

REPORT ON MACHINERY.

No. 6895

No. in Survey held at West Hartlepool

Date, first Survey 11th Nov 1887 Last Survey 5th May 1888

Reg. Book.

on the Screw Steamer "Lowlands".

(Number of Visits 45)

Tons 1789.

Master Holman Built at West Hartlepool By whom built Wm Gray & Co

When built 1888

Engines made at West Hartlepool By whom made Central Marine Engineer & Co when made 1888

Boilers made at West Hartlepool By whom made Central Marine Engineer & Co when made 1888

Registered Horse Power 150.

Owners Hardy, Wilson & Co

Port belonging to West Hartlepool.

ENGINES, &c.—

Description of Engines Triple Expansion, Inverted, Direct Acting Surface Condensing

Diameter of Cylinders 19" 30 1/2" 51" Length of Stroke 36" No. of Rev. per minute 73 Point of Cut off, High Pressure 55 Low Pressure 55

Diameter of Screw shaft 9 1/2" Diam. of Tunnel shaft 9" Diam. of Crank shaft journals 9 1/2" Diam. of Crank pin 9 1/2" size of Crank webs 5 1/4" x 12"

Diameter of screw 13 1/2" Pitch of screw Differential No. of blades 4 state whether moveable No total surface 56.5 Sq. feet

No. of Feed pumps 2 diameter of ditto 2 1/2" Stroke 24" Can one be overhauled while the other is at work Yes.

No. of Bilge pumps 2 diameter of ditto 3" Stroke 24" Can one be overhauled while the other is at work Yes.

Where do they pump from Engine Room bilges, Sea, Tunnel well.

No. of Donkey Engines 2 Size of Pumps 8" x 8" Stroke 4" Feed 4" x 4" x 7" Stroke 4" Where do they pump from Ballast, all Tanks, Engine

Bilges, Sea & Tunnel well. Feed — all Tanks, Engine Bilges, Tunnel well, Hot well, Boilers & Sea.

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 2 and sizes 5" Are they connected to condenser, or to circulating pump Yes to the 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 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 Nov

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 Cylindrical, Multitubular Single Whether Steel or Iron Steel

Working Pressure 150 lbs Tested by hydraulic pressure to 300 lbs Date of test 20th March 1888.

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 66 1/2 sq. feet Description of safety valves Spring No. to each boiler 2

Area of each valve 7.06 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 2' 6" Diameter of boilers 11' 6"

Length of boilers 10' 0" description of riveting of shell long. seams Double Strap treble circum. seams Lap-treble Thickness of shell plates 1 1/2"

Diameter of rivet holes 1" 1 1/4" whether punched or drilled Drilled pitch of rivets long 6 3/4" 5 1/2" Lap of plating Butt strap 15 1/2" Cir. 9 1/2"

Percentage of strength of longitudinal joint 88 1/2% working pressure of shell by rules 150 1/4 lbs size of manholes in shell 16" x 12"

No. of compensating rings 3 1/4" x 1" Double riveted with 1" rivet holes No. of Furnaces in each boiler 2

Side diameter 3' 1/4" length, top 6' 9" bottom 8' 9" thickness of plates 1/2" description of joint Ribbed welded rings are fitted

Greatest length between rings working pressure of furnace by the rules 161 lbs combustion chamber plating, thickness, sides 5/8" back 5/8" top 5/8"

No. of stays to ditto, sides 8 1/2" x 8 1/2" back 8 1/2" x 8 1/2" top 8 1/2" If stays are fitted with nuts or riveted heads Nuts working pressure of plating by

separate rules 152 1/2 lbs Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 158 lbs end plates in steam space, thickness 1 1/2"

No. of stays to ditto 14 1/4" x 14" how stays are secured Double nuts working pressure by rules 153 1/2 lbs diameter of stays at

smallest part 2' 6" working pressure by rules 165 1/2 lbs Front plates at bottom, thickness 3/4" Back plates, thickness 3/8"

Test pitch of stays 12 1/2" working pressure by rules 150 lbs Diameter of tubes 3 1/4" pitch of tubes 4 1/2" x 4 1/2" thickness of tube

Plates, front 1 1/2" back 3/2" how stayed Stay tubes pitch of stays 9" x 9" width of water spaces 5"

Foreign Ship After of Superheater or Steam chest length thickness of plates description of longitudinal joint diam. of rivet holes

No. 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 *Vertical with four cross tubes*
Made at *West Hartlepool* By whom made *H. M. Gray & Co* when made *1888* where fixed *In Storehouse*
Working pressure *45 lbs* tested by hydraulic pressure to *150 lbs* No. of Certificate *1558* fire grate area *22 sq feet* description of safety valves *Spring* No. of safety valves *one* area of each *11 sq ins* 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"* description of riveting *Long Lap Double* thickness of shell plates *1/2"* diameter of rivet holes *3/16"* whether punched or drilled *punch* pitch of rivets *2 7/8"* lap of plating *4"* per centage of strength of joint *71.7* thickness of crown plates *9/16"* stayed by *Six stays 2" dia* Diameter of furnace, top *14' 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* Thickness of furnace crown plates *9/16"* stayed by *Same as steel crown plate* working pressure of shell by rules *44 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 and Bolt nuts. 2 Connecting Rod bottom and Bolt nuts. 2 Main Bearing Bolt nuts. 1 Set of Coupling nuts. 1 Set of Feed pump valves. 1 Set Bilge pump valves. 1 Set spring for 14hp piston. 1 Spare propeller. 6 Boiler tubes. 6 Condenser tubes. Bolt on case 2 Plates of*
The foregoing is a correct description,

PER PRO CENTRAL MARINE ENGINEERING Co. Manufacturer.

Thomas Mudd.

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

The Materials and Workmanship are of the best description. The Engines and Boilers have been constructed under Special Survey, after being fitted on board the vessel, the Engines were tried and worked satisfactorily while the main Boilers were on examination found tight, and their Safety valves were adjusted to retain a working pressure of 150 lbs per sq. inch.

*The Machinery and Boilers are now in good order and safe working conditions, and eligible in my opinion to have the notation **L.M.C. 5,88** marked in the Society's Register Book.*

The amount of Entry Fee *£ 2 : " : "* received by me, }
Special *£ 22 : 10 : "*
Donkey Boiler Fee *£ 2 : 2 : "*
Certificate (if required) *£ : : 11.5.1888*
To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

FRIDAY 18 MAY 1888

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Wm R Austin
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping