

REPORT ON MACHINERY.

Port of **WEST HARTLEPOOL**

Received at London Office

No. in Survey held at **Hartlepool** Date, first Survey **19th March** Last Survey **7th Nov. 1901**
 eg. Book. **21** on the **Steel S.S. "Manchester Exchange"** (Number of Visits **83**) Tons Gross **4115**
 Net **2665**

Master **Blake** Built at **H. Hartlepool** By whom built **Furness Withy & Co. Ltd.** When built **1901**
 Engines made at **Hartlepool** By whom made **Richardsons, Nestgarth & Co. Ltd.** When made **1901**
 Boilers made at **Hartlepool** By whom made **Richardsons, Nestgarth & Co. Ltd.** When made **1901**

Registered Horse Power **374** Owners **Manchester Liners Ltd.** Port belonging to **Manchester**
 Nom. Horse Power as per Section 28 **374** Is Refrigerating Machinery fitted **No** Is Electric Light fitted **Yes.**

GINES, &c.—Description of Engines **Triple expansion** No. of Cylinders **three** No. of Cranks **three**
 Dia. of Cylinders **25"-40"-68"** Length of Stroke **48"** Revs. per minute **65** Dia. of Screw shaft **14 1/2"** Lgth. of stern bush **5'-1 1/2"**
 Dia. of Tunnel shaft **12 1/2"** Dia. of Crank shaft journals **13 1/2"** Dia. of Crank pin **14"** Size of Crank webs **8 1/2" x 20 1/2"** Dia. of thrust shaft under
 flars **14"** Dia. of screw **17'-6"** Pitch of screw **17'-6"** No. of blades **4** State whether moveable **no** Total surface **88.5 sq. ft.**
 No. of Feed pumps **2** Diameter of ditto **3 1/4"** Stroke **24"** Can one be overhauled while the other is at work **Yes.**
 No. of Bilge pumps **2** Diameter of ditto **3 1/4"** Stroke **24"** Can one be overhauled while the other is at work **Yes.**
 No. of Donkey Engines **Three** Sizes of Pumps **4 1/2" x 6" duplex** Ballast **10" x 9"** No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room **Four 3 1/2" dia.** In Holds, &c. **Fifteen.** — One 2 1/2" to fore peak, two 3 1/2" to No. 1 hold
 No. 3 1/2" to fore hold, two 3 1/2" to deep tank, two 3 1/2" to aft hold, two 3 1/2" to aftermost hold, one 2 1/2" to aft well + one 2 1/2" to aft peak.
 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 **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 **New vessel** Is the screw shaft tunnel watertight **Yes.**
 Is it fitted with a watertight door **Yes** worked from **upper platform.**

OILERS, &c.— (Letter for record **S**) Total Heating Surface of Boilers **6142 sq. ft.** Is forced draft fitted **No**
 No. and Description of Boilers **3 Single ended. byl. Mull** Working Pressure **180 lbs.** Tested by hydraulic pressure to **360 lbs.**
 Date of test **21-8-01** Can each boiler be worked separately **Yes** Area of fire grate in each boiler **49 sq. ft.** No. and Description of safety valves to
 each boiler **Two Spring driven** Area of each valve **4.06 sq. in.** 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 **ship side 20"** Mean dia. of boilers **14'-6"** Length **11'-0"** Material of shell plates **steel**
 Thickness **1 1/2"** 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 1/2"** Pitch of rivets **9"** Lap of plates or width of butt straps **19 3/4"**
 Per centages of strength of longitudinal joint **85** Working pressure of shell by rules **207 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 **45 1/2"**
 Length of furnace **4'-0"** Thickness of plates **9"** Description of longitudinal joint **weld** No. of strengthening rings **✓**
 Working pressure of furnace by the rules **193 lbs.** Combustion chamber plates: Material **steel** Thickness: Sides **19 3/32"** Back **19 3/32"** Top **19 3/32"** Bottom **15 1/16"**
 Pitch of stays to ditto: Sides **8 3/4" x 7 1/4"** Back **8 1/2" x 7 1/2"** Top **8 1/2" x 7 1/2"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **184 lbs.** End plates in steam space:
 Material of stays **steel** Diameter at smallest part **1 1/8"** Area supported by each stay **63 sq. in.** Working pressure by rules **190 lbs.** Material of stays **steel**
 Material **steel** Thickness **1"** Pitch of stays **15" x 13 1/2"** How are stays secured **D. N. M.** Working pressure by rules **210 lbs.** Material of Front plates at bottom **steel**
 Diameter at smallest part **25 1/8"** Area supported by each stay **206 sq. in.** Working pressure by rules **210 lbs.** Working pressure of plate by rules **189 lbs.**
 Thickness **7/8"** Material of Lower back plate **steel** Thickness **25 3/32"** Greatest pitch of stays **12 3/4"** Working pressure of plate by rules **189 lbs.**
 Diameter of tubes **3 1/2"** Pitch of tubes **4 5/8"** Material of tube plates **steel** Thickness: Front **1 1/2"** Back **1 1/2"** Mean pitch of stays **11 1/8"**
 Pitch across wide water spaces **14 1/2"** Working pressures by rules **181 lbs.** Girders to Chamber tops: Material **steel** Depth and
 thickness of girder at centre **7 1/4" x 1 3/4"** Length as per rule **31"** Distance apart **7 1/2"** Number and pitch of Stays in each **Two 8 1/2"**
 Working pressure by rules **184 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 *Single ended. bry. Mult.*
Made at *Newcastle* By whom made *H. Stephenson & Son* When made *3.6.01* Where fixed *Sloke hold.*
Working pressure *100 lbs.* tested by hydraulic pressure to *200 lbs.* No. of Certificate *6083* Fire grate area *35.72* Description of safety valves *Spring driven*
No. of safety valves *Two* Area of each *7.06* Pressure to which they are adjusted *100 lbs.* If fitted with easing gear *Yes* If steam from main boilers *Yes*
enter the donkey boiler *No* Dia. of donkey boiler *11'-0"* Length *10'-0"* Material of shell plates *steel* Thickness *1 1/16"* Range of tens
strength *28* Descrip. of riveting long. seams *D. strap. D. riv.* Dia. of rivet holes *5/8"* Whether punched or drilled *drilled* Pitch of rivets *3 1/2"*
With strap Per centage of strength of joint *93%* Rivets *77* Thickness of shell *end* plates *1 1/16"* Radius of do. *Pitch* No. of Stays to do. *18 x*
lap of plates *9 1/2"* Diameter of furnace *Top 39" Bottom 39"* Length of furnace *78 1/2"* Thickness of furnace plates *9/16"* Description
Dia. of stays. *2"* Thickness of *chamber* plates *1 1/32"* Stayed by *1 1/4" bff. 9 x 9 pitch.* Working pressure of shell by rules *112*
joint *d. strap.* Thickness of *chamber* plates *1 1/32"* Diameter of *lets 3 1/2"* Thickness of *tube* plates *F. 2 1/2" 1 1/2"* Thickness of water tubes
Working pressure of furnace by rules *113 lbs.* Diameter of *lets 3 1/2"* Thickness of *tube* plates *F. 2 1/2" 1 1/2"* Thickness of water tubes

SPARE GEAR. State the articles supplied:— *2 hon. rod top + 2 hon. rod bottom end bolts + nuts, 2 Main bearing +*
set of coupling bolts, one set of feed, bilge, air, + air pump valves, quantity of bolts, nuts,
iron, propeller, Pair of crank pin bushes + ecc. straps, air + air pump rods, set of packing
rings H.P. piston + piston valve, 2 Main + 2 donkey feed check valve, Piston + bucket rod complete for feed
+ 2 safety valve spring.

The foregoing is a correct description,

M. Morrison Manufacturer.

Dates of Survey while building
During progress of work in shops— *1901. Mar. 19. 20. Apr. 1. 3. 11. 17. 19. 21. 26. 27. 29. 30. May 1. 2. 3. 4. 7. 8. 10. 13. 14. 15. 16. 17. 21. 22. 23. 24. 29. 31. June 1. 3. 5. 7. 10. 11.*
During erection on board vessel— *19. 27. 28. 29. 30. July 1. 2. 3. 4. 5. 8. 9. 11. 16. 18. 20. 22. 26. 29. 31. Aug. 1. 12. 13. 14. 15. 19. 20. 21. 24. 26. 28. 29. Sept. 1. 2. 4. 6. 7.*
Total No. of visits *83*

Is the approved plan of main boiler forwarded herewith *No*

" " " 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 *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 *✓*
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
non-corrosive *Yes* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The main steam pipes have been tested by hydraulic pressure to 360 lbs. ps 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 + workmanship are good and 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. 11.01* in the Register Book.

It is submitted that this vessel is eligible for THE RECORD. + LMC 11.01 Elec. light

L.S.
21.11.01

C.M.
21.11.01

The amount of Entry Fee. £ *3*
Special £ *38*
Donkey Boiler Fee £ *14*
Travelling Expenses (if any) £ *14*

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

Committee's Minute

FRI. NOV 22 1901

Assigned

+ LMC 11.01

MACHINERY CERTIFICATE
WRITTEN.



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