

REPORT ON MACHINERY.

Port of WEST HARTLEPOOL

Received at London Office

MON. 7 JUL 1902

MAINTENANCE 1898.

No. in Survey held at Hartlepool Date, first Survey 21st Octr. 1901 Last Survey 4th July 1902
 Reg. Book. (Number of Visits 102)

1151 on the Steel S. S. "Como"

Master Built at W. Hartlepool By whom built Furness, Wifly & Co. Ltd. When built 1902

Engines made at Hartlepool By whom made Richardsons, Neestgarth & Co. Ltd. when made 1902

Boilers made at Hartlepool By whom made D. D. when made 1902

Registered Horse Power 490 Owners British Maritime Trust Ltd. Port belonging to London & Hartlepool

Nom. Horse Power as per Section 28 489 Is Refrigerating Machinery fitted No Is Electric Light fitted ✓

ENGINES, &c.—Description of Engines Triple expansion **No. of Cylinders** three **No. of Cranks** three

Dia. of Cylinders 28 - 46 - 74 **Length of Stroke** 48" **Revs. per minute** 70 **Dia. of Screw shaft** as per rule 15" **Lgh. of stern bush** 5 - 42" **as per rule**

Dia. of Tunnel shaft as per rule 13 1/2" **Dia. of Crank shaft journals** as per rule 14 3/4" **Dia. of Crank pin** 14 1/2" **Size of Crank webs** 9 1/2" x 23 1/2" **Dia. of thrust shaft under collars** 15" **Dia. of screw** 18' 0" **Pitch of screw** 17' 0" to 20' 0" **Adj. No. of blades** 4 **State whether moveable** Yes **Total surface** 90 sq. ft.

No. of Feed pumps 2 **Diameter of ditto** 3 3/4" **Stroke** 27" **Can one be overhauled while the other is at work** Yes.

No. of Bilge pumps 2 **Diameter of ditto** 4 1/2" **Stroke** 27" **Can one be overhauled while the other is at work** Yes.

No. of Donkey Engines 2 **Sizes of Pumps** Red 5" x 10" stroke 10" x 9" **No. and size of Suctions connected to both Bilge and Donkey pumps**

In Engine Room Three 3 1/2" dia. In Holds, &c. Thirteen. One 2 1/2" dia. to fore Peak, Two 3 1/2" dia. to W. hold, Two 3 1/2" dia. N. 2 hold, Two 3 1/2" dia. to W. 3 hold, Two 3 1/2" dia. to W. 4 hold, Two 3 1/2" dia. to Off hold,

No. of bilge injections one sizes 4" **Connected to condenser, or to circulating pump** Yes **Is a separate donkey suction fitted in engine room & size** 2 1/2" 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**

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 8140 sq. ft. **Is forced draft fitted** No.

No. and Description of Boilers 4 single ended. byf. Mult. **Working Pressure** 160 lbs. **Tested by hydraulic pressure to** 360 lbs.

Date of test 11-4-02 **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" **Pressure to which they are adjusted** 195 lbs. **Are they fitted with easing gear** Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 3 1/4" **Mean dia. of boilers** 14 1/2" **Length** 10' 0" **Material of shell plates** steel

Thickness 1 1/32" **Range of tensile strength** 28 32" **Are they welded or flanged** No. **Description of riveting: cir. seams** treble **long. seams** treble

Diameter of rivet holes in long. seams 1 1/32" **Pitch of rivets** 9 1/2" **Lap of plates or width of butt straps** 19 1/4"

Per centage of strength of longitudinal joint rivets 95.2% **Working pressure of shell by rules** 207 lbs. **Size of manhole in shell** 13" x 16 1/2"

Size of compensating ring 30" x 20" x 1 1/2" **No. and Description of Furnaces in each boiler** 3 Morison **Material** steel **Outside diameter** 45 1/2"

Length of plain part top 7' - 5 1/2" **Thickness of plates** bottom crown 9" **Description of longitudinal joint** weld **No. of strengthening rings** ✓

Working pressure of furnace by the rules 103 lbs. **Combustion chamber plates: Material** steel **Thickness: Sides** 5" **Back** 8" **Top** 8" **Bottom** 14" **Working pressure by rules** 274 lbs.

Pitch of stays to ditto: Sides 4 1/2" **Back** 7 1/2" **Top** 7 1/2" **If stays are fitted with nuts or riveted heads** nuts. **Working pressure by rules** 274 lbs.

Material of stays steel **Diameter at smallest part** 1 3/8" **Area supported by each stay** 62 sq. in. **Working pressure by rules** 790 lbs. **End plates in steam space:**

Material steel **Thickness** 15" **Pitch of stays** 13 3/4" x 15 1/4" **How are stays secured** D. 11.411. **Working pressure by rules** 199 lbs. **Material of stays** steel

Diameter at smallest part 2 1/4" **Area supported by each stay** 202 sq. in. **Working pressure by rules** 211 lbs. **Material of Front plates at bottom** steel

Thickness 1 3/16" **Material of Lower back plate** steel **Thickness** 25/32" **Greatest pitch of stays** 12 5/8" **Working pressure of plate by rules** 190 lbs.

Diameter of tubes 3 1/2" **Pitch of tubes** 4 1/8" **Material of tube plates** steel **Thickness: Front** 1 1/2" **Back** 2 5/32" **Mean pitch of stays** 9 1/4"

Pitch across wide water spaces 14 1/2" **Working pressures by rules** 194 lbs. **Girders to Chamber tops: Material** steel **Depth and**

thickness of girder at centre 7" x 15" **Length as per rule** 29" **Distance apart** 7 1/2" **Number and pitch of Stays in each** 2 - 7 1/2"

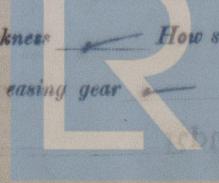
Working pressure by rules 180 lbs. **Superheater or Steam chest how connected to boiler** none **Can the superheater be shut off and the boiler worked**

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** ✓



Lloyd's Register Foundation
W582-011

DONKEY BOILER— No. ✓ Description

No donkey boiler

| Made at | By whom made | When made | Where fixed |
|--------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|
| Working pressure | tested by hydraulic pressure to | No. of Certificate | Fire grate area |
| No. of safety valves | Area of each | Pressure to which they are adjusted | If fitted with easing gear |
| enter the donkey boiler | Dia. of donkey boiler | Length | Material of shell plates |
| strength | Descript. of riveting long. seams | Dia. of rivet holes | Thickness |
| Lap of plating | Per centage of strength of joint | Rivets Plates | Whether punched or drilled |
| Dia. of stays. | Diameter of furnace Top | Bottom | Pitch of rivets |
| joint | Thickness of furnace crown plates | Length of furnace | No. of Stays to do. |
| Working pressure of furnace by rules | Stayed by | Thickness of furnace plates | Description of |
| | Diameter of uptake | Thickness of uptake plates | Working pressure of shell by rules |
| | | | Thickness of water tubes |

SPARE GEAR. State the articles supplied :— Two iron rod top & two iron rod bottom end bolts & nuts, 2 main bearings & one set of coupling bolts, one set of feed, bilge, main feed check & donkey, feed check valves, bolts, nuts & iron various sizes, 2 propeller blades, propeller shaft, 12 condense & 12 boiler tubes, 2 safety valve springs & one set of escape valve springs.

for The foregoing is a correct description,
RICHARDSONS, WESTGARTH & CO. LIMITED
J. G. Gardine Manufacturer.

Dates of Survey while building During progress of work in shops - 1901. Oct. 21. 24. 25. 29. Nov. 2. 4. 6. 7. 8. 9. 11. 18. 19. 20. 22. 23. 25. Dec. 5. 6. 10. 11. 18. 19. 20. 21. 1902. Jan. 6. 8. 9. 11. 13. 14. 15. 16. 17. 18. 20. 21. 22.
 During erection on board vessel - 1902. 24. 25. 27. 28. 29. 30. Feb. 1. 3. 4. 5. 6. 7. 10. 11. 12. 13. 14. 17. 18. 19. 21. 24. 26. 27. 28. Mar. 1. 3. 4. 6. 7. 10. 11. 14. 15. 17. 18. 20. 21. 22. 23. 25. 27. Apr. 1. 3. 5. 8. 10. 11. 12. 14. 15. 16. 17. 19. 21. 22. 23. 25. 26. May 1. 2. 3. 4. July 4.
 Total No. of visits 102 Is the approved plan of main boiler forwarded herewith Yes.

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

Material of screw shaft Steel 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 and 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 & 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 and efficient, when completed and fitted on board were tried under steam at moorings with satisfactory results, and are now in good working order, and in my opinion eligible to have notation
■ L.M.C. 7/02 marked in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD.

| | | | |
|--------------------------------|---|------|-------------------|
| The amount of Entry Fee . . . | £ | : | When applied for, |
| Special | £ | 44 9 | : 4. 9. 1902 |
| Donkey Boiler Fee | £ | : | When received, |
| Travelling Expenses (if any) £ | | | 517.02 19 |

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

Committee's Minute

TUES. 8 JUL 1902

Assigned.

MACHINERY CERTIFICATE
WRITTEN.

Lloyd's Register Foundation