

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S CERTIFICATE, & REPORT,

ENGINES.

Description *Compound Inverted, Direct Acting*
 Made by *Messrs. J. & S. Denny, Dumbarton*
 In the year *1876*
 Present condition *New*
 Diameter of cylinder *47" & 82"*
 Length of stroke *48"*
 No. of revolutions per minute *Not ascertained*
 Point of cut off *7/8 of the stroke of engines*
 Paddle, or Screw *Screw*
 Nominal Horse Power *400*
 Diameter of screw, ~~of paddle wheel~~ *16" 5"*
 Pitch of screw *22" 0"*
 No. of blades, *4* total surface *74 ft on lat. 54 ft on top*
 No. of bilge pumps *2* and size *4 3/4" x 24" stroke*
 Do they 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 *one steam gauge on each boiler one " in Engine Room one vacuum gauge " " one compound " "*
 No. of feed pumps *2* and sizes *4 x 24" stroke*
 Description and size of Donkey Engine... *Inverted Double Acting, 5 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 *6" connected to circulating injections*
 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 they Kingston valves or common cocks *Screw down Valves & Cocks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehole plates *All above turn of Bilge*
 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 *Bilge Discharges Carried up through Bunkers*
 If so state how protected *Cast Iron pipes*
 When was the stern tube, propeller, screw shaft, and all connections examined in dry dock *On Slip previous to being launched*
 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 Cocks has plug with single port in side which cannot be turned to both at the same time*
 Have the bilge suctions non-return valves fitted or not *Yes*

BOILERS.

Number *Four Round Horizontal with*
 Description *3 Furnaces in each, fired Althwart Ships*
 Made by *Messrs. J. & S. Denny, Glasgow*
 In the year *1875*
 Present condition *New*
 When last extensively repaired
 Working pressure *65 lbs*
 When tested by Hydraulic pressure *July 1875*
 To what pressure tested *130 lbs*
 Any super-heating apparatus *Yes*
 Describe it *Vertical with Single Line*
 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 *Yes No*
 No. of safety valves on each boiler *Two*
 Description and area of each safety valve *Direct Spring loaded 15.9" area*
 No. of square feet of fire-grate surface in each boiler *209 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 *Yes*

Denny & Co Manufacturers

I hereby certify that the whole of the above Machinery and Boilers of the Iron (~~Wood~~) Screw (~~or Paddle~~) Steam Vessel *"Mertara"* owned by *British India Steam Nav. Coy. & others* of the Port of *Glasgow* of *1950* Tons Register, and *400* Nominal Horse Power, have been carefully inspected and examined by *me* at *Dumbarton* and found to be at this date, viz., *Aug. 20th* 18*75* in good order and safe working condition.

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