

REPORT ON MACHINERY.

Port of **MIDDLESBROUGH-ON-TEES.**

Received at London **16 MAY 1903**

Sld. 2-3-03.

No. in Survey held at **Stockton**
eg. Book.

Date, first Survey **11th June** or Last Survey **24th Nov.** 1902
Indb Number of Vessels **12**

on the

S. S. "Zone."

Tons { Gross 3914
Net 2456

Master **P. J. Person** Built at **Sunderland** By whom built **J. L. Thompson & Son**

When built **1902**

Engines made at **Stockton** By whom made **Blair & Co. Ltd**

when made **1902.**

Boilers made at **Stockton** By whom made **Blair & Co. Ltd**

when made **1902.**

Registered Horse Power Owners **Messrs. Turner, Brightman & Co.** Port belonging to **London**

nom. Horse Power as per Section 28 **438** Is Refrigerating Machinery fitted **Yes** Is Electric Light fitted **Yes**

ENGINES, &c.—Description of Engines **Triple Expansion** No. of Cylinders **Three** No. of Cranks **3.**
Dia. of Cylinders **24 $\frac{1}{2}$ " 40" 46"** Length of Stroke **45"** Revs. per minute **58** Dia. of Screw shaft as per rule **14.5"** as fitted **15"** Lgth. of stern bush **60"**
Dia. of Tunnel shaft as per rule **12.2"** as fitted **13"** Dia. of Crank shaft journals as per rule **12.83"** as fitted **13 $\frac{1}{2}$ "** Dia. of Crank pin **14"** Size of Crank web **22 $\frac{1}{2}$ " 8 $\frac{3}{4}$ "** Dia. of thrust shaft under
rollers **14"** Dia. of screw **14'-0"** Pitch of screw **14'-0"** No. of blades **4** State whether moveable **Not** Total surface **8109 ft.**
No. of Feed pumps **2.** Diameter of ditto **3"** Stroke **33"** Can one be overhauled while the other is at work **Yes**
No. of Bilge pumps **2.** Diameter of ditto **4 $\frac{1}{2}$ "** Stroke **33"** Can one be overhauled while the other is at work **Yes**
No. of Donkey Engines **Two** Sizes of Pumps **13.9" 10" 4" 8"** No. and size of Suctions connected to both Bilge and Donkey pumps
Engine Room **Three 3 $\frac{1}{2}$ " diameter. —** In Holds, &c. **2 in each hold of 3 $\frac{1}{2}$ " dia.**

No. of bilge injections **1** sizes **6 $\frac{1}{4}$ "** Connected to ~~condenser~~ or to 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 **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 **2nd March** Is the screw shaft tunnel watertight **See Ship Rep.**
Is it fitted with a watertight door **Yes** worked from **top platform**

OILERS, &c.— (Letter for record (S.) Total Heating Surface of Boilers **8430 sq. ft.** Is forced draft fitted **No**
No. and Description of Boilers **3 S. E. Multitubular** Working Pressure **180 lb** Tested by hydraulic pressure to **360 lb**
Date of test **11.02** Can each boiler be worked separately **Yes** Area of fire grate in each boiler **63 $\frac{1}{2}$ sq. ft.** and Description of safety valves to
each boiler **2 d. act. Spring** Area of each valve **8.29"** Pressure to which they are adjusted **185 lb** Are they fitted with easing gear **Yes**
Smallest distance between boilers or uptakes and bunkers or ~~woodwork~~ **18"** Mean dia. of boilers **16'-6"** Length **11'-0"** Material of shell plates **S.**
Thickness **1 $\frac{1}{32}$ "** Range of tensile strength **24-32** Are they welded or flanged **No** Descrip. of riveting: cir. seams **d. r. l.** long. seams **d. butt str.**
Diameter of rivet holes in long. seams **1 $\frac{1}{16}$ "** Pitch of rivets **9 $\frac{1}{4}$ " 4 5 $\frac{1}{8}$ "** Lap of plates & width of butt straps **6 $\frac{5}{8}$ " 20 $\frac{5}{8}$ "**
Per centages of strength of longitudinal joint rivets **92.8** plate **84.4** Working pressure of shell by rules **186 lb** Size of manhole in shell **14" x 13"**
Size of compensating ring **31 $\frac{1}{2}$ " 1 $\frac{1}{32}$ " No. and Description of Furnaces in each boiler **3 Ribbed** Material **S.** Outside diameter **46"**
Length of plain part top **7'-0"** bottom **7'-0"** Thickness of plates crown **39/64"** Description of longitudinal joint **weld** No. of strengthening rings **—**
Working pressure of furnace by the rules **195 lb** Combustion chamber plates: Material **S.** Thickness: Sides **7/16"** Back **7/16"** Top **7/16"** Bottom **1"**
Pitch of stays to ditto: Sides **9 $\frac{1}{4}$ " 7 $\frac{1}{4}$ "** Back **9 $\frac{1}{4}$ " 9 $\frac{1}{8}$ "** Top **9 $\frac{1}{4}$ " 7 $\frac{1}{4}$ "** If stays are fitted with nuts or riveted heads **Nuts** Working pressure by rules **183 lb**
Material of stays **S.** Diameter at smallest part **1 $\frac{9}{16}$ "** Area supported by each stay **88.9"** Working pressure by rules **194 lb** End plates in steam space:
Material **S.** Thickness **1 $\frac{3}{16}$ "** Pitch of stays **20" 14 $\frac{1}{2}$ "** How are stays secured **d. nuts** Working pressure by rules **189 lb** Material of stays **S.**
Diameter at smallest part **2 $\frac{7}{8}$ "** Area supported by each stay **350"** Working pressure by rules **185 lb** Material of Front plates at bottom **S.**
Thickness **1 $\frac{1}{16}$ "** Material of Lower back plate **S.** Thickness **1 $\frac{1}{8}$ "** Greatest pitch of stays **14"** Working pressure of plate by rules **205 lb**
Diameter of tubes **3 $\frac{1}{2}$ "** Pitch of tubes **4 $\frac{1}{2}$ " 4 $\frac{3}{8}$ "** Material of tube plates **S.** Thickness: Front **1 $\frac{1}{32}$ "** Back **1 $\frac{1}{16}$ "** Mean pitch of stays **11"**
Pitch across wide water spaces **14 $\frac{1}{2}$ "** Working pressures by rules **194 195 lb** Girders to Chamber tops: Material **S.** Depth and
thickness of girder at centre **7 $\frac{3}{4}$ " 2"** Length as per rule **30"** Distance apart **9 $\frac{1}{2}$ "** Number and pitch of Stays in each **3. 7 $\frac{3}{4}$ "**
Working pressure by rules **184 5 lb** 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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Lloyd's Register
Foundation

W731-0043

DONKEY BOILER— No. *One* Description *Meredith's Patent*
 Made at *Stockton* By whom made *Riley Bros* When made *7/11/02* Where fixed *deck house*
 Working pressure *180lb* tested by hydraulic pressure to *360lb* No. of Certificate *2875* Fire grate area *30* Description of safety valves *d. a spring*
 No. of safety valves *2* Area of each *3.98* Pressure to which they are adjusted *180lb* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *7'-9"* Length *16'-0"* Material of shell plates *S* Thickness *3/4"* Range of tensile strength *24-32* Descrip. of riveting long. seams *d. butt str 3/4"* Dia. of rivet holes *25/16* Whether punched or drilled *dr* Pitch of rivets *7 1/2"*
Butt str Lap of plating *13"* Per centage of strength of joint Rivets *96.7* Thickness of shell crown plates *23/32* Radius of do. *Cone* No. of Stays to do. *—*
 Dia. of stays *5/16"* Diameter of furnace Top *4'-9"* Bottom *6'-2"* Length of furnace *2'-6"* Thickness of furnace plates *3/4"* Description of joint *lap d.r.* Thickness of furnace crown plates *3/4"* Stayed by *dished* Working pressure of shell by rules *195lb*
 Working pressure of furnace by rules *180lb* as app. Diameter of uptake tubes *3"* Thickness of uptake plates *5/16"* Thickness of water tubes *5/16"*

SPARE GEAR. State the articles supplied:— *Two top end bolts and nuts, two bottom end bolts and nuts, two main bearing bolts and nuts, coupling bolts and nuts, feed and bilge pump valves, assorted iron bolts and nuts*
etc.

The foregoing is a correct description,
FOR BLAIR & CO., LIMITED.

Manufacturers of engines and main boilers

Particular
 MANAGING DIRECTOR (Mdb.) June 11. 18. 25. July 4. 9. 16. 21. 28. Aug. 5. 27. Sept. 3. 4. 6. 8. 11. 17. 18. 22. 24. 26. 29. 30. Oct. 1. 2. 8
 Dates of Survey while building During progress of work in shops — During erection on board vessel — 9. 13. 14. 15. 20. 22. 23. 29. Nov. 3. 5. 12. 13. 13. 17. 18. 19. 21. 24. (Sld) 1902. — Oct. 27. Dec. 2. 6. 10. 18. 1903. — Mar. 2.
 Total No. of visits (Mdb.) 42. (Sld) 6. Is the approved plan of main boiler forwarded herewith *Blair's*
 " " " donkey " " *plans retained*

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

Material of screw shaft *Scrap iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *No*
 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 *—*
 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 *yes.*

These engines and boilers have been built and tested as required by the Society's Rules for Special Survey and are of good workmanship and materials, they have been well fitted and secured on board and on completion tried under steam with satisfactory results.

The vessel has now left for builders yard where the donkey boiler safety valves will be adjusted, pumping plan completed, spare gear and refrigerating machinery fitted. — See Owners letter attached.
 This report for^d to Sunderland Surveyors for comp^d — Wm Sanderson Mtr. 4.12.02
 The above mentioned work has been satisfactorily completed and spare gear supplied.

This vessel's machinery is now in our opinion in a good and efficient working condition and eligible to the notation of:
 *L.M.C 3-03.

It is submitted that this vessel is eligible for THE RECORD. — L.M.C 3.03. ELEC LIGHT REF MCHY.

The amount of Entry Fee... £ 3 : : : When applied for, 14.3.03
 Special ... £ 41 18 : : :
 Donkey Boiler Fee ... £ : : : When received, 18.3.03
 Travelling Expenses (if any) £ : : :

Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

TUES. 17 MAR 1903

Assigned

+ L.M.C 3.03