

REPORT ON MACHINERY.

No. 52309

Port of *Newcastle.*

Received at London **WED FEB 6 1907**

No. in Survey held at *Newcastle.*

Date, first Survey *June 7. 06* Last Survey *Feb. 2 1907*

on the *Twin S/S. Arawa.*

(Number of Visits *51*)

Master *Buton* Built at *Newcastle.* By whom built *Swan Hunter & Co. Ltd.*

Tons { Gross *9372*
Net *5985*
When built *1906.4*

Engines made at *Newcastle.* By whom made *Wallsend Slipway & Eng Co. Ltd.* when made *1906-7.*

Boilers made at *"* By whom made *"* when made *1907*

Registered Horse Power *899* Owners *Shaw, Savill & Albion Co.* Port belonging to *Souhampton.*

Net Horse Power as per Section 28 *916* Is Refrigerating Machinery fitted for cargo purposes *Yes* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Twin Tr. C.P.D.* No. of Cylinders *3* No. of Cranks *3*

No. of Cylinders *23* Length of Stroke *48* Revs. per minute *40* Dia. of Screw shaft *14.4* Material of screw shaft *S*

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

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 *Yes.* If two

shafts are fitted, is the shaft lapped or protected between the liners *Yes.* Length of stern bush *5'5"*

Dia. of Tunnel shaft *12.6* Dia. of Crank shaft journals *13.28* Dia. of Crank pin *14.4* Size of Crank webs *9 1/2* Dia. of thrust shaft under

bars *14.4* Dia. of screw *14 1/4* Pitch of Screw *14 9/16* No. of Blades *3* State whether moveable *Yes* Total surface *85 sq. ft.*

No. of Feed pumps *1 each* Diameter of ditto *5"* Stroke *24* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *1 each* Diameter of ditto *5"* Stroke *24* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *3.* Sizes of Pumps *WEIRS 9x12, 26-12x12, 10-7x9, 21 WEIRS* No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room *6 of 32* In Holds, &c. *2 of 32* in each

No. of Bilge Injections *2* sizes *8"* Connected to condenser, or to circulating pump *CR* Is a separate Donkey Suction fitted in Engine room & size *Yes 3 1/2*

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*

How are the pipes carried through the bunkers *Main Steam* How are they protected *Iron Casings*

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 was the examination of completion of fitting of Sea Connections *Nov 1906* of Stern Tube *Nov-06* Screw shaft and Propeller *Nov-06*

Is the Screw Shaft Tunnel (watertight) *Yes* Is it fitted with a watertight door *Yes.* worked from *top platforms.*

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

Total Heating Surface of Boilers *16,400* Is Forced Draft fitted *No.* No. and Description of Boilers *2 DE & 2 S. Ennea*

Working Pressure *205 lb.* Tested by hydraulic pressure to *410 lbs* Date of test *31. 10. 06.* No. of Certificate *4354.*

Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *664 + 132* No. and Description of Safety Valves to

boiler *2 Spring 2 Spring* Area of each valve *12.5-7.07* Pressure to which they are adjusted *210 lbs* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *2 feet.* Mean dia. of boilers *16'6"* Length *11'0"* Material of shell plates *S*

Thickness *1 1/2* Range of tensile strength *29.5-33.5* Are the shell plates welded or flanged *Ends* Descrip. of riveting: cir. seams *27. r. lap*

seams *d butt* Diameter of rivet holes in long. seams *1 1/2* Pitch of rivets *10 1/8* Lap of plates or width of butt straps *23 1/2*

Percentages of strength of longitudinal joint rivets *84.4* Working pressure of shell by rules *237 1/2* Size of manhole in shell *16" x 12"*

of compensating ring *McKeils* No. and Description of Furnaces in each boiler *6* Material *S* Outside diameter *4'4 1/2*

Length of plain part *top 23* Thickness of plates *bottom 32* Description of longitudinal joint *weld.* No. of strengthening rings *Yes*

Working pressure of furnace by the rules *228.* Combustion chamber plates: Material *S* Thickness: Sides *21* Back *32* Top *31* Bottom *14"*

Height of stays to ditto: Sides *8 3/8 x 8 3/8* Back *9 x 4 1/2* Top *8 3/8 x 8 3/8* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *215*

Material of stays *S.* Diameter at smallest part *2.03* Area supported by each stay *40.14* Working pressure by rules *360* End plates in steam space:

Material *S* Thickness *1 3/16* Pitch of stays *18 1/8 x 16 1/8* How are stays secured *d. nut* Working pressure by rules *215* Material of stays *S*

Area supported by each stay *294* Working pressure by rules *247* Material of Front plates at bottom *S*

Thickness *1"* Material of Lower back plate *S* Thickness *31/32* Greatest pitch of stays *14 1/2* Working pressure of plate by rules *230*

Number of tubes *3* Pitch of tubes *44 x 4 1/8* Material of tube plates *S* Thickness: Front *1 1/4* Back *7/8* Mean pitch of stays *8 3/8*

Height across wide water spaces *13 1/2* Working pressures by rules *560* Girders to Chamber tops: Material *S* Depth and

Thickness of girder at centre *10 1/2 x 1 1/2* Length as per rule *33.5* Distance apart *8 3/8* Number and pitch of stays in each *3 of 8"*

Working pressure by rules *216* Superheater or Steam chest; how connected to boiler *Yes* 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

Strengthened 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

00886-008870-0034

Lloyd's Register Foundation

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____

Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

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 _____ Per centage 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:— 1 Set connecting rod bolts and nuts. 1 Set main bearing bolts and nuts. 1 Set of coupling bolts and nuts. feed & bilge pump valves. Set of valves for water pumps & propeller shaft. set of blades. nuts bolts and assorted iron

The foregoing is a correct description, **FOR THE WALLSEND SLIPWAY & ENGINEERING CO., LIMITED.**

Manufacturer. *M. Murray* SECRETARY.

Dates of Survey while building

During progress of work in shops—	1906. June 7, 15, 21, July 10, 27, Aug 19, 26, 28, 29, 31, Sept 12, 19, 25, Oct 6, 10, 16, 18, 29, 30, 31, Nov 5, 7, 13, 16, 21, 29, Dec.
During erection on board vessel—	1907. Jan. 4, 7, 10, 11, 16, 17, 20, 21, 24, 28, Feb 2
Total No. of visits	51

Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—

Cylinders	July 10	Slides	July 10	Covers	July 10	Pistons	Aug 7	Rods	July 15
Connecting rods	July 15	Crank shaft	Oct 13	Thrust shaft	Oct 11	Tunnel shafts	Oct 13	Screw shaft	Nov 30
Stern tube	Nov 30	Steam pipes tested	23 rd Nov	Engine and boiler seatings	Dec 11	Engines holding down bolts	Dec 11		
Completion of pumping arrangements	Jan 30 07	Boilers fixed	Dec 16	Engines tried under steam	11-1-07				
Main boiler safety valves adjusted	11-1-07	Thickness of adjusting washers	PB p 3/8, AB p 3/8, SB p 1/2, S 3/4						
Material of Crank shaft	P	Identification Mark on Do.	LR 10-06	Material of Thrust shaft	S	Identification Mark on Do.	JTF 11-06		
Material of Tunnel shafts	S	Identification Marks on Do.	LR JTF 10-06	Material of Screw shafts	S	Identification Marks on Do.	LR JTF 11-06		
Material of Steam Pipes	W. Iron.	Test pressure	was 615.						

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

Machinery and boiler built under Special Survey. Materials and workmanship good and efficient. Engines & boiler examined under full steam & found satisfactory. In my opinion this vessel is now eligible for the record of *L.M.C. 2-07 in the Register Book.

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

The amount of Entry Fee. . . £ 3 : : : When applied for.

Special £ 6⁴/₁₀ 19 : : : - 6 FEB 1907

Donkey Boiler Fee £ : : : When received.

Travelling Expenses (if any) £ : : : 12-2-07

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

Committee's Minute FRI. FEB 8 1907

Assigned + L.M.C. 2.07 Elec Light Ref Mch



MACHINERY CERTIFICATE WRITTEN.

Newcastle-on-Tyne.

Certificate (if required) to be sent to

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