

# REPORT ON MACHINERY.

WED 9 DEC 1896

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office.....18

No. in Survey held at Stockton on Tees. Date, first Survey 11th Aug Last Survey 25th Nov 1896  
g. Book. on the Screw Steamer "Troja" (Number of Visits 32) Tons } Gross 2730  
Net 2039

Master Auguste Rubarth Built at Thornaby By whom built Richardson Duck When built 1896  
Engines made at Stockton on Tees By whom made Blair & Co. Ltd. when made 1896  
Boilers made at Stockton on Tees By whom made Blair & Co. Ltd. when made 1896

Registered Horse Power 245 Owners A. C. de Freitas & Co. Port belonging to Hamburg.

Com. Horse Power as per Section 28 246  
Manufacturers HP 200

**ENGINES, &c.** — Description of Engines Triple expansion No. of Cylinders Three

Diameter of Cylinders 27 1/2 - 34 - 61 Length of Stroke 42 Revolutions per minute 58 Diameter of Screw shaft as per rule 10.8  
as fitted 12 1/2

Diameter of Tunnel shaft as per rule 10.3 Diameter of Crank shaft journals 12 Diameter of Crank pin 12 1/2 Size of Crank webs 19 1/2 x 8 1/2  
as fitted 11 1/2

Diameter of screw 16' 0" Pitch of screw 14' 0" No. of blades 4 State whether moveable No Total surface 43 sq. ft.

No. of Feed pumps 2 Diameter of ditto 3" Stroke 30" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 30" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps (4' x 8") (4 1/2' x 9") No. and size of Suctions connected to both Bilge and Donkey pumps  
In Holds, &c. Forehold: Two - 3' dia; Main Hold: Two - 3' dia; After Hold: Two - 3' dia; After peak & funnel hold: one - 2 1/2' dia

Engine Room Four: 3' dia Is a separate donkey suction fitted in Engine room & size Yes: 4"

No. of bilge injections 2 sizes 4 1/2" Connected to condenser, or to circulating pump C.P. Are the sluices on Engine room bulkheads always accessible Yes

Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are they Valves or Cocks Both

Are all connections with the sea direct on the skin of the ship Yes 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 New vessel Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Top platform in engine room.

**BOILERS, &c.** — (Letter for record \$) Total Heating Surface of Boilers 3455 sq. ft.

No. and Description of Boilers Two: One - Multi Single ended Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs

Date of test 15/10/96 Can each boiler be worked separately Yes Area of fire grate in each boiler 56 3/4 No. and Description of safety valves to each boiler Two: Direct Spring Area of each valve 11.074 Pressure to which they are adjusted 16.3 lbs Are they fitted with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork About 18" Mean diameter of boilers 14' 9 1/4"

Length 10' 0" Material of shell plates Steel Thickness 1 1/8" Description of riveting: circum. seams Lap Double long seams 8-12 Butt Sharp  
meron two rows " mid. " Steele

Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 8 3/8" 4 1/2" 1 1/4" width of butt straps 1' 4 3/8"

Per centages of strength of longitudinal joint rivets 95.6 Working pressure of shell by rules 184 lbs Size of manhole in shell 14" x 13"  
plate 83.5

Size of compensating ring 31 x 24 x 1 3/8" No. and Description of Furnaces in each boiler 3: Corrugated Material Steel Outside diameter 3' 8"

Length of plain part top 26.3" Thickness of plates crown 1 1/8" Description of longitudinal joint Welded No. of strengthening rings 4  
bottom 26.3" bottom 32" Back 9 1/6" Top 9 1/6" Bottom 4 1/8"

Working pressure of furnace by the rules 185 lbs Combustion chamber plates: Material Steel Thickness: Sides 9 1/6" Back 9 1/6" Top 9 1/6" Bottom 4 1/8"

Pitch of stays to ditto: Sides 7 5/8" x 7 1/2" Back 7 5/8" x 7 1/2" Top 7 1/2" x 7 1/2" stays are fitted with nuts or riveted heads Nuts Working pressure by rules 182 lbs

Material of stays Iron Diameter at smallest part 1 1/2" Area supported by each stay 56 Working pressure by rules 185 lbs Material of stays Steel

Material Steel Thickness 1" Pitch of stays 16 x 15 1/2" How are stays secured Double nuts Working pressure by rules 185 lbs Material of Front plates at bottom Steel

Diameter at smallest part 2 1/2" Area supported by each stay 248 Working pressure by rules 144 lbs Material of Front plates at bottom Steel

Thickness 1 3/32" Material of Lower back plate Steel Thickness 1 3/32" Greatest pitch of stays 13 1/4" Working pressure of plate by rules 236 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 5/8" Material of tube plates Steel Thickness: Front 1 1/2" Back 1 1/6" Mean pitch of stays 9 1/8"

Pitch across wide water spaces 15 3/4" Working pressures by rules 164 lbs 284 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7" x 1 1/2" Length as per rule 27 1/2" Distance apart 7 1/2" Number and pitch of Stays in each 3: 7 1/4"

Working pressure by rules 168 lbs Superheater or Steam chest; None Can the superheater be shut off and the boiler worked separately Yes

Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness How stayed

Stiffened 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**— Description *Cylindrical metal with 2 plain furnaces.*  
 Made at *Stockton* By whom made *Blair 76<sup>01</sup> dia<sup>2</sup>* When made *21/5/96* Where fixed *In Stockton*  
 Working pressure *100 lbs* tested by hydraulic pressure to *200 lbs* No. of Certificate *1275* Fire grate area *22 1/2* Description of safety valves *Direct Spring*  
 No. of safety valves *2* Area of each *5 1/4* Pressure to which they are adjusted *102 lbs* If fitted with easing gear *Yes* If steam from main boiler  
 enter the donkey boiler *No.* Diameter of donkey boiler *8' 6"* Length *9' 0"* Material of shell plates *Steel* Thickness *9/16*  
 Description of riveting long. seams *Double rivet* Diameter of rivet holes *3/8* Whether punched or drilled *Drilled* Pitch of rivets *3*  
*7/32* Per centage of strength of joint Rivets *82.8* Thickness of shell *End* plates *3/4* Radius of do. *pitch* No. of Stays to do. *16*  
 Dia. of stays. *2 1/2* Diameter of furnace *Top 2' 4" Bottom* Length of furnace *3' 11"* Thickness of furnace plates *15" 14"* Descripti  
 joint *Double Strap* Thickness of *Comb. Chs.* plates *1/2* Stayed by *16* *Side Back Top* Working pressure of shell by rules *110*  
 Working pressure of furnace by rules *101 lbs* Diameter of *tubes* *3"* Thickness of *tube* plates *1 3/4"* Thickness of *water* tubes *5/16"*

**SPARE GEAR.** State the articles supplied:— *Propeller and shaft; Two slide spindles; one pair*  
*each top & bottom end brasses; air circulating pump rods and link*  
*24 Boiler Tubes, 24 Condenser Tubes, 1 Safety valve spring, 6 funnel*  
*Bolts, one set air pump valves, and spare gear required by the Rules*

The foregoing is a correct description,  
**FOR BLAIR & CO., LIMITED.** Manufacturer.  
*Walter Bowie*  
 SECRETARY.

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
 Dates of survey while building  
 During progress of work in shops } 1896 Aug 11. 13. 24. 24. 31 Sep 3. 8. 9. 14. 16. 18. 22. 30 Oct 15. 14. 15. 15. 14. 19  
 During erection on board vessel } 1896 Oct 20. 21. 23. 29. 30 Nov 4. 5. 4. 9. 10. 25  
 Total No. of visits *thirty two*

The Engines and Boilers of this vessel have been built under special survey and the materials and workmanship are good. When completed they were tried under full steam and worked satisfactorily.  
 The machinery throughout is now in good and efficient condition and eligible in my opinion to have record of **L.M.C. 11.96** entered in the Society's Register Book.

It is submitted that this vessel is eligible for  
**THE RECORD. + L.M.C. 11.96**

*R.E.*  
*J.S.* 9/12/96  
 9.12.96

The Surveyors are requested not to write on or below the space for Committee's Minute.

Certificate (if required) to be sent to

The amount of Entry Fee..	£ 2 : " : "	When applied for,
Special .. .. .	£ 32 : 6 : "	4.12.1896
Donkey Boiler Fee .. .. .	£	When received,
Travelling Expenses (if any) £		4.12.1896

*R. E. Austin*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Steamships

Committee's Minute  
 Assigned *+ L.M.C. 11.96*

