

# REPORT ON MACHINERY.

MON. DEC 10 1900

Port of Middlebro'-on-Tees

Received at London Office

No. in Survey held at Middlebro'-on-Tees Date, first Survey 27<sup>th</sup> Febry Last Survey 4<sup>th</sup> Dec<sup>r</sup> 1900.

Reg. Book.

On the Steel Screw Steamer "Austriana"  
now Howhatan

Number of Visits 68  
Tons { Gross 4258  
Net 2784

Master - Ridd Built at N. Hartlepool By whom built Turner, Willy & Co. Ltd When built 1900.

Engines made at Middlebro'-on-Tees By whom made Sir, G. Turner, Westgarth & Co. Ltd when made 1900.

Boilers made at 4 By whom made 4 when made 1900.

Registered Horse Power 378 Owners British Maritime Line L. L. Port belonging to N. Hartlepool

Nom. Horse Power as per Section 28 380 Is Refrigerating Machinery fitted no Is Electric Light fitted no

**ENGINES, &c.—Description of Engines** Inverted Triple Expansion No. of Cylinders 3 No. of Cranks 3.

Dia. of Cylinders 25", 40", 68" Length of Stroke 48" Revs. per minute 65 Dia. of Screw shaft as per rule 13.26 Lgth. of stern bush 5'-0"  
 Dia. of Tunnel shaft as per rule 11.9 Dia. of Crank shaft journals as per rule 12.63 Dia. of Crank pin 13 1/4" Size of Crank webs 21" x 10" Dia. of thrust shaft under  
 bars 13 1/4" Dia. of screw 18'-0" Pitch of screw 14'-0" No. of blades 4 State whether moveable no Total surface 90 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work yes.

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 24" Can one be overhauled while the other is at work yes.

No. of Donkey Engines 2 Sizes of Pumps 7 1/2" x 5" x 6" Duplex No. and size of Suctions connected to both Bilge and Donkey pumps  
Ballast 8" x 8" x 10"

Engine Room Three 3 1/2" dia. In Holds, &c. Fore Hold Two, 3 1/2" dia. Main Hold Two, 3 1/2" dia.  
After Hold Two, 3 1/2" dia. Tunnel well one 2 1/2" dia.

No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room & size yes: 6"

Are all the bilge suction pipes fitted with roses yes. Are the roses in Engine room always accessible yes. Are the sluices on Engine room bulkheads always accessible none.

Are all connections with the sea direct on the skin of the ship yes. Are they Valves or Cocks Both.

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.

What pipes are carried through the bunkers none. How are they protected ✓

Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times yes.

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges yes.

When were stern tube, propeller, screw shaft, and all connections examined in dry dock two vessel Is the screw shaft tunnel watertight yes.

Is it fitted with a watertight door yes worked from Upper platform

**BOILERS, &c.—** (Letter for record (S) ) Total Heating Surface of Boilers 6300 sq. ft. Is forced draft fitted No.

No. and Description of Boilers Three, Cylind, Mult, Single ended. Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs.

Dates of test (1) 14.10.00 Can each boiler be worked separately yes. Area of fire grate in each boiler 49.5 sq. ft. No. and Description of safety valves to  
 each boiler Two, Spring loaded. Area of each valve 9.62 sq. in. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear yes.

Smallest distance between boilers or uptakes and bunkers or woodwork No side bunkers. Mean dia. of boilers 14'-3" Length 11'-0" Material of shell plates S.

Thickness 1 1/2" Range of tensile strength 29-32 Are they welded or flanged no. Descrip. of riveting: cir. seams D.P. Lap. long. seams Stk. straps.

Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 3/4" 4 3/8" Lap of plates or width of butt straps 19 1/2" x 1 1/4" thick.

Percentages of strength of longitudinal joint rivets 89.6 Working pressure of shell by rules 206.9 Size of manhole in shell 16" x 12"

No. of compensating ring 35' x 30' x 1 1/16" No. and Description of Furnaces in each boiler 3. Morrison. Material S. Outside diameter 41 1/4"

Length of plain part top 4'-8" Thickness of plates crown 1 1/2" Description of longitudinal joint weld. No. of strengthening rings ✓  
 bottom 3 1/2"

Working pressure of furnace by the rules 196.0 Combustion chamber plates: Material S. Thickness: Sides 1 1/2" Back 3 1/2" Top 3 1/2" Bottom 1 1/2"

No. of stays to ditto: Sides 4 1/2" x 7 3/8" Back 4 1/2" x 4 1/2" Top 4 1/2" x 4 1/2" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 196.5

Material of stays S. Diameter at smallest part 1 5/8" Area supported by each stay 62 sq. in. Working pressure by rules 250.4 End plates in steam space:  
 Material S. Thickness 1 5/16" Pitch of stays 15" x 14 1/2" How are stays secured D.N.W. Working pressure by rules 191.2 Material of stays S.

Diameter at smallest part 2 1/2" Area supported by each stay 217.5 sq. in. Working pressure by rules 225.4 Material of Front plates at bottom S.

Thickness 1 3/16" Material of Lower back plate S. Thickness 5/8" Greatest pitch of stays 13" x 7 3/8" Working pressure of plate by rules 229.0

Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" x 4 3/4" Material of tube plates S. Thickness: Front 1 3/16" x 5/8" Back 3/4" Mean pitch of stays 9 1/2"

Thickness across wide water spaces 14 1/2" Working pressures by rules 231.1 Girders to Chamber tops: Material S. Depth and  
 thickness of girder at centre 8 1/2" x 1 3/4" Length as per rule 28" Distance apart 4 1/2" Number and pitch of Stays in each 2: 7 3/8"

Working pressure by rules 284. Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked  
 separately ✓ Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet  
✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓

Strengthened with rings ✓ Distance between rings ✓ Working pressure by rules ✓ End plates: Thickness ✓ How stayed ✓

Working pressure of end plates ✓ Area of safety valves to superheater ✓ Are they fitted with easing gear ✓

**DONKEY BOILER**— No. *One*. Description *Vertical Blake's patent wet-back.*  
 Made at *Middlesbrough in Tees*. By whom made *Sir C. Furness, Westgarth & Co. Ltd.* When made *1900*. Where fixed *In stockhold.*  
 Working pressure *80*. tested by hydraulic pressure to *160*. No. of Certificate *2283* Fire grate area *24.97* Description of safety valves *Spring*  
 No. of safety valves *2* Area of each *5.94* Pressure to which they are adjusted *82.4* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *4' 6"* Length *16' 3"* Material of shell plates *S.* Thickness *3/32"* Range of tensile strength *27 1/2* Descrip. of riveting long seams *b.p. Lap* Dia. of rivet holes *3/16"* Whether punched or drilled *Drilled* Pitch of rivets *2 5/8"*  
 Lap of plating *4 1/2"* Per centage of strength of joint Rivets *42.1* Thickness of shell crown plates *3/32"* Radius of do. *1 1/2"* No. of Stays to do. *✓*  
 Dia. of stays. *✓* Diameter of furnace Top *29 1/2"* Bottom *68"* Length of furnace *60"* Thickness of furnace plates *5/8"* Description of joint *Lap single* Thickness of *b.b. back* furnace crown plates *1/2"* Stayed by *1 3/8" S. stays, mitted 10 1/2" x 8 1/2" pitted* Working pressure of shell by rules *82.2*  
 Working pressure of furnace by rules *93.4* Diameter of *tubes* *2 1/2"* Thickness of *tubes* plates *1 1/8", 1 3/8"* Thickness of *stay* tubes *5/16"*

**SPARE GEAR.** State the articles supplied:— *1 propeller, 2 top & 2 bottom end, 2 main bearing & 1 set Coupling bolts & nuts; 1/2 set each air & circulating pump valves; 1 set each feed & filer pump valves; 2 donkey pump valves; 1 feed check valve; 1 set Ram bottom rings, 4 M.P. pistons; 1 set Springs L.P. piston; 1 Safety valve spring; 1 escape valve spring each size; bolts & nuts assorted & known of various sizes.*  
 The foregoing is a correct description,  
 For **SIR CHRISTOPHER FURNESS, WESTGARTH & CO. LTD.** Manufacturers of Engines & Boilers.

Dates of Survey while building: During progress of work in shops - *J. Peatonby, 1900. Feb, March, Apr 6, May 8, June 8, July, Aug.*  
 During erection on board vessel - *CHIEF DRAUGHTSMAN*  
 Total No. of visits *Apr. 6, 1900. Aug. 14, 17, 27. Nov. 28. Dec. 7.* Is the approved plan of main boiler forwarded herewith *Retained for duplicate*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The Engines, and Boilers, of this vessel, have been built under Special Survey in accordance with Rule requirements. The materials, and workmanship are good. When completed, and fitted on board, they were tried under steam at knots, with satisfactory results, and are now in good working order, and in our opinion eligible for notation L.M.C 12.00 in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD. + LMC 12.00.

*RS*  
10.12.00.

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10.12.00.

The amount of Entry Fee... £ 3 : 0 :  
 Special... £ 39 : 0 :  
 Donkey Boiler Fee... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 7.12.1900  
 When received, 7.12.1900

*Richard J. Tate*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUES. DEC 11 1900

Assigned + LMC 12.00

Certificate (if required) to be sent to W. Hartlepool.

The Surveyors are to write on or below the space for Committee's Minute.

