

REPORT ON MACHINERY.

No. 4926

Port of **MIDDLESBROUGH-ON-TEES**

THUR. FEB 14 1907

Received at London Office

No. in Survey held at **Middlesbrough**

Date, first Survey **30th March 1906** Last Survey **5th Feb. 1907**

Reg. Book.

(Number of Visits **56**)

72 Supp on the

S. S. "Maud"

Tons { Gross **2117**
Net **1350**

Master **H. Stranger** Built at **Ferig**

By whom built **Ferigs Jernstøbsbyggeri** When built

Engines made at **Middlesbrough**

By whom made **Richardsons Westgarth & Co** when made **1907**

Boilers made at **ditto**

By whom made **ditto** when made **1907**

Registered Horse Power

owners **Acties Maud (Hjalmar Roed & Co)** Port belonging to **Tönsberg**

Nom. Horse Power as per Section 28 **230**

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 **22"-36"-59"** Length of Stroke **39"** Revs. per minute

Dia. of Screw shaft as per rule **11.83** Material of screw shaft **Ingot Steel**
as fitted **13"**

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 **fitting** If two

liners are fitted, is the shaft lapped or protected between the liners **yes** Length of stern bush **4'-7"**

Dia. of Tunnel shaft as per rule **10.8** Dia. of Crank shaft journals as per rule **11.34** Dia. of Crank pin **11 3/4"** Size of Crank webs **7 3/4" x 18 1/2"** Dia. of thrust shaft under

collars **11 3/4"** Dia. of screw **14'-0"** Pitch of Screw **16'-0"** No. of Blades **4** State whether moveable **no** Total surface **65 ft²**

No. of Feed pumps **2** Diameter of ditto **3"** Stroke **21"** Can one be overhauled while the other is at work **yes**

No. of Bilge pumps **2** Diameter of ditto **4"** Stroke **21"** Can one be overhauled while the other is at work **yes**

No. of Donkey Engines **2 duplex** Sizes of Pumps **6x4x6** **8x8x10"** No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room **Four of 3"** In Holds, &c. **Fore hold two of 2 3/4"**

After hold two of 2 3/4", one of 3" Tunnel **one of 3"**

No. of Bilge Injections **one** sizes **6"** Connected to condenser, or to circulating pump **C.P.** 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 **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 **about level with**

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 **fitted at Ferig.**

What pipes are carried through the bunkers **none** How are they protected **yes**

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 **Ferig** of Stern Tube **23-1-07** Screw shaft and Propeller **23-1-07.**

Is the Screw Shaft Tunnel watertight **see ship report** Is it fitted with a watertight door **yes** worked from **upper grating**

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel **Clyde Bridge Steel Co Ltd**

Total Heating Surface of Boilers **3454 ft²** Is Forced Draft fitted **no** No. and Description of Boilers **Two Cyl. Mult. Single ended**

Working Pressure **180 lbs** Tested by hydraulic pressure to **360 lbs** Date of test **4-12-06** No. of Certificate **3820**

Can each boiler be worked separately **yes** Area of fire grate in each boiler **55 1/2 sq ft.** No. and Description of Safety Valves to

each boiler **2 direct spring** Area of each valve **7"** Pressure to which they are adjusted **185 lbs** Are they fitted with easing gear **yes**

Smallest distance between boilers or uptakes and bunkers or woodwork **15"** Mean dia. of boilers **13'-9"** Length **10'-6"** Material of shell plates **Steel**

Thickness **1 3/4"** Range of tensile strength **28/32** Are the shell plates welded or flanged **no** Descrip. of riveting: cir. seams **DR L.**

long. seams **DR Butt Strap** Diameter of rivet holes in long. seams **1 3/16"** Pitch of rivets **8 1/2" row top of plates or width of butt straps 1'-6" 15/16" outer 1 1/16" inner**

Per centages of strength of longitudinal joint rivets **90.5** Working pressure of shell by rules **182** Size of manhole in shell end **16x12"**

Size of compensating ring **flanged** No. and Description of Furnaces in each boiler **three plain** Material **Steel** Outside diameter **3'-6"**

Length of plain part top **6'-5 1/2"** Thickness of plates crown **49"** Description of longitudinal joint **welded** No. of strengthening rings **yes**

Working pressure of furnace by the rules **183** Combustion chamber plates: Material **Steel** Thickness: Sides **1 1/16"** Back **1 1/16"** Top **2 3/32"** Bottom **1 1/16"**

Pitch of stays to ditto: Sides **8 1/2" x 10"** Back **9 3/4" x 9 3/4"** Top **13 1/2" x 7"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **181**

Material of stays **S. S.** Area at smallest part **2.09"** Area supported by each stay **86.5"** Working pressure by rules **180** End plates in steam space:

Material **Steel** Thickness **1 1/4"** Pitch of stays **20 1/4" x 19"** How are stays secured **DR & W** Working pressure by rules **189** Material of stays **Steel**

Area at smallest part **8.29"** Area supported by each stay **404"** Working pressure by rules **205** Material of Front plates at bottom **Steel**

Thickness **1"** Material of Lower back plate **Steel** Thickness **1 1/16"** Greatest pitch of stays **15 x 9 3/4"** Working pressure of plate by rules **189**

Diameter of tubes **3 1/4"** Pitch of tubes **4 1/2" x 4 1/2"** Material of tube plates **Steel** Thickness: Front **1"** Back **1 3/16"** Mean pitch of stays **1 1/4"**

Pitch across wide water spaces **14 1/4"** Working pressures by rules **189** Girders to Chamber tops: Material **Steel** Depth and

thickness of girder at centre **10 1/2" Cent.** Length as per rule **2'-7"** Distance apart **12" Cent.** Number and pitch of stays in each **Three 7"**

Working pressure by rules **181** Superheater or Steam chest; how connected to boiler **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

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

W1529-0107

VERTICAL DONKEY BOILER— Manufacturers of Steel *Clyde Bridge Steel Co. Ltd*

No. *One* Description *Blake's patent.*
 Made at *Middlesbrough* By whom made *Richardson Westgarth & Co. Ltd* When made *1906* Where fixed *Stokehold*
 Working pressure/100 *tested by hydraulic pressure to 200.* Date of test *28.11.06* No. of Certificate *3815* Fire grate area *24 1/2* Description of Safety
 Valves *direct spring* No. of Safety Valves *2* Area of each *4.91* Pressure to which they are adjusted *100 lb* Date of adjustment *5.2.07*
 If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *7'-0"* Length *15'-0"*
 Material of shell plates *Steel* Thickness *9/16"* Range of tensile strength *27/32* Descrip. of riveting long. seams *DR Lap*
 Dia. of rivet hole *5/16"* Whether punched or drilled *drilled* Pitch of rivets *3"* Lap of plating *4 5/8"* Per centage of strength of joint Rivets *69.5*
 Working pressure of shell by rules *110 lb* Thickness of shell crown plates *9/16"* Radius of do. *3'-6"* No. of stays to do. *✓* Dia. of stays *✓*
 Diameter of furnace Top *3'-6"* Bottom *5'-7 3/4"* Length of furnace *4'-4"* Thickness of furnace plates *4/16"* Description of joint *SR Lap*
 Working pressure of furnace by rules *113* Thickness of furnace crown plates *Comb. Chamf. Top 4/16" Stayed by Lap 3'-9" rad. & gusset.*
 Diameter of tubes *2 1/2"* Thickness of uptake plates *Front 1/16" Pitch of Back 1/8"* Thickness of water tubes *3 5/8"* Dates of survey

SPARE GEAR. State the articles supplied:— *2 Bolts & Nuts for piston rods, connec. rods & main bearings*
1 set coupling bolts & nuts 6 Piston Bolts. 1 set feed & bilge pump valves. 1 set donkey
pump valves 1/2 set air pump valves 2 feed check valves 1 set rings for piston valve
& A.P. & I.P. pistons. 1 set I.P. piston springs. Propeller Tail shaft.
The foregoing is a correct description, Assorted bolts, nuts, & iron.

Manufacturer. *f. Paton*
 For RICHARDSON WESTGARTH & Co. Ltd

Dates of Survey while building
 During progress of work in shops— *1906 March 30. Apr 10. 23. May 14. 15. 19. 22. 28. June 1. 4. 11. 16. 20. 25. July 3. 6. 11. 14. 20. 25. Aug 2. 8. 15.*
 During erection on board vessel— *14. 24. 29. Sep 4. 11. 15. Oct 2. 29. 12. 19. 23. 24. 27. 31. Nov 2. 12. 19. 23. 28. Dec 4. 5. 1907 Jan 4. 9. 16. 21.*
 Total No. of visits *50.* Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders *19.11.06* Slides *24.10.06* Covers *12.11.06* Pistons *4.12.06* Rods *4.12.06*
 Connecting rods *4.12.06* Crank shaft *26.9.06* Thrust shaft *19.11.06* Tunnel shafts *2.11.06* Screw shaft *16.1.07* Propeller *16.1.07*
 Stern tube *21.1.07* Steam pipes tested *31.2.07* Engine and boiler seatings *21.1.07* Engines holding down bolts *1.2.07*
 Completion of pumping arrangements *1.2.07* Boilers fixed *1.2.07* Engines tried under steam *5.2.07*
 Main boiler safety valves adjusted *5.2.07* Thickness of adjusting washers *Port B. P. 1/32" S. 3/64" St. B. P. 1/32" S. 3/64"*
 Material of Crank shaft *Ingot Steel* Identification Mark on Do. *4365 TLT* Material of Thrust shaft *I. Steel* Identification Mark on Do. *5994 RDS*
 Material of Tunnel shafts *I. Steel* Identification Marks on Do. *941 PA 5997 RDS* Material of Screw shafts *I. Steel* Identification Marks on Do. *3054 KH 6064 RDS*
 Material of Steam Pipes *S.D. Copper* *1012 PA 3709 MK 3140 KH 966 PA* Test pressure *360 lb.* *6061 RDS 5998 RDS 6060 RDS 5405 JM 6065 RDS*

General Remarks (State quality of workmanship, opinions as to class, &c.)
This vessel's machinery has been built under Special Survey. The materials and workmanship are good and efficient. It has been fitted and secured on board and tried under steam with satisfactory results, and is now in good and safe working condition and eligible in my opinion to have the record LMC 2.07.

It is submitted that this vessel is eligible for THE RECORD *L.M.C. 2.07*

J.S. 14.2.07
R.D. Philston 14.2.07

The amount of Entry Fee.. £ *2 : 0 : 0* When applied for, *13.2.1907*
 Special £ *31 : 10 : 0*
 Donkey Boiler Fee £ : : : When received, *15.2.1907*
 Travelling Expenses (if any) £ : : : *16.2.1907*

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

Committee's Minute *FRI, FEB 15 1907*
 Assigned *+ LMC 2.07*

MACHINERY CERTIFICATE WRITTEN.



Certificate (if required) to be sent to (The Surveyors are requested not to write on or below the space for Committee's Minute.)