

REPORT ON MACHINERY.

Port of **WEST HARTLEPOOL.**

Received at London Office

Survey held at **WEST HARTLEPOOL.**

Date, first Survey **4th Sept 1894** Last Survey **May 10th 1895**

on the **Steel S.S. "Arion"**

(Number of Vents **45**)

Tons } Gross **2838.2**
Net **1823.19**
When built **1895**

James Disney Built at **WEST HARTLEPOOL.** By whom built **Furness Withy & Co**

made at **WEST HARTLEPOOL.** By whom made **Central Marine Eng. Works** when made **1895**

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rated Horse Power **220** Owners **Messrs Rickinson & Son** Port belonging to **West Hartlepool**

Horse Power as per Section 28 **239**

ENGINES, &c. — Description of Engines **Triple expansion: 3 cranks** No. of Cylinders **Three**

Diameter of Cylinders **23", 36 1/2", 62"** Length of Stroke **39"** Revolutions per minute **65** Diameter of Screw shaft **as per rule 10.2"**

Diameter of Tunnel shaft **as per rule 9.69"** Diameter of Crank shaft journals **11"** Diameter of Crank pin **11"** Size of Crank webs **7" x 15 1/2"**

Diameter of screw **16'-0"** Pitch of screw **Differential** No. of blades **4** State whether moveable **no** Total surface **46 1/2 sq. ft.**

No. of Feed pumps **2** Diameter of ditto **3"** Stroke **30"** Can one be overhauled while the other is at work **Yes.**

No. of Bilge pumps **2"** Diameter of ditto **3 1/4"** Stroke **30"** Can one be overhauled while the other is at work **Yes.**

No. of Donkey Engines **2** Sizes of Pumps **Feed: 3 1/2" x 5" duplex; Ballast 10" x 9"** No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room **Three — two 3" and one 3 1/2" dia.** In Holds, &c. **Seven. — Fore peak 2 1/2", forward well 3 1/2", 2nd well forward 3 1/2", both wells aft each 3 1/2", tunnel well 2 1/2", & after peak 2 1/2" dia.**

No. of bilge injections **one** sizes **5"** 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

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 **Not docked.** Is the screw shaft tunnel watertight **Yes**

Is it fitted with a watertight door **Yes.** worked from **top platform of Engine Room.**

BOILERS, &c. — (Letter for record **S.**) Total Heating Surface of Boilers **3580 sq. ft.**

No. and Description of Boilers **2 Mult. boyl: single ended** Working Pressure **160 lbs** Tested by hydraulic pressure to **320 lbs**

Date of test **21.12.94** Can each boiler be worked separately **Yes** Area of fire grate in each boiler **39.5 sq. ft.** No. and Description of safety valves to each boiler **Two. Spring direct.** Area of each valve **4.07 sq. in.** Pressure to which they are adjusted **162 lbs** Are they fitted with easing gear **Yes** Smallest distance between boilers or uptakes and bunkers or woodwork **22"** Mean diameter of boilers **14'-3"**

Length **10'-0"** Material of shell plates **Steel** Thickness **1 1/2"** Description of riveting: circum. seams **Treble** long. seams **Treble**

Diameter of rivet holes in long. seams **1 3/8"** Pitch of rivets **8 1/2"** Lap of plates or width of butt straps **18"**

Percentages of strength of longitudinal joint **86.0** Working pressure of shell by rules **160.9 lbs.** Size of manhole in shell **16" x 12"**

Size of compensating ring **26" x 24" x 1 1/2"** No. and Description of Furnaces in each boiler **3 Purves'** Material **Steel** Outside diameter **40 1/2"**

Length of plain part **top 6'-3" bottom 6'-8"** Thickness of plates **top 1 1/2" bottom 1 1/2"** Description of longitudinal joint **weld** No. of strengthening rings **✓**

Working pressure of furnace by the rules **141.8 lbs.** Combustion chamber plates: Material **steel** Thickness: Sides **1 1/2"** Back **1 1/2"** Top **1 1/2"** Bottom **1"**

Pitch of stays to ditto: Sides **8 5/8"** Back **8 5/8"** Top **8 1/2" x 9"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **163.4 lbs.**

Material of stays **steel** Diameter at smallest part **1.38"** Area supported by each stay **74.4 sq. in.** Working pressure by rules **161.2 lbs.** End plates in steam space: Material **steel** Thickness **1 1/2"** Pitch of stays **16 1/2" x 20"** How are stays secured **double nuts & washers.** Working pressure by rules **161.2 lbs.** Material of stays **steel**

Diameter at smallest part **2.06" (12) 2.78" (3)** Area supported by each stay **325 sq. in.** Working pressure by rules **169 lbs 162 lbs** Material of Front plates at bottom **steel**

Thickness **3/4"** Material of Lower back plate **Steel** Thickness **1"** Greatest pitch of stays **13 1/2"** Working pressure of plate by rules **189.6 lbs**

Diameter of tubes **3 1/2"** Pitch of tubes **4 1/2" x 4 1/2"** Material of tube plates **steel** Thickness: Front **15/16"** Back **5/8"** Mean pitch of stays **9"**

Pitch across wide water spaces **14 1/2"** Working pressures by rules **F 166.2 lbs 142.8 lbs** Girders to Chamber tops: Material **steel** Depth and thickness of girder at centre **8" x 1 1/2"** Length as per rule **24"** Distance apart **8 1/2"** Number and pitch of Stays in each **one 9"**

Working pressure by rules **172.5 lbs.** Superheater or Steam chest; how connected to boiler **✓** 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 **✓**

[12. I.L.P.H. 5000. Form No. 8. - 4/2/92. - Copyable Ink.]



DONKEY BOILER— Description Vertical with 4 cross tubes.

Made at Stockton By whom made Riley Bros. When made 1894 Where fixed Stoke Newington

Working pressure 80 lbs. tested by hydraulic pressure to 160 lbs. No. of Certificate 889 Fire grate area 26.0 sq ft Description of safety valves Spring

No. of safety valves 2 Area of each 5.94 sq ft Pressure to which they are adjusted 82 lbs If fitted with casing gear Yes If steam from main enter the donkey boiler NO Diameter of donkey boiler 4'-0" Length 14'-0" Material of shell plates Steel Thickness

Description of riveting long seams lap. double Diameter of rivet holes 7/8" Whether punched or drilled punched Pitch of rivets

Lap of plating 4 1/4" Per centage of strength of joint Rivets 44.5 Thickness of shell crown plates 9/16" Radius of do. 5 ft. No. of Stays to do.

Dia. of stays. 1 1/2" Diameter of furnace Top 5'-5" Bottom 6'-0 1/4" Length of furnace 5'-4" Thickness of furnace plates 5/8" Desc joint lap single Thickness of furnace crown plates 9/16" Stayed by same as shell crown Working pressure of shell by rules

Working pressure of furnace by rules 80 lbs. Diameter of uptake 14" Thickness of uptake plates 7/16" Thickness of water tubes 3/8"

SPARE GEAR. State the articles supplied:— 2 bon. rod top end + 2 bottom end bolts + nuts; 2 Main bearing bolts + nuts; 1 set of coupling bolts + nuts; 1 set of feed + 1 set of bilge pump valves; 1 set of springs for H.P. piston; 1 main + 1 donkey feed check valve; 6 Piston bolts; 8 bil. pump valves; Bolts + nuts assorted + 1 prop.

The foregoing is a correct description,

For THE CENTRAL MARINE ENGINE WORKS,

(23, Gray St. E.C. 2.)

Manufacturers of main Engines Boilers. Thomas Ma...

General Remarks (State quality of workmanship, opinions as to class, &c. Main steam pipes tested

by hydraulic pressure to 320 lbs. per sq inch and found tight. The Engines and Boilers of this vessel have been constructed

under Special Survey, and of a good quality of workmanship. The Engines and Main Boilers have been examined under special

safety valves adjusted, and found to work well, and will, in my opinion, be eligible to have L.M.C. 5,95 recorded in

the Register Book.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 5-95

W.A. 16.5.95

Large handwritten signature in blue ink.

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

Certificate (if required) to be sent to

The amount of Entry Fee.. £ 2 : 0 : When applied for, Special £ 31 : 19 : 15.5.95 Donkey Boiler Fee £ : : When received, Travelling Expenses (if any) £ : : 15.5.95

Committee's Minute

FRI 17 MAY 1895

Assigned

+ L.M.C. 5.95



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Lloyd's Register Foundation

The above is a correct description.

For FURNESS, WITBY & CO., LIMITED.

Builder's Signature (here only)

W. Rogers