

REPORT ON MACHINERY.

No. 36579.

Received at London Office FRI. JAN 5 - 1917

Date of writing Report 19 When handed in at Local Office 19 Port of Glasgow

No. in Survey held at Glasgow Date, First Survey 10-12-13 Last Survey 22-12-1916

Reg. Book. on the S.S. Limeleaf (Number of Vails 153)

Master Built at Glasgow By whom built Barclay Curle & Co. (538) When built 1916

Engines made at Glasgow By whom made Barclay Curle & Co. (538) when made 1916

Boilers made at Glasgow By whom made Barclay Curle & Co. (538) when made 1916

Registered Horse Power Owners Port belonging to

Nom. Horse Power as per Section 28 900 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Twin screw triple expansion No. of Cylinders 6 No. of Cranks 6

Dia. of Cylinders 21" 35 1/2" 61" Length of Stroke 45 Revs. per minute 85 Dia. of Screw shaft as per rule 13.29 as fitted 13 3/4 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 length 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 Jels all the way If two liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 4' 8"

Dia. of Tunnel shaft as per rule 11.87 as fitted 12 5/8 Dia. of Crank shaft journals as per rule 12.46 as fitted 12 5/8 Dia. of Crank pin 12 5/8 Size of Crank webs 8 1/2 x 18 Dia. of thrust shaft under collars 12 5/8 Dia. of screw 16-3 Pitch of Screw 18' 9" No. of Blades 3 State whether moveable yes Total surface 68 ft

No. of Feed pumps 4 Diameter of ditto 4 1/4 Stroke 22 1/2 Can one be overhauled while the other is at work yes

No. of Bilge pumps 4 Diameter of ditto 4 1/4 Stroke 22 1/2 Can one be overhauled while the other is at work yes

No. of Donkey Engines 4 Sizes of Pumps 9" x 12", 9" x 6 1/2" x 10", 7" x 9" x 12" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room (2) 3 1/2" in boiler room (2) 3 1/2" In Holds, &c. for peak (1) 4" for deep tanks (1) 4" aft dup

Tank (1) 4" for copper day (1) 4" Store (1) 3 1/2" Cargo space (2) 3 1/2" Chain locker (1) 2 1/2" (1) 2 1/2" in each tunnel (1) 2 1/2" in tunnel

No. of Bilge Injections 2 sizes 8 Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size yes 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 below

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 10/6/16 of Stern Tube 10/5/16 Screw shaft and Propeller 10/5/16

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door no worked from —

OILERS, &c.—(Letter for record 5) Manufacturers of Steel Tom Beardmore & Co. & D. Colville & Sons

1 Aug. 1528 Admin Total 14156 sq ft.

Total Heating Surface of Boilers 12628 Is Forced Draft fitted yes No. and Description of Boilers 4 Single ended

Working Pressure 215 Tested by hydraulic pressure to 430 Date of test 18/10/15, 2/12/15 No. of Certificate 13267, 13288.

Can each boiler be worked separately yes Area of fire grate in each boiler 75-169 No. and Description of Safety Valves to each boiler 1 pair dual spring Area of each valve 9.62 Pressure to which they are adjusted 320 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 0-15 Mean dia. of boilers 16-6 Length 12-0 Material of shell plates steel

Thickness 1 1/4 Range of tensile strength 31 to 35 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams tuble cap

long. seams tuble both Diameter of rivet holes in long. seams 1 21/32 Pitch of rivets 10 1/2 Lap of plates or width of butt straps 23 7/16

Per centages of strength of longitudinal joint rivets 92.8 Working pressure of shell by rules 257 Size of manhole in shell 16" x 12"

Size of compensating ring 10" x 10 1/2" x 1 1/2" No. and Description of Furnaces in each boiler 4 Morrison's Material steel Outside diameter 5' 9 1/4"

Length of plain part top bottom Thickness of plates crown 21" bottom 32 Description of longitudinal joint weld No. of strengthening rings —

Working pressure of furnace by the rules 234 Combustion chamber plates: Material steel Thickness: Sides 11/16 Back 21/32 Top 11/16 Bottom 1"

Pitch of stays to ditto: Sides 7 3/4 x 8 1/2 Back 9 x 7 3/4 Top 8 x 9 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 225

Material of stays steel Diameter at smallest part 2.03 Area supported by each stay 75 Working pressure by rules 253 End plates in steam space: 12

Material steel Thickness 1 1/4 Pitch of stays 20" x 16" How are stays secured 2 nuts Working pressure by rules 219 Material of stays steel

18 Diameter at smallest part 7.56 Area supported by each stay 320 Working pressure by rules 256 Material of Front plates at bottom steel

10 Thickness 3/32 Material of Lower back plate steel Thickness 29/32 Greatest pitch of stays 14 1/4 Working pressure of plate by rules 216

Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 3/4 Material of tube plates steel Thickness: Front 31/32 Back 13/16 Mean pitch of stays 7 1/2"

Pitch across wide water spaces 13 1/2 Working pressures by rules 224 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 10" x 25/32 double Length as per rule 2-10 Distance apart 9 Number and pitch of stays in each (3) 8"

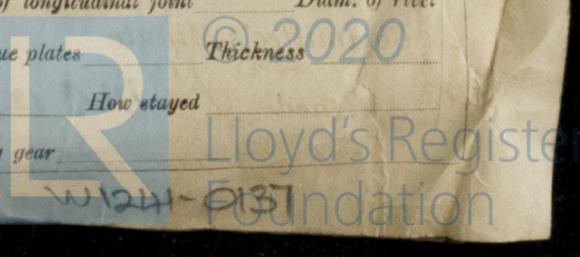
11-15-16 Working pressure by rules 215 Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked

16-21-22 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

15 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



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 _____

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

If fitted with casing 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 _____ 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 top end bolts 7 units 2 bottom end bolts 7 units 15 of coupling bolts 7 units 2 main bearing bolts 7 units fuel & bilge pump gear iron bolts 7 units of various sizes and in addition all other articles specified

The foregoing is a correct description, **FOR BARCLAY, CURLE & Co., LTD.**
 Manufacturer. Archibald Glasgow Director.

Dates of Survey while building	During progress of work in shops	1916. Dec 10-15. 1917. Apr 11-24. Jun 30. July 16-29. Aug 4-6. Sep 11-15. Oct 2-12. 1918. Jan 19-22. Feb 2-5. 1919. Mar 15-17. 1920. Apr 11-17. 1921. May 2-4. 1922. Jun 15-17. 1923. Jul 14-19. 1924. Aug 14-20. 1925. Sep 14-20. 1926. Oct 14-20. 1927. Nov 14-20. 1928. Dec 14-20. 1929. Jan 14-20. 1930. Feb 14-20. 1931. Mar 14-20. 1932. Apr 14-20. 1933. May 14-20. 1934. Jun 14-20. 1935. Jul 14-20. 1936. Aug 14-20. 1937. Sep 14-20. 1938. Oct 14-20. 1939. Nov 14-20. 1940. Dec 14-20.
	During erection on board vessel	Oct 27. Nov 1-2. 3-7. 12. 15-16. 17. 20-21. 22-23. 25-27. 28. Dec 1-4. 5-6. 7-8. 11-12. 13. 14-15. 16-17. 18. 19. 20-21. 22.
	Total No. of visits	153

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

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

Dates of Examination of principal parts — Cylinders 28/10/16 Slides 2/2/15 Covers 10/3/16 Pistons 10/3/16 Rods 1/11/15

Connecting rods 1/11/15 Crank shaft 29/2/16 Thrust shaft 24/1/16 Tunnel shafts 24/1/16 Screw shaft 18/5/16 Propeller 2/6/16

Stern tube 7/4/16, 29/3/16 Steam pipes tested 23/11/16 Engine and boiler seatings 27/10/16 Engines holding down bolts 3/11/16

Completion of pumping arrangements 20/12/16 Boilers fixed 3/11/16 Engines tried under steam 29/12/16

Main boiler safety valves adjusted 8/12/16 Thickness of adjusting washers 5/8" 27/2/16 29/2/16 5/8" 27/2/16 29/2/16 5/8" 27/2/16 29/2/16

Material of Crank shaft Steel Identification Mark on Do. 585 27/2/16 Material of Thrust shaft Steel Identification Mark on Do. 24/1/16

Material of Tunnel shafts Steel Identification Marks on Do. 27/2/16 Material of Screw shafts Steel Identification Marks on Do. 27/2/16

Material of Steam Pipes Lapwelded iron Test pressure 645 lbs.

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

These engines and boilers have been built under special survey, the materials and workmanship are of good description. They have been well fitted on board & tried under steam. This machinery is now in my opinion eligible to have notification of L.M.C. 12. 16 (supd) in the Register Book. The Regenerating plant referred to in Admiralty letter G.P. 128034, dated Sep 15th 1916 has not been fitted.

It is submitted that this vessel is eligible for THE RECORD + LMC 12.16 FD.

The amount of Entry Fee	£ 3	When applied for, 3/11/16
Special Admiralty portion	£ 65	
Donkey Boiler Fee	£ 69	
Travelling Expenses (if any)	£	When received, 19/11/16, 23/1/17, 3/2/17, 27/2/17

A.M. McLeod
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute **GLASGOW** 3 JAN. 1917
 Assigned + L.M.C. 12.16

Glasgow

Certificate (if required) to be sent to