

# REPORT ON MACHINERY

No. 4548

No. in Survey held at *Dunbarton*

Date, first Survey *6<sup>th</sup> August* Last Survey *15<sup>th</sup> August 1886*

Reg. Book.

(Number of Vials *3*) Tons *9448.46*  
*969.05*

on the *Paddle Steamer "Venus"*

Master *Edwin Pitson* Built at *Dunbarton* By whom built *Mr Denny & Brothers* When built *1886*

Engines made at *Dunbarton* By whom made *Denny & Co* when made *1886*

Boilers made at *Do* By whom made *Do* when made *1886*

Registered Horse Power *524* Owners *La Platense Flotilla Co (Ld)* Port belonging to *Glasgow*

## ENGINES, &c.—

Description of Engines *Compound Diagonal Upilating*  
Diameter of Cylinders *44" & 87"* Length of Stroke *72"* No. of Rev. per minute *35* Point of Cut off, High Pressure *52½"* Low Pressure *52½"*

Diameter of *Paddle* shaft *15"* Diam. of Tunnel shaft *—* Diam. of Crank shaft journals *14"* Diam. of Crank pin *16"* size of Crank webs *14" x 13"*

Diameter of *wheel on shaft* *21½"* Pitch of screw *12½" x 3'-6"* No. of blades *10* state whether moveable *Fixed* surface *—*

No. of Feed pumps *Two* diameter of ditto *6"* Stroke *23½"* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *Two* diameter of ditto *6"* Stroke *23½"* Can one be overhauled while the other is at work *Yes*

Where do they pump from *Engine space bilges, After hold, Forehold*

No. of Donkey Engines *Two* Size of Pumps *9" x 4" x 12"* *8" x 4" x 9"* Where do they pump from *Main bilge pipe, Fore & Aft*  
*also separate suction in Engine room - Rea & Hotwell*

Are all the bilge suction pipes fitted with roses *Yes* Are the roses always accessible *Yes* Are the sluices on Engine room bulkheads always accessible *Yes*

No. of bilge injections *One* and sizes *5"* Are they connected to condenser, or to circulating pump *Circulating pipe*

How are the pumps worked *By levers bolted to cylinders*

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 *No* Are the blow off cocks fitted with a spigot and brass covering plate *Yes*

What pipes are carried through the bunkers *Discharge & Exhaust of donkey* How are they protected *By deck*

Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times *Yes*

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *Yes*

When were stern tube, propeller, screw shaft, and all connections examined in dry dock *August 16<sup>th</sup> 1886*

Is the screw shaft tunnel watertight *—* and fitted with a sluice door *—* worked from *—*

## BOILERS, &c.—

Number of Boilers *Two* Description *Multitubular - cylindrical* Whether Steel or Iron *Steel*  
Working Pressure *90 lbs* Tested by hydraulic pressure to *180 lbs* Date of test *May 14<sup>th</sup> 1886*

Description of superheating apparatus or steam chest *None*

Can each boiler be worked separately *Yes* Can the superheater be shut off and the boiler worked separately *—*

No. of square feet of fire grate surface in each boiler *144* Description of safety valves *Direct springs* No. to each boiler *Two on single ended*

Area of each valve *20.6 sq in* Are they fitted with easing gear *Yes* No. of safety valves to superheater *—* area of each valve *—*

Are they fitted with easing gear *—* Smallest distance between boilers and bunkers or woodwork *24"* Diameter of boilers *15-7¼"*

Length of boilers *17-5¼"* description of riveting of shell long. seams *Butt. double* circum. seams *Lap. double* Thickness of shell plates *15/16"*

Diameter of rivet holes *1 3/16"* whether punched or drilled *Drilled* pitch of rivets *4.6* Lap of plating *Butt 12 5/8"*

Per centage of strength of longitudinal joint *71* working pressure of shell by rules *95 lbs* size of manholes in shell *13" x 17"*

Size of compensating rings *Doubling plate* No. of Furnaces in each boiler *Three in single ended*

Outside diameter *49"* length, top *6'-5"* bottom *—* thickness of plates *9/16"* description of joint *Butt* if rings are fitted *1/2" from*

Greatest length between rings *6'-5"* working pressure of furnace by the rules *90 lbs* combustion chamber plating, thickness, sides *½"* back *½"* top *½"*

Pitch of stays to ditto, sides *8" x 8¼"* back *7½" x 8½"* top *7½" x 8"* If stays are fitted with nuts or riveted heads *Riveted heads* working pressure of plating by rules *90 lbs* Diameter of stays at smallest part *1¼" & 1½"* working pressure of ditto by rules *120 lbs* end plates in steam space, thickness *13/16"*

Pitch of stays to ditto *15½" x 18"* how stays are secured *Not in washers* working pressure by rules *90 lbs* diameter of stays at smallest part *2¼" screw* working pressure by rules *96 lbs* Front plates at bottom, thickness *¾"* Back plates, thickness *5/8"*

Greatest pitch of stays *13" x 7½"* working pressure by rules *—* Diameter of tubes *3½"* pitch of tubes *4¾"* thickness of tube plates, front *11/16"* back *11/16"* how stayed *Secured tubes* pitch of stays *16" x 9½"* width of water spaces *6"*

Diameter of Superheater or Steam chest *—* length *—* thickness of plates *—* description of longitudinal joint *—* diam. of rivet holes *—*

Pitch of rivets *—* working pressure of shell by rules *—* diameter of flue *—* thickness of plates *—* If stiffened with rings *—*

Distance between rings *—* working pressure by rules *—* end plates of superheater, or steam chest; thickness *—* how stayed *—*

Superheater or steam chest; how connected to boiler *—*



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**DONKEY BOILER—** Description *Flat-sided Multitubular.*  
 Made at *Dumfries* by whom made *Denny & Co* when made *1886* where fixed *Household*  
 Working pressure *90 lbs* tested by hydraulic pressure to *130 lbs* No. of Certificate *13.7529* description of safety  
 valves *Direct acting spring* No. of safety valves *One* area of each *7 sq in* if fitted with easing gear *Yes* if steam from main boilers can  
 enter the donkey boiler *No* diameter of donkey boiler *7-11 x 5-2 1/2* length *7-6 1/2* description of riveting *Lap - double*  
 Thickness of shell plates *7/16* diameter of rivet holes *7/8* whether punched or drilled *Drilled* pitch of rivets *3 1/4* lap of plating *4 1/4*  
 per centage of strength of joint *70* thickness of *end* plates *5/8* stayed by *2" iron stays - pitch 9 1/2 x 12*  
 Diameter of furnace, top *34"* bottom *—* length of furnace *5-0* thickness of plates *1/2"* description of joint *Butt*  
 Thickness of *lower* furnace plates *1/2"* stayed by *1 1/8" curved stays - 7 1/2 x 7 1/2* working pressure of shell by rules *105 lbs*  
 Working pressure of furnace by rules *130 lbs* diameter of *water* tubes *3"* thickness of plates *5/8* thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *Two paddle arms & two radius rods fitted with bushes complete*  
*Six floats, four iron float brackets with pins complete. One piston rod complete with cap bolts &*  
*braces. Two valve spindles, with braces, nuts &c. One quadrant brass. One set of feed pump valves*  
*Two safety valves & spring for main boilers. Two check valves for ditto. Set of spring for each piston. Two sets*  
*of india rubber valves for air circulating pumps.*

The foregoing is a correct description,  
*Denny & Co* Manufacturers.

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *These Engines & Boilers have*  
*not been built under Special Survey but on completion the*  
*Owners having desired that a Class be assigned to the boiler*  
*a careful examination has been made over all parts of the*  
*machinery & boilers also the sea cocks, valves, and all connections*  
*examined in dry dock. Appended are Photo Drawings of the*  
*Boilers together with the results of tests of the steel which was*  
*manufactured by the Steel Coy of Scotland & the Clydesdale Coy*  
*The tests of the steel were conducted by one of the Builders*  
*Engineering Staff and it will be observed that they bear a*  
*large proportion to the total number of plates in the boiler*  
*The boilers were tested by hydraulic pressure*  
*in the usual way to double the working pressure viz 180*  
*per sq inch in the presence of Mr James Denny one of the*  
*builders firm.*

*The Machinery & Boilers have been tried under steam*  
*at full power in our presence when everything was found*  
*to be satisfactory and in good looking condition and we*  
*are of opinion that they are eligible to be noted in the*  
*Register Book* *Lloyds M.C. 8.86*

The amount of Entry Fee *£ 3 : " : "* received by me, *(Signature)*

Special *£ 14 : 10 : "*

Donkey Boiler Fee *£ " : " : "*

Certificate (if required) *£ " : 5 : "* *23/8/1886*

To be sent as per margin.

(Travelling Expenses, if any, £ - *8/-*)

Committee's Minute

TUESDAY 24 AUGUST 1886

*(Signature) M.C. 8.86*

*James Hollison & Walter Robson*  
 Engineer Surveyors to Lloyd's Register of British & Foreign Shipping.