

## REPORT ON MACHINERY.

No. 2103 Port of Hamburg Received at London Office 2103  
 No. in Survey held at Kiel Date, first Survey August 2<sup>nd</sup> Last Survey Novemb. 24<sup>th</sup> 1891  
 g. Book. on the S. S. Croatia Tons { Gross — Net —  
 Master P. Reich Built at Kiel By whom built Howaldtswerke When built 1891  
 Engines made at Kiel By whom made Howaldtswerke when made 1891  
 Makers made at — By whom made — when made 1891  
 Registered Horse Power 130 Owners Ungaro-Croatische Schiff. A. G. Port belonging to Fiume

## GINES, &amp;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 1/6 Low Pressure 1/6  
 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 4<sup>in</sup> dia. 10<sup>in</sup> stroke Where do they pump from all hold, tanks, bilges, tunnel & sea, delivers 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, &amp;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 29.64 sq. ft. Description of safety valves Spring No. to each boiler 2  
 Diameter of each valve 7.984<sup>in</sup> Are they fitted with easing gear yes No. of safety valves to superheater — area of each valve —  
 Are they fitted with easing gear — Smallest distance between boilers and bunkers or woodwork 18<sup>in</sup> Diameter of boilers 9<sup>in</sup> 4<sup>in</sup>  
 Thickness of shell plates 1<sup>in</sup> 1/2<sup>in</sup> description of riveting of shell long. seams double butt etc. double circum. seams lap double riv.  
 Diameter of rivet holes 1<sup>in</sup> 1/2<sup>in</sup> whether punched or drilled drilled pitch of rivets 4<sup>in</sup> 1/2<sup>in</sup> Lap of plating 4<sup>in</sup> 7/8<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 4<sup>in</sup> x 4<sup>in</sup> x 5/8<sup>in</sup> No. of Furnaces in each boiler 2 Description of Furnaces corrugated  
 Inside diameter 35 3/8<sup>in</sup> length 7<sup>in</sup> 0 3/4<sup>in</sup> thickness of plates 17/32<sup>in</sup> description of joint welded if rings are fitted no  
 Test length between rings — working pressure of furnace by the rules 177 lbs. combustion chamber plating, thickness, sides 11/16<sup>in</sup> back 9/16<sup>in</sup> top 4/16<sup>in</sup>  
 Diameter of stays to ditto, sides 7<sup>in</sup> x 7<sup>in</sup> back 7<sup>in</sup> x 7<sup>in</sup> top 6 1/4<sup>in</sup> x 7<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> 1/2<sup>in</sup> working pressure of ditto by rules 189 lbs. end plates in steam space, thickness 29/32<sup>in</sup>  
 Diameter of stays to ditto 13 3/4<sup>in</sup> how stays are secured by double nuts & washers working pressure by rules 233 lbs. diameter of stays at smallest part 2<sup>in</sup>  
 Working pressure by rules 173 lbs. Front plates at bottom, thickness 29/32<sup>in</sup> Back plates, thickness 29/32<sup>in</sup>  
 Test pitch of stays 12<sup>in</sup> working pressure by rules 219 lbs. Diameter of tubes 3<sup>in</sup> pitch of tubes 4<sup>in</sup> 1/2<sup>in</sup> thickness of tube plates, front 29/32<sup>in</sup> back 29/32<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> 1/2<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 set air pump, circulating pump, and bilge pump each, 1 slide rod to suit each valve, 24 boiler tubes, 1 set fire bars, 10 m-denser tubes, 20 glands, 1/2 set Safety valve springs, 2/2 braces for connecting rod and bottom ends, 1 linkblock, 2 bolts connect rod bottom end, 2 mainbearing bolts, 1 coupling bolts, bolts, nuts, rivets, bars and plate assorted.*  
The foregoing is a correct description,  
**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 142.*

*The crankshaft is a built one. The forgings of Steel have been by the Bochum 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 128.*

*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 \* LMC 11.91 be entered.*

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)

Committee's Minute

FRI 18 DEC 1891

+ LMC 11.91

*It is submitted that this vessel  
eligible to have + LMC 11.91  
recorded*

*M. B. Barrett*

Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

*Wm. Rieck*

Lloyd's Register  
Foundation