

REPORT ON MACHINERY.

Port of *West Harlepool*

MON. 23 OCT 1893

No. in Survey held at *Harlepool* Date, first Survey *20th April* Last Survey *30th Aug 1893*
 1. Book. *Suppl.* (Number of Visits *28*)
 2 on the *Screw Steamer "Cayo Mono"* Tons { Gross *2710.93*
 Net *1755.75*
 ster *Pipe* Built at *Newcastle* By whom built *Swan & Hunter* When built *1893*
 ines made at *Harlepool* By whom made *J. Richardson & Sons* when made *1893*
 lers made at *Harlepool* By whom made *J. Richardson & Sons* when made *1893*
 istered Horse Power *300* Owners *Cuban Steamship Co. Ltd.* Port belonging to *London*
 n. Horse Power as per Section 28 *266* (*Biglands & Co. Inqrs.*)

GINES, &c.— Description of Engines *Inverted, Triple Expansion, 3 Cranks* No. of Cylinders *3*
 Diameter of Cylinders *24, 38, 64* Length of Stroke *42* Revolutions per minute *68* Diameter of Screw shaft *11.24*
 Diameter of Tunnel shaft *10.68* as per rule *11.24* as fitted *11.24*
 Diameter of Crank shaft journals *11.24* Diameter of Crank pin *12* Size of Crank webs *17.4 x 7.2*
 Diameter of screw *15.9* Pitch of screw *16.0* No. of blades *4* State whether moveable *no* Total surface *69.7 sq. ft.*
 of Feed pumps *2* Diameter of ditto *2.4* Stroke *27* Can one be overhauled while the other is at work *yes*
 of Bilge pumps *2* Diameter of ditto *3.4* Stroke *27* Can one be overhauled while the other is at work *yes*
 of Donkey Engines *2* Sizes of Pumps *(8.2 x 7) (3.2 x 7)* No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room *Four, two of 3.2, two of 3* In Holds, &c. *Eight, 2-For. hold 3 dia, 2 main*
old 3 dia, 2 after hold 3 dia, 1 Aftermost hold 3 dia, 1 After well 2.2 dia.
 of bilge injections *one sizes 6 dia* Connected to condenser, or to circulating pump *yes* Is a separate donkey suction fitted in Engine room & size *yes, 3.2 dia*
 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 *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*
 How are they protected
 What pipes are carried through the bunkers *none*
 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 boiler* Is the screw shaft tunnel watertight *yes*
 Is it fitted with a watertight door *yes* worked from *upper platform*

ILERS, &c.— (Letter for record *(3)*) Total Heating Surface of Boilers *4016.6 sq. ft.*
 No. and Description of Boilers *Two, Cyl. mult. Single Ended* Working Pressure *160 lb.* Tested by hydraulic pressure to *320 lb.*
 Date of test *17.8.93* Can each boiler be worked separately *yes* Area of fire grate in each boiler *57.75 sq. ft.* No. and Description of safety valves to
 each boiler *Two, Spring* Area of each valve *8.29 sq. in.* Pressure to which they are adjusted *165 lb.* Are they fitted
 with casing gear *yes* Smallest distance between boilers or uptakes and bunkers or woodwork *2.6* Mean diameter of boilers *15.3*
 Length *10.3* Material of shell plates *Steel* Thickness *1.52* Description of riveting: circum. seams *double lap* long. seams *Double butt straps*
 Diameter of rivet holes in long. seams *1.4* Pitch of rivets *11 in 8.2, 2 in 4.4* of plates or width of butt straps *19.2*
 Percentages of strength of longitudinal joint *89* Working pressure of shell by rules *163 lb.* Size of manhole in shell *none*
 plate *85.29* No. and Description of Furnaces in each boiler *3, Morrison's* Material *Steel* Outside diameter *3.10.4*
 of compensating ring *6* Thickness of plates *19.2* Description of longitudinal joint *welded* No. of strengthening rings *none*
 Length of plain part *9* Working pressure of furnace by the rules *162 lb.* Combustion chamber plates: Material *Steel* Thickness: Sides *19.2* Back *19.2* Top *19.2* Bottom *7.8*
 Pitch of stays to ditto: Sides *8.2 x 8.2* Back *8.2 x 8.2* Top *8.2 x 8.2* stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *169 lb.*
 Material of stays *steel* Diameter at smallest part *1.38* Area supported by each stay *72.25 sq. in.* Working pressure by rules *164 lb.* End plates in steam space:
 Material *Steel* Thickness *1.32* Pitch of stays *18.4 x 16* How are stays secured *Double nut & wash* Working pressure by rules *161 lb.* Material of stays *steel*
 Diameter at smallest part *2.58* Area supported by each stay *300 sq. in.* Working pressure by rules *162 lb.* Material of Front plates at bottom *Steel*
 Thickness *1.3* Material of Lower back plate *Steel* Thickness *2.72* Greatest pitch of stays *12* Working pressure of plate by rules *170 lb.*
 Diameter of tubes *3.28* Pitch of tubes *4.3 x 4.8* Material of tube plates *Steel* Thickness: Front *1.5* Back *3.4* Mean pitch of stays *9.2 x 9.4*
 Pitch across wide water spaces *14.4* Working pressures by rules *166 lb.* Girders to Chamber tops: Material *steel* Depth and
 Thickness of girder at centre *7.2 x 1.4* Length as per rule *29* Distance apart *8.4* Number and pitch of Stays in each *2, 8.4*
 Working pressure by rules *185 lb.* 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 casing gear

DONKEY BOILER— Description *Cylindrical, Multi, Single Ended*
 Made at *Newcastle* By whom made *Thos J. Toward & Co* When made *30.8.93* Where fixed *Spar Deck*
 Working pressure *80* tested by hydraulic pressure to *160* No. of Certificate *4165* Fire grate area *21 1/2* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *5.74* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *9'-0"* Length *9'-0"* Material of shell plates *steel* Thickness *1 1/2"*
 Description of riveting long seams *Lap triple Riv* Diameter of rivet holes *7/8"* Whether punched or drilled *punched* Pitch of rivets *3 1/4"*
 Lap of plating *7 1/2"* Per centage of strength of joint Rivets *77* Thickness of shell plates *5 1/2 + 5 1/2* Radius of do. — No. of Stays to do. *10*
 Dia. of stays *1 1/2"* (13 1/2 x 13) of furnace Top *2* Bottom *30 1/2* Length of furnace *5'-9"* Thickness of furnace plates *1 1/2"* Description
 joint *Lap Single* Thickness of *com-cham* plates *1 1/2"* Stayed by *1 1/2" stays; 8" x 7 1/2" pitch* Working pressure of shell by rules *81 lbs*
 Working pressure of furnace by rules *80 lbs* Diameter of *tubes* *3 1/4"* Thickness of *tube* plates *2 1/2 + 2 1/2* Thickness of *stay* tubes *1 1/4"*

SPARE GEAR. State the articles supplied:— *One Propeller, One Screw shaft, One set of connecting rod bolts, One set of main bearing bolts, One set of coupling bolts, 2 top bolts, 2 bottom end bolts, 2 feed valves, 2 bilge valves, Piston Springs, 6 Condenser 3 6 boiler tubes, nut & bolts & more.*

The foregoing is a correct description,
Thos Richardson Manufacturer of Engines & Steam Boilers

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

Main steam pipes tested by hydraulic pressure to 320 lbs. per square inch and found tight

*The engines and main boilers of this vessel have been constructed under Special Survey and of a good quality of workmanship they have been tried under steam, the safety valves adjusted, and found to work well, and will, in my opinion be eligible to have **L.M.C. 10.93** recorded in the Register Book when the following work has been done.*

Bilge suction pipes in the screw tunnel to be fitted in accordance with the approved plan. Screw tunnel to be fitted with a sluice door and made water tight. Donkey boiler, when placed on board, to be made secure, fitted with in and examined under steam. Spare gear to be supplied in accordance with the Rules. The vessel has proceeded to Newcastle for completion. The photo. print of the main boilers is forwarded with this Report.

The above mentioned fittings have been satisfactorily completed and Spare gear supplied according to the Rules of the Society.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 10.93—

Indt

23/10/93—

Certificate (if required) to be **MACHINERY CERTIFICATE**

WRITTEN.

The amount of Entry Fee..	£ 2 : 0 :	When applied for,
Special	£ 33 : 6 :	17.10.93
Donkey Boiler Fee	£ 2 : 2 :	When received,
Travelling Expenses (if any) £		17.10.93

Committee's Minute

TUES. 24 OCT 1893

Assigned

+ L.M.C. 10.93

J. Stoddart & Richard Hunt
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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