

REPORT ON MACHINERY.

FRI, 23 JUN 1899

Port of *Belfast*

Received at London Office 18

No. in Survey held at *Belfast*
Reg. Book.

Date, first Survey *28 June 1898* Last Survey *20 June 1899*
(Number of Visits *47*)

on the *S.S. "Spring Suez"*

Master Built at *Belfast* By whom built *Worthman Clark & Co. L^{td}* Tons Gross *6457* Net *4148* When built *1899*

Engines made at *Belfast* By whom made *Worthman Clark & Co. L^{td}* when made *1899*

Boilers made at " By whom made " when made "

Registered Horse Power Owners *China Mutual St. Nav. Coy* Port belonging to *London*

Com. 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"* as fitted *15 1/2"*

Diameter of Tunnel shaft as per rule *14 1/2"* as fitted *16"* 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 *188 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" No. 1 & 2
General 8" x 10" x 10" No. 3* 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 Two - 3 1/2' diam*

No. of bilge injections *one* sizes *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 *No - fitted*

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 suction* How are they protected *Wood casing*

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 launching* 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 - Howardens*

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 *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"*

Percentage of strength of longitudinal joint rivets *89.0* plate *85.5* 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 crown *3 1/8"* bottom *3 1/16"* Description of longitudinal joint *Weld* No. of strengthening rings *27 based 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 *Nuts & Washers* Working pressure by rules *246 lbs* Material of stays *Steel*

Diameter at smallest part *2 1/2" & 2 1/4"* Area supported by each stay *232 & 239 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 *✓*

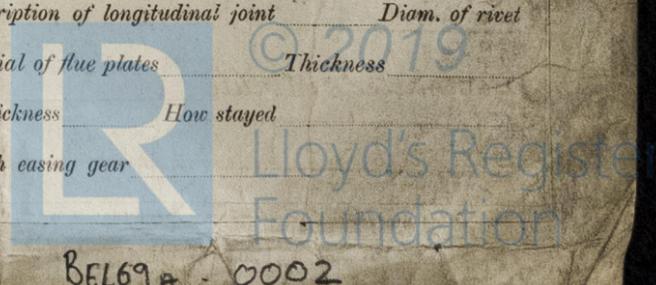
Diameter of tubes *2 1/2"* Pitch of tubes *3 1/2" x 3 5/8"* Material of tube plates *Steel* Thickness: Front *4 1/8"* Back *4 1/8"* Mean pitch of stays *1 1/8"*

Pitch across wide water spaces *13 1/2"* Working pressures by rules *292 lbs with 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

Is 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



BEL69# 0002

DONKEY BOILER— Description *Coffin & Multitubular Single Ended*
 Made at *Belfast* By whom made *Workman Clark & Co. Ltd.* When made *1899* Where fixed *Upper Deck*
 Working pressure *90 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 *90 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 *5/8"*
 Description of riveting long. seams *Butt Double Rivet* Diameter of rivet holes *4/8"* Whether punched or drilled *Drilled* Pitch of rivets *4 1/2"*
 Lap of plating *8 3/4"* Per centage of strength of joint *82.2%* Rivets *8.2.2* Thickness of shell *End* plates *3/2"* Radius of do. *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 1/8" x 5/8"* Working pressure of shell by rules *102 lbs*
 Working pressure of furnace by rules *106 lbs* Diameter of uptake *6"* Thickness of uptake plates *3/2" x 1/2"* Thickness of water tubes *3" Pitched 4 1/2" x 4 1/8"*

SPARE GEAR. State the articles supplied:— *Propeller shaft: 4 plates (Steel); one pair crank pin bushes; set top end bushes; 1 Crank Shaft; Thrust shaft; set piston rings for H.P. & M.P. pistons; air pump rods; 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 while building
 During progress of work in shops— *1898 June 28, 5 July 17, Aug 24, Sep 5, 6, 20, Oct 14, 18, 24, 26 Nov 4-9*
 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 *14 1/2"* as per rule *14 1/2"* as fitted *15 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 *M. 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*

W.S.
23/6/99
23.6.99

The amount of Entry Fee... £ *3* : - :
 Special ... £ *51* : - :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *21-6-99*
 When received, *25-6-99*

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

Committee's Minute **TUES. 27 JUN 1899** MACHINERY CERTIFICATE

Assigned

+ L.M.C. 6,99



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

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