

REPORT ON MACHINERY.

FRIDAY 21 MARCH 1890

No. in Survey held at 7196 Port of Shull Received at London Office 18
 Date, first Survey May 28 89 Last Survey 11th Mar 1890
 Book. Shull (Number of Visits 37) 895-03
 Ship on the Steel Screw Steamer Liberty Tons 373.10
 Built at Shull By whom built Charles Co Lim When built 1890
 Engines made at Shull By whom made Charles Co Lim when made 1890
 Makers made at Shull By whom made Charles Co Lim when made 1890
 Registered Horse Power 210 Owners Co-Operative Wholesale Soc Lim Port belonging to Goole

ENGINES, &c.— (Triple expansion)
 Description of Engines Triple Compound Smothered Direct Acting
 Diameter of Cylinders 24.59" 6.2" Length of Stroke 33" No. of Rev. per minute 100 Point of Cut off, High Pressure .75 Low Pressure .5
 Diameter of Screw shaft 11" Diam. of Tunnel shaft 10 1/2" Diam. of Crank shaft journals 6 1/2" Diam. of Crank pin 11" size of Crank webs 13" x 7 1/2"
 Diameter of screw 12.6" Pitch of screw 15.9" No. of blades 4 state whether moveable no total surface 59.29 sq ft
 No. of Feed pumps two diameter of ditto 5" Stroke 20" Can one be overhauled while the other is at work yes
 No. of Bilge pumps two diameter of ditto 5 1/2" Stroke 20" Can one be overhauled while the other is at work yes
 Where do they pump from Engine room Bilge hold, Tank, Sea.
 No. of Donkey Engines one Size of Pumps 4 1/2" x 6" Where do they pump from Bilge hold, Tank, Sea, Hotwell, Sea, Discharges to Boiler, Tank, Boiler, Peak, Condenser, Hotwell, 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 one and sizes 6" Are they connected to condenser, or to circulating pump Central Circulating Pump
 How are the pumps worked Circulating Pump separate engine other from Intermediate engine lower
 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 Discharges to forward How are they protected wood casing
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times yes in Engine room
 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 how new Launched 13th Oct 1890
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from Main Deck.

BOILERS, &c.—
 Number of Boilers two Description Cylindrical multitudinal Whether Steel or Iron Steel
 Working Pressure 160 lb Tested by hydraulic pressure to 320 lb Date of test 24th January 1890
 Description of superheating apparatus or steam chest none fitted (Heating surface 4500 sq ft)
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately no
 No. of square feet of fire grate surface in each boiler 6629 sq ft Description of safety valves Spring loaded No. to each boiler two
 Area of each valve 9.62 sq ft Are they fitted with easing gear yes No. of safety valves to superheater no area of each valve no
 Are they fitted with easing gear no Smallest distance between boilers and bunkers or woodwork 8" Diameter of boilers 14.6"
 Length of boilers 10.6" description of riveting of shell long. seams all strap etc circum. seams all in lap Thickness of shell plates 19/16"
 Diameter of rivet holes 15/16" whether punched or drilled drilled pitch of rivets 7/8" Lap of plating 18"
 Percentage of strength of longitudinal joint 82.75% working pressure of shell by rules 162 lb size of manholes in shell 16" x 12"
 Size of compensating rings 2.4" x 2.6" x 1.5/16" No. of Furnaces in each boiler Three
 Outside diameter 4.2" length, top 7.6" bottom 8.0" thickness of plates 9/8" description of joint welded if rings are fitted yes
 Greatest length between rings 9" working pressure of furnace by the rules 190 lb combustion chamber plating, thickness, sides 9/16" back 9/16" top 9/16"
 Pitch of stays to ditto, sides 7/4" back 7/4" top 7/4" If stays are fitted with nuts or riveted heads nuts working pressure of plating by rules 162 lb Diameter of stays at smallest part 1.5/16" working pressure of ditto by rules 180 lb end plates in steam space, thickness 15/16"
 Pitch of stays to ditto 16" x 15" how stays are secured all nut in hole working pressure by rules 160 lb diameter of stays at smallest part 2 1/2" working pressure by rules 184 lb Front plates at bottom, thickness 13/16" Back plates, thickness 13/16"
 Greatest pitch of stays 14" working pressure by rules 160 lb Diameter of tubes 5 1/2" pitch of tubes 4 5/8" thickness of plates, front 13/16" back 11/16" how stayed stay tubes pitch of stays 13 1/8" x 9 1/4" width of water spaces 10"
 Diameter of Superheater or Steam chest no length no thickness of plates no description of longitudinal joint no diam. of rivet holes no
 Pitch of rivets no working pressure of shell by rules no diameter of flue no thickness of plates no If stiffened with rings no
 Distance between rings no working pressure by rules no end plates of superheater, or steam chest: thickness no how stayed no
 Superheater or steam chest; how connected to boiler no

(State if part is also sent on the Hull of the Ship)

Description of furnaces

MUL402-015

DONKEY BOILER— Description *Cylindrical Steel Bay Combustion Chamber*
 Made at *Stull* by whom made *Charles Co Sim* when made *1890* where fixed *Bo*
 Working pressure *80 lb* tested by hydraulic pressure to *160 lb* No. of Certificate *392* fire grate area *17 sq ft*
 valves *Spring loaded* No. of safety valves *two* area of each *3.95* if fitted with easing gear *Yes* if steam
 enter the donkey boiler *No* diameter of donkey boiler *7.3* length *5.0* description of riveting *able rivet*
 Thickness of shell plates *1/2* diameter of rivet holes *15/16* whether punched or drilled *drilled* pitch of rivets *3/16* lap of plate
 per centage of strength of joint *69%* thickness of ^{flange} plates *10/16* stayed by *1 1/2* steel stays spaced *14* apart
 Diameter of furnace, top *26* bottom *✓* length of furnace *4.6* thickness of plates *3/16* description of joint *welded*
 Thickness of furnace crown plates *15/16* stayed by *stay tubes 7/2* pitch *working pressure of shell by rules 81*
 Working pressure of furnace by rules *107 lb* diameter of uptake *—* thickness of plates *—* thickness of water tubes *—*

SPARE GEAR. State the articles supplied:— *Two top end bolts, Two bottom end bolts, Two
 turning bolts, One set coupling bolts, One set of dead pump valves, One set
 bilge pump valves, Safety valve springs, set of check valves, Bolts and nuts
 assorted.*

The foregoing is a correct description,

Manufactured by

J. H. Pearson

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

*The Boilers and Machinery of this Vessel have
 been constructed under Special Survey and placed on board in
 accordance with the Society's Rules. They are now in my opinion
 in safe working condition and the case is respectfully submitted
 for the notification + L.M.C. 3.90. in the Register Book.*

*This submitted that this vessel is
 eligible to have + L.M.C. 3.90 awarded
 21 3 90*

The amount of Entry Fee .. £ 2 : - : - received by me, *gds*
 Special .. £ 30 : 10 : -
 Donkey Boiler Fee .. £ 2 : 2 : -
 Certificate (if required) .. £ ✓ : : 18
 To be sent as per margin.
 Expenses, if any, £)

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

Lee's Minute TUES 25 MARCH 1890

+ L.M.C. 3/90

