

# REPORT ON MACHINERY

No. 13356

THUR. 17 OCT 1907

Port of *West Hartlepool*

Received at London Office

No. in Survey held at *Hartlepool*

Date, first Survey *21<sup>st</sup> February* Last Survey *8<sup>th</sup> October 1907*

Reg. Book.

*22* supp. on the

*S/S "MARS"*

(Number of Visits *73*)

Master *A. Henderson*

Built at *Hartlepool*

By whom built *Furness Withy & Co. Ltd*

Tons { Gross *3549.78*  
Net *2236.05*  
When built *1907*

Engines made at *Hartlepool*

By whom made *Richardsons Newcastle & Co. Ltd*

when made *1907*

Boilers made at *Hartlepool*

By whom made *Richardsons Newcastle & Co. Ltd*

when made *1907*

Registered Horse Power

Owners *Harris & Dixon Ltd.*

Port belonging to *London*

Nom. Horse Power as per Section 28 *312*

Is Refrigerating Machinery fitted for cargo purposes *No*

Is Electric Light fitted *No*

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

Dia. of Cylinders *24" - 39" - 66"* Length of Stroke *45"* Revs. per minute *60* Dia. of Screw shaft as per rule *13.62* Material of screw shaft *Bar 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? *Yes*

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 *12.076* Dia. of Crank shaft journals as per rule *12.679* Dia. of Crank pin *13"* Size of Crank webs *8" x 25"* Dia. of thrust shaft under collars *13 1/8"* Dia. of screw *16' 9"* Pitch of Screw *16' 6"* No. of Blades *4* State whether moveable *No* Total surface *88.9 sq ft*

No. of Feed pumps *2* Diameter of ditto *3"* Stroke *27"* Can one be overhauled while the other is at work? *Yes*

No. of Bilge pumps *2* Diameter of ditto *3 3/4"* Stroke *27"* Can one be overhauled while the other is at work? *Yes*

No. of Donkey Engines *2* Sizes of Pumps *4" x 6" and 10" x 9"* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3 - 3 1/2"* In Holds, &c. *8 - 3 1/2" dia<sup>2</sup>*

*1 - 2 1/2" Tunnel Well*

No. of Bilge Injections *One* sizes *5"* Connected to condenser, or to circulating pump *Circulating* 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*

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 *19.7.07* of Stern Tube *29.7.07* Screw shaft and Propeller *31.7.07*

Is the Screw Shaft Tunnel watertight? *Yes* Is it fitted with a watertight door? *Yes* worked from *Glinder Platform*

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

Total Heating Surface of Boilers *4731 sq ft* Is Forced Draft fitted? *No* No. and Description of Boilers *Two Cylindrical Single ended*

Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs* Date of test *21.6.1907* No. of Certificate *3113*

Can each boiler be worked separately? *Yes* Area of fire grate in each boiler *52.3 sq ft* No. and Description of Safety Valves to each boiler *Two, spring loaded*

Area of each valve *7.06 sq ft* 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 *16"* Mean dia. of boilers *16' 0"* Length *10' 6"* Material of shell plates *Steel*

Thickness *19/32* Range of tensile strength *28.5/32* Are the shell plates welded or flanged? *No* Descrip. of riveting: cir. seams *D.R. Lap*

long. seams *T.R.D.B.S.* Diameter of rivet holes in long. seams *19/32* Pitch of rivets *8 5/8"* Top of plates or width of butt straps *16 1/2"*

Per centages of strength of longitudinal joint rivets *86.8* Working pressure of shell by rules *180.5* Size of manhole in shell *13 x 16 1/2"*

plate *85.2* Size of compensating ring *30 x 29 x 1 1/2* No. and Description of Furnaces in each boiler *3, Morsous* Material *Steel* Outside diameter *4' 2 1/2"*

Length of plain part top *3 1/8"* Thickness of plates crown *3 1/8"* Description of longitudinal joint *Welded* No. of strengthening rings *Such*

bottom *3 1/8"* Working pressure of furnace by the rules *199.5* Combustion chamber plates: Material *Steel* Thickness: Sides *19/32* Back *19/32* Top *19/32* Bottom *7/8*

Pitch of stays to ditto: Sides *7 3/4" x 8 1/4"* Back *8 1/4" x 8"* Top *7" x 8 1/2"* If stays are fitted with nuts or riveted heads? *Nuts* Working pressure by rules *184.5*

Material of stays *Steel* Diameter at smallest part *1 3/8"* Area supported by each stay *66 sq ft* Working pressure by rules *180* End plates in steam space:

Material *Steel* Thickness *1 1/32* Pitch of stays *16 1/2" x 16 1/2"* How are stays secured? *D.N.W.* Working pressure by rules *185* Material of stays *Steel*

Diameter at smallest part *2 1/2"* Area supported by each stay *272 sq ft* Working pressure by rules *180* Material of Front plates at bottom *Steel*

Thickness *7/8"* Material of Lower back plate *Steel* Thickness *13/16"* Greatest pitch of stays *12 3/4" x 8"* Working pressure of plate by rules *201*

Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2" x 4 3/8"* Material of tube plates *Steel* Thickness: Front *1"* Back *3/4"* Mean pitch of stays *9"*

Pitch across wide water spaces *14 1/4"* Working pressures by rules *202 lbs* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *8" x 1 3/4"* Length as per rule *2' 6 1/2"* Distance apart *8 1/2"* Number and pitch of stays in each *3 - 7"*

Working pressure by rules *182* 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

Lloyd's Register Foundation  
W839-0187

**VERTICAL DONKEY BOILER**— Manufacturers of Steel *As per report attached hereto.*  
 No. *One* Description *Cylindrical Multitubular, single ended, 2 plain furnaces*  
 Made at *Darlington* By whom made *Blake Boiler Works & Co. Ltd* When made *1907* Where fixed *On Main Deck*  
 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:— *Two top end bolts, two bottom end bolts, two main bearing bolts, one set coupling bolts, one set of sea and bilge pump valves, one set of piston rings, assorted bolts & nuts, one propeller, one propeller shaft.*

The foregoing is a correct description,  
 FOR RICHARDSONS, WESTGARTH & CO. LIMITED.  
 Manufacturers.

Assistant General Manager.  
 Dates of Survey while building: During progress of work in shops— *1907. Feb. 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. May 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. June 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. July 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Aug. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Sept. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Oct. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Nov. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Dec. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31.*  
 Total No. of visits *73* Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts— Cylinders *9/7/07* Slides *4/7/07* Covers *31/7/07* Pistons *29/7/07* Rods *19/7/07*  
 Connecting rods *15/7/07* Crank shaft *16/7/07* Thrust shaft *16/7/07* Tunnel shafts *12/8/07* Screw shaft *6/6/07* Propeller *3/7/07*  
 Stern tube *22/7/07* Steam pipes tested *19/8/07* Engine and boiler seatings *3/8/07* Engines holding down bolts *13/8/07*  
 Completion of pumping arrangements *20/8/07* Boilers fixed *20/8/07* Engines tried under steam *20/8/07*  
 Main boiler safety valves adjusted *20/8/07* Thickness of adjusting washers *Pat. Boiler S. 19/04 Star Boiler S. 29/04*  
 Material of Crank shaft *Steel* Identification Mark on Do. *4537* Material of Thrust shaft *Steel* Identification Mark on Do. *4537*  
 Material of Tunnel shafts *Steel* Identification Marks on Do. *4537* Material of Screw shafts *Bar Iron* Identification Marks on Do. *4537*  
 Material of Steam Pipes *Wrought Iron* Test pressure *600 lbs per sq. in.*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *Workmanship good.*)  
*The Machinery and Boilers of this vessel have been constructed under Special Survey and placed on board in accordance with the Society's Rules. They are now in my opinion in safe working condition and the case is respectfully submitted for the notation LMC 10-07 in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD. *L.M.C. 10.07.*

*HC 17.10.07*

*Yes 17.10.07*

The amount of Entry Fee.. £ *3 : 0 : 0* When applied for,  
 Special .. .. £ *35 : 12 : 0* .. 10 : 10 : 0 .. 1907  
 Donkey Boiler Fee .. .. £ : : : When received,  
 Travelling Expenses (if any) £ : : : .. 12 : 10 : 0 .. 1907

*C. J. Hudson*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. 18 OCT 1907**  
 Assigned *+ LMC 1007*

West Hartlepool

Certificate (if required) to be sent to

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

