

# REPORT ON MACHINERY.

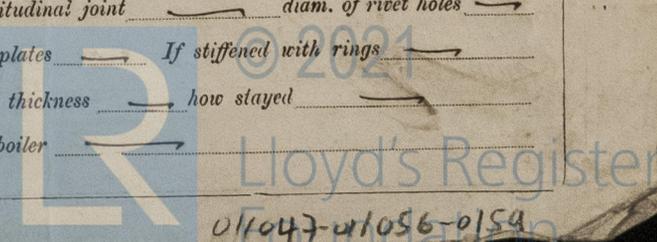
No. 2103 Port of Hamburg Received at London Office 25 Dec 91  
 No. in Survey held at Kiel Date, first Survey August 2<sup>nd</sup> Last Survey Novemb. 24<sup>th</sup> 1891  
 g. Book. (Number of Visits 5)  
 on the S.S. Croatia Tons { Gross —  
 Master Baumgarten Built at Kiel By whom built Howaldtswerke When built 1891  
 Engines made at Kiel By whom made Howaldtswerke when made 1891  
 Milers made at — By whom made — when made 1891  
 Registered Horse Power 130 Owners Ungaro-Croatische Dampf. A. G. Port belonging to Fiume

## ENGINES, &c.—

Description of Engines Triple expansion, surf cond, inverted on three cranks No. of Cylinders 3  
 No. of Cylinders 17<sup>in</sup>, 27<sup>in</sup> + 43<sup>in</sup> Length of Stroke 24<sup>in</sup> Rev. per minute 110 Point of Cut off, High Pressure .6 Low Pressure .6  
 Diameter of Screw shaft 8<sup>in</sup> Diam. of Tunnel shaft 7<sup>in</sup> Diam. of Crank shaft journals 8<sup>in</sup> Diam. of Crank pin 8<sup>in</sup> size of Crank webs 4<sup>in</sup> x 12<sup>in</sup>  
 Diameter of screw 10<sup>in</sup> Pitch of screw 13<sup>in</sup> No. of blades 4 state whether moveable no total surface —  
 No. of Feed pumps 2 diameter of ditto 3<sup>in</sup> Stroke 14<sup>in</sup> Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 diameter of ditto 3<sup>in</sup> Stroke 14<sup>in</sup> Can one be overhauled while the other is at work yes  
 Where do they pump from all holds, tanks, bilges and tunnel  
 No. of Donkey Engines one Size of Pumps dbl. actg. 4<sup>in</sup> dia. 10<sup>in</sup> Where do they pump from all hold, tanks, bilges, tunnel to sea, delivrs overboard, through condenser, into boilers and on deck.  
 Are all the bilge suction pipes fitted with roses yes Are the roses always accessible yes Are the sluices on Engine room bulkheads always accessible yes  
 No. of bilge injections one and sizes 5<sup>in</sup> Are they connected to condenser, or to circulating pump to circulating pump  
 Are the pumps worked by levers from crosshead of S.P. engine.  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valves and valves  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the discharge pipes above or below the deep water line above  
 Are they each fitted with a discharge valve always accessible on the plating of the vessel yes Are the blow off cocks fitted with a spigot and brass covering plate yes  
 Are all pipes carried through the bunkers none How are they protected —  
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times yes  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges yes  
 Were stern tube, propeller, screw shaft, and all connections examined in dry dock on the stocks  
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from Cylinder platform.

## BOILERS, &c.—

No. of Boilers 2 Description Cylindrical multitubular Material Steel and Iron Letter (for record) R  
 Working Pressure 172 lbs. Tested by hydraulic pressure to 344 lbs. Date of test Novemb. 2<sup>nd</sup> 1891.  
 Description of superheating apparatus or steam chest —  
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately —  
 Area of square feet of fire grate surface in each boiler 29.6 sq. ft. Description of safety valves Spring No. to each boiler 2  
 Area of each valve 7.984<sup>sq</sup> Are they fitted with casing gear yes No. of safety valves to superheater — area of each valve —  
 Are they fitted with casing gear — Smallest distance between boilers and bunkers or woodwork 18<sup>in</sup> Diameter of boilers 9<sup>in</sup> 4<sup>in</sup>  
 Length of boilers 9<sup>in</sup> 5<sup>in</sup> description of riveting of shell long. seams dbl. butt etc. etc. in circum. seams lap double riv. Thickness of shell plates 1<sup>in</sup>  
 Diameter of rivet holes 1<sup>in</sup> whether punched or drilled drilled pitch of rivets 4<sup>in</sup> Lap of plating 4<sup>in</sup> 7<sup>in</sup>  
 Percentage of strength of longitudinal joint 72.6% working pressure of shell by rules 178 lbs. size of manholes in shell 12<sup>in</sup> x 16<sup>in</sup>  
 No. of compensating rings L 4<sup>in</sup> x 4<sup>in</sup> x 5<sup>in</sup> No. of Furnaces in each boiler 2 Description of Furnaces corrugated  
 Inside diameter 35<sup>in</sup> 3<sup>in</sup> length 7<sup>in</sup> 0<sup>in</sup> 3<sup>in</sup> 4<sup>in</sup> thickness of plates 17<sup>in</sup> 32<sup>in</sup> description of joint welded if rings are fitted no  
 Working pressure of furnace by the rules 177 lbs. combustion chamber plating, thickness, sides 11<sup>in</sup> 16<sup>in</sup> back 9<sup>in</sup> 16<sup>in</sup> top 4<sup>in</sup> 16<sup>in</sup>  
 No. of stays to ditto, sides 7<sup>in</sup> 2<sup>in</sup> x 7<sup>in</sup> 2<sup>in</sup> back 7<sup>in</sup> 2<sup>in</sup> x 7<sup>in</sup> 2<sup>in</sup> top 6<sup>in</sup> 1<sup>in</sup> 4<sup>in</sup> x 7<sup>in</sup> 2<sup>in</sup> If stays are fitted with nuts or riveted heads with nuts working pressure of plating by rules 173 lbs.  
 Diameter of stays at smallest part 1<sup>in</sup> working pressure of ditto by rules 189 lbs. end plates in steam space, thickness 29<sup>in</sup> 32<sup>in</sup>  
 No. of stays to ditto 13<sup>in</sup> 3<sup>in</sup> 4<sup>in</sup> how stays are secured by dbl. nuts etc. working pressure by rules 232 lbs. diameter of stays at smallest part 2<sup>in</sup> 8<sup>in</sup>  
 Working pressure by rules 173 lbs. Front plates at bottom, thickness 29<sup>in</sup> 32<sup>in</sup> Back plates, thickness 29<sup>in</sup> 32<sup>in</sup>  
 Working pressure by rules 219 lbs. Diameter of tubes 3<sup>in</sup> pitch of tubes 4<sup>in</sup> 2<sup>in</sup> thickness of tube plates, front 29<sup>in</sup> 32<sup>in</sup> back 29<sup>in</sup> 32<sup>in</sup>  
 how stayed stay tubes pitch of stays 9<sup>in</sup> x 9<sup>in</sup> width of water spaces 4<sup>in</sup> 2<sup>in</sup>  
 Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —  
 No. of rivets — working pressure of shell by rules — diameter of flue — thickness of plates — If stiffened with rings —  
 Distance between rings — working pressure by rules — end plates of superheater, or steam chest; thickness — how stayed —  
 Superheater or steam chest; how connected to boiler —



**DONKEY BOILER**— Description *No Donkey Boiler supplied.*  
 Made at \_\_\_\_\_ by whom made \_\_\_\_\_ when made \_\_\_\_\_ where fixed \_\_\_\_\_  
 Working pressure \_\_\_\_\_ tested by hydraulic pressure to \_\_\_\_\_ No. of Certificate \_\_\_\_\_ fire grate area \_\_\_\_\_ description of safety  
 valves \_\_\_\_\_ No. of safety valves \_\_\_\_\_ area of each \_\_\_\_\_ if fitted with easing gear \_\_\_\_\_ if steam from main boilers can  
 enter the donkey boiler \_\_\_\_\_ diameter of donkey boiler \_\_\_\_\_ length \_\_\_\_\_ description of riveting \_\_\_\_\_  
 Thickness of shell plates \_\_\_\_\_ diameter of rivet holes \_\_\_\_\_ whether punched or drilled \_\_\_\_\_ pitch of rivets \_\_\_\_\_ lap of plating \_\_\_\_\_  
 per centage of strength of joint \_\_\_\_\_ thickness of crown plates \_\_\_\_\_ stayed by \_\_\_\_\_  
 Diameter of furnace, top \_\_\_\_\_ bottom \_\_\_\_\_ length of furnace \_\_\_\_\_ thickness of plates \_\_\_\_\_ description of joint \_\_\_\_\_  
 Thickness of furnace crown plates \_\_\_\_\_ stayed by \_\_\_\_\_ working pressure of shell by rules \_\_\_\_\_  
 Working pressure of furnace by rules \_\_\_\_\_ diameter of uptake \_\_\_\_\_ thickness of plates \_\_\_\_\_ thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— *1 propeller, 1 set valves, 1 air pump, circulating pump, and bilge pump each, 1 slide rod to suit each valve, 24 boiler tubes, 1 set fire bars, 10 or denser tubes, 20 glands, 1/2 set Safety valve springs, 2/3 brasses for connecting rod top and bottom ends, 1 linkblock, 2 bolts connect rod bottom end, 2 main bearing bolts, 1 coupling bolts, bolts, nuts, rivets, bars and plate assorted.*  
 The foregoing is a correct description, *coupling bolts, bolts, nuts, rivets, bars and plate assorted.*  
**HOWALDTSWERKE** Manufacturer.  
*Howaldtswerke, Kiel*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *Materials and workmanship of these Engines and Boilers are of very good quality, the outfit is sufficient. I attended a trial of the Engine with vessel moored, when the Machinery worked satisfactory. In trial trips for speed trials were held which I could not attend. I adjusted the Safety valves to the working pressure of 14 1/2 lbs. The crankshaft is a built one. The forgings of Steel have been by the Pochum Steel works and have been machined by the Howaldtswerke. I examined the different parts during the last operation and found them free from surface marks and sound. The straight shafts were forged and machined by the Howaldtswerke and proved to be sound forgings. The Steel Materials for the Boilers have been properly tested by officers of this Society, the signed copies of invoices being in my hands.*

*The Heating Surface of the Boilers as per Rule is 2056 sq. ft and the paying horsepower by Rule 138. Machinery and Boilers of this vessel being of very good description and built to the requirements of the Rules, beg to recommend that she be classed in the Register Book and that \* L.M.C. 11.91 be entered.*

Certificate to Hamburg Office.

*It is submitted that this vessel eligible to have + L.M.C. 11-91 recorded*

The amount of Entry Fee .. £ 2: 0: 0 received by me,  
 Special .. .. £ 18: 14: 0  
 Donkey Boiler Fee .. .. £ : :  
 Certificate (if required) .. £ : : 4/12 1891.  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ 4. 18. 0.)

*W. B. Barrett*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI 18 DEC 1891**  
 + L.M.C. 11.91

