

# REPORT ON MACHINERY.

3984

No. 3984

Port of Belfast

Received at London Office 16 Oct 91

No. in Survey held at Belfast

Date, first Survey November 5<sup>th</sup> 1890 Last Survey October 3<sup>rd</sup> 1891

on the Steel twin screw steamer 'Shropshire'

(Number of Visits 39) Gross 5660 Tons Net 3633

Master I. Henry Built at Belfast By whom built Harland & Wolff Ltd When built 1891-10

Engines made at Belfast By whom made Harland & Wolff Ltd when made 1891

Boilers made at Belfast By whom made Harland & Wolff Ltd when made 1891

Registered Horse Power 630 Owners Bibby Bros & Co Port belonging to Liverpool

## ENGINES, &c.—

Description of Engines Triple Expansion - Twin Screw No. of Cylinders six

Diam. of Cylinders 23 x 37 x 64 Length of Stroke 48 Rev. per minute 6575 Point of Cut off, High Pressure .66 Low Pressure .55

Diameter of Screw shaft 13 1/2 Diam. of Tunnel shaft 12 1/2 Diam. of Crank shaft journals 13 1/2 Diam. of Crank pin 13 1/2 size of Crank webs 10 shaped

Diameter of screw 15 x 6 Pitch of screw 21 x 0 No. of blades 3 state whether moveable yes total surface 63 each screw

To. of Feed pumps two diameter of ditto 14 1/2 Stroke 28 Can one be overhauled while the other is at work Yes pump (10 x 8 x 24)

To. of Bilge pumps two diameter of ditto 5 Stroke 28 Can one be overhauled while the other is at work Yes pump (9 x 6 x 6)

Where do they pump from Ballast donkey (10 x 10 x 10) from tanks or bilges to boiler deck or overhead. Camer on fire pump (8 1/2 x 6 x 6)

No. of Donkey Engines five Size of Pumps Where do they pump from from sea to deck. Cartridges duplex fresh water

Are all the bilge suction pipes fitted with roses yes except the bilge injection Are the roses always accessible yes Are the cocks on Engine room bulkheads always accessible yes

To. of bilge injections two and sizes 3 1/2 Are they connected to condensers or to circulating pump at main injection for clearing

How are the pumps worked Hand levers on middle engines. Centrifugal circulating pump

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 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 Lead bilge pipes to fore hold How are they protected 2 inch wood casing

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 vessel not docked after launching

Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from main deck level

BOILERS, &c.— To. of Boilers Four Description 2 double ended 2 single ended Material Steel Letter (for record) S

Working Pressure 176 lbs Tested by hydraulic pressure to 352 lbs Date of test Single ended 1.7.91 Double 10.7.91

Description of superheating apparatus or steam chest none

Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately ✓

No. of square feet of fire grate surface in each boiler 112 double 56 single Description of safety valves Cockburn's No. to each boiler two

Area of each valve 3 1/2 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 20 from ship's skin Diameter of boilers 14 x 0

Length of boilers 17' 6" double 10' 0" single Description of riveting of shell long. seams Treb riv. doub. butt circum. seams Treb riv. lap Thickness of shell plates 1 3/32

Diameter of rivet holes 1 3/8 whether punched or drilled drilled pitch of rivets 9" x 4 1/2 Lap of plating Shapes 20 1/2 x 1 1/16

Percentage of strength of longitudinal joint 84.72 working pressure of shell by rules 176 lbs size of manholes in shell 16 x 12

Size of compensating rings 11' 6" x 2' 3" No. of Furnaces in each boiler 6 1 3 Description of Furnaces Patent ribbed flues

Outside diameter 3' 6" length 7' 0" over tube plates thickness of plates 7/32 description of joint welded if rings are fitted 9 ribs

Greatest length between ribs 9" working pressure of furnace by the rules 179 combustion chamber plating, thickness, sides 19/32 back 19/32 top 21/32

Pitch of stays to ditto, sides 7 3/4 back 7 3/4 top 8 1/4 If stays are fitted with nuts or riveted heads nuts inside c.c. working pressure of plating by rules 202 1/2

Diameter of stays at smallest part 1 3/5 working pressure of ditto by rules 190 lbs end plates in steam space, thickness 1 3/32

Pitch of stays to ditto 1' 8 1/2 how stays are secured don't nuts 1 working pressure by rules 176 lbs diameter of stays at smallest part 2 7/8

Greatest pitch of stays working pressure by rules 178 lbs Front plates at bottom, thickness 13/16 Back plates, thickness 29/32

Plates, front 7/8 back 3/4 how stayed 79 stays tubes 9" width of water spaces 14 1/2 Cen. 6 Cen. of tubes

Diameter of Superheater or Steam chest ✓ length ✓ thickness of plates ✓ description of longitudinal joint ✓ diam. of rivet holes ✓

Pitch 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 ✓



**DONKEY BOILER—** Description *Single ended main boiler to be utilised as donkey boiler when required.*

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 \_\_\_\_\_ if fitted with easing gear \_\_\_\_\_ if steam from 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:— 2 Cast iron blades 1 set crank pin brasses. 3 safety v. springs 8 coupling bolts & nuts for crank shaft. 1 set of 9 propeller blade studs. 1 eccentric strap & shackle. 1 valve spindle. 11 boiler tubes. 50 condenser tubes. 2 main bearing bolts. 2 top & 2 bottom end con. rod 12 bolts & nuts for pistons. 6 doz assorted bolts & nuts. 100 furnace bars. 2 brass guards for air fl. 1 air pump rod. 24 studs for cyl. & bearing covers. 5 escape valve springs. 4 feed pump valves & seats 2 bilge dolls. 1 main bearing bush. 1 cent. of pump spindle. 4 white metal strips for guides. 9 piston tube stoppers

The foregoing is a correct description,

*Harland & Wolff Ltd.* Manufacturer.

**General Remarks** (State quality of workmanship, opinions as to class, &c.) These engines & boilers have been constructed under special survey, & in accordance with the approved plans & boilers returned with the first entry machinery report on the S.S. Chestre on the 3<sup>rd</sup> Sept. the machinery & boilers in this vessel being exact duplicates of those in the sister vessel. The material & workmanship are good throughout.

The boiler steel has been tested as the Rules require & each of the boilers tested by hydraulic pressure to 352 lbs per sq. in. The safety valves have been adjusted under steam to blow off at 176 lbs per sq. in.

All the main steam pipes have been tested by water pressure to double the working pressure.

The vessel is lighted by electricity; the installment being fitted by W. N. Allen & Co of London on the single wire system. The currents are generated by two Kapp's Patent Dynamos, 245 revs per min. 145 Amperes. 62 volts at the terminals. Total number of lamps about 260.

The whole of the machinery worked well under full steam.

The vessel is eligible in my opinion for the record of + LMC 10.9 & E.L. in the Society's Register Book.

The amount of Entry Fee .. £ 3 : 0 : 0 received by me,

Special .. £ 51 : 16 : 0

Donkey Boiler Fee .. £ : : }

Certificate (if required) .. £ : : }

To be sent as per margin.

(Travelling Expenses, if any, £ )

Committee's Minute **FRI 9 OCT 1891**

+ LMC 10.91

*A. Newell Jones*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.