

# REPORT ON MACHINERY.

Port of West Hartlepool

Received at London Office

THUR. 23 JUL 1909

No. in Survey held at Hartlepool

Date, first Survey 9<sup>th</sup> Dec. 1908 Last Survey 22<sup>nd</sup> July, 1909.

Reg. Book.

(Number of Visits 88)

16 suff. on the

S/S "ARMSTOR"

Master E. M. Smith

Built at West Hartlepool

By whom built J. W. S. B. & D. D. C. & Co. Ltd

Gross 2993.78

Net 1864.19

When built 1909.

Engines made at Hartlepool

By whom made Richardsons Westgarth & Co. Ltd

when made 1909

Boilers made at Hartlepool

By whom made Richardsons Westgarth & Co. Ltd

when made 1909

Registered Horse Power

Owners R. H. Holman

Port belonging to London.

Nom. Horse Power as per Section 28 290

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted No

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

Dia. of Cylinders 23 1/2 - 38 - 64 Length of Stroke 42 Revs. per minute 65 Dia. of Screw shaft 1 3/4 as per rule 1 3/4 as fitted 1 1/4 Material of screw shaft S. Iron

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No 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 No Length of stern bush 4'-8"

Dia. of Tunnel shaft 11'-6" as per rule 11'-6" as fitted 11'-3/4" Dia. of Crank shaft journals 12'-12" as per rule 12'-12" as fitted 12'-3/4" Dia. of Crank pin 12'-3/4" Size of Crank webs 7'-1/2" x 2'-4" Dia. of thrust shaft under collars 12'-2" Dia. of screw 16'-0" Pitch of Screw 16'-6" No. of Blades 4 State whether moveable No Total surface 81.6 sq ft

No. of Feed pumps 2 Diameter of ditto 2'-3/4" 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 6" x 4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps 1 - 2 1/2" tunnel well.

In Engine Room 3 - 3" diam. In Holds, &c. 6 - 3" diam.

1 - 3 1/2" diam.

No. of Bilge Injections One size 5" Connected to condenser, or to circulating pump Circulating 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 2/6/09. of Stern Tube 8/6/09 Screw shaft and Propeller 9/6/09.

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Cylinder platform.

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel John Spencer & Sons.

Total Heating Surface of Boilers 4488 sq ft Is Forced Draft fitted No No. and Description of Boilers 2 Cylindrical Single Sided

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 28/4/09 No. of Certificate 3162

Can each boiler be worked separately Yes Area of fire grate in each boiler 48.65 sq ft No. and Description of Safety Valves to each boiler 2, Spring loaded Area of each valve 5.94 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 2'-2" Mean dia. of boilers 16'-6" Length 10'-6" Material of shell plates Steel

Thickness 1/4" Range of tensile strength 28/32 Tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D.P. LAP.

long. seams T.R.D.B.S. Diameter of rivet holes in long. seams 1/4" Pitch of rivets 8'-2" Lap of plates or width of butt straps 18"

Per centages of strength of longitudinal joint rivets 85.8 plate 85.3 Working pressure of shell by rules 181.5 lbs. Size of manhole in shell 16'-2" x 13"

Size of compensating ring 31 x 29 1/2 x 1 1/4 No. and Description of Furnaces in each boiler 3 Bull. Material Steel Outside diameter 44 3/8"

Length of plain part top 3'-9 1/16" bottom 3'-9 1/16" Description of longitudinal joint Welded No. of strengthening rings Yes

Working pressure of furnace by the rules 198.5 Combustion chamber plates: Material Steel Thickness: Sides 19/32 Back 19/32 Top 19/32 Bottom 7/8

Pitch of stays to ditto: Sides 8" x 8" Back 8 1/4" x 8" Top 8" x 8" 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 8 1/4" x 8" Working pressure by rules 180 lbs. End plates in steam space:

Material Steel Thickness 3/32 Pitch of stays 15 1/2" x 15 1/8" How are stays secured D.N.W. Working pressure by rules 180.5 Material of stays Steel

Diameter at smallest part 2 3/8" Area supported by each stay 15 1/2" x 15 1/8" Working pressure by rules 187 Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel Thickness 13/16" Greatest pitch of stays 13 1/4" x 8 1/4" Working pressure of plate by rules 187 lbs.

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 3/8" Material of tube plates Steel Thickness: Front 7/8" Back 3/4" Mean pitch of stays 8 3/4" x 11 1/4"

Pitch across wide water spaces 1 1/4" Working pressures by rules 181 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 3/4" x 1 3/4" Length as per rule 2'-6 1/2" Distance apart 8" Number and pitch of stays in each 3 - 8"

Working pressure by rules 189.5 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

R.W. 1257

**VERTICAL DONKEY BOILER**— Manufacturers of Steel *As per report attached*

No. *One* Description *Cylindrical Single Ended*

Made at *Stockton* By whom made *Mrs. Ludron & Co. Ltd* When made *1909* Where fixed *Stoffehol*

Working pressure *100* tested by hydraulic pressure to *200* Date of test *7/5/09* No. of Certificate *4263* Fire grate area *26.5* Description of Safety Valves *Spring loaded* No. of Safety Valves *2* Area of each *5.94* Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* 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:— *One propeller, two top end bolts, two bottom end bolts, two main bearing bolts, set of coupling bolts, one set of feed and help pump valves, a quantity of assorted bolts & nuts.*

The foregoing is a correct description,  
For RICHARDSONS, WASTCARTH & CO. LIMITED.

*[Signature]* Manufacturer.

Assistant General Manager

Dates of Survey while building

During progress of work in shops -	1908. Dec. 9, 10, 11, 15, 22, 29, 30.	1909. Jan. 5, 6, 8, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 25, 26, 27, Feb. 1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 16, 18, 19, 22, 23, 24, 26.
	1909. Mar. 1, 2, 4, 8, 9, 11, 12, 15, 16, 18, 19, 22, 24, 25, 26, 29, 31.	

Total No. of visits *88* Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Cylinders *7/4/09* Slides *16/4/09* Covers *13/5/09* Pistons *6/4/09* Rods *16/4/09*

Connecting rods *26/3/09* Crank shaft *24/3/09* Thrust shaft *26/2/09* Tunnel shafts *11/6/09* Screw shaft *12/5/09* Propeller *5/4/09*

Stern tube *27/5/09* Steam pipes tested *15/6/09* Engine and boiler seatings *8/6/09* Engines holding down bolts *14/6/09*

Completion of pumping arrangements *17/6/09* Boilers fixed *17/6/09* Engines tried under steam *17/6/09*

Main boiler safety valves adjusted *17/6/09* Thickness of adjusting washers *Pat. Boils S.V. 1/32 Star. Boiler S.V. 9/32*

Material of Crank shaft *Soft Steel* Identification Mark on Do. *4771* Material of Thrust shaft *Soft Steel* Identification Mark on Do. *4771*

Material of Tunnel shafts *Soft Steel* Identification Marks on Do. *4771* Material of Screw shafts *S. Iron* Identification Marks on Do. *4771*

Material of Steam Pipes *Lap-welded 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 **L.M.C. 7-09.**

It is submitted that this vessel is eligible for THE RECORD. + LMC 7.09

*[Signature]*  
29-7-09.

The amount of Entry Fee. £ *2 : 0 : 0* When applied for.

Special . . . . . £ *34 : 10 : 0* 26-7-1909

Donkey Boiler Fee . . . . . £ *36 : 10 : 0* When received,

Travelling Expenses (if any) £ : : *27 : 7 : 1909*

*[Signature]*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute  
Assigned

FRI. 30 JUL 1909

*Home 7.09*

MACHINERY CERTIFICATE WRITTEN.

*Out Copy 27/12/12*



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Certificate (if required) to be sent to West Hartlepool

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

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