

# REPORT ON MACHINERY.

Port of Sunderland

MUN 21 NOV 1898

No. in Survey held at Sunderland Date, first Survey 27 Jan 98 Last Survey 6 Sept 98  
 Reg. Book. 38H on the Screw Steamer "Mars" (Number of Visits 40)  
 Master M. W. Curtis Built at Hpl By whom built Turness & Co. Ltd. Tons { Gross 3856.36 Net 2494.38  
 Engines made at Sunderland By whom made Wallace & Co. Ltd. when made 1898  
 Boilers made at Sunderland By whom made Wallace & Co. Ltd. when made 1898  
 Registered Horse Power 302 Owners John Lockie Port belonging to Newcastle on Tyne  
 Nom. Horse Power as per Section 28 302 Is Electric Light fitted no

ENGINES, &c.—Description of Engines Triple compound No. of Cylinders 3 No. of Cranks 3  
 Diameter of Cylinders 23" 38 1/2" 64 1/2" Length of Stroke 45 Revolutions per minute 65 Diameter of Screw shaft as per rule 12.39"  
 Diameter of Tunnel shaft as per rule 11.2" Diameter of Crank shaft journals 12 1/4" Diameter of Crank pin 12 1/4" Size of Crank webs 16 1/2" x 8 1/8"  
 Diameter of screw 16" 6" Pitch of screw 16" 6" No. of blades 4 State whether moveable f Total surface 77 1/2"  
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 30" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 3" Stroke 30" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 2 Sizes of Pumps 10 1/2" x 11" 4 1/2" x 4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 8 1/2" 6 1/2" 8 1/2" In Holds, &c. 7 1/2" 1 1/2" 7 1/2" 2 1/2" 1 1/2" 1 1/2"  
7 1/2" 1 1/2" 7 1/4" 1 1/2" 1 1/2" 1 1/2"  
 No. of bilge injections 1 sizes 5 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 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 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 yes  
 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 yes  
 Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 4640 sq. ft. Is forced draft fitted no  
 No. and Description of Boilers 2 Cyl. Multitube S. Ended Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs  
 Date of test 16/6/96 Can each boiler be worked separately yes Area of fire grate in each boiler 56 sq. ft. No. and Description of safety valves to  
 each boiler 2 Spring Area of each valve 8.30 Pressure to which they are adjusted 185 lbs Are they fitted  
 with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 15" Mean diameter of boilers 15" 3 1/2"  
 Length 10' 6" Material of shell plates S. Thickness 1 1/2" Description of riveting: circum. seams d. r. lap. long. seams T. r. d. butt.  
 Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 8 1/8" Lap of plates or width of butt straps 16 1/2"  
 Per centages of strength of longitudinal joint 85.14 Working pressure of shell by rules 180 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 Furnaces Material S. Outside diameter 46 3/4"  
 Length of plain part 7' 9" Thickness of plates 1 1/2" Description of longitudinal joint welded No. of strengthening rings —  
 Working pressure of furnace by the rules 18 1/2 Combustion chamber plates: Material S. Thickness: Sides 1 1/2" Back 2 1/2" Top 1 1/2" Bottom 1 1/2"  
 Pitch of stays to ditto: Sides 8" x 8 1/4" Back 9" x 9" Top 8 1/4" x 8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 184 lbs  
 Material of stays S. Diameter at smallest part 1 1/2" Area supported by each stay 68 sq. in. Working pressure by rules 182 lbs End plates in steam space:  
 Material S. Thickness 1 1/2" Pitch of stays 23" x 16 1/2" How are stays secured d. nuts Working pressure by rules 188 lbs Material of stays S.  
 Diameter at smallest part 3 1/2" Area supported by each stay 349.50 Working pressure by rules 194 Material of Front plates at bottom S.  
 Thickness 3/4" Material of Lower back plate S. Thickness 3/4" Greatest pitch of stays 14" Working pressure of plate by rules 280 lbs  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/4" x 4 1/2" Material of tube plates S. Thickness: Front 2 1/2" Back 2 1/2" Mean pitch of stays 9" x 8 1/2"  
 Pitch across wide water spaces 14" Working pressures by rules 220 lbs Girders to Chamber tops: Material S. Depth and  
 thickness of girder at centre 8" Length as per rule 29 1/2" Distance apart 8" Number and pitch of Stays in each 2 of 8 1/4"  
 Working pressure by rules 182 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked  
 separately yes 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— Description *byf. Mult. with two plain furnaces*  
Made at *Shekton* By whom made *Riley Bros.* When made *4.6.98* Where fixed *Immer decks.*  
Working pressure *100lb* tested by hydraulic pressure to *200lb.* No. of Certificate *1711* Fire grate area *240* Description of safety valves *spring direct*  
No. of safety valves *2* Area of each *5940* Pressure to which they are adjusted *104 lb* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *10-3* Length *9-6* Material of shell plates *steel* Thickness *2 1/2"*  
Description of riveting long. seams *double riv. lap* Diameter of rivet holes *2 1/2"* Whether punched or drilled *drilled* Pitch of rivets *48*  
Lap of plating *7/8* Per centage of strength of joint *78* Rivets *48* Thickness of shell *end 32* plates *4 1/2"* Radius of do. *punch* No. of Stays to do. *15*  
Dia. of stays *2 1/2"* Diameter of furnace *Top 36* Bottom *32* Length of furnace *6-0* Thickness of furnace plates *2 1/2"* Description of joint *weld* Thickness of furnace *end 32* crown plates *4 1/2"* Stayed by *14" off slaps 9 x 8 pitch* Working pressure of shell by rules *104 lb*  
Working pressure of furnace by rules *103 lb.* Diameter of *tube* uptake *3 1/2"* Thickness of *tube* uptake plates *4 1/2"* Thickness of *stay* water tubes *5 1/2"*

SPARE GEAR. State the articles supplied: *Spare gear supplied in accordance with the requirements of the Rules. and in addition, propeller & propeller shaft.*

The foregoing is a correct description,

WILLIAM ALLAN & Co., LIMITED.

Manufacturers of Engines & Main Boilers

Dates of Survey while building  
During progress of work in shops -  
During erection on board vessel -  
Total No. of visits *40*

*1898 First survey 1898 Jan'y. 27*  
*W. H. Poot. 1898. July 19. Aug. 4. Sept. 29. Nov. 14. 15. = 5 visits*

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

ENGINES—Length of stern bush *4' 3"* Diameter of crank shaft journals *as per rule 11.8"* Diameter of thrust shaft under collars *13"*

BOILERS—Range of tensile strength *27-32* Are they welded or flanged *flanged* DONKEY BOILERS—No. *one* Range of tensile strength *24-32*

Is the approved plan of main boiler forwarded herewith *yes* Is the approved plan of donkey boiler forwarded herewith *no*

Machinery and boilers constructed under Special Survey materials and workmanship good and efficient. Boilers & steam pipes tested by hydraulic to double the W.P. and found satisfactory. Engines and boilers examined under full steam and found in good working order.

In our opinion this vessel will be eligible for the record in the Register book of *L.M.C 11.98* when the following work has been carried out viz: Donkey boiler put on board secured. Tested under steam. Spare gear examined & pumping arrangements to hold & tunnel completed as per approved plan.

The foregoing unfinished work has been satisfactory completed.

It is submitted that this vessel is eligible for THE RECORD. *L.M.C. 11.98.*

*J.S. A.C.H.*  
*22. 11. 98 22. 11. 98*

The amount of Entry Fee... £ 3 : " :  
Special ... £ 35 : 2 :  
Donkey Boiler Fee ... £ - : :  
Travelling Expenses (if any) £ : :  
When applied for, *15. 11. 98*  
When received, *15. 11. 98*

*J. J. Findlay*

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

Committee's Minute

Assigned

TUES. 22 NOV 1893

MACHINERY CERTIFICATE

*+ L.M.C 11.98*



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