

REPORT ON MACHINERY.

No. 13968

JUN 27 1894

Port of Greenock

Received at London Office

19

No. in Survey held at Greenock
Reg. Book.Date, first Survey 11th Aug/03Last Survey 7th June 1904

on the

Screw Steamer "Highland Heather"

(Number of Visits)

Tons { Gross
NetWhen built 1904.Master Alford.Built at Port Glasgow.By whom built Russell & Co.Engines made at GreenockBy whom made Rankin & Blackmorewhen made 1904.Boilers made at Greenock.By whom made Rankin & Blackmore.when made 1904.

Registered Horse Power

Owners The Nelson Line (Limited) LtdPort belonging to London.Nom. Horse Power as per Section 28 640Is Refrigerating Machinery fitted Yes.Is Electric Light fitted Yes.ENGINES, &c.—Description of Engines Triple ExpansionNo. of Cylinders ThreeNo. of Cranks ThreeDia. of Cylinders 28"-47"-78"Length of Stroke 54"Revs. per minute 66

Dia. of Screw shaft

as per rule 16"Material of IronIs 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 partbetween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓liners are fitted, is the shaft lapped or protected between the liners ✓Length of stern bush 5'-6 1/2"Dia. of Tunnel shaft as per rule 14'-8"as fitted 14'-8"Dia. of Crank shaft journals as per rule 15'-6"as fitted 15'-4"Dia. of Crank pin 15'-4"Size of Crank webs 108"x24"collars 15'-4" Dia. of screw 18'-6" Pitch of screw 19'-0"No. of blades 4State whether moveable YesTotal surface 92 Sq. feet projectedNo. of Feed pumps 2Diameter of ditto 6 1/2"Stroke 10"Can one be overhauled while the other is at work YesNo. of Bilge pumps 2Diameter of ditto 4 1/2"Stroke 31"Can one be overhauled while the other is at work YesNo. of Donkey Engines TwoSizes of Pumps (6"x4"x6") (9"x10"x15")

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Three: 3 1/2" dia.In Holds, &c. 4 1/2" Hold: 2-3 1/2" dia. 4 1/2" Hold: 2-3 1/2" dia.4 1/2" Hold: 2-3 1/2" dia. 4 1/2" Hold: 2-3 1/2" dia. Tunnel Hall: 1-2 1/2" dia.No. of bilge injections 1sizes 6 1/2"Connected to condenser, or to circulating pump C.P.Is a separate donkey suction fitted in Engine room & size Yes: 3 1/2"Are all the bilge suction pipes fitted with roses YesAre the roses in Engine room always accessible YesAre the sluices on Engine room bulkheads always accessible ✓Are all connections with the sea direct on the skin of the ship YesAre they Valves or Cocks BothAre they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates YesAre the discharge pipes above or below the deep water line AboveAre they each fitted with a discharge valve always accessible on the plating of the vessel YesAre the blow off cocks fitted with a spigot and brass covering plate YesWhat pipes are carried through the bunkers Hold SuctionsHow are they protected By Strong CasingsAre all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times YesAre the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges YesWhen were stern tube, propeller, screw shaft, and all connections examined in dry dock Not Examined Is the screw shaft tunnel watertight YesIs 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 boilersNo. and Description of Boilers 1 Auxiliary & 3 Main Boilers 4 1/2" thickWorking Pressure 200 lbsTested by hydraulic pressure to 400 lbs

Particulars of Main Boilers

Date of test 18/4/04Can each boiler be worked separately YesArea of fire grate in each boiler 56 Sq. ft. No. and Description of safety valves toeach boiler 2: Safety SpringArea of each valve 9.62 sq. in.Pressure to which they are adjusted 200 lbsAre they fitted with easing gear YesSmallest distance between boilers or uptakes and bunkers or woodwork About 24" Mean dia. of boilers 15'-0" Length 12'-0" Material of shell plates SteelThickness 1 1/2"Range of tensile strength 29,000 lbsAre they welded or flanged NoDescrip. of riveting: cir. seams Double rivetlong. seams Double rivetDiameter of rivet holes in long. seams 1 1/2"Pitch of rivets 9 1/4"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 lbsSize of manhole in shell 16"x12"Size of compensating ring 33"x27"x1 1/2"No. and Description of Furnaces in each boiler 3: DoughtonMaterial Steel Outside diameter 48 1/4"

Length of plain part

top 4'-10"bottom 4'-10"

Thickness of plates

crown 3 1/2"Description of longitudinal joint WeldedNo. of strengthening rings NoneWorking pressure of furnace by the rules 222 lbsCombustion chamber plates: Material Steel Thickness: Sides 3 1/2" Back 3 1/2" Top 5" Bottom 4"Pitch of stays to ditto: Sides 7/16"x7/16" Back 7/16"x7/16" Top 8"x8" If stays are fitted with nuts or riveted heads WeldedWorking pressure by rules 205 lbsMaterial of stays SteelDiameter 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 1/4"Pitch of stays 15"x15 1/8"How are stays secured Double nutsWorking pressure by rules 200 lbsDiameter at smallest part 2 5/8"Area supported by each stay 231 sq. in.Working pressure by rules 230 lbsMaterial of Front plates at bottom SteelThickness 2 1/8"Material of Lower back plate SteelThickness 2 1/8"Greatest pitch of stays 12 1/2"Working pressure of plate by rules 211 lbsDiameter of tubes 2 1/2"Pitch of tubes 3 1/2"x3 1/2"Material of tube plates Steel Thickness: Front 1 3/4" Back 3 1/4" Mean pitch of stays 4 3/8"Pitch across wide water spaces 13"Working pressures by rules 316 lbsGirders to Chamber tops: Material Steel

Depth and

thickness of girder at centre 11"x1 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 lbsSuperheater 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

Foundation

W593-0065

If not, state whether, and when, one will be sent?

Is a Report also sent on the Hull of the Ship?

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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, 3 Flym's escape valves & springs, 12 Coupling Bolts, 12 Ring Bolts, 12 Boiler tubes, 50 Condenser tubes, 1 Set Safety valve springs, 1 propeller shaft, 1 Main Bearing Bush, 1 Crank pin Bush, 1 Air pump rod, 1 Set Ramcliff Bottom Ring for H.P. & L.P. pistons, 1 Set Stud & Brass nuts for propeller Boss. Spare gear for Fan Engine, 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.*

Hammond Blaisdell 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.
		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 3. 6. 7. 12. 13. 17. 19. 20. 23. 24. 25.
		Total No. of visits 76

Is the approved plan of main boiler forwarded herewith *Yes* *on instructions*

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 Docks, 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 L.M.C. 6.04 F.D. ELEC LIGHT REF: MCHV.

22.6.04

The amount of Entry Fee. £ *3* : : : When applied for, *14.6.04*

Special £ *52* : : : When received, *15.6.04*

Donkey Boiler Fee £ : : : *Wm. R. Austin*

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

Glasgow 20 JUN 1904

Committee's Minute

Assigned *+ L.M.C. 6.04.*

MACHINERY CERTIFICATE WRITTEN.

