

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
 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, &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 11.81" Material of steel
 as fitted 12 1/4" 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 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" (1) Ballast No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 2 @ 2 3/4" and 2 @ 2 1/4" in stokehold In Holds, &c. N:1 2 @ 2 3/4", N:2 2 @ 2 3/4", N:3 2 @ 2 3/4"
 and 1 @ 2 1/2" Tunnel Well.
 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" x 3"
 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, &c.—(Letter for record 2 main Aux. 3400 total 4252) Manufacturers of Steel Steel Company of Scotland.
 Total Heating Surface of Boilers 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 ft Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear yes.
 Smallest distance between boilers on uptakes and bunkers or woodwork 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. D.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 Working pressure of shell by rules 184 Size of manhole in shell 16" x 12"
 plate 85
 Size of compensating ring 9 1/2" x 1 1/8" No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 3'-7 1/4"
 Length of plain part top 17" bottom 32" Thickness of plates crown 17" 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 Area at smallest part 1.73 sq ft Area supported by each stay 54.375 sq ft Working pressure by rules 190 End plates in steam space: plates nuts outside.
 Material steel Thickness 15/16" Pitch of stays 15 1/2" x 14" How are stays secured secured thru Working pressure by rules 180 Material of stays steel
 Diameter at smallest part 4.11 Area supported by each stay 217 sq ft 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 1/16" 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

008288-008295-0107

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.

Charles Andrew Smith Director 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: During progress of work in shops --- 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 Port Boiler $p \frac{3}{16}$ $s \frac{3}{8}$ Star. Boiler $p \frac{3}{8}$ $s \frac{3}{8}$ Aux Boiler $p \frac{7}{16}$ $s \frac{1}{2}$

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 "Poland" Glasgow Report 20305139.

Glasgow

MACHINERY CERTIFICATE
RULES.

It is submitted that this vessel is eligible for THE RECORD, + L.M.C. 12. 12.

2 SB & 1 Aux SB.

J.W.D.
27/1/13

The amount of Entry Fee .. £ 2 : 0 : 0 When applied for, _____

Special £ 32 : 6 : 0 28/12/12

Donkey Boiler Fee £ : : : When received, _____

Travelling Expenses (if any) £ : : : 30. 1. 13/13

31 DEC. 1912

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

Committee's Minute **GLASGOW**

Assigned + L.M.C. 12. 12. *gib*



28/12/12