

# REPORT ON MACHINERY.

Port of **WEST HARTLEPOOL**

Received at London Office **MUN. 13 JUL 1903**

No. in Survey held at **Hartlepool** Date, first Survey **13<sup>th</sup> Aug. 1902** Last Survey **2<sup>nd</sup> July 1903**  
 g. Book. **57** on the **Seel. S. S. "Clan Macintyre"** (Number of Visits **149**)  
 Master **H. Fisher** Built at **N. Hartlepool** By whom built **Furness Withy & Co.** When built **1903**  
 Engines made at **Hartlepool** By whom made **Richardsons, Westgarth & Co.** when made **1903**  
 Boilers made at **do.** By whom made **do.** when made **1903**  
 Registered Horse Power **452** Owners **Bayne, Irvine & Co.** Port belonging to **Hespero**  
 Is Refrigerating Machinery fitted **No** Is Electric Light fitted **Yes**

**ENGINES, &c.**—Description of Engines **Triple expansion** No. of Cylinders **Three** No. of Cranks **three**  
 No. of Cylinders **26" 43" 71"** Length of Stroke **48"** Revs. per minute **69** Dia. of Screw shaft **14.9"** Lgth. of stern bush **4' 6"**  
 Dia. of Tunnel shaft **14"** Dia. of Crank shaft journals **14.5"** Dia. of Crank pin **15"** Size of Crank webs **9 1/2" x 23 1/4"** Dia. of thrust shaft under  
 lars **16"** Dia. of screw **17-9"** Pitch of screw **17-9"** No. of blades **4** State whether moveable **Yes** Total surface **91 sq. ft.**  
 No. of Feed pumps **2** Diameter of ditto **4 1/2"** Stroke **24"** Can one be overhauled while the other is at work **Yes**  
 No. of Bilge pumps **2** Diameter of ditto **4 1/2"** Stroke **24"** Can one be overhauled while the other is at work **Yes**  
 No. of Donkey Engines **1** Sizes of Pumps **Feed Main 4x21" Ballast 13x11" Dye 13x11"** No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room **Four 3 1/2" dia.** In Holds, &c. **Two - One 2 1/2" dia. in fore peak, two 3 1/2" dia. in each hold and one 2 1/2" dia. in tunnel well.**  
 No. of bilge injections **one** sizes **6 1/2"** Connected to condenser, or to circulating pump **Yes** 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 **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**  
 How are they protected **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 **near vessel** Is the screw shaft tunnel watertight **Yes**  
 Is it fitted with a watertight door **Yes** worked from **upper platform.**

**BOILERS, &c.**— (Letter for record **S.**) Total Heating Surface of Boilers **6107 sq. ft.** Is forced draft fitted **Yes (How described)**  
 No. and Description of Boilers **2 single ended byl. Mult.** Working Pressure **200 lbs.** Tested by hydraulic pressure to **400 lbs.**  
 Date of test **13.2.03.** Can each boiler be worked separately **Yes** Area of fire grate in each boiler **62.9 sq. ft.** No. and Description of safety valves to  
 each boiler **1 no spring direct** Area of each valve **11.04 sq. in.** Pressure to which they are adjusted **205 lbs.** Are they fitted with easing gear **Yes**  
 Smallest distance between boilers or uptakes and bunkers or woodwork **4' 0"** Mean dia. of boilers **16' 2"** Length **11' 9"** Material of shell plates **steel**  
 Thickness **1 1/8"** Range of tensile strength **28-32** Are they welded or flanged **no** Descrip. of riveting: cir. seams **treble** long. seams **treble**  
 Diameter of rivet holes in long. seams **1 1/8"** Pitch of rivets **9 3/4"** Length of plates or width of butt straps **21"**  
 Percentages of strength of longitudinal joint rivets **85.9** Working pressure of shell by rules **200 lbs.** Size of manhole in shell **13" x 16 1/2"**  
 Diameter of compensating ring **29 x 30 x 1 1/8"** No. and Description of Furnaces in each boiler **3 Monson** Material **steel** Outside diameter **50 1/2"**  
 Length of furnace top **4' 11"** Thickness of plates crown **2 1/8"** Description of longitudinal joint **weld** No. of strengthening rings **✓**  
 bottom **3 1/2"** Working pressure of furnace by the rules **210 lbs.** Combustion chamber plates: Material **steel** Thickness: Sides **2 1/32"** Back **1 1/32"** Top **2 1/32"** Bottom **1"**  
 Diameter of stays to ditto: Sides **9 x 7 1/2"** Back **8 1/4 x 8 1/2"** Top **8 1/2 x 8 1/4"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **207 lbs**  
 Material of stays **steel** Diameter at smallest part **1 1/2"** Area supported by each stay **69.4 sq. in.** Working pressure by rules **202 lbs** End plates in steam space:  
 Material **steel** Thickness **1 1/8"** Pitch of stays **14" x 14"** How are stays secured **D. N. & N.** Working pressure by rules **205 lbs.** Material of stays **steel**  
 Diameter at smallest part **2 1/4"** Area supported by each stay **289 sq. in.** Working pressure by rules **208 lbs** Material of Front plates at bottom **steel**  
 Thickness **3/8"** Material of Lower back plate **steel** Thickness **3/8"** Greatest pitch of stays **13 1/2"** Working pressure of plate by rules **207 lbs**  
 Diameter of tubes **2 1/2"** Pitch of tubes **3 3/4"** Material of tube plates **steel** Thickness: Front **1"** Back **3/4"** Mean pitch of stays **7 1/2"**  
 Distance across wide water spaces **13 1/2"** Working pressures by rules **210 lbs.** Girders to Chamber tops: Material **steel** Depth and  
 thickness of girder at centre **8" x 1 1/2"** Length as per rule **30 1/2"** Distance apart **8 1/2"** Number and pitch of Stays in each **1 no 8 1/2"**  
 Working pressure by rules **200 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 **✓**  
 Are they 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 **✓**



**DONKEY BOILER**— No. *One* Description *byl. Mult. with 2 plain furnaces.*  
 Made at *Stockton* By whom made *J. Sudron & Co* When made *1903* Where fixed *Stoke hold*  
 Working pressure *100 lbs* Tested by hydraulic pressure to *200 lbs* No. of Certificate *2947* Fire grate area *29 sq* Description of safety valves *Spring direct.*  
 No. of safety valves *2* Area of each *5.94 sq* Pressure to which they are adjusted *105 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *NO* Dia. of donkey boiler *11-3"* Length *9-0"* Material of shell plates *steel* Thickness *1/16"* Range of tensile strength *27-32* Descrip. of riveting long. seams *Y R. Kap.* Dia. of rivet holes *15/16"* Whether punched or drilled *Drilled* Pitch of rivets *4 1/4"*  
 Lap of plating *6 3/4"* Per centage of strength of joint *80.3* Rivets *80.3* Thickness of shell *and* plates *1 1/2"* Pitch of do. *15" X 15"* No. of Stays to do. *10*  
 Dia. of stays. *2 1/2"* i. Diameter of furnace *Top 36"* Bottom *36"* Length of furnace *5-8 1/2"* Thickness of furnace plates *1/2"* Description of joint *S. P. Butt* Thickness of *Com ch* furnace *or* plates *9/16"* Stayed by *1 1/2" X 1 3/8" U.S.S. riv.* Pitch *8 1/2" X 8 1/4"* Working pressure of shell by rules *100.6 lbs.*  
 Working pressure of furnace by rules *100.6 lbs.* Diameter of uptake *3"* Thickness of *tube* uptake plates *F 23/32"* *1 3/4"* Thickness of *stay* tubes *5/16"*

**SPARE GEAR.** State the articles supplied:— *2 bon. rod top + 2 bon. rod bottom end bolts + nuts, 2 main bearings + one set of coupling bolts, one set of piston rings for H.P. + I.P. pistons, one set of feed, bilge air, circu. and ballast pump valves, bolts, nuts, + iron various sizes, 2 propeller blades, propeller shaft, 6 boiler + 6 condense tubes, 24 condense ferrule, one spiral spring for safety valves.*

The foregoing is a correct description,  
 For **RICHARDSONS, WESTGARTH & CO. LIMITED** Manufacturer.

Dates of Survey while building	During progress of work in shops		During erection on board vessel		Total No. of visits	Is the approved plan of main boiler forwarded herewith	" donkey "	" "	" "
	1901	1902	1901	1902					
	Aug 15, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 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, 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. 2, 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, 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, 1902. Jan. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.						
	19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, Feb. 2, 6, 9, 12, 14, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, Mar. 2, 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, Apr. 1, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, May 4, 7, 15, June 7, 16, July 2 = 149 visits					Yes	Yes	Yes	Yes

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

Material of screw shaft *Engot steel* 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.*

The main steam pipes have been tested by hydraulic pressure to 400 lbs. per sq. in. and found tight.  
 The engines and boilers of this vessel have been built under special survey in accordance with the Rule requirements, the materials and workmanship are good and efficient, when completed and fitted on board were tried under steam at moorings with satisfactory results, and are now in good working order and in our opinion eligible to have **L.M.C. 7.03** marked in the Register Book.

It is submitted that this vessel is eligible for THE RECORD + LMC 7.03 FD. *AM* 13.7.03

The amount of Entry Fee. . . £ 3 : :  
 Special . . . . . £ 42 12 : :  
 Donkey Boiler Fee . . . . . £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 1.7.03  
 When received, 10.7.03  
*G. Williamson*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUES. 14 JUL 1903  
 Assigned + LMC 7.03 FD

