

# REPORT ON MACHINERY.

No. *6732*  
FRI. 25 FEB 1910

Port of *Middlebrough*

Received at London Office

No. in Survey held at *Stockton-on-Tees* Date, first Survey *15th Dec 1909* Last Survey *15th Feb 1910*

Reg. Book. on the *Steel Screw Steamer "Sterndale"* (Number of Visits *9*)

Master *J. Davis* Built at *Thornaby-on-Tees* By whom built *Richardson, Duck & Co* Tons { Gross *2925.18* Net *1808.35* When built *1910*

Engines made at *Stockton* By whom made *Messrs Blair & Co Lim? (No 1666)* when made *1910*

Boilers made at *Stockton* By whom made *Messrs Blair & Co Lim?* when made *1910*

Registered Horse Power Owners *J. & S. B. (Luce & Co.)* Port belonging to *Bristol*

Nom. Horse Power as per Section 28 *292* Is Refrigerating Machinery fitted for cargo purposes *no* Is Electric Light fitted *no*

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

Dia. of Cylinders *24-40-65* Length of Stroke *42* Revs. per minute *-* Dia. of Screw shaft *as per rule 13.3* Material of screw shaft *iron*

Is the screw shaft fitted with a continuous liner the whole length of the stern tube *yes* Is the after end of the liner made water tight in the propeller boss *yes* If the liner is in more than one length are the joints burned *yes* If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *-* If two liners are fitted, is the shaft lapped or protected between the liners *-* Length of stern bush *5'-1"*

Dia. of Tunnel shaft *as per rule 11.37* Dia. of Crank shaft journals *as per rule 11.24* Dia. of Crank pin *19 1/2* Size of Crank webs *24 x 8 1/2* Dia. of thrust shaft under collars *19 1/2* Dia. of screw *17'-0"* Pitch of Screw *16'-6"* No. of Blades *4* State whether moveable *no* Total surface *82 sq*

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 *2* Sizes of Pumps *Blat-9x10; Ind 4x8* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3 @ 3" bore* In Holds, &c. *No 1 = 2 @ 9"; No 2 = 2 @ 3"*

No. of Bilge Injections *1* sizes *6 1/4* Connected to *condenser* circulating pump *yes* 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 *hold motions* How are they protected *wood ceiling*

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*

Dates of examination of completion of fitting of Sea Connections *6.1.10* of Stern Tube *6.1.10* Screw shaft and Propeller *31.1.10*

Is the Screw Shaft Tunnel watertight *see hull Rpt* Is it fitted with a watertight door *yes* worked from *top platform*

MANUFACTURERS, &c.—(Letter for record *(S)*) Manufacturers of Steel *Messrs J. Spencer & Sons*

Total Heating Surface of Boilers *4658* Is Forced Draft fitted *no* No. and Description of Boilers *2 Single Ended*

Working Pressure *160* Tested by hydraulic pressure to *320* Date of test *12.1.10* No. of Certificate *4355*

Can each boiler be worked separately *yes* Area of fire grate in each boiler *59 sq* No. and Description of Safety Valves to each boiler *2 direct spring*

Area of each valve *8.29* Pressure to which they are adjusted *165 lbs* Are they fitted with easing gear *yes*

Smallest distance between boilers or uptakes and bunkers *20"* Mean dia. of boilers *15'-9"* Length *10'-6"* Material of shell plates *steel*

Thickness *1 1/8"* Range of tensile strength *28-32* Are the shell plates welded or flanged *no* Descrip. of riveting: cir. seams *2 Riv Lap*

Long. seams *2 Riv-3 Riv* Diameter of rivet holes in long. seams *1 3/16* Pitch of rivets *8 3/8* Lap of plates or width of butt straps *17 3/8 x 1 7/8*

Percentages of strength of longitudinal joint rivets *87.7* Working pressure of shell by rules *165 lbs* Size of manhole in shell *16" x 12"*

Size of compensating ring *7 1/2" x 1 1/8"* No. and Description of Furnaces in each boiler *3 corrugated* Material *steel* Outside diameter *45 1/4"*

Length of plain part *top 33* Thickness of plates *bottom 24* Description of longitudinal joint *welded* No. of strengthening rings *-*

Working pressure of furnace by the rules *174* Combustion chamber plates: Material *steel* Thickness: Sides *2 1/2"* Back *2 1/2"* Top *2 1/2"* Bottom *3/4"*

Thickness of stays to ditto: Sides *9 1/4" x 9 1/4"* Back *9 1/8" x 9 1/4"* Top *9 1/4" x 9 1/4"* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *165*

Material of stays *steel* Diameter at smallest part *1.59* Area supported by each stay *90.19* Working pressure by rules *199* End plates in steam space: Material *steel* Thickness *1 1/4"* Pitch of stays *21" x 21 1/4"* How are stays secured *nuts & 10"x1" low washers* Working pressure by rules *162* Material of stays *steel*

Diameter at smallest part *3.04* Area supported by each stay *456.75* Working pressure by rules *165* Material of Front plates at bottom *steel*

Thickness *1"* Material of Lower back plate *steel* Thickness *1"* Greatest pitch of stays *16 1/2" x 9 1/4"* Working pressure of plate by rules *177*

Diameter of tubes *3 1/2"* Pitch of tubes *4 3/8" x 4 3/4"* Material of tube plates *steel* Thickness: Front *1"* Back *1 3/8"* Mean pitch of stays *10'-6"*

Thickness across wide water spaces *14 1/2"* Working pressures by rules *170* Girders to Chamber tops: Material *steel* Depth *-*

Thickness of girder at centre *7 1/8" x 1 3/8"* Length as per rule *26 1/2"* Distance apart *9 3/4"* Number and pitch of stays in each *2 @ 9 1/4"*

Working pressure by rules *166* 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 *-*

Lloyd's Register Foundation  
WS45-0268

**VERTICAL DONKEY BOILER**— *Manufacturers of Steel* See *Middlebro Report No 6080*

No. one Description Multitubular Single ended  
 Made at Stockton By whom made Thames Valley Bros (No 4093) When made 1910 Where fixed Upper Stk in Br  
 Working pressure 90 tested by hydraulic pressure to 180 Date of test 6.1.10 No. of Certificate 4353 Fire grate area 33 sq ft Description of S  
 Valves Spring No. of Safety Valves 2 Area of each 7.07 Pressure to which they are adjusted 95 Date of adjustment 15.2.  
 If fitted with easing gear yes If steam from main boilers can enter the donkey boiler no Dia. of donkey boiler 10'-0" Length 10'-0"  
 Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Descrip. of riveting long. seams \_\_\_\_\_  
 Dia. of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plating \_\_\_\_\_ Percentage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_  
 Working pressure of shell by rules \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of stays to do. \_\_\_\_\_ Dia. of stays \_\_\_\_\_  
 Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_  
 Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_  
 Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— Two each of con. rod top end, con. rod bottom end, and main bearing bolts and nuts: one set of coupling bolts and nuts: one set feed and bridge pump valves, assorted bolts and nuts, iron of various sizes; one propeller; main & donkey feed check valves

The foregoing is a correct description,  
**FOR BLAIR & CO., LIMITED** Manufacturer.  
*Geo. Middlebro*

Dates of Survey while building  
 During progress of work in shops— 1909. Oct. 15. 19. 21. 25. 27. 28 Nov. 1. 3. 4. 8. 10. 12. 16. 17. 18. 19. 22. 23.  
 During erection on board vessel— Nov. 20. 30. Dec. 2. 3. 6. 9. 13. 14. 15. 16. 17. 20. 22. 1910 Jan. 4. 6. 10. 12. 14. 18. 20. 27.  
 Feb. 2. 3. 7. 8. 10. 11. 15. 49 Total No. of visits  
 Is the approved plan of main boiler forwarded herewith yes  
 " " " donkey, see Middlebro Report-6080

Dates of Examination of principal parts— Cylinders 18.11.09 Slides 2.12.09 Covers 3.12.09 Pistons 9.12.09 Rods 9.12.09  
 Connecting rods 20.12.09 Crank shaft 14.12.09 Thrust shaft 20.11.09 Tunnel shafts 3.9.09 Screw shaft 14.1.10 Propeller 14.1.10  
 Stern tube 20.12.09 Steam pipes tested 3.2.10 Engine and boiler seatings 6.1.10 Engines holding down bolts 3.2.10  
 Completion of pumping arrangements 10.2.10 Boilers fixed 10.2.10 Engines tried under steam 11.2.10  
 Main boiler safety valves adjusted 11.2.10 Thickness of adjusting washers Star Bl. SV = 13/32: PV = 1/4: PBl SV = 3/32: PV = 1/8  
 Material of Crank shaft Eng Steel Identification Mark on Do. 6532 Material of Thrust shaft Eng Steel Identification Mark on Do. 7014  
 Material of Tunnel shafts Eng Steel Identification Marks on Do. 7019.N Material of Screw shafts Iron Identification Marks on Do. 653  
 Material of Steam Pipes Solid drawn copper 6 1/2 Bore x 1/4" x 5" + 1/4" Test pressure 400 lbs.

**General Remarks** (State quality of workmanship, opinions as to class; &c. The machinery of this vessel has been built under special survey. The materials and workmanship are sound and good. The boilers and main steam pipes were tested by hydraulic pressure and the engines and boilers examined under steam at a wharf and all found satisfactory.

The machinery of this vessel is now in a good and safe working condition and eligible in my opinion to have the notation of LMC-2 in the Register Book

It is submitted that this vessel is eligible for **THE RECORD. + LMC. 2.10.**

The amount of Entry Fee. . . £ 2-0-0 When applied for, 17.2.10  
 Special . . . . . £ 34-12-0 When received, 19.2.10  
 Donkey Boiler Fee . . . . . £ ✓  
 Travelling Expenses (if any) £ ✓

*J.M.* *J.W.D.*  
*Wm Morrison*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute **TUES. 1 MAR 1910**  
 Assigned + LMC 2 10



Certificate (if required) to be sent to Middlebro

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