

## REPORT ON MACHINERY.

Port of

Belfast

THUR. JUL 11 1901

To, in Survey held at  
Book.

Belfast

Date, first Survey 9<sup>th</sup> Octr 1900 Last Survey 6<sup>th</sup> July 1901

Received at London Office

(Number of Visits 56)

on the

S.S. "City of Madrid"

Gross 4898

Net 3134

When built 1901

ter

W. Greenham Built at Belfast

By whom built

Workman Clark & Bay L<sup>d</sup>

ines made at

Belfast

By whom made

Workman Clark & Bay L<sup>d</sup> when made 1901

ers made at

By whom made

when made

istered Horse Power

Owners

J. Smith &amp; Sons

Port belonging to

Glasgow

Horse Power as per Section 28 552

Is Refrigerating Machinery fitted No

Is Electric Light fitted

No

FINES, &amp;c.—Description of Engines

Triple Expansion

No. of Cylinders

Three

No. of Cranks

Three

of Cylinders

27-44-74

Length of Stroke

54

Revs. per minute

65

Dia. of Screw shaft

as per rule 15.3

Lgth. of stern bush

5.0

of Tunnel shaft

as per rule 13.9

Dia. of Crank shaft journals

as per rule 14.6

Dia. of Crank pin

14.4

Size of Crank webs

26x10

Dia. of thrust shaft under

14.4

rs

Dia. of screw

18-3

Pitch of screw

19-6

No. of blades

4

State whether moveable

Yes

Total surface

93 sq ft.

of Feed pumps

2

Diameter of ditto

4.5

Stroke

24

Can one be overhauled while the other is at work

Yes

of Bilge pumps

2

Diameter of ditto

5

Stroke

24

Can one be overhauled while the other is at work

Yes

of Donkey Engines

Twin

SIZES OF PUMPS

Belfast 8x10x8

Glasgow 8x8x8

General 4x5x6

In Holds, &amp;c.

Seven - 3.2 - one L<sup>d</sup>

Engine Room

Three - 3.2

of bilge injections

1

sizes

4

Connected to condenser, or to circulating pump

Ramps

a separate donkey suction fitted in Engine room &amp; size

Yes - 3.2

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

all connections with the sea direct on the skin of the ship

Yes

Are they Valves or Cocks

Both

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

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

at pipes are carried through the bunkers

Fore &amp; Aft suction

How are they protected

Wood casings

all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times

Yes

the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges

Yes

in were stern tube, propeller, screw shaft, and all connections examined in dry dock

Before launching

screw shaft tunnel watertight

Stated to be

fitted with a watertight door

Yes

worked from

Top platform E. Room

BELLERS, &amp;c.—

(Letter for record)

I

Total Heating Surface of Boilers

8888 sq ft

Is forced draft fitted

Yes

and Description of Boilers

2 - Cylind &amp; Double Ended

Working Pressure

185 lbs

Tested by hydraulic pressure to

360 lbs

of test

25.5.0

Can each boiler be worked separately

Yes

Area of fire grate in each boiler

100 sq ft

No. and Description of safety valves to

boiler

Three - Direct Springs

each valve

11.04 sq

Pressure to which they are adjusted

185 lbs

Are they fitted with easing gear

Yes

least distance between boilers or uptakes and bunkers or woodwork

1.5

Mean dia. of boilers

14.0

Length

19.0

Material of shell plates

Steel

thickness

1.5

Range of tensile strength

28.32

Are they welded or flanged

No

Descrip. of riveting: cir. seams

Lap, &amp; Sucker

Butt Sucker

diameter of rivet holes in long. seams

1.32

Pitch of rivets

8.5

Gap of plates

width of butt straps

18

centages of strength of longitudinal joint

rivets 88.2

plate 85.6

Working pressure of shell by rules

183 lbs

Size of manhole in shell

16 x 12

of compensating ring

McNeill

No. and Description of Furnaces in each boiler

6 - Reightons

Material

Steel

Outside diameter

44.4

length of plain part

top 9

Thickness of plates

crown 1.4

Description of longitudinal joint

Weld

No. of strengthening rings

5

working pressure of furnace by the rules

184 lbs

Combustion chamber plates: Material

Steel

Thickness: Sides

5

Back

5

Top 5

length of stays to ditto: Sides

8.5 x 8.5

Back

8.5 x 8.5

Top

8.5 x 8.5

If stays are fitted with nuts or riveted heads

Nuts inside

Working pressure by rules

184 lbs

Material of stays

Steel

Diameter at smallest part

1.5

Area supported by each stay

42.4 sq

Working pressure by rules

192 lbs

End plates in steam space:

Material

Steel

Thickness

1.5

Pitch of stays

16.5 x 16.5

How are stays secured

Nuts &amp; Washers

Working pressure by rules

185 lbs

Material of stays

Steel

Material of Front plates at bottom

Steel

thickness

1

Material of lower back plate

Steel

Thickness

Greatest pitch of stays

Working pressure of plate by rules

184 lbs

diameter of tubes

2.5

Pitch of tubes

3.5 x 3.5

Material of tube plates

Steel

Thickness: Front

3

Back 4.5

pitch across wide water spaces

13.5 x 3.5

Working pressures by rules

249 lbs

Girders to Chamber tops: Material

Steel

Depth and

thickness of girder at centre

13.5 x (3.5 x 2)

Length as per rule

48

Distance apart

8.5

Number and pitch of Stays in each

Twin - 8.5

Working pressure by rules

280 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

Pitch of rivets

Working pressure of shell by rules

Diameter of flue

Material of flue plates

Thickness

flattened 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

Yes

Yes

Yes

Yes

Yes

Yes

Working pressure of end plates

Area of safety valves to superheater

Are they fitted with easing gear

Yes

Yes

Yes

Yes

Yes

Yes

Working pressure of end plates

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Yes

Yes

Yes

Yes

Yes

Working pressure of end plates

Area of safety valves to superheater

Are they fitted with easing gear

Yes

Yes

Yes

Yes

Yes

Yes

Working pressure of end plates

Area of safety valves to superheater

Are they fitted with easing gear

Yes



DONKEY BOILER— No. *100* Description *Casting Single Ended*  
Made at *Belfast* By whom made *Workman Clark & Co. Ltd* When made *1901* Where fixed *Upper Deck*  
Working pressure *90 lbs* Tested by hydraulic pressure to *180 lbs* No. of Certificate *385* Fire grate area *43 sq ft* Description of safety valves *Two*  
No. of safety valves *Two* Area of each *8.29 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*  
Dia. of donkey boiler *2'-6"* Length *10'-0"* Material of shell plates *Steel* Thickness *3/8"* Range of tensile strength *32* Descrip. of riveting long. seams *Butt Lapable* Dia. of rivet holes *4/8"* Whether punched or drilled *Drilled* Pitch of rivets *4"*  
Lap of plating *8 1/4"* Per centage of strength of joint *87.5* Rivets *87.5* Thickness of shell plates *3/8"* Radius of do. *14 1/2"* Stays to do. *14 1/2"*  
Dia. of stays *1"* Diameter of furnace Top *25 1/2"* Bottom *15 1/2"* Length of furnace *7'-2"* Thickness of furnace plates *3/8"* Description of joint *Weld* Thickness of furnace crown plates *1/4"* Stayed by *Screen Stay* *14 1/2" 15"* Working pressure of shell by rules *94 lbs*  
Working pressure of furnace by rules *98 lbs* Diameter of uptake *14 1/2"* Thickness of uptake plates *1/4"* Thickness of water tubes *1/4"*

SPARE GEAR. State the articles supplied:— *1 Propeller shaft; 2 Cast iron propeller blades; 18 studs & nuts for propeller boss; set H.P. piston springs; assorted iron, and all spare gear to Rule additional.*

The foregoing is a correct description,  
FOR WORKMAN, CLARK & CO., LIMITED  
*M. H. Self* Manufacturer.

Dates of Survey { During progress of work in shops— *1900-9 Oct. 16. Nov. 14, 15, 22. Dec. 19, 24. 1901. Jan. 8-15-23-29.*  
During erection on board vessel— *Feb. 1-5-12-15-19-20-26. March 1-4-8-12-14-19-24. April 1-6-19-23-26-29-30. May 1-4-5-6.*  
Total No. of visits *56* 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 examined under Special Survey, and is of good material and workmanship. It has been securely fitted on board, and on trial under steam, it worked satisfactorily. In my opinion, it is eligible for record of Survey + L.M.C. 7-1.*  
*Foreign Draft*  
*The Foreign Reports on the Crank and Propeller shafts are appended.*

It is submitted that  
this vessel is eligible for  
THE RECORD. + L.M.C. 7.01. FD.  
*Cib.*  
*11.7.01*  
*H.S.*  
*11.7.01*

The amount of Entry Fee. £ *3* : - : When applied for. *8-7-1901*  
Special £ *44* : *12* : : When received. *11.7.01*  
Donkey Boiler Fee £ : :  
Travelling Expenses (if any) £ : :  
Committee's Minute TUES. JUL 16 1901  
Assigned  
*+ L.M.C. 7.01 FD*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping  
*R. J. Bennett*