

ENGINEER SURVEYOR'S CERTIFICATE, & REPORT.

ENGINES.

Rec 1/12/75

Description *Compd. Int. Cyl. A.A.S.C. Engines*  
 Made by *J. Jones & Son.*  
 In the year *1875*  
 Present condition *New.*  
 Diameter of cylinders *1 of 32" diam 1 of 64" diam*  
 Length of stroke *33 ins.*  
 No. of revolutions per minute *about 72.*  
 Point of cut off *variable 3" to 27"*  
 Paddle, or Screw *Screw*  
 Nominal Horse Power *170*  
 Diameter of screw, or of paddle wheel *15 ft.*  
 Pitch of screw *18 ft - 6"*  
 No. of blades *Four* total surface *48 ft.*  
 No. of bilge pumps *Two* and size *5" diam*  
 Do they pump from each compartment *Yes.*  
 Is there provision made for pumping }  
 from the wings of the stoke hole } *No.*

Are all the bilge suction pipes fitted with roses *Yes.*  
 What vacuum and steam gauges are there attached to the engines and boilers } *Steam gauge to each boiler, 1 steam, 1 vacuum and 1 back. per gauge in E.R.*  
 No. of feed pumps *Two* and sizes *4" diam*  
 Description and size of } *8" Steam Cyl. 4" plunger, double acting Donkey Engine...*  
 Will it feed the boilers, pump from the bilges, and pump on deck } *Yes. and pumps through condenser.*  
 Can it be driven by steam } *Yes.*  
 from a separate boiler }  
 No. of bilge injections *One* and sizes *3 1/2" diam*  
 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 *Yes.*  
 Is there a deck hose of sufficient length } *Yes.*  
 to reach to any part of the vessel }

CONNECTIONS ON HULL.

Are all connections with the sea } *Yes.*  
 direct on the skin of the ship }  
 Are they Kingston valves or common cocks *Common cocks.*  
 Are they fixed sufficiently high on } *Yes.*  
 the ship's side to be seen }  
 without lifting the stokehole }  
 plates }  
 Are the discharge pipes above or } *Above*  
 below the deep water line }  
 Are they each fitted with a discharge } *Yes.*  
 valve on the plating of the vessel }

Are any pipes carried through the bunkers *Bilge suction to fore bulker*  
 If so state how protected *Strong*  
 When was the stern tube, } *New*  
 propellor, screw shaft, }  
 and all connections }  
 examined in dry dock }  
 How are the pipes, cocks, and valves } *Well arranged*  
 arranged so as to prevent }  
 an unintentional connection }  
 between the sea and the bilge }  
 Have the bilge suction non- } *No.*  
 return valves fitted or not }

BOILERS.

No. *Two*  
 on *Circular return Tubular*  
 by *J. Jones & Son*  
 year *1875*  
 condition *New*  
 extensively repaired *Not yet.*  
 pressure *80 lbs.*  
 tested by Hydraulic pressure *Now*  
 pressure tested *160. (stated)*  
 super-heating apparatus *(No.) 1 Steam chest to each boiler*  
 Describe it *Egg, ended - " - horizontal*  
 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 } *No superheater. Boilers*  
 the boilers worked separately } *can be worked separately*  
 No. of safety valves on each boiler *Two on each*  
 Description and area of each safety valve *Lever loaded. = 12.56 area each*  
 No. of square feet of fire-grate } *46 ft.*  
 surface in each boiler }  
 Is there a separate blow off and } *Yes.*  
 brine cock on each boiler, }  
 independent of those }  
 on the vessel's skin }  
 Is the screw shaft tunnel water } *Yes.*  
 tight and fitted with a }  
 sluice door on bulkhead }  
 Are all pipes, cocks, and roses in con- } *Yes.*  
 nection with these boilers acces- }  
 sible to the engineer at all times }

*John Jones & Son* Manufacturer.

I hereby certify that the whole of the above Machinery and Boilers of the Iron (or Wood) Screw (or Paddle) Steam Vessel *"Luso"* owned by *Arnaud* at present registered in name of *Arnaud* of the Port of *St Michael* of *656.50* Tons Register, and *170* Nominal Horse Power, *180 as per ship's register* have been carefully inspected and examined by *Me* at *Liverpool* and found to be at this date, viz., *30th November 1875* in good order and safe working condition.

*J.G. Viningham*  
 Engineer Surveyor to Lloyd's Register of Shipping.