

## REPORT ON MACHINERY.

Port of *Middlesbrough*

MON 11 MAR 1895

Received at London Office

18

No. in Survey held at *Stockton-on-Tees* Date, first Survey *13<sup>th</sup> Nov<sup>r</sup> 1894* Last Survey *21<sup>st</sup> Feb<sup>y</sup> 1895*  
Reg. Book.(Number of Visits *2*)on the *Screw Steamer Whitgift*Tons { Gross *2924.65*  
Net *1879.63*Master *J. S. Crane* Built at *Sunderland* By whom built *J. L. Thompson & Sons* When built *1895*Engines made at *Stockton-on-Tees* By whom made *Blair & Co<sup>y</sup> Ltd<sup>r</sup>* when made *1895*Milers made at *Stockton-on-Tees* By whom made *Blair & Co<sup>y</sup> Ltd<sup>r</sup>* when made *1895*Registered Horse Power *300* Owners *Houlder Middleton & Co* Port belonging to *London*m. Horse Power as per Section 28 *246*  
Manufacturers *H. P. 190*

GINES, &c.— Description of Engines *Triple Expansion* No. of Cylinders *Three*

Diameter of Cylinders *23"-37½"-61½"* Length of Stroke *39"* Revolutions per minute *60* Diameter of Screw shaft *as per rule 10.7"*  
Diameter of Tunnel shaft *as per rule 10.1"* Diameter of Crank shaft journals *11½"* Diameter of Crank pin *12½"* Size of Crank webs *19½" x 8½"*  
Diameter of screw *16'0"* Pitch of screw *15'6"* No. of blades *4* State whether moveable *No* Total surface *41 sq. ft.*

No. of Feed pumps *2* Diameter of ditto *3"* Stroke *28"* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* Diameter of ditto *4½"* Stroke *28"* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *Two* Sizes of Pumps *Sea (4" x 8") Ballast (7½" x 9")* No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room *Three: Port 3" dia. Centre 3½" dia. Star 3" dia. In Holds, &c. Fore Hold: Two-3" dia. main hold: Two-3" dia. After Hold: Two-3" dia. Aftermost Hold: Two-3" dia. Tunnel truss support: One 2" dia.*

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

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 *New vessel* Is the screw shaft tunnel watertight *yes*

Is it fitted with a watertight door *yes* worked from *top platform*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *3826 sq. ft.*

No. and Description of Boilers *Two: 400 h.p. multi-lingled ended* Working Pressure *160 lbs.* Tested by hydraulic pressure to *320 lbs.*

Date of test *31/1/95* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *50 ft<sup>2</sup>* No. and Description of safety valves to each boiler *Two: Direct Spring* Area of each valve *4.06 ft<sup>2</sup>* Pressure to which they are adjusted *165 lbs.* Are they fitted with easing gear *Yes* Smallest distance between boilers or uptakes and bunkers or woodwork *About 15"* Mean diameter of boilers *14'3.58"*

Length *10'0"* Material of shell plates *Steel* Thickness *1½"* Description of riveting: circum. seams *Lap double long* seams *8 Butt straps*

Diameter of rivet holes in long. seams *1½"* Pitch of rivets *8"* *4"* *Lap of plates or width of butt straps 1'5½" x 1"*

Percentages of strength of longitudinal joint *86.7%* Working pressure of shell by rules *168 lbs.* Size of manhole in shell *14" x 13"*

No. of compensating ring *31 x 27 x 1½"* No. and Description of Furnaces in each boiler *3: Corrugated* Material *Steel* Outside diameter *3'6"*

Length of plain part *top 6'3"* Thickness of plates *crown 1½"* Description of longitudinal joint *bedded* No. of strengthening rings *-*  
*bottom 6'3"* *bottom 1½"*

Working pressure of furnace by the rules *149 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *9/16"* Back *9/16"* Top *9/16"* Bottom *7/8"*

No. of stays to ditto: Sides *4½" x 4"* Back *4½" x 4"* Top *4½" x 4"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *182 lbs.*

Material of stays *Iron* Diameter at smallest part *1½"* Area supported by each stay *54 ft<sup>2</sup>* Working pressure by rules *182 lbs.* and plates in steam space: *Steel* Thickness *3/32"* Pitch of stays *15½" x 15"* How are stays secured *Double nuts & washers* Working pressure by rules *146 lbs.* Material of stays *Steel*

Diameter at smallest part *2½"* Area supported by each stay *233 ft<sup>2</sup>* Working pressure by rules *146 lbs.* Material of Front plates at bottom *Steel*

Thickness *1"* Material of Lower back plate *Steel* Thickness *1"* Greatest pitch of stays *12½"* Working pressure of plate by rules *164 lbs.*

Diameter of tubes *3½"* Pitch of tubes *4½" x 4"* Material of tube plates *Steel* Thickness: Front *1"* Back *1½"* Mean pitch of stays *9'8"*

Width across wide water spaces *14½"* Working pressures by rules *189 lbs.* 284 lbs. Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *4½" x 1½"* Length as per rule *27½"* Distance apart *4'* Number and pitch of Stays in each *3: 7½"*

Working pressure by rules *183 lbs.* 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	
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 *Meredith patent.*  
 Made at *Stockton* By whom made *Riley Bros.* When made *17/1/94* Where fixed *In Stockholm*  
 Working pressure *160 lbs* Tested by hydraulic pressure to *320 lbs* No. of Certificate *958* Fire grate area *24 sq. ft.* Description of safety valves *direct spring*  
 No. of safety valves *2* Area of each *3 1/4* Pressure to which they are adjusted *162 lbs* If filled with casing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *4' 0"* Length *15' 0"* Material of shell plates *Steel* Thickness *1/6"*  
 Description of riveting long. seams *Double rivet* Diameter of rivet holes *1 5/16"* Whether punched or drilled *Drilled* Pitch of rivets *3 1/2"*  
*W.B. Shaps* Rivets *49.6* Thickness of shell crown plates *1/6"* Radius of do. *3' 6"* No. of stays to do. *none*  
*lap of plating 9 1/2"* Per centage of strength of joint *75* Thickness of furnace plates *3/4"* Description of joint *Welded* Thickness of furnace crown plates *1 1/6"* Stayed by *Dished to 2' 6" radius* Working pressure of shell by rules *160 lbs*  
 Dia. of stays. — Diameter of furnace Top *4' 2 5/8"* Bottom *5' 9"* Length of furnace *2' 9"* Thickness of furnace plates *3/4"*  
 Working pressure of furnace by rules *166 lbs* Diameter of tubes *3 1/4"* Thickness of tube plates *1/6"* Thickness of water tubes *3/16"* Stays *14 1/2" steel stays 7 1/2" x 7"*

**SPARE GEAR.** State the articles supplied:— *Propeller, 2 main Bearing Bolts, 2 Crank pin Bolts, 2 Crosshead Bolts, 1 set Coupling Bolts, 1 set Feed + Relief pump valves, 1 set piston springs, 1 set Air pump valves, 1 set Condenser valves, 6 Boiler tubes, 6 Condenser tubes, 1 1/2 set Relief pump valves, Bolts, nuts, Iron, etc.*  
 The foregoing is a correct description,  
**FOR BLAIR & CO., LIMITED.** Manufacturer *of main Engines & Boilers.*  
*P. & W. Blair*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)

*The Engines and Boilers of this vessel have been built under special survey and the materials and workmanship are good. After completion they were examined under steam and worked satisfactorily.*

*The Machinery throughout is now in good and efficient condition and will be eligible in my opinion to have the notation of **L.M.C. 3, 95** marked in the Society Register Book when the following work has been completed: The Donkey Boiler and its mountings to be examined under steam and its safety valves adjusted; The arrangement of suction in Holds and Tunnel to be completed as per approved plan and the non return valves to aftermost Hold & Tunnel well to be examined; Tunnel to be made watertight and Drain holes to be cut through margin plates to allow water to pass freely to the pump suction.*

*The above detailed work has now been completed in a satisfactory manner. J.Y.F.*

It is submitted that this vessel is eligible for THE RECORD **L.M.C. 3 95**

*W.A.*  
*11-3-95*

Certificate (if required) to be sent to

The amount of Entry Fee.. £ 2 : : : When applied for,  
 Special .. .. £ 32 : 6 : : 9 March 1895  
 Donkey Boiler Fee .. .. £ : : :  
 Travelling Expenses (if any) £ : : : 23.3.95

Committee's Minute

**TUES 12 MAR 1895**

Assigned

*+ L.M.C. 3, 95*

*Wm. Austin J.Y.F. M.A.*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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