

# REPORT ON MACHINERY.

No. 8004

(Received in London Office 23/6/81)

No. in Survey held at Greenock & Glasgow Date, first Survey Aug. 13<sup>th</sup> 80 Last Survey June 18<sup>th</sup> 1881  
 Reg. Book.

on the Iron Screw Steamer "Laja" Tons 1335-411

Master Pedro Lantrup Built at Port Glasgow When built 1881

Engines made at Greenock By whom made Parkin & Blackmore when made 1881

Boilers made at Greenock By whom made Parkin & Blackmore when made 1881

Registered Horse Power 280 Owners Companhia Sud Americana de Navegacao Port belonging to Valparaiso

**ENGINES, &c.—**

Description of Engines Compound, Inverted, Direct-acting, Surface-condensing

Diameter of Cylinders 45" & 80" Length of Stroke 54" No. of Rev. per minute 62 Point of Cut off, High Pressure Var. Low Pressure 5/8 stroke

Diameter of Screw shaft 16" Diameter of Tunnel shaft 14 1/2" Diameter of Crank shaft journals 16" Diameter of Crank pin 14" size of Crank webs 18 1/2" x 11"

Diameter of screw 16" 0" Pitch of screw 24" 0" No. of blades 4 state whether moveable Yes total surface 43 sq ft

No. of Feed pumps 2 diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

Where do they pump from All compartments

No. of Donkey Engines Three Size of Pumps 1-8" x 9" Where do they pump from Ballast tanks, Sea bilges and hotwell

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

No. of bilge injections 2 and sizes 3/4" Are they connected to condenser, or to circulating pump Circulating pump

How are the pumps worked By levers from main crossheads

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Valves and cocks

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 Yes Are the blow off cocks fitted with a spigot and brass covering plate Yes

What pipes are carried through the bunkers Tank pipes and bilge pipes How are they protected By wooden casing

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 Before being launched and in Greenock Dock 16/6/81

Is the screw shaft tunnel watertight Stuffed with oakum and fitted with a sluice door worked from Top of E. Room

**BOILERS, &c.—**

Number of Boilers Four Description Round, horizontal, multitubular

Working Pressure 75 lbs Tested by hydraulic pressure to 150 lbs Date of test 7<sup>th</sup> April & 19<sup>th</sup> April 1881

Description of superheating apparatus or steam chest Annular superheater

Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately No

No. of square feet of fire grate surface in each boiler 63 Description of safety valves Direct spring (Turbidity)

No. to each boiler Two area of each valve 15.98 sq inches Are they fitted with easing gear Yes

No. of safety valves to superheater One area of each valve 70" are they fitted with easing gear Yes

Smallest distance between boilers and bunkers on woodwork About 4"

Diameter of boilers 14' 1" Length of boilers 9' 11 1/4" description of riveting of shell long. seams Double lap circum. seams Double lap

Thickness of shell plates 1 1/8" diameter of rivet holes 1 5/16" whether punched or drilled Punched pitch of rivets 4 3/8"

Lap of plating 9" per centage of strength of longitudinal joint 71 working pressure of shell by rules 79 lbs

Size of manholes in shell 16 1/2" x 11" size of compensating rings 6 1/2" x 1 1/8" flat rings

No. of Furnaces in each boiler Three outside diameter 3' 6" length, top 6' 6" bottom 8' 6"

Thickness of plates 1/2" description of joint Double straps if rings are fitted no greatest length between rings —

Working pressure of furnace by the rules 82 lbs

Combustion chamber plating, thickness, sides 1/2" back 1/2" top 1/2" & 9/16"

Pitch of stays to ditto sides 8 1/4" x 8" back 8 3/4" x 4 1/2" top Girders 10" x 4 3/4"

If stays are fitted with nuts or riveted heads Riveted, nuts on top working pressure of plating by rules 44 lbs (least)

Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 91 lbs

End plates in steam space, thickness 3/4" pitch of stays to ditto 15" x 14 1/2" how stays are secured Double nuts & washers

Working pressure by rules 89 lbs diameter of stays at smallest part 2 1/8" working pressure by rules 96 lbs

Front plates at bottom, thickness 3/4" Back plates, thickness 1 1/16" greatest pitch of stays 12 1/2" x 8 3/4" working pressure by rules 93 lbs

Form No. 8, 2000

Diameter of tubes  $3\frac{1}{2}$ " pitch of tubes  $4\frac{1}{16}$ " thickness of tube plates, front  $3\frac{1}{16}$ " back  $3\frac{1}{4}$ "  
 How stayed *Tubes* pitch of stays  $14\frac{1}{16}$ " &  $14\frac{1}{16}$ " width of water spaces  $8\frac{1}{2}$ " between tubes.  
 Diameter of Superheater or Steam chest  $10'0"$  length  $8'0"$   
 Thickness of plates  $3\frac{1}{4}$ " description of longitudinal joint *Double straps* diameter of rivet holes  $1\frac{1}{16}$ " pitch of rivets  $4\frac{1}{8}$ "  
 Working pressure of shell by rules  $49$  lbs Diameter of flue  $4'0"$  thickness of plates  $3\frac{1}{4}$ "  
 If stiffened with rings *no* distance between rings *—* Working pressure by rules  $41$  lbs  
 End plates of superheater, or steam chest; thickness  $3\frac{1}{4}$ " How stayed *By shell & flue attached to angle*  
 Superheater or steam chest; how connected to boiler *By copper steam pipes.*

**DONKEY BOILER—** Description *Round, horizontal, multitubular.*  
 Made at *Greenock* By whom made *R. Steele & Co.* when made *1881*  
 Where used *Over stokehold* working pressure  $60$  lbs Tested by hydraulic pressure to  $120$  lbs No. of Certificate *55*  
 Fire grate area  $21.4$  sq. ft. Description of safety valves *Direct spring* No. of safety valves *Two* area of each  $4'0"$   
 If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *no*  
 Diameter of donkey boiler  $18'4"$  length  $8'0"$  description of riveting *Treble lap.*  
 thickness of shell plates  $9\frac{1}{16}$ " diameter of rivet holes  $15\frac{1}{16}$ " whether punched or drilled *Punched before bedding.*  
 pitch of rivets  $3\frac{3}{4}$ " lap of plating  $6"$  per centage of strength of joint  $75$   
 thickness of crown plates  $7\frac{1}{16}$ " &  $7\frac{1}{2}$ " stayed by *Tops of flues by girder stays*  
 Diameter of furnace, top  $2'4"$  bottom *—* length of furnace  $5'3"$   
 thickness of plates  $7\frac{1}{16}$ " &  $7\frac{1}{2}$ " description of joint *Double straps*  
 thickness of furnace crown plates  $7\frac{1}{16}$ " stayed by *—*  
 Working pressure of shell by rules  $69$  lbs working pressure of furnace by rules  $116$  lbs  
 diameter of uptake *—* thickness of plates *—* thickness of water tubes *—*

The foregoing is a correct description,  
*Ranshin & Blackmore* Manufacturers.

**General Remarks** (State quality of workmanship, opinions as to class, &c. *Workmanship and materials good.*  
*The engines and boilers have been inspected by me during construction, they are in good and efficient condition, and eligible in my opinion to be classed "LLOYD'S M.C.", and to be voted "6.81"*

*This submitted that the vessel is eligible to have the M.C. recorded & Lloyd's M.C. recorded*  
*Am 23/6/81*

The amount of Entry Fee .. £  $3:0:0$  received by me,  
 Special .. £  $34:0:0$   
 Certificate (if required) .. £  $0:0:0$  June 1881  
 To be sent as per margin.  $£34:0:0$   
 (Travelling Expenses, if any, £ *—*)

*Alfred H. Alchin*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
*Greenock.*

Committee's Minute Friday, June 21<sup>st</sup> 1881.

*Lloyd's Register*