

# REPORT ON MACHINERY.

No. 6296.

No. in Survey held at West Hartlepool.

Date, first Survey 10<sup>th</sup> Aug<sup>st</sup> 8<sup>th</sup> East Survey 24<sup>th</sup> Jan<sup>y</sup> 1887

Reg. Book.

on the Screw Steamer "Maryland".

Master R. J. Blacklin Built at West H'pool By whom built H. M. Gray & Co. When built 1886  
Engines made at West H'pool By whom made Central Marine Engineer & Co. when made 1886  
Boilers made at West H'pool By whom made Central Marine Engineer & Co. when made 1886  
Registered Horse Power 300 Owners Baltimore Shipping Co. Port belonging to London.

## ENGINES, &c.—

Description of Engines Triple expansion, Inverted, Direct Acting, Surface Condensing  
Diameter of Cylinders 25<sup>3</sup>/<sub>8</sub>, 42<sup>7</sup>/<sub>8</sub> & 68" Length of Stroke 48" No. of Rev. per minute 65 Point of Cut off, High Pressure 1/2 Low Pressure 1/2  
Diameter of Screw shaft 13<sup>1</sup>/<sub>2</sub>" Diam. of Tunnel shaft 12<sup>1</sup>/<sub>2</sub>" Diam. of Crank shaft journals 13" Diam. of Crank pin 13" size of Crank webs 8<sup>1</sup>/<sub>2</sub>" x 13<sup>1</sup>/<sub>2</sub>"  
Diameter of screw 17' 0" Pitch of screw Differential No. of blades 4 state whether moveable Yes total surface 82 sq. feet  
No. of Feed pumps 2 diameter of ditto 3<sup>3</sup>/<sub>4</sub>" Stroke 30" Can one be overhauled while the other is at work Yes  
No. of Bilge pumps 2 diameter of ditto 4" Stroke 30" Can one be overhauled while the other is at work Yes  
Where do they pump from Sea, Engine Room, Bilges & Tunnel Well.  
No. of Donkey Engines Two Size of Pumps Ballast 9" x 9" Feed 4" x 4" Where do they pump from Ballast, Sea, Engine room Bilges and Ballast tanks. Feed Sea, Hotwell, Engine Bilges, Ballast tanks and Tunnel.  
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 Two and sizes 5" Are they connected to condenser, or to circulating pump One to circulating pump  
How are the pumps worked By Levers from the crosshead of the after engine.  
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 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 13<sup>th</sup> January 1887.  
Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Top platform of Engine Room.

## BOILERS, &c.—

Number of Boilers Two Description Cylinder Multitube Double ended Whether Steel or Iron Steel  
Working Pressure 150 lbs Tested by hydraulic pressure to 300 lbs Date of test 15<sup>th</sup> December 1886.  
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 83.25 Description of safety valves Spring No. to each boiler Two  
Area of each valve 9.62 sq. ins. 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 About 30" Diameter of boilers 13' 0"  
Length of boilers 16' 6" description of riveting of shell long. seams Butt straps Treble circum. seams Lap Treble & Double thickness of shell plates 1<sup>1</sup>/<sub>16</sub>"  
Diameter of rivet holes 1<sup>3</sup>/<sub>32</sub>" whether punched or drilled Drilled pitch of rivets Long 7<sup>1</sup>/<sub>4</sub>" Cir. 5<sup>1</sup>/<sub>2</sub>" & 4<sup>1</sup>/<sub>2</sub>" Lap of plating Straps 16<sup>3</sup>/<sub>8</sub>" Cir. 8<sup>3</sup>/<sub>4</sub>" & 5<sup>3</sup>/<sub>8</sub>"  
Per centage of strength of longitudinal joint 84.9 working pressure of shell by rules 150.36 lbs size of manholes in shell 16" x 12"  
Size of compensating rings 7<sup>1</sup>/<sub>4</sub>" x 1<sup>1</sup>/<sub>8</sub>" Double riveted with 1<sup>1</sup>/<sub>8</sub>" rivets No. of Furnaces in each boiler Six  
Outside diameter 40" length, top 6' 7" bottom thickness of plates 1/2" description of joint Corrugated if rings are fitted  
Greatest length between rings working pressure of furnace by the rules 150 lbs combustion chamber plating, thickness, sides 5/8" back top 5/8"  
Pitch of stays to ditto, sides 8" x 8<sup>3</sup>/<sub>4</sub>" back top 7" x 8" If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 156.74 lbs  
Diameter of stays at smallest part 1<sup>3</sup>/<sub>8</sub>" working pressure of ditto by rules 140 lbs end plates in steam space, thickness 29/32"  
Pitch of stays to ditto 13<sup>3</sup>/<sub>4</sub>" x 14" how stays are secured Nuts & washers working pressure by rules 150.1 lbs diameter of stays at smallest part 2<sup>1</sup>/<sub>8</sub>" working pressure by rules 151.2 lbs Front plates at bottom, thickness 1/16" Back plates, thickness  
Greatest pitch of stays working pressure by rules Diameter of tubes 3<sup>1</sup>/<sub>4</sub>" pitch of tubes 4<sup>1</sup>/<sub>2</sub>" thickness of tube plates, front 15/16" back 15/16" how stayed Stay tubes pitch of stays 9" x 9" width of water spaces 1<sup>1</sup>/<sub>4</sub>"  
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 BOILERS**

Description *Vertical with four cross tubes.*  
 Made at *West Hpool* by whom made *Wm Gray & Co* when made *1886* where fixed *Stokehold*  
 Working pressure *45 lbs* tested by hydraulic pressure to *150 lbs* No. of Certificate *1366* fire grate area *21 Sq. feet* description of safety  
 valves *Spring* No. of safety valves *2* area of each *5.4 sq. ft.* 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"* description of riveting *Long Lap, double*  
 Thickness of shell plates *1/2"* diameter of rivet holes *13/16"* whether punched or drilled *Punched* pitch of rivets *2 1/8"* lap of plating *4 1/4"*  
 per centage of strength of joint *71.74* thickness of crown plates *8/16"* stayed by *Six stays 2" diameter*  
 Diameter of furnace, top *4' 7 1/2"* bottom *5' 2 1/2"* length of furnace *5' 8 1/2"* thickness of plates *9/16"* description of joint *Lap, single riveted*  
 Thickness of furn. & crown plates *9/16"* stayed by *Same as shell crown* working pressure of shell by rules *47.2 lbs*  
 Working pressure of furnace by rules *45 lbs* diameter of uptake *13"* thickness of plates *3/8"* thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *2 Connecting Rod top end Bolts & nuts. 2 do. bottom end*  
*Bolts & nuts. 2 Main Bearing Bolts & nuts. 1 Set coupling Bolts & nuts. 1 Set each Feed &*  
*Silge pump valves. 2 Iron Plates. 36 Bolts & nuts. 2 Propeller Blades.*

The foregoing is a correct description,

PER PRO CENTRAL MARINE ENGINEERING Manufacturer.

*Thomas Mudd*

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

*The Materials and Workmanship throughout are of the best class.*

*These engines are slightly different in design, from those formerly made by this firm; the valves and pistons being all in one centre line fore and aft. The High and Intermediate pressure Cylinders are fitted with piston valves, while the Low pressure Cylinder has an ordinary treble ported slide valve. The piston and slide valves are worked by Double Bar Link Gear, from two eccentric wheels on the crank shaft.*

*The Machinery and Boilers have been constructed under Special Survey, after being fitted on board, the Main Boilers were examined under steam and found tight, their safety valves being adjusted to retain a working pressure of 150 lbs per sq. inch. The Engines were tried and worked satisfactorily.*

*The Machinery and Boilers are now in good order and safe working condition and in my opinion eligible to have the notification L.M.C. 1,87. recorded in the Society's Register Book.*

The amount of Entry Fee .. £ 3 : " : " received by me,  
 Special .. £ 35 : " : "  
 Donkey Boiler Fee .. £ 2 : 2 :  
 Certificate (if required) .. £ : : : 4.2.1887  
 To be sent as per margin.

(Travelling Expenses, if any, £ )

Committee's Minute

TUESDAY 8 FEB 1887

*+ L.M.C.*

*Wm R. Austin*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Ships