

REPORT ON MACHINERY.

No. 16580

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Date of writing Report 19 When handed in at Local Office 12/12/1913. Port of Greenock

No. in Survey held at Greenock Date, First Survey 10th Aug. 1912 Last Survey 5th Dec. 1913
Reg. Book. (Number of Visits 91)

on the TWIN SCREW STEAMER "BERRIMA." Tons { Gross 11,137
Net 7,037 }
When built 1913.

Master *Hine* Built at Greenock By whom built Caird & Co. Ltd. when made 1913.

Engines made at Greenock By whom made Caird & Co. Ltd. when made 1913.

Boilers made at Greenock. By whom made Caird & Co. Ltd. when made 1913.

Registered Horse Power Owners Peninsular & Oriental S.N. Coy. Port belonging to Greenock

Net Horse Power as per Section 28 1200 ✓ Is Refrigerating Machinery fitted for cargo purposes Yes ✓ Is Electric Light fitted ✓

ENGINES, &c.—Description of Engines *Quadruple Expansion* ✓ No. of Cylinders *Four* ✓ No. of Cranks *Four* ✓
2 sets ✓ Dia. of Cylinders *23 1/2 - 34 1/2 - 48 1/2 - 70* ✓ Length of Stroke *54* ✓ Revs. per minute *88* ✓ Dia. of Screw shaft *12.9* ✓ Material of screw shaft *Steel* ✓
as per rule *12.9* ✓ as fitted *13.2* ✓ as per rule *13.6* ✓ as fitted *14.2* ✓

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 to 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 ✓ If 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 *12.9* ✓ as fitted *13.2* ✓ Dia. of Crank shaft journals as per rule *13.6* ✓ as fitted *14.2* ✓ Dia. of Crank pin *14.4* ✓ Size of Crank webs *15 x 10 1/2* ✓ Dia. of thrust shaft under collars *14 1/2* ✓ Dia. of screw *14 1/2* ✓ Pitch of Screw *18.0* ✓ No. of Blades *3* ✓ State whether moveable Yes ✓ Total surface ✓

No. of Feed pumps *2* ✓ Diameter of ditto *15 1/2* ✓ Stroke *24* ✓ Can one be overhauled while the other is at work Yes ✓
No. of Bilge pumps *1* ✓ Diameter of ditto *15* ✓ Stroke *24* ✓ Can one be overhauled while the other is at work ✓

No. of Donkey Engines *Five* ✓ Sizes of Pumps *2 x 10, 2 x 10, 2 x 10, 2 x 10, 2 x 10* ✓ No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room *7* STOKEHOLD. *Six - 3 1/2* dia. ✓ In Holds, &c. *Nº1 HOLD. 2 - 3 1/2* dia. *Nº2 HOLD. 2 - 3 1/2* dia. *Nº3 HOLD. 2 - 3 1/2* dia. *Nº4 HOLD. 2 - 3 1/2* dia. *Nº5 HOLD. 2 - 3 1/2* dia. TUNNEL WELLS. *2 - 3* dia. ✓

No. of Bilge Injections *2* sizes *6* ✓ Connected to condenser, or to circulating pump C. P. Is a separate Donkey Suction fitted in Engine room & size Yes ✓

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 ✓

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 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 *10/9/13* ✓ of Stern Tube *10/9/13* ✓ Screw shaft and Propeller *10/9/13* ✓

Is the Screw Shaft Tunnels watertight Yes ✓ Is it fitted with a watertight doors Yes ✓ worked from upper platform ✓

BOILERS, &c.—(Letter for record *S.V.*) Manufacturers of Steel *D. Colville & Sons Ltd.* ✓

Total Heating Surface of Boilers *11924 D.E., 1264 S.E., 1818 S.C.P.* Is Forced Draft fitted Yes ✓ No. and Description of Boilers *Four Cylindrical built (2 Double & 2 Single)* ✓ *2 DB + 2 SB*

Working Pressure *215 lbs* ✓ Tested by hydraulic pressure to *430 lbs* ✓ Date of test *5/9/13* ✓ No. of Certificate *1139* ✓

Can each boiler be worked separately Yes ✓ Area of fire grate in each boiler *147 sq. ft.* ✓ No. and Description of Safety Valves to each boiler *2: One set Spring loaded.* ✓ Area of each valve *15.9* ✓ Pressure to which they are adjusted *220 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 *20.0* ✓ Material of shell plates *Steel* ✓

Thickness *1 3/32* ✓ Range of tensile strength *30 tons* ✓ Are the shell plates welded or flanged *No* ✓ Descrip. of riveting: cir. seams *Cap Double & Single* ✓

long. seams *Double Strap* ✓ Diameter of rivet holes in long. seams *1 23/32* ✓ Pitch of rivets *10 1/2* ✓ Lap of plates or width of butt straps *2 1/4* ✓

Per centages of strength of longitudinal joint rivets *95.2* ✓ Working pressure of shell by rules *253 lbs* ✓ Size of manhole in shell *16 x 12* ✓

Size of compensating ring *8 1/4 x 1 3/32* ✓ No. and Description of Furnaces in each boiler *8: Morrison's* ✓ Material *Steel* ✓ Outside diameter *43 1/2* ✓

Length of plain part *8' 2"* ✓ Thickness of plates *8* ✓ Description of longitudinal joint *weld* ✓ No. of strengthening rings *3: T Bars, one on Bottom* ✓

Working pressure of furnace by the rules *233 lbs* ✓ Combustion chamber plates: Material *Steel* ✓ Thickness: Sides *5 1/8* ✓ Back *5 1/8* ✓ Top *3 1/2* ✓ Bottom *7 1/8* ✓

Pitch of stays to ditto: Sides *7 1/2 x 5 1/2* ✓ Back *7 1/2 x 5 1/2* ✓ Top *9 1/2 x 8 1/2* ✓ If stays are fitted with nuts or riveted heads *Nuts* ✓ Working pressure by rules *218 lbs* ✓

Material of stays *Steel* ✓ Diameter at smallest part *1 5/8* ✓ Area supported by each stay *49* ✓ Working pressure by rules *238 lbs* ✓ End plates in steam space: Material *Steel* ✓ Thickness *1 1/4* ✓ Pitch of stays *18 1/2 x 16 1/2* ✓ How are stays secured *With nuts & washers* ✓ Working pressure by rules *234 lbs* ✓ Material of stays *Steel* ✓

Diameter at smallest part *3 3/8* ✓ Area supported by each stay *209* ✓ Working pressure by rules *264 lbs* ✓ Material of Front plates at bottom *Steel* ✓

Thickness *1 3/16* ✓ Material of Lower back plate ✓ Thickness *8* ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓

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

Pitch across wide water spaces *13 1/2* ✓ Working pressures by rules *293 lbs* ✓ Girders to Chamber tops: Material *Steel* ✓ Depth and thickness of girder at centre *9 x 13* ✓ Length as per rule *8 1/2* ✓ Distance apart *8 1/2* ✓ Number and pitch of stays in each *4: 9 1/4* ✓

Working pressure by rules *223 lbs* ✓ 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

Lloyd's Register
100739-0022

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *None* 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 _____ 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:— $\frac{1}{2}$ Crank shaft, 1 Propeller shaft, 2 Propeller blades, 1 set Propeller blade studs, 1 set Crank pin Bushes, 1 Eccentric wheel & strap, 2 Piston valves, 1 set Crosshead Bushes, 4 Slide Spirals, 1 P. Piston, 1 P. Piston Hood, 4 sets Packing Rings, 1 Piston Rod, 1 Piston Rod gland, Air Pump Bucket, Rod & gratings, 1 set Spare gear for Centrifugal Pump, 2 Piston valve Packing Rings, 1 Piston valve Casings liners, 1 Thomson's shaft Coupling

The foregoing is a correct description, 2 spare armatures and list of spare gear required by the Rules.

Manufacturer.

Malcolm Fisher

Dates of Survey while building	During progress of work in shops --	1912 Aug. 10-20-28 Sept. 3-6-16-18-25 Oct. 4-8-16-29 Nov. 13-15-18-28 Dec. 4-12-17-25 1913 Jan. 6-13-15-17-21-29 Feb. 3-6-14-18-21-25-28
	During erection on board vessel ---	July 29-31 Aug. 1-6-7-15-19-27 Sept. 3-5-9-10-15-16-18-22-26 Oct. 3-9-10-30 Nov. 6-12-14-19 Dec. 1-2-4-5
	Total No. of visits	91

Is the approved plan of main boiler forwarded herewith Yes.

Dates of Examination of principal parts—Cylinders 16/5/12 Slides 19/9/12 Covers 5/12/12 Pistons 18/9/12 Rods 5/9/12

Connecting rods 5/9/12 Crank shaft *See Report* Thrust shaft 16/5/12 Tunnel shafts *See Report* Screw shaft 5/9/12 Propellers 2/9/12

Stern tubes 29/7/12 Steam pipes tested *See Report* Engine and boiler seatings 10/4/12 Engines holding down bolts 24/9/12

Completion of pumping arrangements 6/11/12 Boilers fixed 6/11/12 Engines tried under steam 5/12/12

Main boiler safety valves adjusted 6/11/12 Thickness of adjusting washers *See Report*

Material of Crank shaft *Steel* Identification Mark on Do. *Steel* Material of Thrust shaft *Steel* Identification Mark on Do. 1156 D

Material of Tunnel shafts *Steel* Identification Marks on Do. 1156 A Material of Screw shafts *Steel* Identification Marks on Do. 1156 A

Material of Steam Pipes *Wrought Iron Lap welded* Test pressure 645 lbs.

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

The Engines and Boilers of this vessel were built under Special Survey and the materials and workmanship are good. When completed they were examined while running full power trials, and found to work satisfactorily.

The machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of **LMC 12, 13** marked in the Society's Register Book

It is submitted that this vessel is eligible for THE RECORD. + LMC 12. 13. F.D.

The amount of Entry Fee .. £	3	When applied for,	12/12/13
Special £	75	When received,	26/12/13
Donkey Boiler Fee .. . £			
Travelling Expenses (if any) £			

J.W.D. Pres.
17/10/13
Wm. Austin
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute GLASGOW 16 DEC 1913

Assigned + LMC 12, 13

MACHINERY CERTIFICATE WRITTEN (12.13)



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GREENOCK

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

16.12.13