

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S CERTIFICATE.

ENGINES.

Description *Compound Inverted Direct Acting* Are all the bilge suction pipes fitted with roses *Yes*
 Made by *Blackwood & Gordon Pt. Glasgow* What vacuum and steam gauges are there attached to the engines and boilers... *1 Vacuum & 1 Steam attached to engines only*
 In the year *1875*
 Present condition *New*
 Diameter of cylinder *20" & 35"*
 Length of stroke *24"*
 No. of revolutions per minute *about 80*
 Point of cut off *5/8th of stroke*
~~Paddle, or~~ Screw
 Nominal Horse Power *60*
 Diameter of screw, ~~or of paddle wheel~~ *9" 0"*
 Pitch of screw *13" 6"*
 No. of blades, *3* total surface *22" 0"*
 No. of bilge pumps *2* and size *2 3/4" dia. x 13" stroke*
 Do they pump from each compartment *Engine room & stoke hole*
 Is there provision made for pumping from the wings of the stoke hole *Yes*
 Description and size of Donkey Engine... *Inverted, Double Acting, 6" Cyl. x 6 stroke pump 3" dia.*
 Will it feed the boilers, pump from the bilges, and pump on deck *Yes*
 Can it be driven by steam from a separate boiler *Yes*
 No. of bilge injections *one* and sizes *connected to circulating injection by a 2" pipe*
 Are they fitted with non return valves *Yes*
 Is there a hand pump in the engine room *Yes*
 Can it be worked by the main engines *No*
 Is there a deck hose of sufficient length to reach to any part of the vessel *Yes*

CONNECTIONS ON HULL.

Are all connections with the sea direct on the skin of the ship *Yes*
 Are any pipes carried through the bunkers *No*
 If so state how protected
 When was the stern tube, propellor, screw shaft, and all connections examined in dry dock *While being fitted*
 How are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilge *Donkey sea & bilge suction cock, has single ported plug. Bilge suction branch on deck. Injection has screw down valve fitted*
 Have the bilge suctions non-return valves fitted or not *None*
 Key Kingston valves or common cocks *Common Cocks & screw down valves*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehole plates *No. The blow off cock is ash cooling cock under the stoke plate.*
 Are the discharge pipes above or below the deep water line *Circulating discharge below*
 Are they each fitted with a discharge valve on the plating of the vessel *Yes*

BOILERS.

Number *One* *Round Horizontal*
 Position *Multitubular (2 Furnaces)*
 Made by *Blackwood & Gordon Pt. Glasgow*
 In the year *1875*
 Present condition *New*
 When last extensively repaired
 Working pressure *60 lbs*
 When tested by Hydraulic pressure *Not present personally*
 What pressure tested *Reported to be 120 lbs*
 Is there a super-heating apparatus *No*
 Describe it
 Can each boiler be worked separately *One Boiler*
 Is each boiler fitted with a separate steam gauge *Yes*
 Can the super-heater be shut off and the boilers worked separately
 No. of safety valves on each boiler *One*
 Description and area of each safety valve *Lever with weights 16" 0"*
 No. of square feet of fire-grate surface in each boiler *33 sq. ft.*
 Is there a separate blow off and brine cock on each boiler, independent of those on the vessel's skin *Yes*
 Is the screw shaft tunnel water tight and fitted with a sluice door on bulkhead *Yes*
 Are all pipes, cocks, and roses in connection with these boilers accessible to the engineer at all times *Blow off cocks under stokehole plates. The others under Engine room platform have hand holes & hatches fitted with covers*

Blackwood & Gordon Manufacturers

I hereby certify that the whole of the above Machinery and Boilers of the Iron (or Wood) Screw (or Paddle) Steam Vessel *Anna Clara* owned by *Antonia Marcal dos Santos* of the Port of *Rio de Janeiro* of *129.29* Tons Register, and *60* Nominal Horse Power, have been carefully inspected and examined by *me* at *Port Glasgow* and found to be at this date, viz., *14th May 1875* in good order and safe working condition.

James Morrison
 Engineer Surveyor to Lloyd's Register of Shipping.