

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S CERTIFICATE, & REPORT.

ENGINES.

Description *Compound, S. D. A.* ✓
 Made by *Messrs. Caird & Co., Greenock.* ✓
 In the year *1875* ✓
 Present condition *New* ✓
 Diameter of cylinder *13 1/2" & 5 1/4"* ✓
 Length of stroke *36"* ✓
 No. of revolutions per minute *40* ✓
 Pitch of cut off *from 8" to 22"* ✓
 or Screw *Screw* ✓
 Indicated Horse Power *130* ✓
 Diameter of screw, or of paddle wheel *12' 10"* ✓
 Pitch of screw *1 1/4"* ✓
 Number of blades, *4* total surface *72 sq. ft.* ✓
 Number of bilge pumps *2* and size *4 1/8" dia. x 18" stroke* ✓
 Delivery pump from each compartment *Yes* ✓
 Is there provision made for pumping }
 from the wings of the stoke hole } *Yes* ✓

Are all the bilge suction pipes fitted with roses *Yes* ✓
 What vacuum and steam gauges are there attached to the engines and boilers... } *Compound 1 Steam 4 1/2 Vacuum on Engines and 1 for each boiler on stokehole* ✓
 No. of feed pumps *two* and sizes *4 1/8" x 18" stroke* ✓
 Description and size of Donkey Engine... } *Inverted, double acting, 5 1/2" x 10" stroke* ✓
 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 *1* and sizes *3 1/4" connected to Air pump* ✓
 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 there connections with the sea } *Yes* ✓
 direct on the skin of the ship }
 Are there Kingston valves or common cocks } *Screw down Valves & Cocks.* ✓
 fixed sufficiently high on ship's side to be seen without lifting the stokehole } *All except the bottom blow off Cocks* ✓
 Are there discharge pipes above or below the deep water line } *Below* ✓
 Are each fitted with a discharge valve on the plating of the vessel } *Yes* ✓

Are any pipes carried through the bunkers. *Bilge pipe to fore hold* ✓
 If so state how protected *Strong Wood Casing* ✓
 When was the stern tube, propellor, screw shaft, and all connections examined in dry dock } *On Slip before launching* ✓
 How are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilge } *Intermediate branch Cock on Iron Key with plug open at bottom & simple plug inside so that it could be turned to sea & bilge at the same time* ✓
 Have the bilge suction non-return valves fitted or not } *No* ✓

BOILERS.

Number of Boilers *Two Coal Horizontal* ✓
 Description *Multitubular* ✓
 Made by *Messrs Caird & Co.* ✓
 In the year *1875* ✓
 Present condition *New* ✓
 Have they been extensively repaired *No* ✓
 Working pressure *65 lbs per sq. inch* ✓
 Tested by Hydraulic pressure *March 8 1875* ✓
 To what pressure tested *Reported to be 130 lbs per sq. inch* ✓
 Any super-heating apparatus *Yes* ✓
 Describe it *Vertical Single Flue* ✓
 Can each boiler be worked separately *Yes* ✓
 Is each boiler fitted with a separate steam gauge *Yes* ✓

Can the super-heater be shut off and the boilers worked separately } *No* ✓
 No. of safety valves on each boiler *Two* ✓
 Description and area of each safety valve *Direct Spring loaded, 10.32" Area* ✓
 No. of square feet of fire-grate surface in each boiler *40 feet* ✓
 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 } *Yes, and all fitted with self locking Keys. Which cannot be taken off unless the Cocks are shut* ✓

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 *Umballa* owned by *British India Steam Nav. Coy.* of the Port of *Glasgow* of *348* Tons Register, and *130* Nominal Horse Power, have been carefully inspected and examined by *me* at *Greenock* and found to be at this date, viz., *18th June 1875* in good order and safe working condition.

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