

# REPORT ON MACHINERY.

No. 64119.

29 APR 1910.

Received at London Office

SAT. 30 APR 1910

Date of writing Report 29 APR 1910 When handed in at Local Office 29 APR 1910 Port of LIVERPOOL.

No. in Survey held at Rirkenhead Date, First Survey 6th Apr 1909 Last Survey 20 Apr 1910

Reg. Book. 23 on the S.S. Highland Laddie (Number of Visits)

Master Andrews Built at Rirkenhead By whom built Cammell Laird & Co. Ld. When built 1909

Engines made at Rirkenhead By whom made Cammell Laird & Co. Ld. when made 1910

Boilers made at do By whom made do when made 1910

Registered Horse Power 855 Owners Hellon Line Ltd Liverpool Port belonging to London

Nom. Horse Power as per Section 28 855 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Vertical triple No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 31-51-86 Length of Stroke 54 Revs. per minute 75 Dia. of Screw shaft 14 1/2 Material of screw shaft 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 no 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 no

If two liners are fitted, is the shaft lapped or protected between the liners no Length of stern bush 6-0 5/8

Dia. of Tunnel shaft 16 1/2 Dia. of Crank shaft journals 14 1/2 Dia. of Crank pin 17 1/2 Size of Crank webs 11 1/4 Dia. of thrust shaft under collars 14 1/2

Dia. of screw 19-0 Pitch of Screw 19-6 No. of Blades 4 State whether moveable yes Total surface 115-5

No. of Feed pumps 2 Diameter of ditto 9 Stroke 21 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 6 Stroke 30 Can one be overhauled while the other is at work yes

No. of Donkey Engines Four Sizes of Pumps See appended list No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Four 3 1/2 diam In Holds, &c. Two 3 1/2 in each hold, and one 2 1/2 in tunnel well.

No. of Bilge Injections 1 sizes 10 Connected to condenser, or to circulating pump 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 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 yes

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

Dates of examination of completion of fitting of Sea Connections 12-10-09 of Stern Tube 12-10-09 Screw shaft and Propeller 30-10-09

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Upper Platform

BOILERS, &c.—(Letter for record (B)) Manufacturers of Steel W. Bellville & Sons & Steel Co of Scotland

Total Heating Surface of Boilers 10300 Is Forced Draft fitted yes No. and Description of Boilers Three Single ended Steel

Working Pressure 210 lbs Tested by hydraulic pressure to 420 lbs Date of test 1-10-09, 13-10-09 No. of Certificate 1896, 1898

Can each boiler be worked separately yes Area of fire grate in each boiler 74.4 sq No. and Description of Safety Valves in each boiler Two Spring

Area of each valve 12.18 Pressure to which they are adjusted 210 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 16.6 Length 12.0 Material of shell plates Steel

Thickness 1 3/32 Range of tensile strength 30550-32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams Lap double

long. seams Butt Lap Diameter of rivet holes in long. seams 1 3/32 Pitch of rivets 10" Lap of plates or width of butt straps 1-11 1/2

Per centages of strength of longitudinal joint rivets 96.72 Working pressure of shell by rules 247 Size of manhole in shell 16-12

plate 83.34 Size of compensating ring 8 x 1 1/2 No. and Description of Furnaces in each boiler 4 Horizontal Material Steel Outside diameter 3.9

Length of plain part top Thickness of plates bottom 3 1/2 Description of longitudinal joint Butt No. of strengthening rings no

Working pressure of furnace by the rules 237.5 Combustion chamber plates: Material Steel Thickness: Sides 5/8 Back 5/8 Top 5/8 Bottom 1"

Pitch of stays to ditto: Sides 8 1/2 x 4 1/2 Back 8 1/2 x 4 1/2 Top 8 x 4 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 211 lbs

Material of stays Steel Diameter at smallest part 1.46 Area supported by each stay 64 Working pressure by rules 210 End plates in steam space:

Material Steel Thickness 1 3/2 Pitch of stays 17.14 1/2 How are stays secured Welded Working pressure by rules 213 Material of stays Steel

Diameter at smallest part 3" Area supported by each stay 298 Working pressure by rules 237 Material of Front plates at bottom Steel

Thickness 1" Material of Lower back plate Steel Thickness 1" Greatest pitch of stays 14 1/2 Working pressure of plate by rules 213

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

Pitch across wide water spaces 13 1/2 Working pressures by rules 210.5 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 4 1/2 x 2 7/8

Length as per rule 2.6 1/2 Distance apart 8" Number and pitch of stays in each Three 4 1/2

Working pressure by rules 212 Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately no

Diameter no Length no Thickness of shell plates no Material no Description of longitudinal joint no Diam. of rivet holes no

Pitch of rivets no Working pressure of shell by rules no Diameter of flue no Material of flue plates no Thickness no

If stiffened with rings no Distance between rings no Working pressure by rules no End plates: Thickness no How stayed no

Working pressure of end plates no Area of safety valves to superheater no Are they fitted with easing gear no

W490-0247



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. \_\_\_\_\_ Description \_\_\_\_\_

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure \_\_\_\_\_ tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Safety \_\_\_\_\_

Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

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 \_\_\_\_\_ Plates \_\_\_\_\_

Working pressure of shell by rules \_\_\_\_\_ 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 \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_

Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

SPARE GEAR. State the articles supplied:— *Crank Shaft, Propeller Shaft, two cast iron propeller blades, 1 set of crankhead traps, 1 set of connecting rod traps, 2 connecting rod bolts & nuts, 2 top end bolts & nuts, 2 main bearing bolts & nuts, 1 set of shaft coupling bolts & nuts, six piston bolts, one spring for each valve, The foregoing is a correct description, 6 studs for each cylinder & bullock chest covers, 1 set of feed bullock, 1 set of tie up bullock, 36 condenser tubes, nuts, bolts & iron assorted.*

*R. R. Peoni* Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1909. April 6, 16, 21 May 13, 14, 15, 20, 26 June 2, 3, 7, 10, 11, 16, 17, 18, 24, 25, 29, 30 July 1, 2, 7, 8, 9, 12, 13, 15, 21, 22, 27, 28
	During erection on board vessel - -	Sept 8, 15, 16, 20, 22 Oct 1, 4, 5, 14, 15, 16, 18, 22, 29, 30 Nov 7, 11, 15, 20, 22, 24, 30 Dec 7, 9, 13, 14, 16, 22 1910. Jan 12, 27, 7, 17, 20, 28 Feb 5
	Total No. of visits	March 12, 15, April 20 80

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

" " " donkey " " *yes*

Dates of Examination of principal parts—Cylinders *12-24-9-09* Slides *18-8-09* Covers *13-8-09* Pistons *24-8-09* Rods *22-9-09*

Connecting rods *24-8-09* Crank shaft *8-16-22-9-09* Thrust shaft *22-8-09* Tunnel shafts *14, 18, 21-9-09* Screw shaft *24, 16, 14-09* Propeller *22/10 29-10-09*

Stern tube *22-9-09* Steam pipes tested *16-12-09* Engine and boiler seatings *13/8 2/11-09* Engines holding down bolts *22-11-09*

Completion of pumping arrangements *22-12-09* Boilers fixed *15-11-09* Engines tried under steam *5-3-10 20-4-10*

Main boiler safety valves adjusted *20-1-10* Thickness of adjusting washers *Part for 2 1/2" S.P. 40, Centre for 7" Standard for 13" S.P. 40*

Material of Crank shaft *Steel* Identification Mark on Do. *504 4.1* Material of Thrust shaft *Steel* Identification Mark on Do. *517*

Material of Tunnel shafts *Steel* Identification Marks on Do. *501, 505, 514* Material of Screw shafts *Steel* Identification Marks on Do. *505 5.101*

Material of Steam Pipes *Steel* Test pressure *630 lbs*

General Remarks (State quality of workmanship, opinions as to class, &c. *The machinery has been specially surveyed during construction the material and workmanship good and renders the vessel eligible in our opinion to have the Record + L.M.C. 4.10 in the Register Book of the Society.*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 4.10

3513 (FD) + 1 Misc SB. H.S.D.  
Ref. machy. 3.5.10.

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

The amount of Entry Fee..	£	:	:	When applied for,
Special .. .. .	£	:	:	.....19.....
Donkey Boiler Fee .. .. .	£	:	:	When received,
Travelling Expenses (if any) £	£	:	:	.....19.....

*Richard Hirst & C.D. Shilston*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute LIVERPOOL, 29 APR 1910  
Assigned *L.M.C. 4.10*

MACHINERY CERTIFICATE  
WRITTEN 30 4 10  
copy 19.10.11

