

REPORT ON MACHINERY.

No. 13968

16 JUN 1894

Port of Greenock

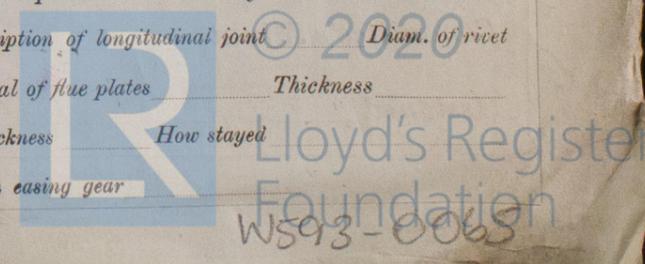
Received at London Office 10

No. in Survey held at Greenock Date, first Survey 11th Aug/03 Last Survey 7th June 1904
 Reg. Book. Greenock (Number of Visits) 1
 on the Screw Steamer "Highland Heather" Tons { Gross 114 Net 92
 Master Alford Built at Port Glasgow By whom built Russell & Co When built 1904
 Engines made at Greenock By whom made Rankin & Blackmore when made 1904
 Boilers made at Greenock By whom made Rankin & Blackmore when made 1904
 Registered Horse Power _____ Owners The Nelson Line (Limited) Port belonging to London
 Nom. Horse Power as per Section 28 640 Is Refrigerating Machinery fitted Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks Three
 Dia. of Cylinders 28"-47"-78" Length of Stroke 54" Revs. per minute 66 Dia. of Screw shaft as per rule 16" Material of screw shaft Iron
 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 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 Yes If two liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 5'-6 1/2"
 Dia. of Tunnel shaft as per rule 14.8 Dia. of Crank shaft journals as per rule 15.6 Dia. of Crank pin 15 3/4" Size of Crank webs 108" x 24" Dia. of thrust shaft under collars 15 3/4" Dia. of screw 18' 6" Pitch of screw 19' 0" No. of blades 4 State whether moveable Yes Total surface 92 Sq. feet projected
 No. of Feed pumps 2 Diameter of ditto 6 1/2" Stroke 10" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 31" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Two Sizes of Pumps (6x4x6) (9x10x15) No. and size of Suctions connected to both Bilge and Donkey pumps Ballast
 In Engine Room Three: 3 1/2" dia. In Holds, &c. No. 1 Hold: 2-3 1/2" dia. No. 2 Hold: 2-3 1/2" dia. Tunnel Hall: 1-2 1/2" dia.
 No. of bilge injections 1 sizes 6 1/2" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room of size Yes: 3 1/2"
 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 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 Hold Suctions How are they protected By Strong Casings
 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
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock Not used Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from Upper platform in Engine Room

BOILERS, &c.— (Letter for record B.) Total Heating Surface of Boilers 9560 Sq. ft. Is forced draft fitted Yes to main boiler
 No. and Description of Boilers 1 Auxiliary & 1 Main Boiler Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs
 Particulars of Main Boilers. Date of test 18/4/04 Can each boiler be worked separately Yes Area of fire grate in each boiler 56 Sq. ft. No. and Description of safety valves to each boiler 2: Spring Area of each valve 9.62 sq. in. Pressure to which they are adjusted 200 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork About 24" Mean dia. of boilers 15' 0" Length 12' 0" Material of shell plates Steel
 Thickness 1 1/2" Range of tensile strength 29,320 lbs Are they welded or flanged No Descrip. of riveting: cir. seams Double rivet long. seams Butt Strap
 Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 9 3/4" Lap of plates or width of butt straps 2 1/2"
 Per centages of strength of longitudinal joint rivets 91.5 Working pressure of shell by rules 228 lbs Size of manhole in shell 16" x 12"
 Size of compensating ring 33" x 27" x 1 1/8" No. and Description of Furnaces in each boiler 3: Deighton Material Steel Outside diameter 48 1/4"
 Length of plain part top 2' 10" bottom 2' 10" Thickness of plates top 3/32" bottom 3/32" Description of longitudinal joint Weld No. of strengthening rings None
 Working pressure of furnace by the rules 222 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 3/8" Back 1 3/8" Top 5" Bottom 4"
 Pitch of stays to ditto: Sides 7/16" x 7/16" Back 7/16" x 7/16" Top 8" x 8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 205 lbs
 Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 59 sq. in. Working pressure by rules 200 lbs End plates in steam space: Material Steel Thickness 1 3/4" Pitch of stays 15" x 15 3/8" How are stays secured Double Nuts Working pressure by rules 273 lbs Material of stays Steel
 Diameter at smallest part 2 5/8" Area supported by each stay 231 sq. in. Working pressure by rules 230 lbs Material of Front plates at bottom Steel
 Thickness 3/8" Material of Lower back plate Steel Thickness 3/8" Greatest pitch of stays 12 1/2" Working pressure of plate by rules 211 lbs
 Diameter of tubes 2 1/2" Pitch of tubes 3 1/8" x 3 1/8" Material of tube plates Steel Thickness: Front 1 1/8" Back 3/4" Mean pitch of stays 4 3/8"
 Pitch across wide water spaces 13" Working pressures by rules 316 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 11" x 1 1/2" Length as per rule 28.4" Distance apart 8" Number and pitch of Stays in each 3: 8"
 Working pressure by rules 384 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 _____ 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 _____

If not, state whether, and when, one will be sent? To a Report also sent on the Hull of the Ship?



DONKEY BOILER— No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety valves _____

No. of safety valves _____ Area of each _____ Pressure to which they are adjusted _____ 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 _____ 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 _____

Thickness of furnace crown plates _____ Stayed by _____ Working pressure of shell by rules _____

Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *Two propeller blades, Flywheel escape valve spring, 12 Coupling Bolts, 6 pin Key Bolts, 12 Boiler tubes, 50 condenser tubes, 1 set Safety valve spring, 1 propeller shaft, 1 Main Bearing Bush, 1 Crank pin Bush, 1 Air pump rod, 1 set Rambottom Rings for H.P. & L.P. pistons, 1 set Stud & Brass nuts for propeller Boss. Spare gear for San Dymie, 1 set Air pump valves, 1 set Circulating pump valves, 1 set Ball valves, 1 set Check valves, and list of spare gear as required by the Rules.*

The foregoing is a correct description, *required by the Rules.*

Ramsden Macmillan Manufacturer.

Dates of Survey while building

During progress of work in shops - -	1903: Aug. 11, 17, 19, 24. Sep. 3, 7, 11, 15, 21, 24. Oct. 1, 5, 9, 13, 16, 20, 23, 28. Nov. 2, 5, 10, 13, 17, 20
During erection on board vessel - -	26. Dec. 1, 4, 9, 11, 15, 16, 18, 23, 28, 29, 31. 1904. Jan. 13, 14, 15, 22, 25, 28. Feb. 3, 4, 8, 10, 12, 18, 24. Mar. 1, 4, 8, 15, 18, 19, 22, 28, 31. April 6, 7, 12, 16, 18, 29. May 2, 6, 7, 12, 13, 17, 19, 20, 23, 24, 25.
Total No. of visits	76

Is the approved plan of main boiler forwarded herewith } *with report*

" " " *Amulius donkey* " " " } *on test*

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

The Engines and Boilers of this vessel have been built under Special Survey and the materials and workmanship are good. When completed they were examined while running full power trials in the Suez, 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 6,04** marked in the Society's Register Book.

It is submitted that this vessel is eligible for THE RECORD **LMC 6.04** F.D. ELEC LIGHT REF: MCHY.

J.S.
22.6.04

The amount of Entry Fee... £ 3 : : : When applied for, 14.6.1904

Special ... £ 52 : : : When received, 15.6.1904

Donkey Boiler Fee ... £ : : : *Ramsden Macmillan*

Travelling Expenses (if any) £ : : : *Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.*

Glasgow 20 JUN 1904

Assigned **LMC 6.04**

MACHINERY CERTIFICATE WRITTEN.

© 2020 Lloyd's Register Foundation

Certificate (if registered) to be sent to the Registrar of Shipping, Glasgow, or below the space for Committee's Minute.