

REPORT ON MACHINERY.

No. 14998.

Port of Greenock

Received at London Office **TUES. MAR 26 1907**

No. in Survey held at Greenock

Date, first Survey 4th April 1906 Last Survey 15th March 1907

Reg. Book.

on the **SCREW STEAMER "SPRINGBURN."**

(Number of Visits 61)

Tons { Gross 4955.99
Net 3172.69

Master Crosthwaite 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 Burn Line Limited Port belonging to Greenock

Nom. Horse Power as per Section 28 471 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 27"-44"-43" Length of Stroke 48" Revs. per minute 69 Dia. of Screw shaft 14.9" 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 - If two liners are fitted, is the shaft lapped or protected between the liners - Length of stern bush 64"

Dia. of Tunnel shaft 13.3" Dia. of Crank shaft journals 14" Dia. of Crank pin 14" Size of Crank webs 9x18 1/2" Dia. of thrust shaft under collars 14" Dia. of screw 18.3" Pitch of Screw 18.9" No. of Blades 4 State whether moveable No Total surface 110 sq. ft.

No. of Feed pumps 1 Diameter of ditto 4" Stroke 26" Can one be overhauled while the other is at work - Lamont's Feed Pumps

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 26" Can one be overhauled while the other is at work Yes 8"x6"x8" Duplex

No. of Donkey Engines Three Sizes of Pumps 9"x11"x10" (7"x4 1/2"x8") (4"x2 1/2"x5") No. and size of Suctions connected to both Bilge and Donkey pumps -

In Engine Room Three 3 1/2" dia. In Holds, &c. No. 1 Hold: Two-3 1/2" dia. No. 2 Hold: Two-3 1/2" dia.

No. 3 Hold (Deep Tanks) Two-6" dia. & Two-3 1/2" dia. No. 4 Hold: Two-3 1/2" dia. Funnel Well: One-2 1/2" dia.

No. of Bilge Injections 1 sizes 5 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 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 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 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 14/2/07 of Stern Tube 14/2/07 Screw shaft and Propeller 11/2/07

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top platform in Engine Room

BOILERS, &c.—(Letter for record \$.) Manufacturers of Steel Steel Co. of Scotland

Total Heating Surface of Boilers 6542 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers 2: Cylindrical built: Single ended

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 24/1/07 No. of Certificate 811

Can each boiler be worked separately Yes Area of fire grate in each boiler 66 sq. ft. No. and Description of Safety Valves to each boiler 2: Direct Spring Area of each valve 12.56 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 14" Mean dia. of boilers 16.6" Length 12.0" Material of shell plates Steel

Thickness 1 5/16" Range of tensile strength 28 1/2 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap, Double

long. seams Double Butt Straps Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 1/16" 4.84" Lap of plates or width of butt straps 20 1/2"

Per centages of strength of longitudinal joint rivets 86.8 plate 85.8 Working pressure of shell by rules 182 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring Plate flanged No. and Description of Furnaces in each boiler 4: Doughton's Material Steel Outside diameter 44 1/4"

Length of plain part 8 1" Thickness of plates 14" Description of longitudinal joint Weld No. of strengthening rings None

Working pressure of furnace by the rules 184 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5" Back 5" Top 5" Bottom 4"

Pitch of stays to ditto: Sides 8" x 9 1/4" Back 7 1/2" x 9 1/8" Top 8" x 9 1/4" If stays are fitted with nuts or riveted heads Auto Working pressure by rules 181 lbs.

Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 43 1/2 sq. in. Working pressure by rules 192 lbs. End plates in steam space:

Material Steel Thickness 1 3/4" Pitch of stays 20 5/8" x 16 1/2" How are stays secured Double nuts & washers Working pressure by rules 181 lbs. Material of Front plates at bottom Steel

Diameter at smallest part 2 1/8" Area supported by each stay 340 sq. in. Working pressure by rules 184 lbs. Material of Front plates at bottom Steel

Thickness 3/8" Material of Lower back plate Steel Thickness 1 1/16" Greatest pitch of stays 12 1/2" Working pressure of plate by rules 190 lbs.

Diameter of tubes 2 1/2" Pitch of tubes 23 3/4" x 23 3/4" Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 9.3"

Pitch across wide water spaces 13 1/4" Working pressures by rules 248 lbs. 2x3 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10" x 1 5/8" Length as per rule 33.6" Distance apart 9 1/2" Number and pitch of stays in each 5: 8"

Working pressure by rules 203 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 superheat Are they fitted with easing gear

8020-8151
1998-8208



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. one Description Cylinder multi Single End
 Made at Parsley By whom made A. F. Craig & Co When made 1906 Where fixed on deck
 Working pressure 100 lbs tested by hydraulic pressure to 200 lbs Date of test 25/10/06 No. of Certificate 8392 Fire grate area 20 sq ft Description of Safety
 Valves Direct Spring No. of Safety Valves 2 Area of each 5.94 sq in Pressure to which they are adjusted 105 lbs Date of adjustment 12/3/07
 If fitted with easing gear Yes If steam from main boilers can enter the donkey boiler No 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 _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— 1 Propeller and shaft; 12 Coupling Bolt nuts; 2 Connecting Rod
(both ends) Bolt nuts; 2 Crosshead Bolt nuts; 2 Main Bearing Bolt nuts; 1 Set safety valve spring
12 Condenser tubes; 2 Feed Pump valves; 2 Bilge pump valves; 1 set air pump valves; 1 set check valve
for 1st Kamelottan Pump; 1 set crank pin bushes; 56 lb White Metal; 3 Cylinder Escape valves & Springs
1 Feed Inlet valve & Spring; 12 Boiler tubes; 6 Holding down Bolt
6 Furn. Ring Bolts; 6 Expt. Cover studs; 6 Valve chest cover studs; etc etc.

The foregoing is a correct description,

Ramsay Macdonald Manufacturer.

Dates of Survey while building
 During progress of work in shops— 1906. April 4. 12. 16. 25. 28. May 2. 17. 21. 29. June 6. 14. 21. 26. July 2. 4. 18. 21. Aug 14. 20. 29. Sep 6.
 During erection on board vessel — 12. 20. 27. 28. Oct 4. 9. 18. 26. 31. Nov 5. 9. 13. 16. 20. 24. 28. Dec 5. 11. 12. 18. 21. 24. 29. 1907— Jan 10. 16. 17. 24. Feb 1. 5.
 Total No. of visits 61. Is the approved plan of main boiler forwarded herewith Yes.

Dates of Examination of principal parts—Cylinders 15/3/07 Slides 27/9/06 Covers 15/3/07 Pistons 27/9/06 Rods 6/9/06
 Connecting rods 6/9/06 Crank shaft Glasgow Thrust shaft 20/11/06 Tunnel shafts 20/11/06 Screw shaft 20/11/06 Propeller 11/2/07
 Stern tube 14/2/07 Steam pipes tested 26 & 27/2/07 Engine and boiler seatings 12/3/07 Engines holding down bolts 12/3/07
 Completion of pumping arrangements 13/3/07 Boilers fixed 12/3/07 Engines tried under steam 15/3/07
 Main boiler safety valves adjusted 12/3/07 Thickness of adjusting washers PK 7/8 in. SV 7/8" PK 7/8 in. SV 7/8 in. PK 3/4 in. SV 3/4 in.
 Material of Crank shaft _____ Identification Mark on Do. _____ Material of Thrust shaft Steel Identification Mark on Do. 420
 Material of Tunnel shafts Steel Identification Marks on Do. 412 & 419 Material of Screw shafts Iron Identification Marks on Do. 412
 Material of Steam Pipes Copper Test pressure 400 lbs sq in

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 under steam while running full
power trials in the Firth 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 3.07 marked in the Society's Register Book.

It is submitted that
 this vessel is eligible for
 THE RECORD. + LMC 3.07. Electric Light F.D.

JRS
28/3/07
28.3.07

The amount of Entry Fee.. £ 3 : When applied for, 19/3/1907
 Special £ #3 : 11 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 Committee's Minute Glasgow 5 MAR 1907
 Assigned + LMC 3.07.

Wm R. Austin
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



Greenock.

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