

REPORT ON MACHINERY.

Port of *Greenock*

FR 6 JUL 1894

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No. in Survey held at *Port Glasgow & Greenock* Date, first Survey *June 7th 1893* Last Survey *June 23rd 1894*Reg. Book. *Supplement*58 on the *Screw Steamer "Mathairly"* (Number of Visits *110*)Master *Rawlings* Built at *Greenock* By whom built *Russell & Co.*Tons } Gross *4142*Net *2704*When built *1894*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 *Burrell & Son* 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 12.4*

Diameter of Tunnel shaft *as fitted 12* Diameter of Crank shaft journals *13.2* Diameter of Crank pins *13.2* Size of Crank webs *18 x 8 1/2*

Diameter of screw *17.6* Pitch of screw *18.3* No. of blades *Four* State whether moveable *yes* Total surface *16 square feet*

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 *12 x 14, 10 x 12, 8 x 10* 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 bunker and one in tunnel well*

No. of bilge injections *one* sizes *6* Connected to condenser, or to circulating pump *is 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 *little 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 *Holds 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 *2nd platform*

BOILERS, &c.— (Letter for record *5*) Total Heating Surface of Boilers *5,500 square feet*

No. and Description of Boilers *Three Round Horizontal Multitubular* Working Pressure *170 lbs* Tested by hydraulic pressure to *340 lbs*

Date of test *19.4.94* Can each boiler be worked separately *yes* Area of fire grate in each boiler *42.74 sq ft* 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 *2.13 straps triple*

Diameter of rivet holes in long. seams *1 1/2* Pitch of rivets *7 1/2 & 3 1/2 bare* Lap of plates or width of butt straps *16 1/2 straps*

Per centages of strength of longitudinal joint *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 23 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 *top 2.0 bottom 1.0* Thickness of plates *top 1 1/2 bottom 1 1/2* Description of longitudinal joint *Welded* No. of strengthening rings *none*

Working pressure of furnace by the rules *178 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *9/16* Back *1/2* Top *9/16* Bottom *7/8*

Pitch of stays to ditto: Sides *7 3/4 x 7 3/4* Back *8 1/4 x 8 1/4* 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 & 1 1/2* Area supported by each stay *66.68 & 90.0* Working pressure by rules *174 lbs* End plates in steam space:

Material *Steel* Thickness *3/32* Pitch of stays *15 5/8 x 15 1/2* How are stays secured *Double nuts* 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 *3/4* 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 3/4* Length as per rule *32* Distance apart *7 1/4* 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 *—*

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 *—*

ALW328-0057

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 _____ 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, 4 propeller blades, 1 set slide valve spindles, ~~4 propeller blades~~, 8 studs & nuts for blades, 12 junk ring pins, 1 set piston springs, 12 studs for cylinder covers, 1 set valves & seats for bilge & feed pumps, 2 bottom end & 4 top end bolts & nuts, 2 main bearing bolts & nuts, 2 sets coupling bolts, 2 bolts for eccentric rods, 2 studs

The foregoing is a correct description,

Blackwood & Co. Manufacturer.

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

These Engines & Boilers have been specially surveyed during construction, workmanship of good quality, shafts examined when being turned and found apparently sound. The Engines and Boilers are satisfactorily fitted on 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 the Register Book.

LMC. 6, 94.

Spare gear Continued

for bottom end of same, 12 mounting Metal studs for pumps, 2 springs for safety valves, 1 spring for feed relief valves, 24 tubes for main boiler (18 plain & 6 stay), 12 tubes for Donkey boiler (10 plain and 2 stay), 36 tubes & 150 screwed ferrules for condenser, 3 feed check valves for main boilers, 2 girths and bolts for boiler doors, 1/2 set fire bars for main boilers, 1/2 set for Donkey boiler, 1 set bars for air & circulating pump, 1 do for ballast pump, zinc plates for boilers, a quantity of bolts nuts and iron assorted.

This vessel's main Boilers are fitted with forced draught, Howden's system,

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It is submitted that this vessel is eligible for THE RECORD + LMC. 6-94

M.A.
6-7-94

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

Certificate (if required) to be sent to <i>Greenock</i>			
The amount of Entry Fee..	£ 3 :		When applied for,
Special	£ 37 : 7 :		27. 6. 18. 94
Donkey Boiler Fee	£ :		When received, <i>J. Byers</i>
Travelling Expenses (if any) £	:		28. 6. 18. 94

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

Committee's Minute
Assigned
TUES. 10 JUL 1894
+ L.M.C. 6. 94.