

REPORT ON MACHINERY

No. 16490

Received at London Office

WED. JUN. 25. 1913

Date of writing Report 19 When handed in at Local Office 19/6/1913 Port of Greenock

No. in Survey held at Greenock Date, First Survey 30th July 1912 Last Survey 18th June 1913
Reg. Book. on the SCREW STEAMER 'KAMO' (Number of Visits 68)

Master Built at Campbeltown By whom built Campbeltown S.B. Coy. When built 1913
Tons Gross 1236 Net 725

Engines made at Greenock By whom made Rankin & Blackmore when made 1913

Boilers made at Greenock By whom made Rankin & Blackmore when made 1913

Registered Horse Power Owners Union S.S. Co. of N.Z. Ltd Port belonging to Dunedin

Nom. Horse Power as per Section 28 159 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks Three
 Dia. of Cylinders 18"-27 1/2"-45" Length of Stroke 33" Revs. per minute 98 Dia. of Screw shaft 10.0" 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 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 3'5"

Dia. of Tunnel shaft as per rule 8.84" as fitted 8 3/8" Dia. of Crank shaft journals as per rule 9.29" as fitted 9 3/8" Dia. of Crank pin 9 3/8" Size of Crank webs 13 1/2" x 6 1/2" Dia. of thrust shaft under collars 9 3/8" Dia. of screw 12.4" Pitch of Screw 12.0" No. of Blades 4 State whether moveable No Total surface 50 sq. ft.
 No. of Feed pumps 2 Diameter of ditto 2 3/4" Stroke 18" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 18" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Three Sizes of Pumps 8" x 8" 6" x 4" x 6" 6" x 3 1/2" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Four: 2 1/4" dia! In Holds, &c. Forward Hold 2 - 2 1/4" dia!
 after Hold 1 - 2 1/2" dia! Inmisc Well 1 - 2 1/4" dia!
 No. of Bilge Injections 1 sizes 3" 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 Yes
 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 5/5/13 of Stern Tube 5/5/13 Screw shaft and Propeller 20/5/13
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper platform

BOILERS, &c.—(Letter for record X) Manufacturers of Steel W. Beardmore & Co. Ltd
 Total Heating Surface of Boilers 2324 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers Two Cylindrical mult. Single
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 1/5/13. No. of Certificate 1114
 Can each boiler be worked separately Yes Area of fire grate in each boiler 36 1/2 sq. ft. No. and Description of Safety Valves to each boiler 2: Direct Spring Loaded Area of each valve 7.06 sq. in. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork About 8" Mean dia. of boilers 11'6" Length 10'6" Material of shell plates Steel
 Thickness 1 5/16" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap Double long. seams V.W. Butt Straps Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 3/32" Lap of plates or width of butt straps 1'4 1/2"
 Per centages of strength of longitudinal joint rivets 87% plate 86.8% Working pressure of shell by rules 180 lbs. Size of manhole in shell 16" x 12"
 Size of compensating ring 20" x 26 1/4" x 1 1/8" No. and Description of Furnaces in each boiler 2: Reighton's Material Steel Outside diameter 40 1/4"
 Length of plain part top 6'9" Thickness of plates crown 1 1/8" bottom 3/32" Description of longitudinal joint Weld No. of strengthening rings none
 Working pressure of furnace by the rules 189 lbs. Combustion chamber plates: Material Steel. Thickness: Sides 5" Back 5" Top 5" Bottom 4"
 Pitch of stays to ditto: Sides 7 1/2" x 9 1/2" Back 9 1/4" x 8" Top 9 1/2" x 7 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 180 lbs
 Material of stays Section Diameter at smallest part 1 1/2" Area supported by each stay 74 sq. in. Working pressure by rules 210 lbs. End plates in steam space: Material Steel Thickness 1 1/4" Pitch of stays 16 3/4" x 15 1/4" How are stays secured V.W. Nuts Working pressure by rules 149 lbs. Material of stays Steel
 Diameter at smallest part 2 1/8" Area supported by each stay 256 sq. in. Working pressure by rules 193 lbs. Material of Front plates at bottom Steel
 Thickness 7/16" Material of Lower back plate Steel Thickness 2 5/16" Greatest pitch of stays 13" Working pressure of plate by rules 180 lbs
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/16" x 4 1/16" Material of tube plates Steel Thickness: Front 1 3/16" with 1/16" Back 4" Mean pitch of stays 8 1/8"
 Pitch across wide water spaces 13 1/2" Working pressures by rules 227 lbs. 256 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/8" x 1 1/2" Length as per rule 37 Distance apart 9 1/2" Number and pitch of stays in each 3: 7 1/2"
 Working pressure by rules 183 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
 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

W1337-0244



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:— *One Propeller and shaft, 1 Pair Crosshead brasses, 1 Pair Crank Pin brasses, 1 Feed Pump Plunger, 1 Pair Pump Link brasses, 1 Piston Rod Nut, 1 set Piston Ring for main & Auxiliary engines, 1 full set of valves & springs for each pump, 1 Air Pump Bucket Rod & Head valve Grating complete, 2 sets Air pump valves, 3 Boiler Stay tubes, 12 Main tubes, 5 Condenser tubes, 100 Gunmen frames, 1 Spring for each size*

The foregoing is a correct description, *7 escape valves, 1 Control Stay and Staps, 1 Piston Rod Head Stud Nut, 4 Valve spindles, Slide Nut, 1 Spare valve for each Boiler mounting, several sizes of Bolts, Iron of various sizes and last of spare gear required by the Society's Rules, & 2 Safety valve Springs*

Ranvir Blackmore Manufacturer. *See required by the Society's Rules, & 2 Safety valve Springs*

Dates of Survey while building: During progress of work in shops --- 1912 July 30, Aug. 14, Sept. 10, 16, 19, 26, Oct. 1, 3, 10, 11, 16, 23, 29, Nov. 5, 8, 14, 18, 25, Dec. 4, 9, 15, 18, 25, 30, 1913, Jan. 9, 13, 16, 21, 24, 25, 30, Feb. 5, 14, 18, 25, Mar. 4, 7, 8, 18, 20, 25, 26, Apr. 1, 10, 14, 21, 23, 30, May 1, 5, 6, 8, 14, 16, 17, 20, 22, 27, 29, Jun. 2, 4, 5, 9, 10, 12, 14, 17, 18.

Total No. of visits *68* Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Cylinders *5/2/13*, Slides *5/2/13*, Covers *12/6/13*, Pistons *1/4/13*, Rods *3/13*, Connecting rods *5/11/12*, Crank shaft *See report*, Thrust shaft *18/3/13*, Tunnel shafts *25/2/13*, Screw shaft *1/5/13*, Propeller *17/5/13*, Stern tube *15/4/13*, Steam pipes tested *29/5/13*, Engine and boiler seatings *5/5/13*, Engines holding down bolts *5/6/13*, Completion of pumping arrangements *10/6/13*, Boilers fixed *10/6/13*, Engines tried under steam *12/6/13*, Main boiler safety valves adjusted *10/6/13*, Thickness of adjusting washers *Port Boiler 1 1/2" to 5/16", Star Boiler 1 1/2" to 5/16"*

Material of Crank shaft *Steel* Identification Mark on Do. *2966*, Material of Thrust shaft *Steel* Identification Mark on Do. *1186*, Material of Tunnel shafts *Steel* Identification Marks on Do. *1187*, Material of Screw shafts *Steel* Identification Marks on Do. *1188*, Material of Steam Pipes *Copper 3 1/2 dia x 7 Wj.* Test pressure *450 lbs.*

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

*The Engines & Boilers of this vessel were built under special survey and the materials and workmanship are good. When completed they underwent full power trials in the berth and were 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. 6, 13** marked in the Society's Register Book.*

It is submitted that this vessel is eligible for **THE RECORD. + LMC. 6. 13.**

F.D. *JWR* *26/6/13*
Wm. Austin
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

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|------------------------------|---------------|-------------------|--|
| The amount of Entry Fee | £ 2 : . . . | When applied for, | |
| Special | £ 23 : 17 : . | 19/6/13 | |
| Donkey Boiler Fee | £ | When received, | |
| Travelling Expenses (if any) | £ 1 : 2/6 : . | 30/6/13 | |

Committee's Minute **GLASGOW 24 JUN. 1913**

Assigned **+ LMC 6.13**
F.D.

Certificate (if required) to be sent to _____

