

REPORT ON MACHINERY.

Port of WEST HARTLEPOOL

OCT 31 1901

No. in Survey held at Hartlepool Date, first Survey 4th Feb'y. Last Survey 14th Dec 1901
 Reg. Book. up 33 on the Steel S.S. "Birmingham" Number of Visits 57
 Master N. Hartlepool By whom built Irvine's S. B. & D. W. B. Ltd When built 1901
 Engines made at Hartlepool By whom made Richardsons, Westgarth & Co. Ltd When made 1901
 Boilers made at Hartlepool By whom made Do When made 1901
 Registered Horse Power 314 Owners Birmingham Steamship Co. Ltd Port belonging to Cardiff
 Nom. Horse Power as per Section 28 306 Is Refrigerating Machinery fitted no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders three No. of Cranks three
 Dia. of Cylinders 25" - 40" - 64" Length of Stroke 45" Revs. per minute 60 Dia. of Screw shaft 14 1/2" Lgth. of stern bush 4' - 10 1/2"
 Dia. of Tunnel shaft 12 1/2" Dia. of Crank shaft journals 12 3/4" Dia. of Crank pin 13" Size of Crank webs 8" x 18 3/4" Dia. of thrust shaft under collars 13" Dia. of screw 14' - 0" Pitch of screw 16' - 9" No. of blades 4 State whether moveable no Total surface 83 sq. ft.
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 24" Can one be overhauled while the other is at work Yes.
 No. of Bilge pumps 2 Diameter of ditto 3 3/4" Stroke 24" Can one be overhauled while the other is at work Yes.
 No. of Donkey Engines Two Sizes of Pumps Feed 4" x 6" duplex 10" x 9" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Four 3 1/2" dia. In Holds, &c. Yes. - One 2 1/2" dia. to fore peak, two 3 1/2" dia. to No. 1 hold, two 3 1/2" dia. to No. 2 hold, two 3 1/2" dia. to No. 3 hold, two 3 1/2" dia. to Aftermost hold, and one 2 1/2" dia. to After well.
 No. of bilge injections one sizes 5" Connected to condenser, or to circulating pump yes pump 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.
 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 14, 10. 01 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 4615 sq. ft. Is forced draft fitted No
 No. and Description of Boilers 2 Single ended. Cyl. Mull. Working Pressure 165 lbs. Tested by hydraulic pressure to 330 lbs.
 Date of test 10, 9, 01 Can each boiler be worked separately Yes. Area of fire grate in each boiler 54 sq. ft. No. and Description of safety valves to each boiler 2 Spring direct Area of each valve 4.06 sq. in. Pressure to which they are adjusted 140 lbs. Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 20" Mean dia. of boilers 15' - 9" Length 10' - 6" Material of shell plates steel
 Thickness 1 1/32" Range of tensile strength 28 3/32 Are they welded or flanged no Descrip. of riveting: cir. seams treble long. seams treble
 Diameter of rivet holes in long. seams 1 1/32" Pitch of rivets 9 1/8" Lap of plates or width of butt straps 19 3/4"
 Per centages of strength of longitudinal joint 86.4 Working pressure of shell by rules 190 lbs Size of manhole in shell 13" x 16 1/2"
 Size of compensating ring 30" x 30" x 1 1/2" No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 49 1/4"
 Length of plain part top 9" Thickness of plates bottom 19 1/32" Description of longitudinal joint weld No. of strengthening rings ✓
 Working pressure of furnace by the rules 189 lbs. Combustion chamber plates: Material steel Thickness: Sides 19 1/32" Back 19 1/32" Top 19 1/32" Bottom 13 1/16"
 Pitch of stays to ditto: Sides 4 3/4" Back 4 3/4" Top 4 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 206 lbs.
 Material of stays steel Diameter at smallest part 1 1/4" Area supported by each stay 60 sq. in. Working pressure by rules 165 lbs. End plates in steam space:
 Material steel Thickness 29" Pitch of stays 14" x 15 1/4" How are stays secured D. N. & W. Working pressure by rules 167 lbs. Material of stays steel
 Diameter at smallest part 2 3/8" Area supported by each stay 228 sq. in. Working pressure by rules 194 lbs. Material of Front plates at bottom steel
 Thickness 13 1/16" Material of Lower back plate steel Thickness 3 1/4" Greatest pitch of stays 12 5/8" Working pressure of plate by rules 174 lbs.
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" Material of tube plates Steel Thickness: Front 3 1/32" Back 3 1/4" Mean pitch of stays 9"
 Pitch across wide water spaces 14 1/4" Working pressures by rules 165 lbs. Girders to Chamber tops: Material steel Depth and thickness of girder at centre 7 1/4" x 15 1/8" Length as per rule 30" Distance apart 7 1/4" Number and pitch of Stays in each 3 - 7 1/2"
 Working pressure by rules 165 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 ✓
 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— No. *One* Description *Blakes patent. (net back)*
 Made at *Middlesbrough* By whom made *Richardsons Westgarth & Co.* When made *27.9.01* Where fixed *Stoke hold.*
 Working pressure *90 lbs.* tested by hydraulic pressure to *180 lbs.* No. of Certificate *2584* Fire grate area *30 sq ft* Description of safety valves *Spring direct.*
 No. of safety valves *2* Area of each *5.94 sq ft* Pressure to which they are adjusted *95 lbs.* If fitted with casing gear *Yes*. If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *8'-0"* Length *16'-6"* Material of shell plates *steel* Thickness *3 1/2"* Range of tensile strength *27-32* Descrip. of riveting long. seams *D. riv. lap.* Dia. of rivet holes *1 5/16"* Whether punched or drilled *drilled* Pitch of rivets *3"*
 Lap of plating *4 5/8"* Per centage of strength of joint *73.7* Rivets *59* Thickness of shell crown plates *1 1/2"* Radius of do. *Hemi.* No. of Stays to do. *✓*
 Dia. of stays. *✓* Diameter of furnace Top *3'-6"* Bottom *6'-4"* Length of furnace *4'-10"* Thickness of furnace plates *1 1/2"* Description of joint *S. riv. lap.* Thickness of furnace crown plates *2 1/2" + 2"* Stayed by *1 3/8" S. stays & nuts 11" x 11" pipes* Working pressure of shell by rules *91.1 lbs.*
 Working pressure of furnace by rules *97.4 lbs.* Diameter of uptake *2 1/2"* Thickness of uptake plates *7 1/2" x 1 3/8"* Thickness of *stay* tubes *3/8"*

SPARE GEAR. State the articles supplied:— *2 bon. rod top, + 2 bon. rod bottom end bolts nuts, 2 Main bearing + one set of coupling bolts, one set of feed + bilge pump valves, quantity of assorted bolts nuts + iron, set of air + circulating pump valves, propeller, propeller shaft, 2 safety valve springs, one set of main feed check valves.*

The foregoing is a correct description,
 for **RICHARDSONS, WESTGARTH & CO. LIMITED**
J. B. Boarding Manufacturers.

Dates of Survey while building	{	During progress of work in shops - -	1901. Feb. 21. 27. Mar. 6. 19. 26. 30. Apr. 12. 19. May 7. 17. 21. June 13. 14. 19. 20. 21. 24. 25. 26. 27.	
		During erection on board vessel - -	July 2. 3. 4. 5. 9. 11. 12. 16. 18. 26. 27. 29. 31. Aug. 1. 16. 18. 20. 21. 22. 23. 26. 28. 29. Sept. 2. 3. 5. 6. 9. 10. 12. 19. 23. 24. 30. Oct. 3. 4. 14.	
		Total No. of visits	57	
			Is the approved plan of main boiler forwarded herewith	Yes
			" " " donkey " " "	No

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

Material of screw shaft *Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *No 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 *No*
 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 *No* If two liners are fitted, is the shaft lapped or protected between the liners *No*

The main steam pipes have been tested by hyd. pressure to 330 lbs. per sq. in. and found tight.
*The Engines + Boilers of this vessel, have been built under special survey in accordance with the Rule requirements. The materials and workmanship are good + efficient, when completed and fitted on board, were tried under steam at moorings with satisfactory results, and, in my opinion, eligible to have notation **L.M.C. 10, 01.** in the Register Book.*

It is submitted that
 this vessel is eligible for
THE RECORD. + L.M.C. 10-01

C.M.
31-10-01

The amount of Entry Fee..	£ 3 :	When applied for,
Special	£ 35 6 :	24. 10. 19. 01
Donkey Boiler Fee .. .	£ :	When received,
Travelling Expenses (if any) £	:	2 11. 01

R.S.
1. 11. 01
Wmish.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRI. NOV 1 1901

Assigned

+ L.M.C. 10, 01



Certificate (if required) to be sent to W. Martlepool

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