

# REPORT ON MACHINERY.

MON. DEC 23 1901

Port of Glasgow Received at London Office \_\_\_\_\_  
 Survey held at Glasgow Date, first Survey 16 January Last Survey 4 December 1901  
 on the S.S. "INVERIC" (Number of Visits 35) Tons { Gross 4788.56  
 Net 3112.80  
 Built at Port Glasgow By whom built W. Hamilton & Co. When built 1901  
 Made at Glasgow By whom made D. Rowan & Co. when made 1901  
 Made at Glasgow By whom made D. Rowan & Co. when made 1901  
 Indicated Horse Power ✓ Owners A. Weir & Co. Port belonging to Glasgow  
 Horse Power as per Section 28 405 Is Refrigerating Machinery fitted No. Is Electric Light fitted Yes.

**ENGINES, &c.**—Description of Engines Triple expansion - screw No. of Cylinders 3 No. of Cranks 3  
 Diameter of Cylinders 27, 43 1/2, 54 1/2 Length of Stroke 48 Revs. per minute 70 Dia. of Screw shaft 14.8 as per rule 16 as fitted 16 Lgth. of stern bush 5.6  
 Dia. of Tunnel shaft 13.25 as per rule 13.92 as fitted 14 1/2 Dia. of Crank shaft journals 14 1/2 as fitted 14 1/2 Dia. of Crank pin 14 1/2 Size of Crank webs 9 3/4 Dia. of thrust shaft under  
 Dia. of screw 18.0 Pitch of screw 18.0 No. of blades 4 State whether moceable No Total surface 84 sq. ft.  
 Feed pumps 2 Diameter of ditto 4 Stroke 14 Can one be overhauled while the other is at work Yes.  
 Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 14 Can one be overhauled while the other is at work Yes.  
 Donkey Engines 4 Sizes of Pumps { 9 1/2 x 7 x 8 - 9 x 12 x 10 } No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room Two in Engine room 3 1/2 dia In Holds, &c. Two in each No 1, 2 & 3 holds 3 1/2  
 Bilge injections 1 sizes 6 Connected to condenser, or to circulating pump Yes Is a separate donkey suction fitted in Engine room & size yes 3 1/2  
 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  
 All connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Yes  
 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 Yes  
 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  
 All pipes are carried through the bunkers none How are they protected ✓  
 All pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times Yes.  
 The bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes.  
 When stern tube, propeller, screw shaft, and all connections examined in dry dock before launch Is the screw shaft tunnel watertight Yes  
 Is it fitted with a watertight door Yes worked from top platform.

**BOILERS, &c.**— (Letter for record (5)) Total Heating Surface of Boilers 5177 sq. ft. Is forced draft fitted Yes.  
 and Description of Boilers Two single ended Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs  
 Date of test 21/6/01 Can each boiler be worked separately Yes Area of fire grate in each boiler 61.5 sq. ft. No. and Description of safety valves to  
 each boiler 2 Patent Spring Area of each valve 9.63 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 15 Mean dia. of boilers 15.6 Length 11.6 Material of shell plates steel  
 Thickness 1 1/4 Range of tensile strength 28 to 32 Are they welded or flanged No Descrip. of riveting: cir. seams double long. seams treble  
 Diameter of rivet holes in long. seams 1 5/16 Pitch of rivets 8 5/16 Lap of plates or width of butt straps 19 1/4  
 Percentages of strength of longitudinal joint rivets 89.2 Working pressure of shell by rules 187 lbs Size of manhole in shell 16 x 12  
 Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 4.2  
 Length of plain part top ✓ bottom ✓ Thickness of plates crown 19/32 Description of longitudinal joint welded No. of strengthening rings ✓  
 Working pressure of furnace by the rules 189 lbs Combustion chamber plates: Material steel Thickness: Sides 19/32 Back 19/32 Top 5/8 Bottom 7/8  
 Pitch of stays to ditto: Sides 8 1/4 x 8 Back 7 3/4 x 8 Top 8 x 9 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 184 lbs  
 Material of stays steel Diameter at smallest part 1.76 Area supported by each stay 66 Working pressure by rules 213 lbs End plates in steam space:  
 Material steel Thickness 1 1/8 Pitch of stays 17 x 19 How are stays secured nuts Working pressure by rules 184 lbs Material of stays steel  
 Diameter at smallest part 6.33 Area supported by each stay 373 Working pressure by rules 196 lbs Material of Front plates at bottom steel  
 Thickness 13/16 Material of Lower back plate steel Thickness 3/4 Greatest pitch of stays 14 x 8 Working pressure of plate by rules 337 lbs  
 Diameter of tubes 2 1/2 Pitch of tubes 3 7/8 x 3 3/4 Material of tube plates steel Thickness: Front 3/4 Back 7/8 Mean pitch of stays 4 5/8  
 Pitch across wide water spaces 14 Working pressures by rules 231 lbs Girders to Chamber tops: Material steel Depth and  
 Thickness of girder at centre 8 x 2 - 1/16 Length as per rule 2.8 1/2 Distance apart 9 Number and pitch of Stays in each 3 - 8  
 Working pressure by rules 188 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 ✓



**DONKEY BOILER—** No. *one* Description *horizontal*  
 Made at *Glasgow* By whom made *D. Rowan & Co* When made *1901* Where fixed *on a*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *5796* Fire grate area *36.6* Description of safety valves *patent*  
 No. of safety valves *2* Area of each *9.62* Pressure to which they are adjusted *85 lbs* If fitted with easing gear *yes* If steam from  
 enter the donkey boiler *no* Dia. of donkey boiler *12" 0"* Length *11" 0"* Material of shell plates *steel* Thickness *5/8"*  
 strength *28 to 32* Descrip. of riveting long. seams *treble (lap)* Dia. of rivet holes *15/16"* Whether punched or drilled *drilled* Pitch  
 Lap of plating *6 1/2"* Per centage of strength of joint Rivets *80.5* Plates *73.2* Thickness of shell *end* plates *3/4"* Radius of do. *✓* No. of Stays  
 Dia. of stays. *2" 266* Diameter of furnace Top *3" 6 1/2"* Bottom *Plain* Length of furnace *6" 10"* Thickness of furnace plates *17/32"*  
 joint *welded* Thickness of furnace *com. cham.* plates *7/16" + 15/32"* Stayed by *steel stays* *98 area* *1/8" x 8 1/2"* Working pressure of shell by  
 Working pressure of furnace by rules *80 lbs.* Diameter of *tubes* *3 1/2"* Thickness of *uptake* plates *11/16" 5/8"* Thickness of *scuted* tubes

**SPARE GEAR.** State the articles supplied:— *Two top end, two bottom end conn  
 rod bolts, two main bearing bolts, one set coupling  
 one set of feed & bilge pump valves. &c.*

The foregoing is a correct description,  
*David Rowan & Co* Manufacturer.

Dates of Survey while building  
 During progress of work in shops— *1901: Jan. 16. 25. Feb. 11. 25. Mar. 18. 27. Apr. 10. 19. 21. May. 3. 8. 29. Jun. 12. 20. 21. 24.*  
 During erection on board vessel — *12. 17. 26. Sep. 6. 7. 12. 19. Oct. 9. 21. 28. Nov. 4. 7. 13. 18. 21. 27. Dec. 4.*  
 Total No. of visits *35*

Is the approved plan of main boiler forwarded herewith  
 " " " donkey " " "

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

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  
 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  
 non-corrosive *✓* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

*The machinery of this vessel has been constructed under  
 Survey, the material & workmanship are of good quality, it  
 been securely fitted on board & tried under steam.  
 In my opinion, it is eligible to be classed in the  
 Book with the notation of + L.M.C 12.01.*

*It is submitted that  
 this vessel is eligible for  
 THE ABCOORD. + L.M.C 12.01. F.D. Elec*

The amount of Entry Fee... £ *3* : :  
 Special ... £ *40* 5 : :  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 19... 19...  
 When received, 17-01 18-02

*J.W. Dunmore*  
 Engineer Surveyor to Lloyd's Register of British & Foreign S

Committee's Minute *Glasgow, 23 DEC 1901*

Assigned *+ L.M.C. 12.01*

Certificates (if required) to be sent to Glasgow

Builder's Name, State, No. of Stays, etc.

