

REPORT ON MACHINERY.

Mat. No. 1163

W. No. 9336

Port of *Middlesbrough-on-Tees.*

Received at London Office

MAR 1894

No. in Survey held at *Stockton-on-Tees*
Reg. Book.

Date, first Survey *8th Nov. 1893* Last Survey *14th Feb. 1894*

(Number of Visits *24*)

Tons { Gross *2889.76*
Net *1861.61*

on the *Screw Steamer "Madeline"*

Master *H. Hedden* Built at *Hartlepool.* By whom built *Furness, Ratby & Co. Ltd.* When built *1894.*

Engines made at *Stockton-on-Tees.* By whom made *Blair & Co. Ltd.* when made *1894.*

Boilers made at *Stockton-on-Tees.* By whom made *Blair & Co. Ltd.* when made *1894.*

Registered Horse Power *220* Owners *Pyman Bell & Co.* Port belonging to *Newcastle*

Nom. Horse Power as per Section 28 *236*
Manufacturers *H 190.*

ENGINES, &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 *19" x 8½" built.*
Diameter of screw *16' 0"* Pitch of screw *15' 6"* No. of blades *4* State whether moveable *No* Total surface *71 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 *(4 x 8") (7½ x 9")* No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room *Three - Centre 3½" and Wings 3" dia.* In Holds, &c. *Fore Hold well: one 3½" dia.*
Main Hold well: 1-3½" dia. After Hold well: 1-3½" dia. Aftermost Hold well: 1-3½" dia. Tunnel well: 2½" dia.
No. of bilge injections *1* sizes *6"* Connected to condenser, or to circulating pump *C. P.* Is a separate donkey suction fitted in Engine room & size *Yes: 4" dia.*
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 *Yes*
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 of engine room*

BOILERS, &c.— (Letter for record *S.*) Total Heating Surface of Boilers *3528 sq. ft.*
No. and Description of Boilers *Two: cylindrical multitubular* Working Pressure *160 lbs.* Tested by hydraulic pressure to *320 lbs.*
Date of test *11/1/94.* Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *49½ sq. ft.* No. and Description of safety valves to
each boiler *Two: Direct Spring.* Area of each valve *7.06 sq. in.* Pressure to which they are adjusted *167 lbs.* Are they fitted
with easing gear *Yes.* Smallest distance between boilers or uptakes and bunkers or woodwork *16"* Mean diameter of boilers *14' 0¾"*
Length *10' 0"* Material of shell plates *Steel.* Thickness *1½"* Description of riveting: circum. seams *Lap Double* long. seams *Butt Straps*
Diameter of rivet holes in long. seams *1¾"* Pitch of rivets *8"* Lap of plates or width of butt straps *1' 5¾" x 1" thick*
Per centages of strength of longitudinal joint *89%* Working pressure of shell by rules *166 lbs.* Size of manhole in shell *16" x 12"*
Size of compensating ring *28" x 24" 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" bottom 6' 3"* Thickness of plates *crown 1½" bottom 1½"* Description of longitudinal joint *Welded* No. of strengthening rings *2"*
Working pressure of furnace by the rules *194 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *¾"* Back *¾"* Top *¾"* Bottom *¾"*
Pitch of stays to ditto: Sides *¾" x ¾"* Back *¾" x ¾"* Top *¾" x ¾"* 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 sq. in.* Working pressure by rules *149 lbs.* End plates in steam space:
Material *Steel* Thickness *¾"* Pitch of stays *16½" x 15"* How are stays secured *Double Nuts & Washers.* Working pressure by rules *167 lbs.* Material of stays *Steel*
Diameter at smallest part *2½"* Area supported by each stay *243 sq. in.* Working pressure by rules *181 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 *160 lbs.*
Diameter of tubes *3½"* Pitch of tubes *4½" x 4½"* Material of tube plates *Steel* Thickness: Front *1"* Back *1½"* Mean pitch of stays *10' 4"*
Pitch across wide water spaces *14½"* Working pressures by rules *190 lbs. & 227 lbs.* Girders to Chamber tops: Material *Steel* Depth and
thickness of girder at centre *¾" x 1½"* Length as per rule *27½"* Distance apart *7½"* Number and pitch of Stays in each *3: 7½"*
Working pressure by rules *165 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
holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness
If 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

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Foundation

HPL372-0050

DONKEY BOILER— Description *Horace patent.*
 Made at *So. Shields* By whom made *M. Shaker & sons* When made *22/12/93* Where fixed *In Larkhol*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *4220* Fire grate area *30* Description of safety valves *Spring*
 No. of safety valves *1* Area of each *15.9* Pressure to which they are adjusted *85* If fitted with easing gear *Yes* If steam from main boilers
 enter the donkey boiler *No* Diameter of donkey boiler *4'6"* Length *14'6"* Material of shell plates *Steel* Thickness *1/2"*
 Description of riveting long. seams *Lap Double* Diameter of rivet holes *3/8"* Whether punched or drilled *punched* Pitch of rivets *3"*
 Lap of plating *4 3/4"* Per centage of strength of joint Rivets *70* Thickness of shell crown plates *1/2"* Radius of do. *3'9"* No. of Stays to do. *hor*
 Dia. of stays. — Diameter of furnace *Top 6'9" Bottom* Length of furnace *Spherical* Thickness of furnace plates *1/2" 5/8"* Description
 joint *Lap Single* Thickness of furnace crown plates *5/8"* Stayed by *Dished* Working pressure of shell by rules *80*
 Working pressure of furnace by rules *103 lbs* Diameter of uptake *24"* Thickness of uptake plates *1/4"* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *Two connecting rod bolts, top, and two bottom. Two main bearing bolts. One set coupling bolts. One set feed pump valves and one set bilge. One set piston rings HP and one set NP Bolts & nuts assorted. Bar iron. One propeller*
The foregoing is a correct description,
FOR BLAIR & CO., LIMITED. Manufacturers of main Engines & Boilers.
S. H. Blair

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Engines and Boilers have been constructed under special survey, and the workmanship is good. When fitted in place on board the vessel, they were examined under steam and worked satisfactorily.
The Machinery is now in good and efficient condition, and will be eligible in my opinion to have the record of L.M.C. 3, 94. marked in the Register Book, when the following work has been satisfactorily completed:— The lutions in Holds and Tunnel to be finished in accordance with the approved plans; the Tunnel to be made watertight, the Donkey boiler with its mountings to be examined under steam and its safety valves set, and Spare gear to be supplied.
The Donkey boiler has been examined under steam and its safety valve adjusted. The tunnel has been made water tight. The pumping arrangement has been completed. Spare gear has been supplied as stated above.
A. P. Paton

MACHINERY CERTIFICATE
It is submitted that this vessel is eligible for THE RECORD + L.M.C. 3-94
W. A. 9.3.94
 Certificate (if required) to be sent to
 The amount of Entry Fee.. £ 2 : " : "
 Special £ 31 : 16 : "
 Donkey Boiler Fee £ : : "
 Travelling Expenses (if any) £ : : "
 When applied for, 7.3.94
 When received, 7.3.94
Wm. R. Austin.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 Committee's Minute
 Assigned
 FEB 9 MAR 1894
 + L.M.C. 3, 94

(The Surveyors are required to write on or below this space for Committee's Minute.)

