

## REPORT ON MACHINERY.

Port of *Belfast* Received at London Office *10*

No. in Survey held at *Belfast* Date, first Survey *Feb 4.11* Last Survey *Oct 10.12*

g. Book. *S.S. "Keemun"* (Number of Visits *49*) Gross *7642*

on the *Belfast* Tons Net *4894*

aster Built at *Belfast* By whom built *Workman Clark & Co.* when built *1902*

Engines made at *Belfast* By whom made *"* when made *"*

ilers made at *"* By whom made *"* when made *"*

Registered Horse Power *801* Owners *China Mutual Steam Nav. Co.* Port belonging to *Liverpool*

om. Horse Power as per Section 28 *801* Is Refrigerating Machinery fitted *No* Is Electric Light fitted *Yes*

GINES, &c.—Description of Engines *Twin Screw Triple Expansion* of Cylinders *6* No. of Cranks *6*

Dia. of Cylinders *22"-34"-63"* Length of Stroke *48"* Revs. per minute *75* Dia. of Screw shaft *18.34"* Lgth. of stern bush *57 3/4"*

Dia. of Tunnel shaft *12.5"* Dia. of Crank shaft journals *13.0"* Dia. of Crank pin *13"* Size of Crank web *23 1/2" x 8 1/2"* Dia. of thrust shaft under

ollars *13"* Dia. of screw *15.9"* Pitch of screw *18"-6"* No. of blades *3* State whether moveable *Yes* Total surface *62 sq ft.*

No. of Feed pumps *One* Diameter of ditto *5 1/2"* Stroke *24"* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *One* Diameter of ditto *6"* Stroke *24"* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *4* Sizes of Pumps *1 1/2" x 12" x 24" Double* and size of Suctions connected to both Bilge and Donkey pumps

in Engine Room *4-3 1/2"* *1 1/2" x 12" x 24" Double* Holds, &c. *14-3 1/2"*

No. of bilge injections *2* sizes *4 1/2"* Connected to condenser, or to circulating pump *Pump* 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*

What pipes are carried through the bunkers *Fore 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 *Top platform Engine Room*

BOILERS, &c.— (Letter for record *7*) Total Heating Surface of Boilers *11670 sq ft.* Is forced draft fitted *Yes-Handers*

No. and Description of Boilers *3-Double Ended, Cylind.* Working Pressure *200 lbs* Tested by hydraulic pressure to *400 lbs*

Date of test *5-8-12* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *97 1/2 sq ft.* No. and Description of safety valves to

each boiler *3- Direct Spring* Area of each valve *12.56 sq in* Pressure to which they are adjusted *200 lbs* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers *1 ft 2 in* Mean dia. of boilers *13'-9"* Length *19'-0"* Material of shell plates *Steel*

Thickness *1 1/2"* Range of tensile strength *28-32* Are they welded or flanged *No* Descrip. of riveting: cir. seams *Lap Rivet* Butts *Double*

Diameter of rivet holes in long. seams *1 1/4"* Pitch of rivets *9 1/2"* Lap of plates or width of butt straps *20 3/4"*

Per centages of strength of longitudinal joint *84.9* Working pressure of shell by rules *229 lbs* Size of manhole in shell *16" x 12"*

Size of compensating ring *11.5"* No. and Description of Furnaces in each boiler *6-Annular* Material *Steel* Outside diameter *43 1/2"*

Length of plain part *6"* Thickness of plates *3 1/4"* Description of longitudinal joint *Weld* No. of strengthening rings *7*

Working pressure of furnace by the rules *208 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *3 1/2"* Back *3 1/2"* Top *3 1/2"* Bottom *3 1/2"*

Pitch of stays to ditto: Sides *8 1/2" x 7 1/2"* Back *"* Top *8 1/2" x 8"* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *219 lbs*

Material of stays *Iron* Diameter at smallest part *1 1/2"* Area supported by each stay *68 sq in* Working pressure by rules *227 lbs* End plates in steam space:

Material *Steel* Thickness *1 1/2"* Pitch of stays *21" x 16"* How are stays secured *Nuts inside* Working pressure by rules *261 lbs* Material of stays *Steel*

Diameter at smallest part *3 1/2"* Area supported by each stay *346 sq in* Working pressure by rules *208 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 1/2"* Material of tube plates *Steel* Thickness: Front *3 1/2"* Back *1 3/8"* Mean pitch of stays *7 1/2" x 7 1/4"*

Pitch across wide water spaces *13 1/2"* Working pressures by rules *34 lbs with 1 1/2" Double* Girders to Chamber tops: Material *Steel* Depth and

thickness of girder at centre *7 1/2" x (1/2" x 2)* Length as per rule *46 3/8"* Distance apart *8"* Number and pitch of Stays in each *4-8 1/2"*

Working pressure by rules *337 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— No. 1 Description *Cylindrical Single Ended.*  
Made at *Belfast* By whom made *Workman Clark & Co. Ltd.* When made *1902* Where fixed *Upper Deck*  
Working pressure *100 lbs* by hydraulic pressure to *200 lbs* of Certificate *220* Fire grate area *45 sq ft* Description of safety valves *Two*  
No. of safety valves *2* Area of each *8.29 sq in* Pressure to which they are adjusted *100 lbs* If steam from main boilers enter the donkey boiler *No* Dia. of donkey boiler *12'-6"* Length *10'-3"* Material of shell plates *Steel* Thickness *3/8"* Range of tensile strength *28-32* Descrip. of riveting long. seams *Butt Double Riv* Dia. of rivet holes *7/8"* Whether punched or drilled *Drilled* Pitch of rivets *4"*  
*Butt* of plating *9/16"* Per centage of strength of joint *81.1* Thickness of shell plates *3/8"* Radius of do. *12'* No. of stays to do. *19*  
Dia. of stays *2 1/2"* Diameter of furnace Top *38"* Bottom *34"* Length of furnace *7'-2"* Thickness of furnace plates *3/8"* Description of joint *Weld* Thickness of *comb. chamber* plates *3/8"* Stayed by *iron screw stays* *15 1/2"* Working pressure of shell by rules *105 lbs*  
Working pressure of furnace by rules *122 lbs* Diameter of uptake *12"* Thickness of uptake plates *3/8"* Thickness of *water tube* plates *3/8"*

SPARE GEAR. State the articles supplied:— *1 Propeller shaft: 1 Thrust shaft: 5 Crank shaft: 4 Propeller blades: pair Crank pin bushes: pair Crankhead bushes: 2 slide valve spindles: air pump rod: guards & valves: sets Rams: rings for H.P. & I.P. pistons: Centrifugal pump fan spindle: cyl. escape valves: tubes &c. all clear to and Rules extra.*

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

Dates { During progress of work in shops— *Feb. 25* March *5, 17, 21, 25* April *5, 19, 14, 18, 22, 24, 25, 30* May *8, 14, 20, 22, 27*  
of Survey { During erection on board vessel— *June 5, 12, 19, 27* July *1, 3, 7, 24* Aug *7, 11, 12, 16, 20, 21, 25, 28, 29* Sept *1, 3, 5, 8, 12, 14, 19*  
while building { Total No. of visits *49* Is the approved plan of main boiler forwarded herewith *Yes*  
" " " donkey " " " *Yes*

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

Material of screw shaft *Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *Yes*  
Is the after end of the liner made water tight in the propeller boss *Yes* If the liner is in more than one length are the joints burned *✓*  
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 *✓* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The machinery of this vessel has been constructed under Special Survey, and is of good material, and workmanship throughout. It has been securely fitted on board, and worked satisfactorily on trial in Belfast Lough.

In my opinion, it is eligible to have record *+ L.M.C. 10-2* "Forced Draft" & "Electric Light."

The Electric Light installation has been fitted by Messrs. Charles Chapman & Co. Ltd. Newcastle. A Report will be forwarded to the Committee.

It is submitted that  
this vessel is eligible for  
THE RECORD + L.M.C. 10-02 F.D. Elec. Light.

The amount of Entry Fee.. £ *3* : - :  
Special .. .. £ *60* : 1 :  
Donkey Boiler Fee .. .. £ *✓* : :  
Travelling Expenses (if any) £ *✓* : :  
When applied for, *17/10/02*  
When received, *23.10.02*

*R. F. Beveridge*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute

FRI. 24 OCT 1902

Assigned

MACHINERY CERTIFICATE  
WRITTEN.



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Foundation