

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 Vessels 45)

Gross 2838.2
Tons } Net 1823.19
When built 1895

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

s 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

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

Diameter of Cylinders 23", 36½", 62" Length of Stroke 39" Revolutions per minute 65 Diameter of Screw shaft as per rule 10.2" as fitted 11½"

Diameter of Tunnel shaft as per rule 9.69" as fitted 10½" Diameter of Crank shaft journals 11" Diameter of Crank pin 11" Size of Crank webs 7" x 15½"

Diameter of screw 16'-0" Pitch of screw Differential No. of blades 4 State whether moveable no Total surface 46½ 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 3½" Stroke 30" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines 2 Sizes of Pumps Feed: 3½" x 5" duplex: 10" x 9" No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room Three—two 3" and one 3½" dia. In Holds, &c. Seven.—Fore peak 2½", forward well 3½", 2nd well forward 3½", both wells aft each 3½", tunnel well 2½", & after peak 2½" dia.

No. of bilge injections one sizes 5" Connected to condenser, or to circulating pump or pump Is a separate donkey suction fitted in Engine room & size Yes 3½"

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. byl: 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 407 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 1½" Description of riveting: circum. seams Treble long. seams Treble

Diameter of rivet holes in long. seams 1½" Pitch of rivets 8½" Lap of plates or width of butt straps 18"

Per centages of strength of longitudinal joint rivets 86.0 plate 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 1½" No. and Description of Furnaces in each boiler 3 Purves' Material Steel Outside diameter 40½"

Length of plain part top 6'-3" bottom 6'-8" Thickness of plates crown ½" bottom ½" Description of longitudinal joint weld No. of strengthening rings ✓

Working pressure of furnace by the rules 174.8 lbs. Combustion chamber plates: Material steel Thickness: Sides ½" Back ½" Top ½" Bottom ½"

Pitch of stays to ditto: Sides 8½" Back 8½" Top 8½" 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 1½" Pitch of stays 16½" x 20" How are stays secured double nut & washers Working pressure by rules 161.2 lbs. Material of stays steel

Diameter at smallest part 2.66" (27) Area supported by each stay 325 sq. in. Working pressure by rules 169 lbs. Material of Front plates at bottom steel

Thickness ¾" Material of Lower back plate steel Thickness 1" Greatest pitch of stays 13½" Working pressure of plate by rules 189.6 lbs

Diameter of tubes 3½" Pitch of tubes 4½" x 4½" Material of tube plates steel Thickness: Front 15/16" Back 5/8" Mean pitch of stays 9"

Pitch across wide water spaces 14½" Working pressures by rules 172.5 lbs. Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8" x 1½" Length as per rule 24" Distance apart 8½" 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 ✓

DONKEY BOILER— Description *Vertical with 4 cross tubes.*

Made at *Stockton* By whom made *Riley Bros.* When made *1894* Where fixed *Stoke, N.*

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 easing 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 *3/8"*

Description of riveting long. seams *lap. double* Diameter of rivet holes *7/8"* Whether punched or drilled *punched* Pitch of rivets *1 1/2"*

Lap of plating *4 1/4"* Per centage of strength of joint *74.5* Rivets *7/8"* Thickness of shell crown plates *9/16"* Radius of do. *5 ft.* No. of Stays to do. *12*

Dia. of stays. *1 1/2"* Diameter of furnace Top *5'-5"* Bottom *6'-0 1/2"* Length of furnace *5'-4"* Thickness of furnace plates *5/8"*

joint *lap single* Thickness of furnace crown plates *7/8"* Stayed by *same as shell crown* Working pressure of shell by rules *80 lbs.*

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

SPARE GEAR. State the articles supplied:— *2 bon. rod top end & 2 bottom end bolts & nuts; 2 Ma*

bearing bolts & nuts; 1 set of coupling bolts & nuts; 1 set of feed & 1 set of

bridge pump valves; 1 set of springs for H.P. piston; 1 main & 1 donkey

check valve; 6 Piston bolts; 8 br. pump valves; Bolts & nuts assorted & 1 prop

The foregoing is a correct description,

FOR THE CENTRAL MARINE ENGINE WORKS,

(23, Quay & Co. St.)

Manufacturers of main Engines & Boilers.

Thomas M.

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 signature]

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)

[Signature]