

## REPORT ON MACHINERY.

Port of *Glasgow*

Received at London Office TUES. 11 APL 1893 18

No. in Survey held at *Glasgow* Date, first Survey *23 Oct. 1891* Last Survey *1st Apr. 1893*  
Reg. Book. *S. S. Louisiana. (a Mandalay)* (Number of Visits *30*)  
Tons { Gross *1942*  
Net *1263*  
Master *Sinclair* Built at *Amburton* By whom built *H. Denny & Bros* When built *1872*  
Engines made at *Glasgow* By whom made *Muir & Houston* when made *1893*  
Boilers made at *Glasgow* By whom made *Muir & Houston* when made *1893*  
Registered Horse Power *185* Owners *Colymbas & Co* Port belonging to *Glasgow*  
Nom. Horse Power as per Section 28 *-*

ENGINES, &c.— Description of Engines *Triple Exp. two Cranks Tandem* No. of Cylinders *Four*  
Diameter of Cylinders *15.35" & 55"* Length of Stroke *42"* Revolutions per minute *70* Diameter of Screw shaft *as per rule 11"*  
Diameter of Tunnel shaft *as per rule 10 7/8"* Diameter of Crank shaft journals *11"* Diameter of Crank pin *10 7/8"* Size of Crank webs *old shaft*  
Diameter of screw *15.0"* Pitch of screw *17.0"* No. of blades *4* State whether moveable *no* Total surface *62 sq. ft*  
No. of Feed pumps *2* Diameter of ditto *2 7/8"* Stroke *21"* Can one be overhauled while the other is at work *yes*  
No. of Bilge pumps *2* Diameter of ditto *2 7/8"* Stroke *21"* Can one be overhauled while the other is at work *yes*  
No. of Donkey Engines *2* Sizes of Pumps *6" x 3 1/2" x 6"* No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room *old arrangement old donkey* In Holds, &c. *old arrangement*  
No. of bilge injections *1* sizes *4"* Connected to condenser, or to circulating pump *yes* Is a separate donkey suction fitted in Engine room & size *yes*  
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 *yes*  
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 *about*  
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 *bilge suction* How are they protected *flooring*  
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 *29/3/93* Is the screw shaft tunnel watertight *yes*  
Is it fitted with a watertight door *yes* worked from *upper deck*.

BOILERS, &c.— (Letter for record *S.*) Total Heating Surface of Boilers *2516*.  
No. and Description of Boilers *One Cyl. Multitubular* Working Pressure *150 lbs* Tested by hydraulic pressure to *300 lbs*  
Date of test *15/4/92* Can each boiler be worked separately *-* Area of fire grate in each boiler *112 sq. ft* No. and Description of safety valves to  
each boiler *two direct spring* Area of each valve *12.5"* Pressure to which they are adjusted *150 lbs* Are they fitted  
with easing gear *yes* Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Mean diameter of boilers *13.0"*  
Length *15.6"* Material of shell plates *steel* Thickness *1 3/32"* Description of riveting: circum. seams *lap* long. seams *d. butt str.*  
Diameter of rivet holes in long. seams *1 1/8"* Pitch of rivets *7 3/4"* Lap of plates or width of butt straps *17 1/8"*  
Per centages of strength of longitudinal joint *86.* Working pressure of shell by rules *155 lbs* Size of manhole in shell *12 x 16"*  
Size of compensating ring *McAlister* No. and Description of Furnaces in each boiler *Six plain* Material *steel* Outside diameter *39"*  
Length of plain part *top 5.7"* Thickness of plates *bottom 3 1/16"* Description of longitudinal joint *butt.* No. of strengthening rings *1 iron*  
Working pressure of furnace by the rules *153 lbs* Combustion chamber plates: Material *steel* Thickness: Sides *9/16"* Back *-* Top *9/16"* Bottom *-*  
Pitch of stays to ditto: Sides *8"* Back *-* Top *8 x 7"* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *151 lbs*  
Material of stays *steel* Diameter at smallest part *1 3/8"* Area supported by each stay *64 x 56"* Working pressure by rules *150 lbs* End plates in steam space:  
Material *steel* Thickness *3/16"* Pitch of stays *14"* How are stays secured *nuts & washers* Working pressure by rules *159 lbs* Material of stays *steel*  
Diameter at smallest part *2 7/8"* Area supported by each stay *196 sq. in* Working pressure by rules *150 lbs* Material of Front plates at bottom *steel*  
Thickness *1/16"* Material of Lower back plate *steel* Thickness *1/16"* Greatest pitch of stays *10"* Working pressure of plate by rules *163 lbs*  
Diameter of tubes *3"* Pitch of tubes *4 1/2"* Material of tube plates *steel* Thickness: Front *9/16"* Back *9/16"* Mean pitch of stays *8 1/2"*  
Pitch across wide water spaces *13 1/2"* Working pressures by rules *39"* Girders to Chamber tops: Material *iron* Depth and  
thickness of girder at centre *8 x 1" dbl.* Length as per rule *39"* Distance apart *7"* Number and pitch of Stays in each *4. 8"*  
Working pressure by rules *157 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 *-*



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DONKEY BOILER— Description *Vertical with cross tubes*  
Made at *Glasgow* By whom made *Muir & Houston* When made *1893* Where fixed *Stothols*  
Working pressure *70 lbs* tested by hydraulic pressure to *140 lbs* No. of Certificate *2255* Fire grate area *22 sq ft* Description of safety valves *d. spring*  
No. of safety valves *2* Area of each *5 sq ft* Pressure to which they are adjusted *70 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *6'-0"* Length *13'-0"* Material of shell plates *steel* Thickness *3/8"*  
Description of riveting long seams *d.r. lap* Diameter of rivet holes *1 1/16"* Whether punched or drilled *drill* Pitch of rivets *3 1/2"*  
Lap of plating *4 1/2"* Per centage of strength of joint *101* Rivets *73* Thickness of shell crown plates *1 1/16"* Radius of do. *flat* No. of stays to do. *11*  
Dia. of stays *2"* Diameter of furnace Top *4'-7"* Bottom *5'-6"* Length of furnace *5'-6"* Thickness of furnace plates *9/16"* Description of joint *lap* Thickness of furnace crown plates *9/16"* Stayed by *as above* Working pressure of shell by rules *81 lbs*  
Working pressure of furnace by rules *71 lbs* Diameter of uptake *16"* Thickness of uptake plates *9/16"* Thickness of water tubes *3/8"*  
SPARE GEAR. State the articles supplied:— *Half crank shaft Piston Rod - 2 Valve Spindle Propeller - also old spare gear originally supplied.*

The foregoing is a correct description,  
*Muir & Houston* Manufacturers.

General Remarks (State quality of workmanship, opinions as to class, &c. *The above mentioned vessel's machinery has been converted into triple expansion by means of two high pressure cylinders being fitted on the top of the old ones and working on the same connecting rods. All parts of machinery overhauled and put in good working order. L.p. cylinder lined up. Vessel put in dry dock and necessary alterations made to sea connections. Propeller shaft drawn and fitted with a new propeller. - New boilers complete as above. - The above was carried out under the late Mr Robson's survey. - The machinery has been tried under steam with satisfactory results and the vessel is now in my opinion eligible to the notation: *L.M.C. 4.93 & F.N.B. 93.* -*

It is submitted that this vessel is eligible for THE RECORD LMC 4-93 and F.N.B. 93 & Impl'd 93 and to have its name removed from the limited list.  
*W.A.*  
*11-4-93*

Certificate (if required) to be sent to  
The amount of Entry Fee... £ *12:12* Special... £ *12:12* Donkey Boiler Fee... £ *5/4* Travelling Expenses (if any) £ *5/4*  
Machinery Certificate  
WRITTEN  
When applied for, *4/4/93*  
When received, *5/4/93*

*John Sanderson*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
*Glasgow.*

Committee's Minute *FRI 14 APR 1893* *FRI 27 MAY 1893* *TUES. 23 AUG 1893*  
Assigned *L.M.C. 4.93 + W.B. 93* *TUES. 11 APR 1899* *TUES. 19 SEP 1899*  
*Note non limit Tripled 93*  
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