

# REPORT ON MACHINERY.

Port of Belfast

Received at London Office **MON 5 SEP 1898**

No. in Survey held at Belfast Date, first Survey July 24 1897 Last Survey Aug 31 1898  
Reg. Book. S.S. "Bay State" (Number of Visits 30)

on the S.S. "Bay State" Tons { Gross 6824  
Net 4368  
Master S. Walters Built at Belfast By whom built Harland & Wolff When built 1898

Engines made at Belfast By whom made Harland & Wolff when made 1898

Boilers made at Belfast By whom made Harland & Wolff when made 1898

Registered Horse Power 755 Owners Bay State Steam Co. Ltd. Port belonging to Liverpool  
Nom. Horse Power as per Section 28 755 White Diamond Steamship Coy. Ltd.

**ENGINES, &c.** — Description of Engines Turn Screw Triple Expansion No. of Cylinders Six

Diameter of Cylinders 23 1/2 - 39 - 66" Length of Stroke 48" Revolutions per minute 75 Diameter of Screw shaft as per rule 13 1/4"  
as fitted 14"

Diameter of Tunnel shaft as per rule 11 1/8" Diameter of Crank shaft journals 13 3/4" Diameter of Crank pin 14 1/2" Size of Crank webs 20 x 10"  
as fitted 13 1/8"

Diameter of screw 15 - 9" Pitch of screw 20 - 9" No. of blades Three State whether moveable Yes Total surface 61 1/2 sq ft.

No. of Feed pumps Two Diameter of ditto 4 1/2" Stroke 28" Can one be overhauled while the other is at work Yes

No. of Bilge pumps Two Diameter of ditto 5" Stroke 28" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps 12 x 6 x 9" Cameron No. and size of Suctions connected to both Bilge and Donkey pumps  
6 x 4 x 6" Duplex Worthington

In Engine Room Three - 3 1/2" In Holds, &c. Thirteen - 3 1/2"

No. of bilge injections Two sizes 8" 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 below the deep water line Yes - 20 ft

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 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 touching the screw shaft tunnels watertight Stated to be

Is it fitted with a watertight doors Yes worked from Upper platform Engine Room

**BOILERS, &c.** — (Letter for record S) Total Heating Surface of Boilers 12692 sq ft.

No. and Description of Boilers Two D.C. & Two S. Ended Cyl. Working Pressure 192 lbs Tested by hydraulic pressure to 384 lbs

Date of test 27-5-98 Can each boiler be worked separately Yes Area of fire grate in each boiler 218.116 sq ft. No. and Description of safety valves to  
each boiler 3.0 Three Rust Spring Area of each valve 3.0 3 1/2 diam Pressure to which they are adjusted 192 lbs Are they fitted  
with easing gear Yes Smallest distance between boilers on uptakes and bunkers or woodwork About 18" Mean diameter of boilers 15' - 0"

Length 10' - 3" Material of shell plates Steel Thickness 1 1/2" Description of riveting: circum. seams Double Rivets long. seams Double Rivets  
S.C. Two Lap of plates or width of butt straps 20 1/4"

Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Working pressure of shell by rules 221 lbs Size of manhole in shell 16" x 12"

Per centages of strength of longitudinal joint rivets 89.6 plate 85.0 Working pressure of shell by rules 221 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 8 1/4 x 2' - 3" x 1 1/2" No. and Description of Furnaces in each boiler Six - Morrison Material Steel Outside diameter 46 3/4"

Length of plain part top 5' Thickness of plates bottom 3 5/8" Description of longitudinal joint Mild No. of strengthening rings 5

Working pressure of furnace by the rules 215 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/2" Back 1 1/2" Top 3/4" Bottom 3/4"

Pitch of stays to ditto: Sides 8" x 7 1/2" Back 8" x 7 1/2" Top 8" x 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 192 lbs

Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 63.3 Working pressure by rules 188 lbs End plates in steam space:  
Material Steel Thickness 1" Pitch of stays 1 1/2" x 16" How are stays secured Nuts & Washers Working pressure by rules 192 lbs Material of stays Steel

Diameter at smallest part 5 3/4" Area supported by each stay 280 sq Working pressure by rules 212 lbs Material of Front plates at bottom Steel

Thickness 4 1/2" Material of Lower back plate Steel Thickness 4 1/2" Greatest pitch of stays 13 1/4" Working pressure of plate by rules 192 lbs

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

Pitch across wide water spaces 14 1/4" Working pressures by rules 192 lbs Girders to Chamber tops: Material Iron Depth and  
thickness of girder at centre 6 1/2 x 1 3/4" Suspension S.C. Length as per rule 3' - 5 3/4" S.C. Distance apart 8 1/2" Number and pitch of Stays in each Two - 8" S.C.

Working pressure by rules 192 lbs Superheater or Steam chest; how connected to boiler ✓ Can the superheater be shut off and the boiler worked  
separately Yes Diameter 200 lbs S.C. Length 3' - 0" Thickness of shell plates 1/2" Material Steel Description of longitudinal joint Double Rivets Diam. of rivet  
holes 1 1/2" Pitch of rivets 10" Working pressure of shell by rules 221 lbs Diameter of flue 16" Material of flue plates Steel Thickness 1/2"

If stiffened with rings Yes Distance between rings 12" Working pressure by rules 192 lbs End plates: Thickness 1/2" How stayed By stays

Working pressure of end plates 192 lbs Area of safety valves to superheater 218.116 sq ft. Are they fitted with easing gear Yes

DONKEY BOILER— Description *None*

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 boiler \_\_\_\_\_  
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 \_\_\_\_\_ Descripti \_\_\_\_\_  
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:— *Two propeller blades, & set studs for one blade; set crank pin brasses; eccentric straps & bolts; two slide valve spindles; air pump rod & screw valves; centrifugal pump spindle & ~~rod~~; escape valve & spring; condenser tubes & ferrules; boiler tubes; safety valve springs for main & donkey boilers, and all gear to ~~the~~ are Requirements additional.*

The foregoing is a correct description,  
*Harland & Wolff Ltd.* Manufacturer.

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

Dates of Survey while building  
During progress of work in shops - - - *Feb 24 March 25 Apr 22 Dec 1 March 15 Apr 18-19-23-27 May 2-3-4-5-11-27*  
During erection on board vessel - - - *June 1-20-23-28 July 1-6-8-27 Aug 1-3-4-6-9-18-31*  
Total No. of visits *30.*

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 trials, worked satisfactorily under steam. In our opinion, it is eligible for record of Survey *+ L.M.C. 8-98. E.L.* in the Register Book.

The electric light installation is by Messrs. W.H. Allen & Co. A report will be forwarded in the course of a few days.

The approved plans of the pumping arrangements, main boilers, and three forging reports on the crank, tunnels, propeller shafts, and the connecting rods are appended.

It is submitted that this vessel is eligible for THE RECORD. *+ L.M.C. 8-98 Elec Light.*

*RS*  
*5/9/98*

Certificate (if required) to be sent to  
The amount of Entry Fee. £ *9* : - : When applied for, *1<sup>st</sup> Sept 1898*  
Special .. .. £ *57* : *15* :  
Donkey Boiler Fee .. .. £ : : When received, *3<sup>rd</sup> Sept 1898*  
Travelling Expenses (if any) £ : : *3<sup>rd</sup> Sept 1898*

*R. J. Pennington* (For L. Jones)  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **TUES. 6 SEP 1898**

HULL CERTIFICATE WRITTEN.

Assigned *+ L.M.C. 8, 98* *Elect Light*



VES  
These particulars  
Signal Letters (if  
Official Number  
*10945*  
No., Date, and Por  
Whether British or  
Foreign Built.  
British  
Number of Decks  
Number of Masts  
Rigged ...  
Stern ...  
Build ...  
Galleries  
Head ...  
Framework and  
vessel ...  
Number of Bulk  
Number of water  
and their capa  
Total to quarter  
at side amid  
No. of  
Engines  
De  
*Six* Inver  
Actin  
Expa  
*Twin*  
Number  
Iron or  
Pressur  
Under Tonna  
Closed-in spa  
Space or s  
Poop ...  
Forecastl  
Round Ho  
Other clo  
Deduction  
I  
Na  
No. of Ov  
Name, R  
Dated  
RS & C

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