

## REPORT ON MACHINERY.

No. 32197  
WED. JAN. 1 1913

Received at Local Office

Date of writing Report 16. 12 1912 When handed in at Local Office 27. 12 1912 Port of Glasgow.  
 No. in Survey held at Glasgow. Date, First Survey 18. 3. 12 Last Survey 24. 12 1912  
 Supp. Book. 69 on the s/s "BORDERLAND" (Number of Visits 50.)  
 Master Built at Glasgow. By whom built Barclay Curle & Co. Ltd. (N:503) en built 1912.  
 Engines made at Glasgow. By whom made Barclay Curle & Co. Ltd. (N:503). when made 1912.  
 Boilers made at Glasgow. By whom made Barclay Curle & Co. Ltd. (N:503). when made 1912.  
 Registered Horse Power Owner Liverpool & Hamburg Steamship Co. Port belonging to Liverpool.  
 Nom. Horse Power as per Section 28 246. Is Refrigerating Machinery fitted for cargo purposes no. Is Electric Light fitted yes.

## ENGINES, &amp;c.—Description of Engines

Triple Expansion

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders 19 1/2" 34" 55" Length of Stroke 42" Revs. per minute 88 Dia. of Screw shaft as per rule 11 1/8" Material of screw shaft as fitted 12 1/4" 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 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 fits whole length two liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 5'-0"

Dia. of Tunnel shaft as per rule 10-45" Dia. of Crank shaft journals as per rule 10-98" Dia. of Crank pin 11 3/4" Size of Crank webs 16" x 8" Dia. of thrust shaft under collars 11 1/2" Dia. of screw 14-9" Pitch of Screw 17-3" No. of Blades 4 State whether moveable no. Total surface 59.5 sq ft.

No. of Feed pumps 2 Diameter of ditto (10 3/4" Stroke 21" Can one be overhauled while the other is at work yes.

No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 21" Can one be overhauled while the other is at work yes.

No. of Donkey Engines 2 Sizes of Pumps (1) 6" x 15" (2) 10" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 2 @ 2 1/4" and 2 @ 2 1/4" in stokehold In Holds, &c. N:1 2 @ 2 1/4", N:2 2 @ 2 1/4", N:3 2 @ 2 1/4".

No. of Bilge Injections 1 size 6" Connected to condenser, or to circulating pump pump. Is a separate Donkey Suction fitted in Engine room & size 10 3/4"

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 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.

Dates of examination of completion of fitting of Sea Connections 9 of Stern Tube 7 Screw shaft and Propeller 27. 11. 12

Is the Screw Shaft Tunnel watertight yes. Is it fitted with a watertight door yes. worked from upper deck.

## BOILERS, &amp;c.—(Letter for record

Manufacturers of Steel

Steel Company of Scotland.

Total Heating Surface of Boilers 3400 sq ft. Is Forced Draft fitted no. No. and Description of Boilers 2 single ended.

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 5. 8. 12 No. of Certificate 11713

Can each boiler be worked separately yes. Area of fire grate in each boiler 51 sq ft. No. and Description of Safety Valves to each boiler 2 spring loaded Area of each valve 4.91 sq in. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear yes.

Smallest distance between boilers on uptakes and bunkers on deck 9'-0" inside dia. of boilers 13'-6" Length 9'-10" Material of shell plates steel.

Thickness 1 1/8" Range of tensile strength 28/32 Are the shell plates welded or flanged no. Descrip. of riveting: cir. seams D.R.

long. seams T.R. O.B.S. Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 7 1/2" Lap of plates or width of butt straps 16 1/4"

Per centages of strength of longitudinal joint rivets 87.2 plate 85 Working pressure of shell by rules 184 Size of manhole in shell 16" x 12"

Size of compensating ring 9 1/2" x 1 1/8" No. and Description of Furnaces in each boiler 3 horizontal Material steel Outside diameter 3'-7 1/4"

Length of plain part top 17 1/2" bottom 32 Thickness of plates crown 17 1/2" Description of longitudinal joint weld. No. of strengthening rings

Working pressure of furnace by the rules 189 Combustion chamber plates: Material steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 3/4"

Pitch of stays to ditto: Sides 7 1/4" x 7 1/2" Back 7 1/2" x 7 1/4" Top 7 1/4" x 7 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 188

Material of stays iron Diameter at smallest part 1.73" Area supported by each stay 54.375 sq in. Working pressure by rules 190 End plates in steam space: Material steel Thickness 15/16" Pitch of stays 15 1/2" x 14 How are stays secured secured thru plates outside. Working pressure by rules 180 Material of stays steel

Diameter at smallest part 4.11" Area supported by each stay 217 sq in. Working pressure by rules 197 Material of Front plates at bottom steel Thickness 11/16" Material of Lower back plate steel Thickness 11/16" Greatest pitch of stays 14 1/4" x 7 1/4" Working pressure of plate by rules 237

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/4" Material of tube plates steel Thickness: Front 13/16" Back 13/16" Mean pitch of stays 11"

Pitch across wide water spaces 14 1/4" x 9 1/16" Working pressures by rules 210 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8" x 20" x 11/16" Length as per rule 2-3 1/16" Distance apart 7 3/4" Number and pitch of stays in each 30 7 1/2"

Working pressure by rules 214 Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately

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

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# 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	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	Radius of do.	Stayed by		
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:— 2 Connecting rod top-end bolts & nuts, 2 Connecting rod bottom-end bolts & nuts, 2 main-bearing bolts, 1 set of coupling bolts, 1 set of feed and bilge pump valves, a quantity of assorted bolts and nuts, and iron of various sizes.

The foregoing is a correct description,

FOR BARCLAY CURLE & CO., LTD. Manufacturer.

During progress of work in shops -- 1912. March 18. 26. 28. April 16. 30. May 7. 10. 22. 28. 29. June 3. 12. 17. 20. 25. 28.

Dates of Survey while building -- July 1. 8. 11. 25. 30. Aug 5. 6. 12. 19. 21. 26. Sept 2. 18. 20. 25. 27. Oct 1. 14. 21. 31. Nov 12. 15. 22. 25. 27. 28.

During erection on board vessel -- Dec 2. 3. 5. 9. 11. 12. 13. 24

Total No. of visits 50.

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

Dates of Examination of principal parts—Cylinders 21.8.12 Slides 1.10.12 Covers 21.8.12 Pistons 1.10.12 Rods 1.10.12

Connecting rods 1.10.12 Crank shaft 6.8.12 Thrust shaft 6.8.12 Tunnel shafts 1.10.12 Screw shaft 1.10.12 Propeller 1.10.12

Stern tube 1.10.12 Steam pipes tested 20.9.12 11.12.12 Engine and boiler seatings 2.12.12 Engines holding down bolts 12.12.12

Completion of pumping arrangements 12.12.12 Boilers fixed 12.12.12 Engines tried under steam 24.12.12

Main boiler safety valves adjusted 13.12.12 Thickness of adjusting washers *P 7/16 S 3/8 P 3/4 S 3/8 P 7/16 S 1/2*

Material of Crank shaft *steel* Identification Mark on Do. 503 Material of Thrust shaft *steel* Identification Mark on Do. 503

Material of Tunnel shafts *steel* Identification Marks on Do. 503 Material of Screw shafts *steel* Identification Marks on Do. 503.

Material of Steam Pipes *Wrought Iron* Test pressure 540 lbs per square inch.

## General Remarks

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

The materials & workmanship are good. The machinery of this vessel has been built under special survey, fitted on board in a satisfactory manner, and tested under steam, and is eligible, in my opinion, for classification with the record *L.M.C. 12.12.*

This machinery is a duplicate of the machinery fitted in the *Gt Poland* Glasgow Report 20305139.

MACHINERY CERTIFICATE  
1911-12.

It is submitted that  
this vessel is eligible for  
THE RECORD + L.M.C. 12.12.

2SB & 1AuxSB.

*J.W.D.*  
27/1/13

The amount of Entry Fee .. £ 2 : 0 : 0 When applied for, 28/12/12.

Special .. £ 32 : 6 : 0

Donkey Boiler Fee .. £ : : : When received, 30.1.13

Travelling Expenses (if any) £ : : : 31 DEC. 1912

Committee's Minute GLASGOW

Assigned + L.M.C. 12.12.

*A.B. Forster*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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Foundation

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

24/12/12