

REPORT ON MACHINERY.

Port of WEST HARTLEPOOL

RECEIVED
17 APR 1902

Received at London Office

No. in Survey held at *Hartlepool* Date, first Survey *18 March 1901* Last Survey *March 26, 1902*
 Reg. Book. *60* on the *Steel S.S. "Akabo"* (Number of Visits *108*)
 Master *Built at Middlesbrough By whom built Sir. H. Dixon & Co* Tons { Gross *3806*
 Engines made at *Hartlepool* By whom made *Richardson, Westgarth & Co* Net *2418*
 Boilers made at *Hartlepool* By whom made *do do* When built *1902*
 Registered Horse Power *Owners British & African S.N.C. (1900) Lim* Port belonging to *Liverpool*
 Nom. Horse Power as per Section 28 *436* Is Refrigerating Machinery fitted *for provisions only* Is Electric Light fitted *yes*

ENGINES, &c.—Description of Engines *Triple expansion* No. of Cylinders *three* No. of Cranks *three*
 Dia. of Cylinders *27" 43" 42"* Length of Stroke *48"* Revs. per minute *40* Dia. of Screw shaft *as per rule 14 1/2"* Lgth. of stern bush *5' 1 1/2"*
 Dia. of Tunnel shaft *as per rule 13 1/2"* Dia. of Crank shaft journals *as per rule 14"* Dia. of Crank pin *14 1/2"* Size of Crank webs *9" x 22 1/2"* Dia. of thrust shaft under collars *15"* Dia. of screw *17' 3"* Pitch of screw *Adjust. 16' 6" to 19' 6"* No. of blades *4* State whether moveable *yes* Total surface *82 sq. ft.*
 No. of Feed pumps *2* Diameter of ditto *3 1/2"* Stroke *27"* Can one be overhauled while the other is at work *yes*
 No. of Bilge pumps *2* Diameter of ditto *4"* Stroke *27"* Can one be overhauled while the other is at work *yes*
 No. of Donkey Engines *3* Sizes of Pumps *Feed 8" x 6" 9" x 4" 9" x 10"* No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room *Four 3 1/2" dia.* In Holds, &c. *Two of 3" dia in Nos 1-2-3 & 4 Holds*
 No. of bilge injections *one size 8"* Connected to condenser, or to circulating pump *in 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 *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
 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 *See Ship report*
 Is it fitted with a watertight door *yes* worked from *upper grating*

BOILERS, &c.—(Letter for record *S*) Total Heating Surface of Boilers *5897 sq. ft.* Is forced draft fitted *yes*
 No. and Description of Boilers *2 single ended byl. Mult.* Working Pressure *180 lbs.* Tested by hydraulic pressure to *360 lbs.*
 Date of test *18-12-01* Can each boiler be worked separately *yes* Area of fire grate in each boiler *61.5 sq. ft.* No. and Description of safety valves to each boiler *2 spring direct* Area of each valve *12.5 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 *25"* Mean dia. of boilers *15'-9"* Length *12'-0"* Material of shell plates *steel*
 Thickness *1 1/8"* 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 *1-15/32"* Pitch of rivets *9 1/8"* Lap of plates or width of butt straps *2 1/2"*
 Per centages of strength of longitudinal joint *88* Working pressure of shell by rules *206 lbs.* Size of manhole in shell *13" x 16 1/2"*
 Size of compensating ring *31 x 31 x 1 1/8"* No. and Description of Furnaces in each boiler *3 Morison* Material *steel* Outside diameter *49 1/4"*
 Length of plain part *8'-0"* Thickness of plates *5"* Description of longitudinal joint *weld* No. of strengthening rings *✓*
 Working pressure of furnace by the rules *202 lbs.* Combustion chamber plates: Material *steel* Thickness: Sides *5"* Back *5"* Top *5"* Bottom *1"*
 Pitch of stays to ditto: Sides *7 1/8"* Back *7 1/8"* Top *7 1/8"* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *217 lbs.*
 Material of stays *steel* Diameter at smallest part *1 3/8"* Area supported by each stay *62 sq. in.* Working pressure by rules *191 lbs.* End plates in steam space
 Material *steel* Thickness *1 1/8"* Pitch of stays *15 1/4" x 14 1/8"* How are stays secured *Q.N.M.* Working pressure by rules *231 lbs.* Material of stays *steel*
 Diameter at smallest part *2 1/2"* Area supported by each stay *230 sq. in.* Working pressure by rules *213 lbs.* Material of Front plates at bottom *steel*
 Thickness *1 1/8"* 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 *2 1/2"* Pitch of tubes *3 1/4"* Material of tube plates *steel* Thickness: Front *31/32"* Back *3/4"* Mean pitch of stays *9 3/8"*
 Pitch across wide water spaces *13 1/2"* Working pressures by rules *197 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 *30"* Distance apart *7 1/4"* Number and pitch of Stays in each *3-7 1/8"*
 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 *✓*

DONKEY BOILER— No. One Description Cyl. Mult., two plain furnaces
Made at Stockton By whom made Sudron & Co. When made 1901 Where fixed Stokehold
Working pressure 90 lbs tested by hydraulic pressure to 180 lbs No. of Certificate 2580 Fire grate area 30 sq ft Description of safety valves direct spring
No. of safety valves Two Area of each 8.29 sq Pressure to which they are adjusted 90 lbs If fitted with easing gear yes If steam from main boilers can enter the donkey boiler no Dia. of donkey boiler 9' 6" Length 9' 0" Material of shell plates Steel Thickness 3/8" Range of tensile strength 28/32 Descrip. of riveting long seams Double Butt Strap Dia. of rivet holes 15/16 Whether punched or drilled drilled Pitch of rivets 3 3/2"
Butt Straps 9 3/8" Per centage of strength of joint Rivets 101 end 3 3/4 Pitch of stays 18 x 12 No. of stays to do. 10
Lap of plating 9 3/8" Plates 13.9 Thickness of shell crown plates 3 3/4 Radius of do. 18 x 12 No. of stays to do. 10
Dia. of stays 2 1/2 off dia. Diameter of furnace Top 36" Bottom Length of furnace 6' 0" Thickness of furnace plates 3 3/4 Description of joint Double Butt St. Thickness of furnace crown plates 1/2 Stayed by 1 1/2" Iron Sts. 7 1/2" Pitch riveted Working pressure of shell by rules 95 lbs
Working pressure of furnace by rules 100 lbs Diameter of uptake tubes 3 1/2" Thickness of uptake plates 3 3/4 B 3 3/4 Thickness of water tubes 5/8"

SPARE GEAR. State the articles supplied:— 2 con. rod top + 2 con. rod bottom end bolt + nut, 2 Main bearings + one set of coupling bolt, one set of feed, bilge + air pump valves, a quantity of iron + bolts + nuts, 2 propeller blades, 50 con. + 12 bolts tubes, Air pump rod + bucket, H. valve spindle, pair of con. rod bushes, Air pump head valve seat + guard, 2 safety valve spring, one main + one donkey feed check valve.
The foregoing is a correct description.

for RICHARDSONS, WESTGARTH & CO, LIMITED Manufacturer.

J. B. Harding
Dates of Survey while building
During progress of work in shops— 1901. Mar. 28. 30. Apr. 1. 12. 19. 26. May 7. 8. 9. 10. 16. 17. June 24. July 5. 9. 16. 26. 29. 31. Aug. 9. 2. 14. 15. 19. 22. 26. 27. 28. 29. 30. Sept. 2. 6. 7. 9.
During erection on board vessel— 10. 11. 12. 13. 14. 17. 18. 19. 20. 21. 24. 25. 26. 27. 30. Oct. 1. 2. 3. 7. 8. 9. 11. 14. 15. 17. 18. 19. 21. 22. 24. 25. 28. 29. Nov. 1. 2. 4. 5. 7. 8. 12. 14. 19. 21. 25. 27. Dec. 2. 3. 5. 6.
Total No. of visits 108
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 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 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 hyd. pressure to 360 lbs. per sq. in. and found tight.
The engines and boilers of this vessel, have been built under Special Survey in accordance with the Rules 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 our opinion, eligible to have notation L.M.O. marked in the Register Book

It is submitted that this vessel is eligible for THE RECORD - I - L M C 3:02 F.D. Elec. Light

The amount of Entry Fee. £ 3 : : When applied for.
Special £ 41 : 16 : : 21. 2. 1902
Donkey Boiler Fee £ : : :
Travelling Expenses (if any) £ : : : 2. 4. 1902

Committee's Minute

FRI. 18 APR 1902

Assigned

+ L.M.C. 3.02

Electric Light

MACHINERY CERTIFICATE WRITTEN.

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



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