

# REPORT ON MACHINERY.

No. *8607* Port of *West Hartlepool* Received at London Office *21 OCT 91*  
 No. in Survey held at *West Hartlepool* Date, first Survey *22 Jan 7* Last Survey *14 Oct 1891*  
 Reg. Book. on the *Sea Steamer Emma* (Number of Visits *40*)  
 Master *Shore* Built at *W. Hartlepool* By whom built *Messrs. R. Irvine & Co.* Tons { Gross *2893.07* Net *1887.28*  
 Engines made at *Hartlepool* By whom made *Messrs. T. Richardson & Sons* when made *1891*  
 Boilers made at *Hartlepool* By whom made *Messrs. T. Richardson & Sons* when made *1891*  
 Registered Horse Power *180* Owners *O. Prochman* Port belonging to *W. Hartlepool*  
*250*

## ENGINES, &c.—

Description of Engines *Inverted, Triple Expansion, 3 Cranks* No. of Cylinders *3*  
 Diam. of Cylinders *23", 36½", 59"* Length of Stroke *42"* Rev. per minute *60* Point of Cut off, High Pressure *53%* Low Pressure *63%*  
 Diameter of Screw shaft *11½"* Diam. of Tunnel shaft *11"* Diam. of Crank shaft journals *11½"* Diam. of Crank pin *11½"* size of Crank webs *16½" x 7¾"*  
 Diameter of screw *16.6"* Pitch of screw *14.9"* No. of blades *4* state whether moveable *no* total surface *80 sq. ft.*  
 No. of Feed pumps *2* diameter of ditto *2¾"* Stroke *26"* Can one be overhauled while the other is at work *yes*  
 No. of Bilge pumps *2* diameter of ditto *3¾"* Stroke *26"* Can one be overhauled while the other is at work *yes*  
 Where do they pump from *Sea, main & After holds, After well, Engine room & Sea.*  
 No. of Donkey Engines *2* Size of Pumps *(10" x 9") (4" x 6")* Where do they pump from *(Sea, tanks, & engine-room bilge)*  
 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 *4½"* Are they connected to condenser, or to circulating pump *Circulating pump.*  
 How are the pumps worked *By lever from the after piston rod 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 *2<sup>nd</sup> September 1891.*  
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *Top platform of engine room.*

## BOILERS, &c.—

No. of Boilers *Two* Description *Cyl. built, single ended* Material *Steel* Letter (for record) *S*  
 Working Pressure *160 lb.* Tested by hydraulic pressure to *320 lb.* Date of test *7<sup>th</sup> August 1891.*  
 Description of superheating apparatus or steam chest *none.* Heating surface *4113 sq. ft.*  
 Can each boiler be worked separately *yes* Can the superheater be shut off and the boiler worked separately *no superheater.*  
 No. of square feet of fire grate surface in each boiler *43* Description of safety valves *Spring* No. to each boiler *2*  
 Area of each valve *7.07* 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 16"* Diameter of boilers *14.9"*  
 Length of boilers *10.0* description of riveting of shell long. seams *double butt straps* circum. seams *double riv. lap* Thickness of shell plates *15/16"*  
 Diameter of rivet holes *1.932"* whether punched or drilled *drilled* pitch of rivets *1 in 8¼", 2 in 4½"* Lap of plating *11"*  
 Percentage of strength of longitudinal joint *84.46* working pressure of shell by rules *162 lb.* size of manholes in shell *none*  
 Size of compensating rings — No. of Furnaces in each boiler *3* Description of Furnaces *Ribbed (Purves patent)*  
 Outside diameter *3.336"* length *6.04 ft., 6.76 ft.* thickness of plates *15/32"* description of joint *welded* if rings are fitted *no*  
 Greatest length between rings — working pressure of furnace by the rules *162 lb.* combustion chamber plating, thickness, sides *5/8"* back *5/8"* top *5/8"*  
 Pitch of stays to ditto, sides *8½" x 8½"* back *8½" x 7½"* top *8½" x 8"* If stays are fitted with nuts or riveted heads *nuts* working pressure of plating by rules *166 lb.*  
 Diameter of stays at smallest part *1 3/8"* working pressure of ditto by rules *164 lb.* end plates in steam space, thickness *1 1/32"*  
 Pitch of stays to ditto *18" x 17"* how stays are secured *double nuts & washers* working pressure by rules *164 lb.* diameter of stays at smallest part *2 3/4"* working pressure by rules *174 lb.* Front plates at bottom, thickness *1 3/16"* Back plates, thickness *7/8"*  
 Greatest pitch of stays *12"* working pressure by rules *163 lb.* Diameter of tubes *3½"* pitch of tubes *4 3/4" x 4 3/4"* thickness of tube plates, front *1"* back *13/16"* how stayed *stay tubes* pitch of stays *14½" x 9½"* width of water spaces *1 1/4"*  
 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



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2 DONKEY BOILER—S Description *Vertical, Cylindrical, 4 Cross tubes.*  
Made at *Gateshead* by whom made *Clarke Chapman & Co* when made *26.59* where fixed *In stock hole*  
Working pressure *80 lb.* tested by hydraulic pressure to *160 lb.* No. of Certificate *3589* fire grate area *23 sq. ft.* description of safety  
valves *Spring* No. of safety valves *one* area of each *11.04* if fitted with easing gear *yes* if steam from main boilers can  
enter the donkey boiler *no* diameter of donkey boiler *6.6"* length *13.0* description of riveting *double riv lap*  
Thickness of shell plates *7/16"* diameter of rivet holes *7/8"* whether punched or drilled *drilled* pitch of rivets *3 7/16"* lap of plating *1 1/4"*  
per centage of strength of joint *72* thickness of crown plates *9/16"* stayed by *6 stays 1 1/8" dia.*  
Diameter of furnace, top *5.2"* bottom *5.6 3/4"* length of furnace *5.3"* thickness of plates *5/8"* description of joint *single riv lap*  
Thickness of furnace crown plates *9/16"* stayed by *6 stays 1 1/8" dia.* working pressure of shell by rules *87 1/2*  
Working pressure of furnace by rules *85 lb.* diameter of uptake *16 1/2"* thickness of plates *7/16"* thickness of water tubes *3/8"*  
as reported by *J. A. Holden.*

SPARE GEAR. State the articles supplied:— *One Propeller, A set of bolter & nuts for a 100 lb. rod, main bearing, & shaft coupling. A set of valves for the feed and bilge pumps. 2 sets of piston springs. Bolter nuts & iron assorted*

The foregoing is a correct description,

*J. A. Holden* Manufacturer of Engines & main boilers

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

*Main steam pipes tested by hydraulic pressure to 320 lb. per sq. inch and found tight*

*The engines and boilers of this vessel have been constructed under Special Survey and of a good quality of workmanship they have been tried under steam the safety valves adjusted and found to work well and are now in safe and efficient working condition and, in my opinion, eligible to have*  
*L.M.C. 10.91. recorded in the Register of this Society*

Date *14 10 91*

*It is submitted that this vessel is eligible for the record + L.M.C. 10.91*  
*C. J. Stoddard 21 10 91*

The amount of Entry Fee .. £ 2 : 0 : 0 received by me,

Special .. £ 32 : 10 : 0

Donkey Boiler Fee .. £ : :

Certificate (if required) .. £ *yes* : *20 10 1891*

To be sent as per margin.

(Travelling Expenses, if any, £ ..)

Committee's Minute

FRI 23 OCT 1891

+ Lmb 10/91

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