

## REPORT ON MACHINERY

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19 SEP 1898

Port of Sunderland

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No. in Survey held at SunderlandDate, first Survey Jan'y 14<sup>th</sup> 98 Last Survey Aug 24<sup>th</sup> 1898

Reg. Book.

on the S/S. "Silurian"Number of Visits 2Tons { Gross 939.54  
Net 480.44Master William Evans Built at Hudders By whom built R Bragg & Son (145)When built 1898Engines made at Sunderland By whom made Mac boll & Pollockwhen made 1898Boilers made at " By whom made "when made 1898

Registered Horse Power

Owners Wm & Wm Williams & Coy.Port belonging to CardiffNom. Horse Power as per Section 28 113Is Electric Light fitted no

ENGINES, &c.—Description of Engines Tri compound No. of Cylinders 3 No. of Cranks 3

Diameter of Cylinders 16" 26" 43" Length of Stroke 30" Revolutions per minute 70 Diameter of Screw shaft as per rule 8.1"

Diameter of Tunnel shaft as fitted 7.32" Diameter of Crank shaft journals 8" Diameter of Crank pin 8" Size of Crank webs 5 3/4" x 1 1/2"

Diameter of screw 10" 6" Pitch of screw 12" 6" No. of blades 4 State whether moveable f Total surface 45 1/2"

No. of Feed pumps 2 Diameter of ditto 2 1/2" Stroke 16" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 2 1/2" Stroke 16" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps 5 1/4" x 3 1/2" x 5" 4 1/2" x 7 1/2" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 3 of 2 1/2" In Holds, &c. 2 of 2 1/2"

aft 2 of 2 1/2" after well 2 1/2"

No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump C.P. 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 —

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 above

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 none. How are they protected —

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 new vessel Is the screw shaft tunnel watertight Apparently

Is it fitted with a watertight door yes. worked from upper grating.

BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 1874 sq ft Is forced draft fitted no

No. and Description of Boilers 1 by Multitube S. ended Working Pressure 160 Tested by hydraulic pressure to 220 lbs

Date of test 6/8/98 Can each boiler be worked separately — Area of fire grate in each boiler 56 sq ft No. and Description of safety valves to each boiler 2 direct spring Area of each valve 7.07 sq in Pressure to which they are adjusted 165 lbs Are they fitted with easing gear yes. Smallest distance between boilers or uptakes and bunkers or woodwork 2 feet Mean diameter of boilers 14 feet

Length 10' 6" Material of shell plates S. Thickness 1" Description of riveting: circum. seams d. r. lap. long. seams T. r. a. butt

Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 7 1/2" Lap of plates on width of butt straps 13 1/8"

Per centages of strength of longitudinal joint 85.8 Working pressure of shell by rules 161 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 28" x 26" x 1" No. and Description of Furnaces in each boiler 3 plain Material S. Outside diameter 42"

Length of plain part top 6' 8" bottom 6' 5" Thickness of plates 4 1/2" 6 1/2" Description of longitudinal joint welded No. of strengthening rings 1/2 ring

Working pressure of furnace by the rules 176 lbs Combustion chamber plates: Material S. Thickness: Sides 3/8" Back 3/8" Top 3/8" Bottom 1/2"

Pitch of stays to ditto: Sides 8 1/2" x 8 1/4" Back 8 1/2" x 8 1/4" Top 8 1/2" x 8 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 168 lbs

Material of stays S. Diameter at smallest part 1 1/8" Area supported by each stay 71 sq in Working pressure by rules 168 lbs End plates in steam space:

Material S. Thickness 3/8" Pitch of stays 14 1/2" x 15 1/2" How are stays secured d. nuts Working pressure by rules 163 lbs Material of stays S.

Diameter at smallest part 2 9/16" Area supported by each stay 225 sq in Working pressure by rules 174 lbs Material of Front plates at bottom S.

Thickness 3/4" Material of Lower back plate 3/4 S Thickness 3/4" Greatest pitch of stays 12 1/8" Working pressure of plate by rules 172 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates S. Thickness: Front 3/4" Back 3/4" Mean pitch of stays 9"

Pitch across wide water spaces 14" Working pressures by rules 161 lbs Girders to Chamber tops: Material S. Depth and thickness of girder at centre 8 1/2" x 1 1/2" Length as per rule 30" Distance apart 8 1/2" Number and pitch of Stays in each 2 of 8 1/4"

Working pressure by rules 190 lbs Superheater or Steam chest; how connected to boiler none 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 holes

Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness

If 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 easing gear



**DONKEY BOILER**—*Judron's Patent*  
 Made at *Stockton* By whom made *Judron & Co Ltd* When made *27.7.98* Where fixed *Motorhold*  
 Working pressure *80 lb* tested by hydraulic pressure to *160 lb* No. of Certificate *1745* Fire grate area *20* Description of safety valves *dis. Spring*  
 No. of safety valves *1* Area of each *9.62* Pressure to which they are adjusted *80 lb* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Diameter of donkey boiler *6'-0"* Length *13'-0"* Material of shell plates *Steel* Thickness *1 3/32"*  
 Description of riveting long. seams *lap* Diameter of rivet holes *1 1/16"* Whether punched or drilled *drilled* Pitch of rivets *2 3/4"*  
 Lap of plating *4 1/4"* Per centage of strength of joint *79* Thickness of shell crown plates *17/32"* Radius of do. *5'-0"* No. of Stays to do. *5*  
 Dia. of stays *1 7/8"* Diameter of furnace Top *5'-0"* Bottom *5'-4"* Length of furnace *3'-4"* Thickness of furnace plates *19/32"* Description of joint *lap* Thickness of furnace crown plates *9/16"* Stayed by *dished 39" rad* Working pressure of shell by rules *81 lb*  
 Working pressure of furnace by rules *85 lb* Diameter of tubes *2 1/2"* Thickness of tube plates *2 1/4" + 9/16"* Thickness of water tubes *3/32" + 9/16"*

**SPARE GEAR.** State the articles supplied:— *1 set connecting rod bolts. 2 main bearing bolts. 1 set of coupling bolts and nuts. 1 set of feed and bilge pump valves. propeller.*

The foregoing is a correct description,

*Maclean & Polesch* Manufacturer.

Dates During progress of work in shops— *1898 Jan 17 Feb 8 Apl. 1, 14, 22, 28 May 3, 23, 24 June 10, 14, 21, 28 Aug.*  
 of Survey During erection on board vessel— *5, 6, 8, 15, 18, 19, 22, 24, 25, 30. Mch 1898 Sept 1, 2, 8, 12, 16*  
 while building Total No. of visits *23 Mch No 5.*

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

**ENGINES**—Length of stern bush *2' 9 3/4"* Diameter of crank shaft journals *as per rule 7.91"* Diameter of thrust shaft under collars *8"*

**BOILERS**—Range of tensile strength *29-33* Are they welded or flanged *flanged* **DONKEY BOILERS**—No. *1* Range of tensile strength *27-32*

Is the approved plan of main boiler forwarded herewith *yes.*

Is the approved plan of donkey boiler forwarded herewith *Ord. Pige.*

Machinery and boilers constructed under special survey: materials and workmanship good and efficient main steam pipe & boilers tested by hydraulic to double the working pressure & found satisfactory. Engines & boilers tried under steam & found in good working order. In our opinion this vessel is eligible for the record in the Registerbook of *L.M.C. 9/98*

The vessel left for Middlesbrough where the following work was to be completed. Donkey boiler secured in place mounted & safety valves adjusted under steam. Suctions to hold & after well fitted. Tunnel door to fit.

The above work has now been carried out, and the machinery is now eligible to recommendation made above *L.M.C. 9.98.*

It is submitted that this vessel is eligible for THE RECORD. *L.M.C. 9.98*

The amount of Entry Fee... £ *2* : : : When applied for.  
 Special ... £ *16* : *19* : : :  
 Donkey Boiler Fee ... £ : : :  
 Travelling Expenses (if any) £ : : :  
 When received, *at 13.9.98*

Committee's Minute

Assigned

**TUES. 20 SEP. 1898**

*+ L.M.C. 9.98*

MAQUINISTE CERTIFICATE WRITTEN.

*J. T. Findlay* *Lidley Howell*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

LR-FAF-TB3-276