

# REPORT ON MACHINERY.

46

Port of Middlesbro'

Received at London Office MURS 1 MAY 1890

No. 46

No. in Survey held at Middlesbro'

Date, first Survey 27 March 1889 Last Survey 24 April 1890

Reg. Book.

"Prudence"

(Number of Visits 74)

on the Screw Steamer

Tons { Gross 2319.48  
Net 1874.69

Master Ross

Built at So. Hackton

By whom built Craig, Taylor & Co.

When built 1890

Engines made at Middlesbro'

By whom made Hestgarth, English & Co. when made 1890

Boilers made at Middlesbro'

By whom made Hestgarth, English & Co. when made 1890

Registered Horse Power 250

Owners Alfred Smart

Port belonging to London

208 By Rule

## ENGINES, &c.—

Description of Engines Triple expansion, Inverted, Direct Acting, Surface Condensers No. of Cylinders Three

Diam. of Cylinders 22" - 35" - 54" Length of Stroke 39" Rev. per minute 70 Point of Cut off, High Pressure 7 Low Pressure 7

Diameter of Screw shaft 10 1/2" Diam. of Tunnel shaft 10 1/2" Diam. of Crank shaft journals 10 1/2" Diam. of Crank pin 10 1/2" size of Crank webs 17" x 8"

Diameter of screw 18 feet Pitch of screw 16.3" to 14.9" No. of blades 4 state whether moveable No total surface 60 sq. feet.

No. of Feed pumps 2 diameter of ditto 3" Stroke 21" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 diameter of ditto 4" Stroke 21" Can one be overhauled while the other is at work Yes

Where do they pump from Engine Room Bilges, Ballast tanks, Sea, Aftermost main tank (Bunkers).

No. of Donkey Engines One Size of Pumps Duplex 6" x 4" x 6" Where do they pump from Sea, Main Bunkers, Hot

well, Engine Room Bilges, Ballast tanks, Aftermost main tank (Bunkers) & Appurtenances.

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 None

No. of bilge injections 1 and sizes 6" Are they connected to condenser, or to circulating pump To Circulating pump.

How are the pumps worked By levers from the crosshead of the middle 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 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 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 New vessel, before commissioning.

Is the screw shaft tunnel watertight None and fitted with a sluice door — worked from —

## BOILERS, &c.—

No. of Boilers Two Description Single End? Cylindrical Material Steel Letter (for record) —

Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs. Date of test 20th March 1890 (No. 1007)

Description of superheating apparatus or steam chest None Heating Surface 3188 sq. feet.

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 50 sq. ft. Description of safety valves Spring No. to each boiler Two

Area of each valve 7.66" 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 24" Diameter of boilers 14' 0"

Length of boilers 10' 9 1/4" description of riveting of shell long. seams DRS. Treble circum. seams Lap Double Thickness of shell plates 1 1/4"

Diameter of rivet holes 1 1/4" whether punched or drilled Drilled pitch of rivets Long: 7 1/2" Ci: 4 1/2" Lap of plating DRS. 1 1/2" Ci: 6"

Per centage of strength of longitudinal joint 83.87. working pressure of shell by rules 162.2 lbs. size of manholes in shell 16" x 12"

Size of compensating rings 28" x 24" x 1 1/4" No. of Furnaces in each boiler Three Description of Furnaces Ribbed.

Outside diameter 3' 6" length 6' 10" thickness of plates 3/8" description of joint Welded if rings are fitted —

Greatest length between rings — working pressure of furnace by the rules 160 lbs. combustion chamber plating, thickness, sides 9/16" back 9/16" top 9/16"

Pitch of stays to ditto, sides 4 1/4" x 4 1/4" back 4 1/4" x 4 1/4" top 4 1/4" x 4 1/4" stays are fitted with nuts or riveted heads Nuts. working pressure of plating by

rules 161.8 lbs. Diameter of stays at smallest part 1 1/4" working pressure of ditto by rules 163 lbs. end plates in steam space, thickness 1"

Pitch of stays to ditto 14 1/2" x 14 1/2" how stays are secured Double nut working pressure by rules 140 lbs. diameter of stays at

smallest part 2 1/4" working pressure by rules 140 lbs. Front plates at bottom, thickness 5/16" Back plates, thickness 3/4"

Greatest pitch of stays 10" working pressure by rules 142.8 lbs. Diameter of tubes 3 1/2" pitch of tubes 4 1/4" x 4 1/4" thickness of tube

plates, front 3/4" with 5/8" double back 5/8" how stayed Stay tubes pitch of stays 9 1/2" x 9 1/2" width of water spaces 4 1/2"

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, cylindrical, Multitubular.*  
Made at *Stockton* by whom made *Riley Bros.* when made *18.3.90* where fixed *on Deck.*  
Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *10023* fire grate area *18 sq. feet.* description of safety valves *Spring* No. of safety valves *one* area of each *11.04 sq. in.* if fitted with easing gear *Yes* if steam from main boilers can enter the donkey boiler *No* diameter of donkey boiler *8' 0"* length *4' 6"* description of riveting *Double rivet? Lap*  
Thickness of shell plates *1/2"* diameter of rivet holes *1/8"* whether punched or drilled *Punch* pitch of rivets *2 1/4"* lap of plating *4 1/2"*  
per centage of strength of joint *70* thickness of ~~crown~~ <sup>top and</sup> plates *5/8"* stayed by *1 1/2" sq. Stay 13 1/4" x 11" pitch.*  
Diameter of furnace, top *2 1/4"* bottom *2 1/4"* length of furnace *4' 8"* thickness of plates *3/8"* description of joint *Lap Single*  
Thickness of furnace-crown plates *5/32"* stayed by *1 1/8" sq. Stay 7 1/8" x 7 1/8" pitch.* working pressure of shell by rules *99.2 lbs.*  
Working pressure of furnace by rules *81 lbs.* diameter of ~~uptake~~ <sup>tube</sup> *3"* thickness of plates *Back 3/8"* thickness of ~~water~~ <sup>Boiler Back</sup> tubes *2 1/6"*

SPARE GEAR. State the articles supplied:— *1 Propellor, 1 Propellor shaft, 1/3 Crank shaft, 2 Main Bearing Bolt nuts, 1 Set Coupling Bolt Nuts, 2 Each, Top & Bottom Bolt Nuts, 1 Set Piston valve blocks, 1 set hp piston spring, 1 set Feed Valve pump valves, 1 set Check valves, 1 Escape valve spring of each size*  
*The foregoing is a correct description,* *Bolts, nuts & iron work as per spec.*  
*Wm. A. L. H. & Co.* Manufacturers *Main Engines & Boilers.*

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

*Materials and Workmanship good.*  
*The Engines and Boilers have been constructed under special survey, when fitted on board the former were tried and worked well, while the Boilers with full steam up were found tight, and their safety valves are now adjusted to carry a working pressure of 160 lbs per sq. in.*

*The whole Machinery is now in good and efficient condition and eligible in my opinion to have the notation *L.M.C. 4, 90* marked in the Society's Register Book.*

*It is submitted that this vessel is eligible*  
*to have + L.M.C. 4-90 recorded—*  
*W.A.*  
*1-5-90*

The amount of Entry Fee .. £ *2* : : received by me,  
Special .. £ *30* : *8* :  
Donkey Boiler Fee .. £ : :  
Certificate (if required) .. £ : : *29.4.1890*  
To be sent as per margin.  
(Travelling Expenses, if any, £ )

Committee's Minute *FRIDAY 2 MAY 1890*

*+ L.M.C. 4/90*

*Wm. A. L. H. & Co.*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



Lloyd's Register  
Foundation