

REPORT ON MACHINERY.

FRI, 23 JUN 1899

Port of *Belfast*
 No. in Survey held at *Belfast*
 Reg. Book. *S.S. "Spring Suez"*
 on the
 Master *Belfast* Built at *Belfast* By whom built *Worthman Clark & Son L^{ds}*
 Engines made at *Belfast* By whom made *Worthman Clark & Son L^{ds}* when made *1899*
 Boilers made at *"* By whom made *"* when made *"*
 Registered Horse Power *620* Owners *China Mutual St. & Nav. Coy* Port belonging to *London*
 Nom. Horse Power as per Section 28 *620* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Triple Expansion* No. of Cylinders *Three* No. of Cranks *Three*
 Diameter of Cylinders *28"-44"-44"* Length of Stroke *60* Revolutions per minute *68* Diameter of Screw shaft *as per rule 15 1/2"*
 Diameter of Tunnel shaft *as per rule 14 1/2"* Diameter of Crank shaft journals *15 1/2"* Diameter of Crank pin *15 1/2"* Size of Crank webs *28" x 10 1/2"*
 Diameter of screw *19'-9"* Pitch of screw *20'-9"* No. of blades *4* State whether moveable *Yes* Total surface *108 sq ft.*
 No. of Feed pumps *2* Diameter of ditto *4 1/2"* Stroke *30"* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *2* Diameter of ditto *4 1/2"* Stroke *30"* Can one be overhauled while the other is at work *Yes*
 No. of Donkey Engines *3* Sizes of Pumps *Feed 10 1/2" x 8" x 24" High Pressure 8" x 10" x 10" Duplex* No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room *Three - 3 1/2' diam* In Holds, &c. *One - 3" and Eleven 3 1/2' diam*

No. of bilge injections *one size 9"* Connected to condenser, or to circulating pump *Pumps* 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 *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*
 That pipes are carried through the bunkers *Hold Suctions* How are they protected *Wood casings*
 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 running* the screw shaft tunnel watertight *Stated to be*
 Is it fitted with a watertight door *Yes* worked from *Upper Platform in Engine Room*

BOILERS, &c.—(Letter for record *u*) Total Heating Surface of Boilers *8994 sq ft* Is forced draft fitted *Yes - Hand driven*
 No. and Description of Boilers *Two - Double Ended.* Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs*
 Date of test *3-3-99* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *115 1/2 sq ft* No. and Description of safety valves to
 each boiler *Three - Direct Spring* Area of each valve *12.5 sq in* Pressure to which they are adjusted *180 lbs* Are they fitted
 with easing gear *Yes* Smallest distance between boilers *on uptakes* and bunkers *on woodwork 14"* Mean diameter of boilers *14'-6"*
 Length *19'-6"* Material of shell plates *Steel* Thickness *1 1/2"* Description of riveting: circum. seams *Lap. Riv. & Seaming* seams *Butt Rivet*
 Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *9 1/4"* Lap of plates on width of butt straps *19 1/2"*
 Percentages of strength of longitudinal joint *89.0* Working pressure of shell by rules *205 lbs* Size of manhole in shell *16" x 12"*
 Size of compensating ring *Mc Neils* No. and Description of Furnaces in each boiler *Six - Reversing* Material *Steel* Outside diameter *43 1/2"*
 Length of plain part *top 4' bottom 9'* Thickness of plates *top 3 1/2" bottom 3 7/8"* Description of longitudinal joint *Weld* No. of strengthening rings *27 bars on C.C. bottom*
 Working pressure of furnace by the rules *180 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *5"* Back *5"* Top *5"* Bottom *5"*
 Pitch of stays to ditto: Sides *8 1/2" x 8"* Back *✓* Top *8 1/2" x 8"* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *201 lbs*
 Material of stays *Iron* Diameter at smallest part *1 1/2"* Area supported by each stay *67 sq in* Working pressure by rules *230 lbs* End plates in steam space:
 Material *Steel* Thickness *1 1/2"* Pitch of stays *14" x 16"* How are stays secured *Welded* Working pressure by rules *246 lbs* Material of stays *Steel*
 Diameter at smallest part *2 1/2" x 2 1/2"* Area supported by each stay *23 1/2 sq in* Working pressure by rules *212 lbs* Material of Front plates at bottom *Steel*
 Thickness *1"* Material of Lower back plate *✓* Thickness *✓* Greatest pitch of stays *✓* Working pressure of plate by rules *✓*
 Diameter of tubes *2 1/2"* Pitch of tubes *3 1/2" x 3 5/8"* Material of tube plates *Steel* Thickness: Front *4 1/2"* Back *4 1/2"* Mean pitch of stays *1 1/2"*
 Pitch across wide water spaces *13 1/2"* Working pressures by rules *292 lbs* Girders to Chamber tops: Material *Steel* Depth and
 thickness of girder at centre *4" x (1/2" x 2)* Length as per rule *51"* Distance apart *8"* Number and pitch of Stays in each *4-8 1/2"*
 Working pressure by rules *180 lbs* Superheater or Steam chest: How connected to boiler *✓* 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— Description *Jeffery's Multitubular Single Ended*
Made at *Belfast* By whom made *Workman Clark & Co. Ltd.* When made *1899* Where fixed *Upper Rock*
Working pressure *100 lbs* Tested by hydraulic pressure to *180 lbs* No. of Certificate *281* Fire grate area *42 sq ft* Description of safety valves *Direct Spring*
No. of safety valves *Two* Area of each *8.2 sq ft* Pressure to which they are adjusted *40 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Diameter of donkey boiler *12'-0"* Length *10'-0"* Material of shell plates *Steel* Thickness *5"*
Description of riveting long. seams *Butt Double Rivet* Diameter of rivet holes *4 1/2"* Whether punched or drilled *Drilled* Pitch of rivets *4 1/2"*
Lap of plating *8 3/4"* Per centage of strength of joint *82.5* Rivets *8.2.5* Thickness of shell *End* plates *3 1/2"* Radius of do. *None* Pitch of Stays to do. *17 x 16*
Dia. of stays. *2 1/2"* Diameter of furnace Top *4 3/8"* Bottom *5"* Length of furnace *6'-6"* Thickness of furnace plates *1 1/2"* Description of joint *Weld* Thickness of *Comb. Cham.* plates *5"* Stayed by *Iron Screw Stay 1 1/2" x 5"* Working pressure of shell by rules *102 lbs*
Working pressure of furnace by rules *106 lbs* Diameter of uptake *6"* Thickness of uptake plates *3 1/2" x 1/2"* Thickness of water tubes *3" Pitched 4 1/2" x 4 1/2"*

SPARE GEAR. State the articles supplied:— *Propeller shaft: 4 blades (Steel): one pair crank pin bushes: 5 Crank Shaft: Thrust Shaft: Set piston rings for H.P. & M.P. pumps: air pump rod: two slide valve spindles: fan & spindle for centrifugal pump: main & boiler safety valve springs: air, feed & buffer pump valves & guards & all other gear to our Reg.*

The foregoing is a correct description,

WORKMAN, CLARK & CO., LIMITED.

M. W. Bell

Manufacturer.

Dates of Survey { During progress of work in shops— *1898 June 28, 5 July 17, Aug 24, Sep 3-6, 20, Oct 14, 18, 24, 26 Nov 4-9*
while building { During erection on board vessel— *15-16-28-29 Dec 2-3-8-12-15-19-21, 1899 Jan 5, 11, 16 Feb 2-16-20 March 3, 14, 23, 27, 28*
Total No. of visits *April 17, 27 May 8, 10, 24, 25, June 3, 5, 7, 8, 16, 19, 20 Total 47.*

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

ENGINES—Length of stern bush *62"* Diameter of crank shaft journals *as per rule 14 1/2"* Diameter of thrust shaft under collars *15 1/2"*
BOILERS—Range of tensile strength *29-32* Are they welded or flanged *No* DONKEY BOILERS—No. *One* Range of tensile strength *29-32*
Is the approved plan of main boiler forwarded herewith *No* Is the approved plan of donkey boiler forwarded herewith *No*

The machinery of this vessel has been constructed under Special Survey, and is of good material and workmanship. It has been securely fitted on board, and on trial, it worked satisfactorily under steam. In my opinion, it is eligible to have record *+ L.M.C. 6-99* in the Register Book, also "Fore & Aft" and "Electric Light".

A Report on the Electric Light installation, which has been fitted by W. C. Martin & Co. Glasgow, will be forwarded later.

The machinery of this vessel is a duplicate of the S.S. "Yangtze", Belfast Report No. 4976.

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

+ L.M.C. 6,99 + D. Elec Light

23/6/99

23.6.99

The amount of Entry Fee... £ *3* : - :
Special ... £ *54* : - :
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ : :
When applied for, *21-6-99*
When received, *25-6-99*

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

Committee's Minute

TUES. 27 JUN 1899

MASTERY CERTIFICATE

Assigned

+ L.M.C. 6,99



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