

## REPORT ON MACHINERY

MON. DEC 1894

Port of *Belfast*

Received at London Office

No. in Survey held at *Belfast*  
Reg. Book.Date, first Survey *January 2<sup>nd</sup>* Last Survey *November 17, 1894*(Number of Visits *37*)on the *Steel Screw Steamer "Hornston Grange"*Gross *3444*  
Tons Net *2202*Master *Chas. S. Crichton* Built at *Belfast*By whom built *Workman Clark & Co. Ltd.*When built *1894*Engines made at *Belfast*By whom made *Messrs Workman Clark & Co. Ltd.*when made *1894*Boilers made at *Belfast*By whom made *Messrs Workman Clark & Co. Ltd.*when made *1894*Registered Horse Power *500*Owners *Messrs Houlder Bros & Co.*Port belonging to *London*Nom. Horse Power as per Section 28 *284*

## ENGINES, &amp;c.—

Description of Engines

*Triple expansion*

No. of Cylinders

*Three*

Diameter of Cylinders *24; 40; 66* Length of Stroke *45* Revolutions per minute *75* Diameter of Screw shaft as per rule *12 7/8*  
 Diameter of Tunnel shaft as per rule *11 1/2* Diameter of Crank shaft journals *12 7/8* Diameter of Crank pin *12 7/8* Size of Crank webs *8 1/2 x 23 1/4*  
 Diameter of screw *16 1/2* Pitch of screw *17 1/2* No. of blades *4* State whether moveable *no* Total surface *75.5*

No. of Feed pumps *two* Diameter of ditto *3 3/4* Stroke *24* Can one be overhauled while the other is at work *yes*No. of Bilge pumps *two* Diameter of ditto *4 1/2* Stroke *24* Can one be overhauled while the other is at work *yes*No. of Donkey Engines *three* Sizes of Pumps *Beam's Vert. dup. ballast 7 x 9 x 9* No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room *Four 3 1/2* *Vertical duplex 4 x 2 3/4 x 4* In Holds, &c. *No 1 hold, one 3 1/2. No 2 hold, two 3 1/2*No 3 hold, two 3 1/2. No 4 hold, one 3 1/2. Tunnel drain *2 1/4*No. of bilge injections *1* sizes *7* Connected to condenser, or to circulating pump *circ. p.* 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 *Larger ones valves; smaller, cocks*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 *before launch* Is the screw shaft tunnel watertight *yes*Is it fitted with a watertight door *yes* worked from *upper S.R. grating*

## BOILERS, &amp;c.—

(Letter for record *S*)Total Heating Surface of Boilers *4141 sq. ft.*No. and Description of Boilers *Two single-ended* Working Pressure *180* Tested by hydraulic pressure to *360*Date of test *3.10.94* Can each boiler be worked separately *yes* Area of fire grate in each boiler *51.18* No. and Description of safety valves toeach boiler *Two Adam's patent* Area of each valve *9.62* Pressure to which they are adjusted *185 W.* Are they fittedwith easing gear *yes* Smallest distance between boilers or uptakes and bunkers or woodwork *18" approx.* Mean diameter of boilers *13.9"*Length *11.3"* Material of shell plates *steel* Thickness *1 5/16* Description of riveting: circum. seams *treble; ends down long. seams double straps*Diameter of rivet holes in long. seams *1 3/8* Pitch of rivets *9/8* Lap of plates or width of butt straps *19 7/8*Per centages of strength of longitudinal joint *91.9* Working pressure of shell by rules *195 W.* Size of manhole in shell *16 x 12*Size of compensating ring *2' 0" x 2' 4"* No. and Description of Furnaces in each boiler *3 Morrison* Material *steel* Outside diameter *43"*Length of plain part *top 17 1/32* Thickness of plates *bottom 17 1/32* Description of longitudinal joint *welded* No. of strengthening rings *✓*Working pressure of furnace by the rules *190* Combustion chamber plates: Material *steel* Thickness: Sides *9/16* Back *9/16* Top *9/16* Bottom *3/4*Pitch of stays to ditto: Sides *7 3/4 x 6"* Back *7 3/4 x 7 3/4* Top *7 3/4 x 6"* If stays are fitted with nuts or riveted heads *nuts inside* Working pressure by rules *182*Material of stays *steel* Diameter at smallest part *1 3/8* Area supported by each stay *60"* Working pressure by rules *197* End plates in steam space:Material *steel* Thickness *1 1/32* Pitch of stays *14 1/2* How are stays secured *double nuts small washers* Working pressure by rules *239* Material of stays *steel*Diameter at smallest part *2 3/8* Area supported by each stay *210"* Working pressure by rules *184* Material of Front plates at bottom *steel*Thickness *7/8* Material of Lower back plate *steel* Thickness *1 1/16* Greatest pitch of stays *as approx.* Working pressure of plate by rules *180*Diameter of tubes *2 1/2* Pitch of tubes *3 7/8 x 3 7/8* Material of tube plates *steel* Thickness: Front *13/16* Back *3/4* Mean pitch of stays *7 1/2"*Pitch across wide water spaces *14"* Working pressures by rules *180 +* Girders to Chamber tops: Material *steel* Depth andthickness of girder at centre *8" x 1 1/2* Length as per rule *26 1/2* Distance apart *7 3/4* Number and pitch of Stays in each *three at 6"*Working pressure by rules *225* Superheater or Steam chest; how connected to boiler *✓* Can the superheater be shut off and the boiler workedseparately *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivetholes *✓* 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—** Description *Donkey boiler to be fitted. Not yet ready.*

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure \_\_\_\_\_ tested by hydraulic pressure to \_\_\_\_\_ 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 \_\_\_\_\_

Diameter of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_ Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_

Description of riveting long. seams \_\_\_\_\_ Diameter of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_

Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of Stays to do. \_\_\_\_\_

Dia. of stays \_\_\_\_\_ Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_

Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— *Propeller. Set coupling bolts. Two connecting top & bottom end bolts. Two main bearing bolts & nuts. 3 Gunter ring bolts & nuts. H.P. pump rings & springs. Air or air pump rod. Spare air & air pump valves. Set feed & bilge pump valves. Feed escape spring. Set safety valve springs. 12 boiler tubes. 12 condenser tubes. 50 fine bars. Main & donkey check valves. Assorted iron, bolts & nuts etc.*

The foregoing is a correct description,  
**THE WORKMAN, CLARK & CO., LIMITED,** Manufacturer.  
*M. W. Bell*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The machinery has been constructed under special survey; the boilers in accordance with the approved tracings. The donkey boiler is not yet completed, & will be fitted on board at a future time.*

*All the steel has been tested as required by the Rules.*

*A photoprint of the patent short stern tube fitted in this & other vessels by the same Builders is forwarded.*

*The Electric Lighting installation has been fitted by Messrs Ernest Scott & Mountain of Newcastle & a report will be forwarded.*

*The boilers are supplied with forced draught on Howden's system, the fan being driven by a Chandler's vertical engine.*

*The following drawings are forwarded:— Photoprints of main boilers, of stern tube, & of engine pumping arrangements. Tracing of cold pipe arrangements.*

*The forging certificates for the shafting are also enclosed.*

*The machinery in my opinion renders the vessel eligible for the record of the notation + LMC 11.94 in the Register Book.*

*The vessel left for Newport & London on the 23rd inst & it is understood that she will make a voyage before having refrigerating machinery & the donkey boiler fitted on board.*

*It is submitted that this vessel is eligible for THE RECORD + LMC 11.94.*

*The Surveyor should be requested to state where the donkey boiler is being made, and if it is being built under special survey, also where it is intended to be put on board—so that arrangement be made to have it surveyed.*

Certificate (if required) to be sent to \_\_\_\_\_

The amount of Entry Fee.. £ 2: 0: 0 When applied for,  
 Special .. .. £ 34: 4: 0 25 Nov. 1894  
 Donkey Boiler Fee .. .. £ : : : When received, H.C.  
 Travelling Expenses (if any) £ : 8: 0 5.12.1894 6.

*A. L. Jones*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

Assigned

TUES. 4 DEC 1894

+ LMC 11.94



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