

REPORT ON MACHINERY.

Port of Greenock

Received at London Office 18 31 MAY 1894

No. in Survey held at Port Glasgow & Greenock Date, first Survey June 7 1893 Last Survey 13 May 1894
Reg. Book. Supplement (Number of Visits 109)

45 on the Screw Steamer "Strathgairn"

Tons { Gross 4142.03
Net 2678.41
When built 1894

Master R. MacKenzie Built at Greenock By whom built Russell & Co.

Engines made at Port Glasgow By whom made Blackwood & Gordon when made 1894

Boilers made at do By whom made do when made 1894

Registered Horse Power 353 Owners Russell & Co. Port belonging to Glasgow

Nom. Horse Power as per Section 28 347

ENGINES, &c.— Description of Engines Inverted Direct Acting Triple Expansion No. of Cylinders Three
 Diameter of Cylinders 26.42 & 69 Length of Stroke 48 Revolutions per minute 70 Diameter of Screw shaft as per rule 12.6
 Diameter of Tunnel shaft as per rule 12 Diameter of Crank shaft journals 13 1/2 Diameter of Crank pins 3 1/2 Size of Crank webs 18 x 8 1/2
 Diameter of screw 17.6 Pitch of screw 18.3 No. of blades 4 State whether moveable yes Total surface 76 projected
 No. of Feed pumps Two Diameter of ditto 4 1/2 Stroke 30 Can one be overhauled while the other is at work yes
 No. of Bilge pumps Two Diameter of ditto 4 1/2 Stroke 30 Can one be overhauled while the other is at work yes
 No. of Donkey Engines Three Sizes of Pumps 2 x 14, 1 1/2 x 12, 1 1/2 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3 1/2 In Holds, &c. Eight 3 1/2 in holds & cross-bunkers and one in tunnel well
 No. of bilge injections one sizes 6 Connected to condenser, or to circulating pump via pump a separate donkey suction fitted in Engine room & size 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 none fitted
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks, valves
 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 bilge pipes How are they protected wood casing
 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 on slip before launching Is the screw shaft tunnel watertight yes
 Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 5500 square feet
 No. and Description of Boilers Three Round Horizontal Iron Horizontal Working Pressure 170 lbs Tested by hydraulic pressure to 340 lbs
 Date of test 26.3.94 Can each boiler be worked separately yes Area of fire grate in each boiler 42.74 sq feet No. and Description of safety valves to each boiler Two Direct Spring Area of each valve 5.94 sq in Pressure to which they are adjusted 174 lbs Are they fitted with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 3.0 Mean diameter of boilers 13.6
 Length 11.6 Material of shell plates Steel Thickness 1 1/2 Description of riveting: circum. seams Lap double long. seams Double treble
 Diameter of rivet holes in long. seams 1 1/2 Pitch of rivets 7 1/2 & 3 1/2 Lap of plates or width of butt straps 16 1/2 straps
 Per centages of strength of longitudinal joint rivets 87.8 Working pressure of shell by rules 170 lbs Size of manhole in shell 16 x 12
 Size of compensating ring 28 1/2 x 2 1/2 x 1 1/2 No. and Description of Furnaces in each boiler Three ribbed Material Steel Outside diameter 39
 Length of plain part 9 Thickness of plates crown 1/2 Description of longitudinal joint welded No. of strengthening rings —
 Working pressure of furnace by the rules 178 lbs Combustion chamber plates: Material Steel Thickness: Sides 9/16 Back 3/2 Top 9/16 Bottom 7/8
 Pitch of stays to ditto: Sides 7 3/4 x 7 3/4 Back 8 1/2 x 8 1/2 Top 7 3/4 x 7 3/4 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 174 lbs
 Material of stays Steel Diameter at smallest part 1 3/8 Area supported by each stay 60.68 sq in Working pressure by rules 174 lbs End plates in steam space: Material Steel Thickness 3/32 Pitch of stays 1 5/8 x 1 5/8 How are stays secured double nut Working pressure by rules 172 lbs Material of stays Steel
 Diameter at smallest part 2 1/4 Area supported by each stay 242 sq in Working pressure by rules 173 lbs Material of Front plates at bottom Steel
 Thickness 3/4 Material of Lower back plate Steel Thickness 23/32 Greatest pitch of stays 13 3/4 Working pressure of plate by rules 182 lbs
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/8 Material of tube plates Steel Thickness: Front 3/16 Back 3/4 Mean pitch of stays 9.68
 Pitch across wide water spaces 14 Working pressures by rules 194 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 3/4 x 7/8 double Length as per rule 32 Distance apart 7 1/2 Number and pitch of Stays in each Three 7 3/4
 Working pressure by rules 173 lbs Superheater or Steam chest; how connected to boiler — 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 —

If not, state whether, and when, one will be done. Report also sent to the Hull of the ship? Yes

Form No. 8. - 1-2-92. - Copyable in



DONKEY BOILER— Description *See attached Report*

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 _____

Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____

Description of riveting long seams _____ Diameter 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:— *1 length crank shaft, 1 propeller shaft complete, 1 H.P. Centre spindle, 1 I.P. & 1 E.P. do., 4 propeller blades & studs & nuts for same, 12 junkie ring pins, 1 set of springs for each piston, 12 studs for Cylinder Covers, 1 set valves & seats for bilge & feed pumps, 2 bottom end & 4 top end bolts & nuts, 2 brass*

The foregoing is a correct description,

Blackburn & Sons Manufacturer.

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

These Engines and Boilers have been specially examined during construction, quality of workmanship good. Shafts examined when being turned & found apparently sound. Main Steam pipes tested by hydraulic pressure to 320 lbs per sq. inch, tests satisfactory. The Machinery and Boilers are satisfactorily fitted in board and have been tested under full steam they are now in good order and safe working condition and are in my opinion eligible to be noted in Register Book. L.M.C. 5, 94.

Spare gear Continued

bearing bolts & nuts, 2 sets coupling bolts & nuts, 2 eccentric bolts & 2 studs for eccentric rod bottom end, 12 Quantity Metal studs for pumps, 2 Springs for safety valve, 1 Spring for feed relief, 24 tubes for Main boiler (18 plain & 6 stay), 12 tubes for Donkey boiler (10 plain & 2 stay), 36 tubes for Condenser, & 50 screws & ferrules, 3 check valves for Main Boilers, 2 glands & 4 bolts for boiler doors, 1/2 set furnace bars for Main boiler, 1/2 set for Donkey boiler, 1 set valves for air pump, 1 do for circulating pumps, 1 do for ballast pump, fine plates for boiler, & quantity of bolts & nuts & iron assorted.

This vessel's Main boilers are fitted with forced draught, Howden's system.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 5-94

H.A. 31-5-94

Certificate (if required) to be sent to *Greenock Office*

The amount of Entry Fee..	£ 3 :	When applied for,
Special	£ 57 : 7 :	25 5 18 94
Donkey Boiler Fee	£ :	When received,
Travelling Expenses (if any) £	:	18

A.B. Merrin
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
Greenock District.

Committee's Minute **FRI. 1 JUN 1894**
Assigned **+ L.M.C. 5, 94**



The Signatures are required not to write on or below the space for Committee's Minute.