

REPORT ON MACHINERY.

Port of *Glasgow*

Received at London Office

No. in Survey held at *Glasgow & Loon* Date, first Survey *1 July 1897* Last Survey *18 May 1898*
Reg. Book. (Number of Visits *61*)

on the *S.S. Hebrides* Tons { Gross *585.34*
Net *157.86*
Master *J. McBallum* Built at *Loon* By whom built *The Ailsa Ship Co* When built *1898*

Engines made at *Glasgow* By whom made *A.S. Duplex* when made *1898*
Boilers made at *"* By whom made *" " "* when made *1898*

Registered Horse Power Owners *J. McBallum & Co.* Port belonging to *Glasgow*
Nom. Horse Power as per Section 28 *100* Is Electric Light fitted *Yes by Hamilton*

ENGINES, &c.—Description of Engines *Triple* No. of Cylinders *3* No. of Cranks *3*
Diameter of Cylinders *16" 26" 42"* Length of Stroke *30"* Revolutions per minute *104* Diameter of Screw shaft *8"*
Diameter of Tunnel shaft *8 1/2"* Diameter of Crank shaft journals *8 1/2"* Diameter of Crank pin *8 1/2"* Size of Crank webs *5 1/2 x 10 1/2"*
Diameter of screw *10 1/2"* Pitch of screw *13 1/2"* No. of blades *4* State whether moveable *Yes* Total surface *30 sq ft*
No. of Feed pumps *2* Diameter of ditto *2 1/2"* Stroke *15"* Can one be overhauled while the other is at work *Yes*
No. of Bilge pumps *2* Diameter of ditto *3"* Stroke *15"* Can one be overhauled while the other is at work *Yes*
No. of Donkey Engines *1 Duplex* Sizes of Pumps *6" x 4" x 6"* No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room *3 - 2 1/2"* In Holds, &c. *One in each 2 1/2"*

No. of bilge injections *1* sizes *4 1/2"* Connected to *circulating pump* Is a separate donkey suction fitted in Engine room & size *Yes 2 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 *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 *near to baseline*
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 pipes to forward holds* How are they protected *by 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 launch* Is the screw shaft tunnel watertight *Apparently*
Is it fitted with a watertight door *Yes* worked from *upper platforms*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *1535 ft* Is forced draft fitted *No*
No. and Description of Boilers *One single ended multitubular* Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs*
Date of test *3/3/98* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *54 ft* No. and Description of safety valves to each boiler *Two direct spring* Area of each valve *5.9"* Pressure to which they are adjusted *160 lbs* Are they fitted with easing gear *Yes* Smallest distance between boilers or uptakes and bunkers or woodwork *Mean diameter of boilers 14 ft*
Length *10 x 6"* Material of shell plates *Steel* Thickness *1 3/16"* Description of riveting: circum. seams *Double & Triple* long. seams *Double*
Diameter of rivet holes in long. seams *1 3/16"* Pitch of rivets *1 3/4"* Lap of plates or width of butt straps *1 3/4"*
Per centages of strength of longitudinal joint *84.6%* Working pressure of shell by rules *141 lbs* Size of manhole in shell *12" x 16"*
Size of compensating ring *McNeil's* No. and Description of Furnaces in each boiler *3 Burvis* Material *Steel* Outside diameter *3' 6 1/4"*

Length of plain part *6' 4 1/2"* Thickness of plates *8 1/16"* Description of longitudinal joint *welded* No. of strengthening rings *—*
Working pressure of furnace by the rules *164 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *9 1/16"* Back *19"* Top *9 1/16"* Bottom *16"*
Pitch of stays to ditto: Sides *8 1/4" x 4 1/2"* Back *8 1/8" x 8"* Top *8" x 8"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *143 lbs*
Material of stays *Steel* Diameter at smallest part *1 1/2"* Area supported by each stay *6.7"* Working pressure by rules *168 lbs* End plates in steam space:
Material *Steel* Thickness *1 1/4"* Pitch of stays *16" x 16"* How are stays secured *by nuts* Working pressure by rules *168 lbs* Material of stays *Steel*
Diameter at smallest part *2 3/4"* Area supported by each stay *256"* Working pressure by rules *182 lbs* Material of Front plates at bottom *Steel*
Thickness *1 1/4"* Material of Lower back plate *Steel* Thickness *1 3/16"* Greatest pitch of stays *12 3/4"* Working pressure of plate by rules *201 lbs*

Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2" x 4 3/8"* Material of tube plates *Steel* Thickness: Front *1 1/4"* Back *1 1/4"* Mean pitch of stays *14 1/16"*
Pitch across wide water spaces *14 1/4"* Working pressures by rules *245 lbs* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *8" x 1" (6)* Length as per rule *2' 9 1/2"* Distance apart *8"* Number and pitch of Stays in each *3 - 8"*
Working pressure by rules *185 lbs* Superheater or Steam chest; how connected to boiler *how* 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 *—*

DONKEY BOILER— Description *One Round vertical Cross tube*
 Made at *Glasgow* By whom made *A. & J. Inglis* When made *1898* Where fixed *In St. Nicholas*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *4484* Fire grate area *11.5* Description of safety valves *Sweet Spring*
 No. of safety valves *One* Area of each *4"* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Diameter of donkey boiler *4' 5"* Length *8' 6"* Material of shell plates *Steel* Thickness *3/16"*
 Description of riveting long seams *Double* Diameter of rivet holes *13/16"* Whether punched or drilled *Drilled* Pitch of rivets *4"*
 Lap of plating *4"* Per centage of strength of joint Rivets *40%* Plates *40%* Thickness of shell crown plates *10/16"* Radius of do. *8' 6"* No. of Stays to do. *3*
 Dia. of stays *1 3/4"* Diameter of furnace Top *3' 6"* Bottom *3' 11"* Length of furnace *4' 6"* Thickness of furnace plates *8/16"* Description of joint *Welded* Thickness of furnace crown plates *9/16"* Stayed *as above* Working pressure of shell by rules *122 lbs*
 Working pressure of furnace by rules *110 lbs* Diameter of uptake *14"* Thickness of uptake plates *8/16"* Thickness of water tubes *3/16"*

SPARE GEAR. State the articles supplied:— *2 connect rod bolts (top + bottom) 2 main bearing bolts, set coupling bolts, set of pump valves, assortment of bolts, nuts, springs and other gear.*

The foregoing is a correct description,
A. & J. Inglis Manufacturers

Dates of Survey while building
 During progress of work in shops: 1894- July 1, 2, 6, 30. Aug. 2, 6, 13, 20, 23, 24. Sept. 3, 4, 13, 22, 23, 24, 28, 30. Oct. 1, 8, 14, 21, 24, 29. Nov. 13, 22, 24.
 During erection on board vessel: Dec. 16, 17, 20, 21, 27, 30. Jan. 13, 14, 21, 25, 26, 27, 31. Feb. 4, 7, 10, 11, 15, 22, 26. Mar. 1, 2, 3, 11, 17, 22, 26. Apr. 1, 9, 16, 26, 26. May 6, 18.
 Total No. of visits *sixty-one*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery & boilers of this vessel are of good workmanship & material and are now in good order and safe working condition & eligible in my opinion to be noted in the Register Book + L.M.C. 6/98*

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 5.98 Rec. Light

J.S.
 9.6.98

GLASGOW.

The amount of Entry Fee.. £ 2 :
 Special .. £ 15 :
 Donkey Boiler Fee .. £ :
 Travelling Expenses (if any) £ :

When applied for, 25.5.98
 When received, 28.5.98
James Morrison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 Clyde District

Committee's Minute **FRI. 10. JUN 1898**
 Assigned

+ L.M.C. 5.98 Glasgow Lloyd's Register Foundation

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

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