

REPORT ON MACHINERY

No. 3464

No. in Survey held at *Belfast* Date, first Survey *22 Nov. 1887* Last Survey *11th Aug. 1888*
 Reg. Book. *590* on the *Steel Screw Steamer Bostonian* (Number of Visits *48*) Net *2925*
 Master *W. H. Grant* Built at *Belfast* By whom built *Harland & Wolff* When built *1888*
 Engines made at *Belfast* By whom made *Harland & Wolff* when made *1888*
 Boilers made at *Belfast* By whom made *Harland & Wolff* when made *1888*
 Registered Horse Power *500* Owners *Bostonian S.S. Co. Ltd.* Port belonging to *Liverpool*
(7 England & Co.)

ENGINES, &c.—

Description of Engines *Triple Expansion three Cylinders & Three Cranks*
 Diameter of Cylinders *29, 45, 74* Length of Stroke *60"* No. of Rev. per minute *65* Point of Cut off, High Pressure *3/8"* M.P. *40"*
 Diameter of Screw shaft *15 1/2"* Diam. of Tunnel shaft *14 1/2"* Diam. of Crank shaft journals *15 1/2"* Diam. of Crank pin *15 1/2"* size of Crank webs *21 x 11 1/2"*
 Diameter of screw *19'-0"* Pitch of screw *24'-0"* No. of blades *4* state whether moveable *yes* total surface *95 sq. ft.*
 No. of Feed pumps *2* diameter of ditto *3 1/4"* Stroke *35"* Can one be overhauled while the other is at work *yes*
 No. of Bilge pumps *2* diameter of ditto *4"* Stroke *35"* Can one be overhauled while the other is at work *yes*
 Where do they pump from *Sea from hotwell Bilge from all bilges & forward bal. tank.*
 No. of Donkey Engines *Two* *12 cyl. 12" at 5" pitch & 3" suet.* Where do they pump from *Sea, Ballast, Exhaust*
Pulsometer 24 & 12 1/2"
 fresh water tanks, hotwell, all bilges and boilers
 Are all the bilge suction pipes fitted with roses *Yes* Are the roses always accessible *Yes* Are the sluices on Engine room bulkheads always accessible *Yes*
 No. of bilge injections *none* and sizes *✓* Are they connected to condenser, or to circulating pump *✓*
 How are the pumps worked *by links and levers from two after engines.*
 Are all connections with the sea direct on the skin of the ship *yes* Are they Valves or Cocks *Cocks & valves*
 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 *below*
 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 *ballast & bilge* How are they protected *boxed in with wood*
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times *yes.*
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *yes.*
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *3rd August 1888.*
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *upper deck.*

BOILERS, &c.—

Number of Boilers *Two* Description *Double ended, Inclined & Circular* Whether Steel or Iron *Steel*
 Working Pressure *150 lbs.* Tested by hydraulic pressure to *300 lbs.* Date of test *18th May, 1888.*
 Description of superheating apparatus or steam chest *None fitted*
 Can each boiler be worked separately *Yes* Can the superheater be shut off and the boiler worked separately *✓*
 Area of square feet of fire grate surface in each boiler *103* Description of safety valves *D. Cockburn's Sp. to each boiler* *Two*
 Area of each valve *14.18 sq. ft.* Are they fitted with easing gear *Yes* No. of safety valves to superheater *✓* area of each valve *✓*
 Are they fitted with easing gear *✓* Smallest distance between boilers and bunkers or woodwork *11"* Diameter of boilers *14'-8"*
 Length of boilers *16'-8"* description of riveting of shell long. seams *Double & triple* circum. seams *Double & triple* Thickness of shell plates *1 1/2"*
 Diameter of rivet holes *1 1/8" + 7/16"* whether punched or drilled *drilled* pitch of rivets *8 1/2"* Lap of plating *19 1/4" Straps*
 Percentage of strength of longitudinal joint *83.8* working pressure of shell by rules *151 lbs.* size of manholes in shell *12" x 15"*
 Number of compensating rings *24 x 27 x 14"* rectangular steel plate No. of Furnaces in each boiler *Six*
 Inside diameter *46 1/2"* length, top *6'-4 1/2"* bottom *7'-10"* thickness of plates *9/16"* description of joint *Seams welded* if rings are fitted *✓*
 Shortest length between rings *✓* working pressure of furnace by the rules *152* combustion chamber plating, thickness, sides *9/16"* bot. *5/8"* top *9/16"*
 Number of stays to ditto, sides *8 x 8"* back *✓* top *8 x 8"* If stays are fitted with nuts or riveted heads *Nutted* working pressure of plating by
 rules *152 lbs.* diameter of stays at smallest part *1.24* working pressure of ditto by rules *155 lbs.* plates in steam space, thickness *7/8"*
 Number of stays to ditto *16 1/2" x 16"* how stays are secured *bolts nuts & washers* working pressure by rules *171 with 240* Diameter of stays at
 smallest part *3 1/4"* working pressure by rules *191 lbs.* Front plates at bottom, thickness *13/16"* Back plates, thickness *✓*
 Shortest pitch of stays *✓* working pressure by rules *✓* Diameter of tubes *3 1/4" 7 lbs.* pitch of tubes *4 1/2" x 4 1/2"* thickness of tube
 plates, front *7/8"* back *3/4"* how stayed *Stays & solid stays* pitch of stays *9" x 9"* width of water spaces *5" bet. boxes*
 Diameter of Superheater or Steam chest *✓* length *✓* thickness of plates *✓* description of longitudinal joint *✓* diam. of rivet holes *✓*
 Shipped of rivets *✓* working pressure of shell by rules *✓* diameter of flue *✓* thickness of plates *✓* If stiffened with rings *✓*
 Distance between rings *✓* working pressure by rules *✓* end plates of superheater, or steam chest; thickness *✓* how stayed *✓*
 Superheater or steam chest; how connected to boiler

Harland & Wolff
17th Nov. 1888

DONKEY BOILER— Description *Circular, Multitubular & Single ended.*
 Made at *Belfast* by whom made *Harland & Wolff* when made *1888* where fixed *on upper br.*
 Working pressure *90 lbs.* tested by hydraulic pressure to *180 lbs.* No. of Certificate *33* fire grate area _____ description of safety
 valves _____ No. of safety valves *See form attached for particulars* _____ main boilers can
 enter the donkey boiler _____ diameter of donkey boiler _____ length _____ description of riveting _____
 Thickness of shell plates _____ diameter of rivet holes _____ whether punched or drilled _____ pitch of rivets _____ lap of plating _____
 per centage of strength of joint _____ thickness of crown plates _____ stayed by _____
 Diameter of furnace, top _____ bottom _____ length of furnace _____ thickness of plates _____ description of 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 plates _____ thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *1 Set of propeller blades, 1 air + 1 circular pump
 rod, bucket & valves complete; 4 feed + 2 bilge pump valves 2 Connect rod top & 2
 connect rod bottom end bolts, 16 coupling bolts, 1 spindle for HP + NP slide valves,
 1 Set of propeller studs, 12 pin & ring bolts, 1 Set of piston rings for HP + NP cyl.
 The foregoing is a correct description,
Harland & Wolff Manufacturer. *an assorted quantity of bolts nuts
 and iron of various sizes & L.F.
 2 main bearing bolts added.**

General Remarks (State quality of workmanship, opinions as to class, &c.)
*The boilers and other parts of the machinery of this steamer have
 been constructed and fitted on board, in accordance with the plans
 approved, namely the main & auxiliary boilers, the Secretary's letters
 of the 8th & 20th September, 1887; the amended sketch, shewing the
 rearrangement of comb. box crown stays; in accordance with
 or equal to Rules of the Society for Steamships and arrangements
 for the Special Survey on New Machinery and to the entire
 satisfaction of the undersigned.*

*The steel used in the construction of the boilers has been tested
 as required by the Rules.
 The boilers and main steam pipes have been tested by hydraulic
 and the machinery under steam pressure, giving satisfaction.
 The safety valves were adjusted under steam to 150 lbs. on the
 main and 90 lbs. on auxiliary boiler.
 The shafting when finished was found good & sound.
 The materials used in the construction of the machinery
 and the workmanship throughout are good & satisfactory.
 The machinery is in my opinion eligible for the
 Notification *L.M.C. 8-88* and I would respectfully recommend
 the same to the favourable consideration of the Committee.*

The amount of Entry Fee .. £ *3* : 0 : 0 received by me,
 Special .. £ *45* : 0 : 0
 Donkey Boiler Fee .. £ : :
 Certificate (if required) *Gratis* : : *25/10/88*
 (To be sent as per margin.)
 (Travelling Expenses, if any, £)

*This submitted that
 this vessel is eligible to
 have + L.M.C. 8-88 recorded*
James Maxton
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
13.9.88

Committee's Minute *16 Aug 1888*
+ L.M.C. 8-88 -