

REPORT ON MACHINERY.

Port of WEST HARTLEPOOL

Received at London Office 8 AUG 1902

No. in Survey held at *West Hartlepool* Date, first Survey *13th April, 1901* Last Survey *18th July 1902*
 Reg. Book. *La bouskudora Naval Española* No. *24* (Number of Visits *46*)
 on the *La bouskudora Naval Española* No. *24* Tons Gross *11909* Net *305*
 Master *By whom built* When built
 Engines made at *West Hartlepool* By whom made *Central Marine Engine Works, Ltd.* when made *1902*
 Boilers made at *Do* By whom made *Do* when made *1902*
 Registered Horse Power *184* Owners *Is Refrigerating Machinery fitted* Port belonging to *Is Electric Light fitted*
 Com. Horse Power as per Section 28 *184* Is Refrigerating Machinery fitted *Is Electric Light fitted*

GINES, &c.—Description of Engines *Direct acting triple expansion* No. of Cylinders *3* No. of Cranks *3*
 Dia. of Cylinders *21-33-53* Length of Stroke *36* Revs. per minute *65* Dia. of Screw shaft *11.84* as per rule *11.78* Lgth. of stern bush *3.11*
 Dia. of Tunnel shaft *9.84* as per rule *10* Dia. of Crank shaft journals *10.33* as per rule *10.8* Dia. of Crank pin *10.8* Size of Crank webs *14.63* Dia. of thrust shaft under
 flars *10.8* Dia. of screw *13.6* Pitch of screw *13.6* No. of blades *4* State whether moveable *No* Total surface *638*
 No. of Feed pumps *2* Diameter of ditto *2 1/2* Stroke *24* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *2* Diameter of ditto *3* Stroke *24* Can one be overhauled while the other is at work *Yes*
 No. of Donkey Engines *2* Sizes of Pumps *3 1/2-5 & 10-9* No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room *In Holds, &c.*
 No. of bilge injections *1* sizes *6* Connected to condenser, or to circulating pump *Pump* Is a separate donkey suction fitted in Engine room & size
 Are all the bilge suction pipes fitted with roses *Are the roses in Engine room always accessible* Are the sluices on Engine room bulkheads always accessible
 Are all connections with the sea direct on the skin of the ship *Are they Valves or Cocks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates *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 *Are the blow off cocks fitted with a spigot and brass covering plate*
 How are they protected
 Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times
 Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *Is the screw shaft tunnel watertight*
 Is it fitted with a watertight door *worked from*

ILERS, &c.— (Letter for record *(S)*) Total Heating Surface of Boilers *29609* Is forced draft fitted
 No. and Description of Boilers *Two Simple ended Steel* Working Pressure *165 lb* Tested by hydraulic pressure to *330 lb*
 Date of test *17.8.01* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *36.65* No. and Description of safety valves to
 each boiler *Two Spring* Area of each valve *7.04* Pressure to which they are adjusted *Are they fitted with easing gear*
 Smallest distance between boilers or uptakes and bunkers or woodwork *Mean dia. of boilers 12.11* Length *10.0* Material of shell plates *Steel*
 Thickness *1 1/2* Range of tensile strength *27-30* Are they welded or flanged *Both* Descrip. of riveting: cir. seams *Lap joints* long. seams *Butt straps*
 Diameter of rivet holes in long. seams *1 1/8* Pitch of rivets *4 5/16* Lap of plates or width of butt straps *16"*
 Percentages of strength of longitudinal joint *86.8* Working pressure of shell by rules *167.4* Size of manhole in *16.12* in shell
 Size of compensating ring *2.8-3.4-1 1/4* No. and Description of Furnaces in each boiler *3 Cambered* Material *Steel* Outside diameter *2.11 1/2*
 Length of plain part *6.4* Thickness of plates *7/16* Description of longitudinal joint *Butt* No. of strengthening rings *-*
 Working pressure of furnace by the rules *176* Combustion chamber plates: Material *Steel* Thickness: Sides *5/8* Back *5/8* Top *5/8* Bottom *13/16*
 Pitch of stays to ditto: Sides *9* Back *9* Top *9* If stays are fitted with nuts or riveted heads *Yes* Working pressure by rules *166.6*
 Material of stays *Steel* Diameter at smallest part *1.8* Area supported by each stay *81.0* Working pressure by rules *176* End plates in steam space:
 Material *Steel* Thickness *1 1/8* Pitch of stays *17 1/2-17 1/2* How are stays secured *By nuts* Working pressure by rules *166.1* Material of stays *Steel*
 Diameter at smallest part *2.66* Area supported by each stay *306.0* Working pressure by rules *181* Material of Front plates at bottom *Steel*
 Thickness *1 1/8* Material of Lower back plate *Steel* Thickness *1 1/8* Greatest pitch of stays *16"* Working pressure of plate by rules *198*
 Diameter of tubes *3 1/4* Pitch of tubes *4 1/2* Material of tube plates *Steel* Thickness: Front *1 1/8* Back *5/8* Mean pitch of stays *9"*
 Pitch across wide water spaces *14 1/2* Working pressures by rules *166.2* Girders to Chamber tops: Material *Steel* Depth and
 Thickness of girder at centre *7 3/4-1 1/4* Length as per rule *2.8* Distance apart *8"* Number and pitch of Stays in each *Two 9" pitch*
 Working pressure by rules *169* 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
 Pitch of rivets *-* Working pressure of shell by rules *-* Diameter of flue *-* Material of flue plates *-* Thickness *-*
 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. 1 Description *Vertical crop tubes*
 Made at *Stockholm* By whom made *J. Ludron & Co* When made Where fixed
 Working pressure *80* tested by hydraulic pressure to *100* No. of Certificate Fire grate area Description of safety valves
 No. of safety valves Area of each Pressure to which they are adjusted If fitted with easing gear If steam from main boilers can enter the donkey boiler
 Dia. of donkey boiler *6' 6"* Length *13' 6"* Material of shell plates *Steel* Thickness *7/16* Range of tensile strength *27-32* Descrip. of riveting long. seams *Lap double riveted* Dia. of rivet holes *13/16* Whether punched or drilled *Punched* Pitch of rivets *2 3/4*
 Lap of plating *4 1/2* Per centage of strength of joint Rivets *72 7/8* Thickness of shell crown plates *9/16* Radius of do. *6' 0"* No. of Stays to do. *6*
 Dia. of stays. *1 5/8* Diameter of furnace Top *6' 2"* Bottom *6' 9"* Length of furnace *6' 9"* Thickness of furnace plates *5/8* Description of joint *Lap Single* Thickness of furnace crown plates *9/16* Stayed by *Same as shell crown* Working pressure of shell by rules *88 1/4*
 Working pressure of furnace by rules *85 1/4* Diameter of uptake *18"* Thickness of uptake plates *7/16* Thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:— *Propeller, 2 Main bearing bolts & nuts, 2 top end bolts & nuts, 2 bottom end bolts & nuts, 1 set of shaft coupling bolts & nuts, 1 set of feed pump valves, 1 set of bilge pump valves, Springs for A.P. piston, nuts, bolts & girths.*

The foregoing is a correct description,

Manufacturer.

Wm. B. Borrowman

Dates of Survey while building
 During progress of work in shops— 1901. Apr. 23. 26. 30. May 7. 9. 13. 16. 20. 22. 31. June 3. 4. 5. 7. 8. 11. 13. 14. 17. 18. 19. 20. 21. 24. 25. 28. July 2. 3. 5. 9. 10.
 During erection on board vessel— 11. 12. 13. 16. 17. 18. 20. 23. 25. 29. Aug. 15. 17. 20. 26. 1902. July 28.
 Total No. of visits *46* For visits at Cadiz *See Ship's Log* Is the approved plan of main boiler forwarded herewith *yes*
 " " " donkey " " " *no*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery has been specially surveyed during construction the material and workmanship good & renders the vessel eligible in my opinion to have the Record + L.R.C. When the machinery has been efficiently fitted & the main & donkey safety valves adjusted.*
 Material of screw shaft *Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *no*

Is the after end of the liner made water tight in the propeller boss 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

The machinery and boilers have been shipped to Cadiz to be fitted.

The amount of Entry Fee. £ *2* : : When applied for, *6. 8. 02*
 Special £ *18* 8 : :
 Donkey Boiler Fee £ : : When received, *5. 1. 03*
 Travelling Expenses (if any) £ : : *6. 1. 03*

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

Committee's Minute

FRI. 26 JUN 1903

Assigned

MACHINERY CERTIFICATE
 WRITTEN



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 Foundation

W. Warlepool

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