

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S CERTIFICATE.

ENGINES.

Description *Compound Direct Acting Inverted* Are all the bilge suction pipes fitted with roses *Yes*
 Made by *Messrs Caird & Co Greenock*
 In the year *1875*
 Present condition *New*
 Diameter of cylinder *22" - 44"*
 Length of stroke *27"*
 No. of revolutions per minute *85*
 Point of cut off *1/2 to 3/8 of stroke*
~~Paddle, or~~ Screw
 Nominal Horse Power *85*
 Diameter of screw, ~~or of paddle wheel~~ *8" - 6"*
 Pitch of screw *13 ft. to 14 ft.*
 No. of blades, *4* total surface *28.5*
 No. of bilge pumps *2* and size *3" dia x 7" stroke*
 Do they pump from each compartment *Yes*
 Is there provision made for pumping from the wings of the stoke hole *Yes*
 What vacuum and steam gauges are there attached to the engines *One Vacuum one steam and one Compound vacuum pressure*
 No. of feed pumps *2* and sizes *3" dia x 7" stroke*
 Description and size of Donkey Engine... *Inverted, Direct, Double acting*
 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 Air pump*
 Are they fitted with non return valves *By a 3" pipe, sluice valve on deck*
 Is there a hand pump in the engine room *No*
 Can it be worked by the main engines
 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 they Kingston valves or common cocks *Common Cocks & screws down valves*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehole plates *No*
 Are the discharge pipes above or below the deep water line *Above*
 Are they each fitted with a discharge valve on the plating of the vessel *Yes*
 Are any pipes carried through the bunkers *No*
 If so state how protected
 When was the stern tube, propeller, 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 *The main & branch bilge suction pipes have intermediate cocks fitted. Donkey bilge suction has non return valve*
 Have the bilge suctions non-return valves fitted or not

BOILERS.

Number *2* *One Oval Horizontal Multi-tubular with 2 furnaces*
 Description *- tubular with 2 furnaces*
 Made by *Messrs Caird & Co Greenock*
 In the year *1875*
 Present condition *New*
 When last extensively repaired
 Working pressure *65 lbs*
 When tested by Hydraulic pressure *January 1875*
 To what pressure tested *Reported to be 130 lbs not present personally*
 Any 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 *2*
 Description and area of each safety valve *Lower & weights 19.5*
 No. of square feet of fire-grate surface in each boiler *40 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 & surface cocks under stokehole plates have hand holes, and those under engine room platform have hatches with covers fitted.*
Caird & Co. Manufacturer.

I hereby certify that the whole of the above Machinery and Boilers of the Iron (or Wood) Screw (or Paddle) Steam Vessel *Karang* owned by *The Netherlands Indian S. Nav. Coy.* of the Port of *Batavia* of *221 2/3* Tons Register, and *85* Nominal Horse Power, have been carefully inspected and examined by *me* at *Greenock* and found to be at this date, viz., *April 29th 1875* in good order and safe working condition.

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