

# REPORT ON MACHINERY.

No. 8682 Port of West Hartlepool Received at London Office 13  
 No. in Survey held at West Hartlepool Date, first Survey 10<sup>th</sup> August Last Survey 24 December 1891  
 Reg. Book. "Spheroid" (Number of Visits 40)  
 on the Steamer "Spheroid" Tons { Gross 1741.06  
 Master A. Norris Built at West Hartlepool By whom built W. Gray & Co. (Linn) When built 1891  
 Engines made at West Hartlepool By whom made Central Marine & Works when made 1891  
 Boilers made at West Hartlepool By whom made Central Marine & Works when made 1891  
 Registered Horse Power 220 Owners J. Scrutton Sons & Co. Port belonging to London  
192

## ENGINES, &c.—

Description of Engines Triple Exp. Inverted, Direct Acting, Surface Condensing No. of Cylinders 3 (3 Banks)  
 Diam. of Cylinders 22" - 36" - 60" Length of Stroke 39" Rev. per minute 65 Point of Cut off, High Pressure .55 Low Pressure .55  
 Diameter of Screw shaft 11" Diam. of Tunnel shaft 10 1/2" Diam. of Crank shaft journals 11" Diam. of Crank pin 11" size of Crank webs 14 1/2" x 7"  
 Diameter of screw 14" - 9" Pitch of screw Differential No. of blades 4 state whether moreable No total surface 68 sq ft  
 No. of Feed pumps 2 diameter of ditto 3" Stroke 28" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 diameter of ditto 3 1/2" Stroke 28" Can one be overhauled while the other is at work Yes  
 Where do they pump from Fore & Aft Holds, Engine Room Tunnel, Sea and Fore Peak  
 No. of Donkey Engines 2 Size of Pumps 3" dia x 8" stroke duplex Where do they pump from Ballast - Sea, Tanks & Bilges  
Feed - Sea, Hotwell, Tanks, Boilers & Bilges  
 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 One and sizes 3" dia Are they connected to condenser, or to circulating pump to Circ pump  
 How are the pumps worked Lever from Aft Crosshead  
 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 15<sup>th</sup> December 1891  
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Upper platform

## BOILERS, &c.—

No. of Boilers One Description Mult. Cyl. Single Ended Material Steel (Liber-Iron) Letter (for record) S  
 Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs Date of test 6/11/91 No 2252  
 Description of superheating apparatus or steam chest None Total Heating Surface 2390 sq ft  
 Can each boiler be worked separately ✓ Can the superheater be shut off and the boiler worked separately ✓  
 No. of square feet of fire grate surface in each boiler 28 Description of safety valves Spring direct No. to each boiler 2  
 Area of each valve 9.62 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 on woodwork about 12" Diameter of boilers 15'-0"  
 Length of boilers 11'-2" description of riveting of shell long. seams TBS treble circum. seams center lap treble Thickness of shell plates 15/16"  
 Diameter of rivet holes 15/16", 6/16" whether punched or drilled drilled pitch of rivets long 8 1/2", 6" 8 1/2" Lap of plating TBS 19/32", lap 9/16"  
 Percentage of strength of longitudinal joint 84.55% working pressure of shell by rules 160.2 lbs size of manholes in shell 16" x 12"  
 Size of compensating rings 8 x 1 3/8" thick No. of Furnaces in each boiler 3 Description of Furnaces Brown's patent Ribbed  
 Outside diameter 43 1/2" length 7'-10" thickness of plates 1/2" description of joint welded if rings are fitted No  
 Greatest length between rings ✓ working pressure of furnace by the rules 160 lbs combustion chamber plating, thickness, sides 19/32" back 19/32" top 19/32"  
 Pitch of stays to ditto, sides 8 3/8" x 8" back 8 3/8" x 8" top 8 1/2" If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 163.7  
 Diameter of stays at smallest part 1.3837 working pressure of ditto by rules 173.9 end plates in steam space, thickness 1"  
 Pitch of stays to ditto 16 7/8" x 16" how stays are secured double nuts working pressure by rules 161.6 lbs diameter of stays at smallest part 2.5367  
 working pressure by rules 170.3 lbs Front plates at bottom, thickness 3/4" Back plates, thickness 7/8"  
 Greatest pitch of stays 12 1/2" working pressure by rules 169.3 lbs Diameter of tubes 2 1/2" EX pitch of tubes 33/4" x 33/4" thickness of tube plates, front 7/8" back 7/8" how stayed stay tubes pitch of stays 7 3/4" x 7 1/2" width of water spaces 5"  
 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 *Wiles & Fraser Patent Vertical Multitubular No 30*  
Made at *Cardiff* by whom made *Mount Stuart Dry Dock Co* when made *1891* where fixed *Upper Deck*  
Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *99* fire grate area *24 sq ft* description of safety valves *Spring direct* No. of safety valves *one* area of each *11.41* if fitted with easing gear *Yes* if steam from main boilers enter the donkey boiler *No* diameter of donkey boiler *6-9"* length *15-0"* description of riveting *Vertical double pin lap*  
Thickness of shell plates *1/2"* diameter of rivet holes *7/8"* whether punched or drilled *drilled* pitch of rivets *2 1/8" x 2 1/8"* lap of plating *4 1/8" x 2 1/8"*  
per centage of strength of joint *70%* thickness of crown plates *17/32"* stayed by *dished & 5 Gunmet Stays*  
Diameter of furnace, top *4-6"* bottom *5-6 1/2"* length of furnace *1-0"* thickness of plates *9/16"* description of joint *single pin lap*  
Thickness of furnace crown plates *9/16"* stayed by *dished & 5 Gunmet Stays* working pressure of shell by rules  
Working pressure of furnace by rules *80 lbs* diameter of uptake *✓* thickness of plates *✓* thickness of water tubes *✓*

SPARE GEAR. State the articles supplied:— *The Propeller, The Propeller Shaft, The set of Bearing Bolts & Nuts, The set Connecting Rod Bolts & Nuts (top & bottom), The set Coupling Bolts, The set Feed & Bilge Pump valves, The set Piston & Piston Bolts & Nuts assorted, & Bars Iron assorted.*

The foregoing is a correct description,

FOR THE CENTRAL MARINE ENGINE WORKS

Manufacturers of Main Engines & Boilers.

General Remarks (State quality of workmanship, opinions as to class, &c. *The Main Steam Pipes have been tested by hydraulic pressure to 320 lbs per sq inch & found tight. A wooden Forced Blast has been applied to the Main Boiler, the Fan placed in the Engine Room Tween Decks being driven by a belt from a separate direct acting engine, on the engine platform. A duplicate of this engine is fitted to be used in the event of an accident. The Engines & Boilers have been constructed under special license, of a good quality of workmanship. They have been tried under steam, the safety valves adjusted and tested for accumulation with full blast on and found to work well and are now in my opinion eligible to have*  
✠ *L. M. C. 12.91* recorded in the Register of this Society.

It is submitted that this vessel is eligible for entry in the REGISTER  
C. 12.91

The amount of Entry Fee .. £ *2 : 0 : 0* received by me,  
Special .. .. £ *28 : 16 : 0*  
Donkey Boiler Fee .. .. £ : :  
Certificate (if required) .. £ *yes* : *30 12 18 91*  
To be sent as per margin.  
(Travelling Expenses, if any, £ .. ..)

Committee's Minute

Machinery Certificate

*30 12 18 91*  
*L. M. C. 12.91*

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



Lloyd's Register Foundation