

REPORT ON MACHINERY.

Port of *Belfast*

2 NOV 93

Received at London Office

18

No. in Survey held at
Reg. Book.*Belfast*Date, first Survey *Feb. 25th* Last Survey *28th Oct. 1893*(Number of Visits *35*)

*2 Sup. on the

*Steel screw Steamer "Sachem"*Tons { Gross *5203.6*
Net *3336.8*Master *Sam^l Walters* Built at *Belfast*By whom built *Harland & Wolff Lim*When built *1893*Engines made at *Belfast*By whom made *Harland & Wolff Lim*when made *1893*Boilers made at *Belfast*By whom made *Harland & Wolff Lim*when made *1893*Registered Horse Power *593*Owners *Constitution S. S. Co Lim*Port belonging to *Liverpool*Nom. Horse Power as per Section 28 *592*

ENGINES, &c.—

Description of Engines

Triple Expansion

No. of Cylinders

*Three*Diameter of Cylinders *31; 49; 79* Length of Stroke *60* Revolutions per minute *68* Diameter of Screw shaft *as per rule 15.02*
*as fitted 16 1/2*Diameter of Tunnel shaft *as per rule 14.27* Diameter of Crank shaft journals *16 1/2* Diameter of Crank pin *16 1/2* Size of Crank webs *11 x 2 1/2 Shaped*
*as fitted 15 1/2*Diameter of screw *19 ft* Pitch of screw *21" 6"* No. of blades *4* State whether moveable *yes* Total surface *95 sq*No. of Feed pumps *one* Diameter of ditto *6"* Stroke *30"* Can one be overhauled while the other is at work *✓*No. of Bilge pumps *two* Diameter of ditto *5"* Stroke *30"* Can one be overhauled while the other is at work *yes*No. of Donkey Engines *Five* Sizes of Pumps *See other side* No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room *Four 3" suction*In Holds, &c. *No 1 hold, forward, two 3" suction.*No 2 hold, one 3". No 3 hold, two 6" suction & two 3". No 4 hold, three 3". No 5 hold (aft) two 6" & two 3". No 6, one 3". No 7, one 3".
No. of bilge injections *1* sizes *12"* Connected to condenser, or to circulating pump *circ. p.* Is a separate donkey suction fitted in Engine room & size *yes 2 1/2"*
*summed well 2 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 *valves & cocks*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*What pipes are carried through the bunkers *Ballast & bilge pipes* How are they protected *Strong 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 *examined before launching* Is the screw shaft tunnel watertight *yes*Is it fitted with a watertight door *yes* worked from *level of deck*

OILERS, &c.—

(Letter for record *S*)Total Heating Surface of Boilers *10477 sq*No. and Description of Boilers *Two double ended & one single ended* Working Pressure *160* Tested by hydraulic pressure to *320 lb*Date of test *14.8.93 & 1.9.93* each boiler be worked separately *yes* Area of fire grate in each boiler *112 doub. ended 150 sing. ended*each boiler *Two, Cockburn's* Area of each valve *15.03 sq d. 2 6.49 sq d. 2* Pressure to which they are adjusted *165 lbs* Are they fittedwith casing gear *yes* Smallest distance between boilers or uptakes and bunkers or woodwork *12" baffle plates* Mean diameter of boilers *15.6" d. 2 14.0" s. 2*Length *14' 0" d. 2 10' 0" s. 2* Material of shell plates *steel* Thickness *1 3/8 d. 2 1 1/4 s. 2* Description of riveting: circum. seams *ends down others, long. seams double straps*Diameter of rivet holes in long. seams *1 3/8* Pitch of rivets *9" outside rows* Lap of plates or width of butt straps *20 1/2 x 1 1/16 d. 2 11" s. 2*Per centages of strength of longitudinal joint *89.0 plate 84.7* Working pressure of shell by rules *182 d. 2 181 s. 2* Size of manhole in shell *16" x 12"*Size of compensating ring *31 x 27 x 1 3/8 d. 2 1 1/4 s. 2* No. and Description of Furnaces in each boiler *Six, Morrison Patent* Material *steel* Outside diameter *49 d. 2 44 s. 2*Length of plain part *top 180 d. 2 171 s. 2 bottom 171 s. 2* Thickness of plates *top 9/16 d. 2 7/8 s. 2 bottom 7/8 s. 2* Description of longitudinal joint *welded* No. of strengthening ringsWorking pressure of furnace by the rules *180 d. 2 171 s. 2* Combustion chamber plates: Material *steel* Thickness: Sides *9/16* Back *9/16* Top *3/8 d. 2 9/16 s. 2* Bottom *3/4*Pitch of stays to ditto: Sides *8 1/4"* Back *8 1/4"* Top *8 1/2 x 8 1/4 d. 2 8 1/4 s. 2* stays are fitted with nuts or riveted heads *yes at back of boiler* Working pressure by rules *161*Material of stays *steel* Diameter at smallest part *1 3/8 f* Area supported by each stay *70 sq* Working pressure by rules *171* End plates in steam space:Material *steel* Thickness *1 1/16 d. 2 1" s. 2* Pitch of stays *18" d. 2 18 3/8 s. 2* How are stays secured *Double nuts & largest washers* Working pressure by rules *196 d. 2 166 s. 2* Material of stays *steel*Diameter at smallest part *2 7/8* Area supported by each stay *297 d. 2 324 s. 2* Working pressure by rules *193 d. 2 177 s. 2* Material of Front plates at bottom *steel*Thickness *7/8* Material of Lower back plate *steel* Thickness *7/8* Greatest pitch of stays *as approx* Working pressure of plate by rules *160*Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2"* Material of tube plates *steel* Thickness: Front *7/8* Back *3/4* Mean pitch of stays *9"*Pitch across wide water spaces *14 1/2"* Working pressures by rules *160 +* Girders to Chamber tops: Material *steel* Depth andThickness of girder at centre *6 x 7/8 (2 plates) suspended 40 1/2 d. 2 6 1/2 x 7/8 (2 plates) 26 7/8 s. 2* Distance apart *8 1/2 d. 2 8 1/4 s. 2* Number and pitch of Stays in each *4 at 8 1/2" d. 2 2 at 8 1/4" s. 2*Working pressure by rules *160 d. 2 181 s. 2* Superheater or Steam chest; how connected to boiler *✓* Can the superheater be shut off and the boiler workedseparately *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivetholes *✓* Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thicknessif 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 casing gear *✓*

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DONKEY BOILER— Description *Single ended auxiliary main boiler used.*

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 boilers can 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 _____ 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 uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *Propeller blade & set studs & nuts for same. Piece crank shaft. Coupling clamp for shaft. Set piston rings. 2 H.P. piston valve rings. Pair crank pin brasses. 2 cr. pin bolts. 2 crosshead bolts. 2 main bearing bolts. Set coupling bolts. H.P. ecc. strap & bolts. 1 Intermed. ditto. 2 valve spindles. Quadrant block. Air pump rod. Centrif. spindle & fan. 24 pump ring bolts & nuts. Set escape valve springs. Set feed valves. 2 main & 1 donkey check V. Set bilge pump valves. 30 boiler tubes. 3 main boiler safety-valve springs & one auxiliary boiler ditto. Half set fire bars. Assorted iron, bolts, nuts etc.*

The foregoing is a correct description,
Horland & Co. Ltd. Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c.) *The following pumps are fitted*

No 8 D Pulsometer Ballast pump. Cameron's pump 12" x 6" x 9" (from bilges, tanks, &c.) Weirs duplex feed 10" x 8" x 24". Two Deane's duplex pumps 6" x 4" x 6"

The machinery has been constructed & fitted under special survey, & the workmanship is good throughout. The boilers are made in accordance with the approved plans enclosed, & have been tested to double the working pressure. Each length of main & branch main steam pipe has been tested to double the working pressure by water.

The vessel ran a trial in the Belfast Lough on the 28th October, & the safety valves were found to be adjusted to blow off at 165 lbs.

Messrs W H Allen & Co have fitted the electric light installation of which a report will be forwarded.

The machinery in my opinion renders the vessel eligible for the record of + LMC 10.93 in the Register Book.

It is submitted that this vessel is eligible for THE RECORD + LMC 10.93.—

A. L. Jones
 2/11/93 —

MACHINERY CERTIFICATE

Certificate (if required) to be sent to

WRITTEN.

The amount of Entry Fee.. £ 3-0-0: When applied for,
 Special £ 49-13-0: 28th Oct 1893
 Donkey Boiler Fee £ : : When received,
 Travelling Expenses (if any) £ : : 31st Oct 1893

Committee's Minute

Assigned

28 NOV 1893
 + LMC 10.93

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

BELFAST.



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