

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 Novr. 1901**
(Number of Visits **83**)

eg. Book. **21** on the **Steel S.S. Manchester Exchange** Tons Gross **4115** Net **2665**

Master **Blake** Built at **N. 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.**

ENGINES, &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 **12-6 1/2"** Dia. of Crank shaft journals **13 1/4"** Dia. of Crank pin **14"** Size of Crank webs **8 1/2 x 20 1/2"** Dia. of thrust shaft under

blades **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 **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 **Three** Sizes of Pumps **4 1/2 x 6 duplex, 10 x 9, 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, two 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 aft most 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 **air-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 **New vessel** Is the screw shaft tunnel watertight **Yes.**

Is it fitted with a watertight door **Yes** worked from **upper platform.** Is forced draft fitted **No**

OILERS, &c.— (Letter for record **S**) Total Heating Surface of Boilers **6142 sq. ft.** Tested by hydraulic pressure to **360 lbs.**

No. and Description of Boilers **3 Single ended. byf. Mult** Working Pressure **180 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 direct** 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 1/32"** 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 1/32"** Pitch of rivets **9"** Lap of plates or width of butt straps **19 3/4"**

Per centages of strength of longitudinal joint **84** 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 **top 4-0"** Thickness of plates **bottom 9/16"** 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 **19/32"** Back **19/32"** Top **19/32"** Bottom **15/16"**

Pitch of stays to ditto: Sides **8 1/4" 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 **188 lbs.**

Material of stays **steel** Diameter at smallest part **1 1/8" off.** Area supported by each stay **63 sq. in.** Working pressure by rules **184 lbs.** End plates in steam space:

Material **steel** Thickness **1"** Pitch of stays **15" x 13 1/2"** How are stays secured **D. N. Y. M.** Working pressure by rules **190 lbs.** Material of stays **steel**

Diameter at smallest part **2 1/8" off.** Area supported by each stay **206 sq. in.** Working pressure by rules **210 lbs.** Material of Front plates at bottom **steel**

Thickness **7/8"** Material of Lower back plate **steel** Thickness **25/32"** 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"**

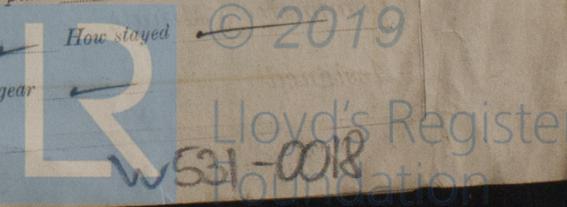
Working pressure by rules **184 lbs.** Superheater or Steam chest; how connected to boiler **none** Can the superheater be shut off and the boiler worked

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 *35.70* Description of safety valves *Spring disc*
 No. of safety valves *two* Area of each *7.060* Pressure to which they are adjusted *100 lbs.* If fitted with easing gear *Yes* If steam from main boilers enter the donkey boiler *No* Dia. of donkey boiler *11'-0"* Length *10'-0"* Material of shell plates *steel* Thickness *1/16"* Range of tens strength *28* Descrip. of riveting long. seams *D. strap. D. riv.* Dia. of rivet holes *1/8"* Whether punched or drilled *drilled* Pitch of rivets *3 1/2"*
 Rivets *44* Thickness of shell *end* plates *13/16"* Radius of do. *Pitch* of Stays to do. *18 x*
 Leap of plates *9 3/8"* Per centage of strength of joint *45.8* Plates *45.8* Thickness of furnace plates *9/16"* Description
 Dia. of stays. *2"* Diameter of furnace *Top 39" Bottom 39"* Length of furnace *78 1/2"* Thickness of furnace plates *9/16"*
 joint *d. strap.* Thickness of *chamber* plates *1 1/2"* Stayed by *1 1/4" bff. 9 x 9 pitch.* Working pressure of shell by rules *112*
 Working pressure of furnace by rules *113 lbs.* Diameter of *lets 3 1/2"* Thickness of *uptake* plates *F. 25. 13. 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. 2. 3. 11. 17. 19. 23. 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. 14. 17. 19. 20. 21. 22. 24. 25. 27. July 1. 2. 3. 4. 5. 8. 9. 11. 16. 18. 20. 22. 26. 29. 31. Aug. 2. 12. 13. 14. 15. 19. 20. 21. 24. 26. 28. 29. Sept. 2. 4. 6. 7. Oct. 2. 3. 5. 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. 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 + 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.

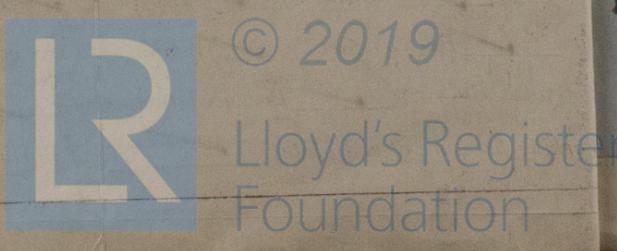
It is submitted that this vessel is eligible for **THE RECORD. + L.M.C. 11.01** Elec. light

J.S.
 21. 11. 01
 C.M.
 21. 11. 01

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

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

Committee's Minute **FRI. NOV 22 1901**
 Assigned *+ L.M.C. 11.01*



Machinery Certificate
 WRITTEN.

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

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