

# REPORT ON MACHINERY.

Port of Sunderland

Received at London Office 13

No. in Survey held at Sunderland Date, first Survey, 14th Oct 1901 Last Survey 8th March 1902  
 Reg. Book. on the Steel S. S. Manaton (Number of Visits 46) Tons { Gross 4025 Net 2623  
 Master Page Built at Sunderland By whom built John Priestman & Co When built 1902  
 Engines made at Sunderland By whom made George Clark Ltd when made 1902  
 Boilers made at Sunderland By whom made George Clark Ltd when made 1902  
 Registered Horse Power Owners Commercial Steamship Co Port belonging to London  
 Nom. Horse Power as per Section 28 312 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Tri compound No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 24"-#1"-6 1/4" Length of Stroke #5" Revs. per minute 40 Dia. of Screw shaft as per rule 13.5" Lgth. of stern bush 4'-8"  
 Dia. of Tunnel shaft as per rule 11.69" Dia. of Crank shaft journals as per rule 12.29" Dia. of Crank pin 12 5/8" Size of Crank webs 18 1/2" x 8 1/2" Dia. of thrust shaft under collars 13 1/4" Dia. of screw 1 1/4" Pitch of screw 1 1/2" No. of blades 4 State whether moveable No Total surface 89.6 sq ft  
 No. of Feed pumps Two Diameter of ditto 3 1/4" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps Two Diameter of ditto 4 1/4" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines Two Sizes of Pumps 4 1/2" x 4 1/2" x 6" & 4 1/4" x 9" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room Three. 3 1/2" diameter In Holds, &c. Two in each, 3 1/2" diameter & one in Hold & Tunnel well, 3 1/2" diameter  
 No. of bilge injections one sizes 5 1/2" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room of size Yes 4"  
 Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes Are the sluices on Engine room bulkheads always accessible yes  
 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 and all boiler mountings accessible at all times yes  
 Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges yes  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock new vessel Is the screw shaft tunnel watertight yes  
 Is it fitted with a watertight door yes worked from Top platform

BOILERS, &c.— (Letter for record A.) Total Heating Surface of Boilers 4840 sq ft Is forced draft fitted no  
 No. and Description of Boilers 2 single ended ordinary marine type Working Pressure 160 lbs Tested by hydraulic pressure to 320  
 Date of test 29-1-02 Can each boiler be worked separately yes Area of fire grate in each boiler 60 sq ft No. and Description of safety valves to each boiler 2. Direct spring Area of each valve 9.6 sq ft Pressure to which they are adjusted 160 lbs Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 15'-9" Length 10'-6" Material of shell plates S  
 Thickness 1 5/32" Range of tensile strength 28 1/2-32 Are they welded or flanged flanged Descrip. of riveting: cir. seams D.R.L. long. seams I.R.D.B.S.  
 Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 4 15/16" ~~Top of plates~~ width of butt straps 18 1/4"  
 Per centages of strength of longitudinal joint rivets 89 Working pressure of shell by rules 164 lbs Size of manhole in shell 16" x 13"  
 Size of compensating ring 8 3/4" x 1 3/16" No. and Description of Furnaces in each boiler 3 Plain Material S Outside diameter 48.6"  
 Length of plain part top 6 ft bottom 5'-6" Thickness of plates crown 4/16" bottom 6/16" Description of longitudinal joint welded No. of strengthening rings 2 on bottom  
 Working pressure of furnace by the rules 160 lbs Combustion chamber plates: Material S Thickness: Sides 1/16" Back 1/16" Top 1/16" Bottom 1/16"  
 Pitch of stays to ditto: Sides 9 3/4" Back 10" Top 9 3/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 162 lbs  
 Material of stays Iron Diameter at smallest part 1 3/4" Area supported by each stay 1000 sq in Working pressure by rules 174 lbs and plates in steam space:  
 Material S Thickness 1 5/32" Pitch of stays 14" x 21" How are stays secured nuts Working pressure by rules 164 lbs Material of stays Iron  
 Diameter at smallest part 3 1/8" Area supported by each stay 8230 sq in Working pressure by rules 164 lbs Material of Front plates at bottom S  
 Thickness 3/4" Material of Lower back plate S Thickness 7/8" Greatest pitch of stays 15" Working pressure of plate by rules 162 lbs  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 3/8" Material of tube plates S Thickness: Front 15/16" + 1/16" Back 3/4" Mean pitch of stays 9"  
 Pitch across wide water spaces 1 1/4" Working pressures by rules 160 lbs Girders to Chamber tops: Material S Depth and thickness of girder at centre 8" x 13/16" x 2" Length as per rule 2'-6" Distance apart 9" Number and pitch of Stays in each 2 stays 9 3/4"  
 Working pressure by rules 142 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately



**DONKEY BOILER**— No. *One* Description *Vertical Blake Boiler*  
 Made at *Middleboro* By whom made *Richardson, Westgate & Co Ltd* When made *11-2-02* Where fixed *On Deck*  
 Working pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate *2683* Fire grate area *24 sq ft* Description of safety valves *Direct spring*  
 No. of safety valves *2* Area of each *12 sq ft* Pressure to which they are adjusted *80 lbs* If fitted with casing gear *Yes* If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *4'-0"* Length *16'-6"* Material of shell plates *Iron* Thickness *7/16"* Range of tensile strength *27-32* Descrip. of riveting long. seams *Double riveted lap* Dia. of rivet holes *15/16"* Whether punched or drilled *drilled* Pitch of rivets *3"*  
 Lap of plating *4 5/8"* Per centage of strength of joint *69.5* Rivets *68.8* Thickness of shell crown plates *7/16"* Radius of do. *Hemispherical* No. of Stays to do. *✓*  
 Dia. of stays *✓* Diameter of furnace Top *2'-6"* Bottom *5'-3 1/2"* Length of furnace *6'-1 1/2"* Thickness of furnace plates *19/32"* Description of joint *S. R. Lap* Thickness of *c.c./rod* plates *7/16"* Stayed by *1 1/2" Iron stays ratted 11" x 12" pitched* Working pressure of shell by rules *82.9 lbs*  
 Working pressure of furnace by rules *82.4 lbs* Diameter of *TUBES 2 3/4" plain* Thickness of *TUBE* plates *F. 3/8"* Thickness of *STAY* tubes *5/16"*

**SPARE GEAR.** State the articles supplied:—

*Top and bottom end connecting rod bolts and nuts, two main bearing bolts and nuts, one set of coupling bolts, feed and bilge pump valves, bolts, nuts, and iron assorted propeller &c.*

The foregoing is a correct description,  
**FOR GEORGE CLARK LIMITED**  
*James C. Clark, Manufacturers of main engine & Boilers only*

Dates of Survey  
 During progress of work in shops— 1901— Oct. 14, 15, 16, 21, 22, 23, 28, 29, 31. Nov. 1, 4, 8, 18, 28. Dec. 2, 5, 9, 13, 16, 19, 30. 1902— Jan. 6, 7, 13, 16, 22, 24, 28. Feb. 4  
 During erection on board vessel— 11, 12, 13, 14, 15, 20, 22, 26, 27. Mar. 2, 4, 8.  
 Total No. of visits *41.*

Is the approved plan of main boiler forwarded herewith *yes*  
 .. .. .. donkey .. .. .. *yes*

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

Material of screw shaft *Scrap Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *yes*  
 Is the after end of the liner made water tight in the propeller boss *yes* If the liner is in more than one length are the joints burned *✓*  
 If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *fits tightly* If two liners are fitted, is the shaft lapped or protected between the liners *one liner*

The Machinery of this vessel has been constructed under Special Survey, the material and workmanship being good and efficient, and the Engines when tried under steam worked satisfactorily.

The pumps, watertight doors, and steam steering gear are in good working order, and the main steam pipes have been tested by hydraulic pressure to 400 lbs per square inch.

In my opinion, this vessel is eligible for the notification in the Register Book of **L.M.C. 3.02.**

It is submitted that this vessel is eligible for THE RECORD— **L.M.C. 3.02.**

*P. R. Salmon*  
 21.3.02

**P. R. Salmon**  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee... £ *3 : 0 : 0* When applied for, *19.3.02*  
 Special ... .. £ *35 : 12* : .. .. ..  
 Donkey Boiler Fee ... .. £ .. .. ..  
 Travelling Expenses (if any) £ .. .. ..

Committee's Minute **FRI. MAR 21 1902**

Assigned *L.M.C. 3.02*



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Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.