

# REPORT ON MACHINERY.

Port of Glasgow

RECEIVED 31 OCT 1906

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No. in Survey held at Glasgow & Dalmeir Date, first Survey 6<sup>th</sup> June 05 Last Survey 18<sup>th</sup> Oct 1905

Reg. Book. on the S.S. "Highland Laddie"

(Number of Visits)

Tons { Gross 3750  
Net 2400

Master Built at Glasgow By whom built W. Beardmore & Co. Ltd. When built 1901

Engines made at Glasgow By whom made W. Beardmore & Co. Ltd. when made 1901

Boilers made at Do. By whom made Do. when made 1901

Registered Horse Power 355 Owners Felton Line (H. & R. Felton Ltd.) Port belonging to LONDON

Nom. Horse Power as per Section 28 (316) Is Refrigerating Machinery fitted for cargo purposes no. Is Electric Light fitted no.

**ENGINES, &c.**—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 23" 38" 62" Length of Stroke 48" Revs. per minute 137 Dia. of Screw shaft as per rule 13.24 Material of screw shaft Steel  
as fitted 13.56

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 no 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 no If two liners are fitted, is the shaft lapped or protected between the liners no Length of stern bush 4'-4 1/4"

Dia. of Tunnel shaft as per rule 12.04 Dig. of Crank shaft journals as per rule 12.64 Dia. of Crank pin 12 7/8" Size of Crank webs 9 1/4" Dia. of thrust shaft under collars 12 7/8" Dia. of screw 17.0" Pitch of screw 14'-9" No. of blades 4 State whether moveable no Total surface 88 sq

No. of Feed pumps 2 Diameter of ditto 8" x 10" Stroke 15" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 5 1/2" Stroke 22" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 9" x 9" x 10" + 7 1/2" x 5" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2 on starb. 3 1/2" 3 1/2" on port In Holds, &c. No. 1 hold 2 at 3 1/2" No. 2 hold 2 at 3 1/2" No. 3 hold 2 at 3 1/2" No. 4 hold 3 1/2" tunnel well 2 1/4"

No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump C. pump Is a separate donkey suction fitted in Engine room & size Yes 3 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 no

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 no

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 14/10/05 Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Upper deck

**BOILERS, &c.**— (Letter for record (S)) Total Heating Surface of Boilers 6420 sq Is forced draft fitted no

No. and Description of Boilers 3 cyl. single ended. Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb.

Date of test 9-2-05 Can each boiler be worked separately Yes Area of fire grate in each boiler 59.66 sq No. and Description of safety valves to each boiler 2 spring loaded Area of each valve 7.06" Pressure to which they are adjusted 185 lb. Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 15'-3" Length 11'-0" Material of shell plates Steel

Thickness 1 1/2" Range of tensile strength 29.32 Are they welded or flanged no Descrip. of riveting: cir. seams DR & TR. long. seams DB straps

Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 7/8" Top of plates or width of butt straps 19 1/2"

Per centages of strength of longitudinal joint rivets 92.2 Working pressure of shell by rules 190 lb. Size of manhole in shell 17" x 12 1/2"

Size of compensating ring 7" x 1 1/2" No. and Description of Furnaces in each boiler 3 Beardmore Material Steel Outside diameter 3'-11 1/2"

Length of plain part top 185 lb. Thickness of plates crown 9" Description of longitudinal joint welded. No. of strengthening rings 1

Working pressure of furnace by the rules 185 lb. Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 13/16"

Pitch of stays to ditto: Sides 7 3/4" x 7 3/4" Back 7 3/4" x 7 3/4" Top 7 3/4" x 7 3/4" stays are fitted with nuts or riveted heads nuts Working pressure by rules 182 lb.

Material of stays Steel Diameter at smallest part 1.41" Area supported by each stay 60" Working pressure by rules 188 lb. End plates in steam space:

Material Steel Thickness 1 3/16" Pitch of stays 18 1/2" x 16" How are stays secured D. nuts Working pressure by rules 187 lb. Material of stays Steel

Diameter at smallest part 5.45" Area supported by each stay 296" Working pressure by rules 184 lb. Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 12" Working pressure of plate by rules 238 lb.

Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" x 4 7/8" Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 10.6"

Pitch across wide water spaces 15" Working pressures by rules 219 lb., 180 lb. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 2 (9 1/4" x 3 1/4") Length as per rule 2'-10" Distance apart 7 3/4" Number and pitch of Stays in each 3 - 7 3/4"

Working pressure by rules 184 lb. Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately no

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



W649-0258

**DONKEY BOILER—** No. *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:— *2 top end and 2 bottom end bolts and nuts, 2 main bearing bolts nuts, 1 set coupling bolts, 1 set feed and bilge pump valves, 1 set piston springs, assorted bolts nuts, iron of various sizes, set escape valve springs, safety valve springs etc.*

The foregoing is a correct description,

For **WILLIAM BEARDMORE & CO. LIMITED** Manufacturer.

Dates of Survey while building  
 During progress of work in shops— 1902: June 6, 12, July 29, Aug. 2, 4, 8, 12, 20, Sep. 5, 14, Oct. 6, 15, 18, 25, Nov. 4, 8, 15, 17, 24, Dec. 9, 14, 16  
 During erection on board vessel— 26, 1902: Jan. 13, Feb. 9, 10, 21, Mar. 2, 12, 22, 25, Apr. 5, 12, 27, 28, 31, June 15, 29, Oct. 12, 16, 18  
 Total No. of visits *41*

Is the approved plan of main boiler forwarded herewith *Yes*

Is the approved plan of donkey boiler forwarded herewith \_\_\_\_\_

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

*The engines and boilers have been built under special survey, the materials and workmanship are of good description. The boilers were tested by hydraulic press: to double the working pressure. I were found tight & sound in every respect. In my opinion the above are eligible for record*

It is submitted that this vessel is eligible for THE RECORD

*L.M.C 10.05 (subject to the propeller being reduced to 15' 10" in dia)*

*See ind. 5.12.05*

*3.11.05*

*5.12.05*

The amount of Entry Fee.. £ *3* : : When applied for, *2 OCT 1905 19*  
 Special .. .. £ *27 14* : :  
 Donkey Boiler Fee .. .. £ : : When received, *17.10.1905*  
 Travelling Expenses (if any) £ : :

*Wm. Buchanan & James Hollison*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *Glasgow 30 OCT 1905*

Assigned *+ L.M.C 10.05*

