

REPORT ON MACHINERY.

No. 15323.

Date of writing Report 11th March 1908 When handed in at Local Office 13th March 1908 Port of Glasgow Received at London Office TUES. 17 MAR 1908

No. in Survey held at Port Glasgow Date, First Survey 9th Oct. 1907 Last Survey 13th March 1908
 Reg. Book. (Number of Visits 37)

As built on the **SCREW STEAMER DARENT.**

Master W.M. Johnston Built at Port Glasgow By whom built Ferguson Bros. Tons { Gross 171.57
 Engines made at Port Glasgow By whom made Ferguson Bros. when made 1908
 Boilers made at Port Glasgow By whom made Glyde S.B. & Eng. Co. Ltd. when made 1908
 Registered Horse Power 84 Owners Conservators of the River Thames Port belonging to London
 Nom. Horse Power as per Section 28 84 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 14-21½-35 Length of Stroke 24 Revs. per minute 122 Dia. of Screw shaft 8.2 Material of Iron
 as fitted 8.4 screw shaft

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No. 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 ✓ 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 3.6

Dia. of Tunnel shaft 6.4 Dia. of Crank shaft journals 4.06 Dia. of Crank pin 4.8 Size of Crank webs 10 x 4½ Dia. of thrust shaft under

collars 4.8 Dia. of screw 10.0 Pitch of Screw 10.3 No. of Blades 3 State whether moveable No. Total surface 30 sq. ft.

No. of Feed pumps 1 Diameter of ditto 3 Stroke 12 Can one be overhauled while the other is at work Yes.

No. of Bilge pumps 1 Diameter of ditto 3 Stroke 12 Can one be overhauled while the other is at work Yes.

No. of Donkey Engines Three Sizes of Pumps 5 x 3 x 5-10 x 6 x 10-5½ x 3½ x 4 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Two: 2" dia. In Holds, &c. Forward: one-2" dia. Aft: one-2" dia.

No. of Bilge Injections 1 sizes 4 Connected to condenser, or to circulating pump No. Is a separate Donkey Suction fitted in Engine room & size Yes. 2½"

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 Auxiliary Main Steam pipes. How are they protected By steel plate tube.

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 21/1/08 of Stern Tube 21/1/08 Screw shaft and Propeller 21/1/08

Is the Screw Shaft Tunnel watertight None. After Bulkhead is Is it fitted with a watertight door worked from either side.

BOILERS, &c.—(Letter for record 3) Manufacturers of Steel Steel 604 of Scotland

Total Heating Surface of Boilers 1540 Is Forced Draft fitted No. No. and Description of Boilers One. Cylindrical. Single End.

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 3/2/08 No. of Certificate 845.

Can each boiler be worked separately ✓ Area of fire grate in each boiler 60 sq. ft. No. and Description of Safety Valves to

each boiler 2: Direct Spring Area of each valve 4.06 Pressure to which they are adjusted 184 lbs. Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 11" Mean dia. of boilers 13.6" Length 10.6" Material of shell plates Steel

Thickness 1½" 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 Double Strap Diameter of rivet holes in long. seams 1½" Pitch of rivets 8½" Lap of plates or width of butt straps 18½"

Per centages of strength of longitudinal joint 88 Working pressure of shell by rules 206 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring Flanged Ring No. and Description of Furnaces in each boiler 3: Brown Material Steel Outside diameter 42"

Length of plain part 7.1" Thickness of plates 1½" Description of longitudinal joint Weld. No. of strengthening rings None.

Working pressure of furnace by the rules 180 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5" Back 3½" Top 5" Bottom 5"

Pitch of stays to ditto: Sides 9 x 8" Back 8½ x 8" Top 8 x 8" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 181 lbs.

Material of stays Steel Diameter at smallest part 1½" Area supported by each stay 42" Working pressure by rules 196 lbs. End plates in steam space:

Material Steel Thickness 1½" Pitch of stays 16 x 21" How are stays secured Double Nuts Working pressure by rules 191 lbs. Material of stays Steel

Diameter at smallest part 3½" Area supported by each stay 336" Working pressure by rules 232 lbs. Material of Front plates at bottom Steel

Thickness 3½" Material of Lower back plate Steel Thickness 3½" Greatest pitch of stays 13½" Working pressure of plate by rules 201 lbs.

Diameter of tubes 3½" Pitch of tubes 4½ x 4½" Material of tube plates Steel Thickness: Front 2½" Back 3½" Mean pitch of stays 9½"

Pitch across wide water spaces 14½" Working pressures by rules 272 lbs. Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 9 x 12" Length as per rule 32" Distance apart 8" Number and pitch of stays in each 3: 8"

Working pressure by rules 223 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 superheater ✓ Are they fitted with easing gear ✓

007938-007946-0075

VERTICAL DONKEY BOILER—

No. *None* Description *Manufacturers of Steel*
 Made at _____ By whom made _____
 Working pressure _____ tested by hydraulic pressure to _____ Date of test _____ When made _____ Where fixed _____
 Valves _____ No. of Safety Valves _____ Area of each _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____
 If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Pressure to which they are adjusted _____ Date of adjustment _____
 Material of shell plates _____ Thickness _____ Range of tensile strength _____ Dia. of donkey boiler _____ Length _____
 Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Descrip. of riveting long. seams _____
 Working pressure of shell by rules _____ Thickness of shell crown plates _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____
 Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____ Plates _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Thickness of furnace plates _____ Description of joint _____
 Diameter of uptake _____ Thickness of uptake plates _____ Stayed by _____
 Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— 1 Propeller, 12 Boiler tubes 10 Condenser tubes 1 set air pump valves, 1 set Circulating pump valves 1 set Donkey pump valves 1 set feed pump valves 1 set Belgi pump valves, 15 Tube stoppers, 2 main Bearing Bolts, 2 Grand pin Bolts, 2 Crosshead Bolts 1 set Coupling Bolts. Assorted sizes of Bolts nuts and iron of various sizes.
 The foregoing is a correct description,

Manufacturer. *Lurgan Bros*
 Dates of Survey while building { During progress of work in shops - 1907. Oct. 9. 15. 18. 25. 30. Nov. 1. 12. 14. 22. 28. 29. Dec. 5. 6. 10. 12. 17. 31. 1908 Jan 8
 { During erection on board vessel - 14. 15. 21. 28. 29. 31. Feb. 3. 4. 10. 14. 17. 18. 24. 26. 28. Mar. 6. 7. 9. 10. 11. 13.
 Total No. of visits 38

Is the approved plan of main boiler forwarded herewith *Yes*
 Dates of Examination of principal parts—Cylinders 14/1/08. Slides 14/1/08. Covers 10/3/08. Pistons 14/11/04. Rods 22/11/04.
 Connecting rods 22/11/04. Crank shaft 14/11/04. Thrust shaft 14/11/04. Tunnel shafts 14/11/04. Screw shaft 14/11/04. Propeller 21/1/08.
 Stern tube 21/1/08. Steam pipes tested 24/2/08. Engine and boiler seatings 24/2/08. Engines holding down bolts 18/2/08.
 Completion of pumping arrangements 9/2/08. Boilers fixed 18/2/08. Engines tried under steam 10/2/08.
 Main boiler safety valves adjusted *B. March 1908*. Thickness of adjusting washers *PORT VALVE 19" 32" STARB VALVE 19" 32"*
 Material of Crank shaft *Steel* Identification Mark on Do. *146*. Material of Thrust shaft *Steel* Identification Mark on Do. *644*.
 Material of Tunnel shafts *Steel* Identification Marks on Do. *648*. Material of Screw shafts *Iron* Identification Marks on Do. *646*.
 Material of Steam Pipes *Copper S.D. 3 1/2 dia* Test pressure *360 lbs*.

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Engines and Boiler 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 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 L.M.C. 3.08. marked in the Society's Register Book.

It is submitted that this vessel is eligible for THE RECORD. *L.M.C. 3.08. ELEC. LIGHT.*

The amount of Entry Fee.. £ 1 : : : When applied for, 11/3/1908
 Special .. £ 12. 12 : : :
 Donkey Boiler Fee .. £ : : :
 Travelling Expenses (if any) £ : : :
 Committee's Minute *Glasgow* 16 MAR 1908

J.H.C. 19.3.08
Wm. Frank Austin 19.3.08
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Assigned *+ L.M.C. 3.08.*

MACHINERY CERTIFICATE WRITTEN, 17-3-08