. When completed they were run under steam and worked satisfactorily.
*The machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of **L.M.C. 1, 98.** inserted in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD.
 + L.M.C. 1, 98
 J.H.
 3/2/98

The amount of Entry Fee, £ : : When applied for.
 Special £ 11 : 2 : 31. 1. 18. 98.
 Donkey Boiler Fee £ : : :
 Travelling Expenses (if any) £ : : :
 When received. 2. 2. 18. 98.

Wm. Austin
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *FRI, 4 FEB 1898*
 Assigned *+ L.M.C. 1, 98*



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