

# REPORT ON MACHINERY.

Port of Sunderland

WED. AUG 26 1896

Received at London Office

No. in Survey held at Sunderland Date, first Survey 17<sup>th</sup> Feb 1896 Last Survey Aug 19<sup>th</sup> 1896  
Reg. Book. (Number of Visits 39)

on the S/S. "Umvoti" Tons Gross 2624.72 Net 1618.57

Master J Lewis Built at S. land. By whom built J. Raing When built 1896

Engines made at Sunderland By whom made G. Clark & Co when made 1896

Boilers made at Sunderland By whom made G. Clark & Co when made 1896

Registered Horse Power 450 Owners Bullard King & Co Port belonging to London

Nom. Horse Power as per Section 28 379 Is Electric Light fitted yes

**ENGINES, &c.**—Description of Engines Tri compound. No. of Cylinders 3 No. of Cranks 3

Diameter of Cylinders 25" 41 1/2" 68" Length of Stroke 45" Revolutions per minute 70 Diameter of Screw shaft as per rule 12 5/16"  
 Diameter of Tunnel shaft as per rule 11 7/8" Diameter of Crank shaft journals 13" Diameter of Crank pin 14" Size of Crank webs 20 x 9 1/8"  
 Diameter of screw 16 2" Pitch of screw 19 feet 3" No. of blades 4 State whether moveable f Total surface 75 f  
 No. of Feed pumps 2 Diameter of ditto 3 1/2" Stroke 24" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 4 3/8" Stroke 24" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 2 Sizes of Pumps 7 1/2" x 5" x 6" 7 1/8" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 2 3 1/2" C 3 1/2" S 3 1/2" In Holds, &c. h<sup>o</sup> 1 - 2 of 3" h<sup>o</sup> 2 - 2 of 3"  
 No. of bilge injections 1 sizes 6 Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room & 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 none  
 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 R.) Total Heating Surface of Boilers 5142 sq Is forced draft fitted yes

No. and Description of Boilers 2 Cyl. Multib. S. ended. Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 20/3/96 Can each boiler be worked separately yes Area of fire grate in each boiler 56 3/4 sq No. and Description of safety valves to each boiler 2 direct spring Area of each valve 110 Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes. Smallest distance between boilers or uptakes and bunkers or woodwork 10" Mean diameter of boilers 15 feet

Length 11-6" Material of shell plates S Thickness 29/64" Description of riveting: circum. seams d. r. lap long. seams t. r. butt

Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Imp of plates on width of butt straps 2 2 7/8"

Per centages of strength of longitudinal joint rivets 90 plate 85 Working pressure of shell by rules 200 lbs Size of manhole in shell 16" x 13"

Size of compensating ring 9 1/2" x 1 1/2" No. and Description of Furnaces in each boiler 3 Adams on Ring Material S. Outside diameter 44 1/2"

Length of plain part top 25 3/8" Thickness of plates bottom 5 1/8" Description of longitudinal joint welded. No. of strengthening rings 3

Working pressure of furnace by the rules 180 lbs Combustion chamber plates: Material S. Thickness: Sides 1/16" Back 1/16" Top 1/16" Bottom 3/32"

Pitch of stays to ditto: Sides 9 1/2" x 9" Back 9 1/2" x 9" Top 9 1/2" x 9" If stays are fitted with nuts or riveted heads nuts. Working pressure by rules 181 lbs

Material of stays S Diameter at smallest part 1.730 Area supported by each stay 85.52 Working pressure by rules 203 lbs End plates in steam space: Material S. Thickness 1 1/4" Pitch of stays 18 3/4" x 16 1/2" How are stays secured d. nuts Working pressure by rules 228 lbs Material of stays S. Diameter at smallest part 2.190 Area supported by each stay 2970 Working pressure by rules 201 lbs Material of Front plates at bottom S Thickness 3/4" Material of Lower back plate S Thickness 3/32" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 180 lbs

Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates S. Thickness: Front 29/32" Back 23/32" Mean pitch of stays 7 1/2"

Pitch across wide water spaces 13 1/2" Working pressures by rules 185 lbs Girders to Chamber tops: Material S Depth and thickness of girder at centre 9 x 1 3/8" Length as per rule 31 1/4" Distance apart 9" Number and pitch of Stays in each 2 of 9 1/2"

Working pressure by rules 180 lbs. Superheater or Steam chest; how connected to boiler none. Can the superheater be shut off and the boiler worked separately — Diameter — Length — Thickness of shell plates — Material — Description of longitudinal joint — Diam. of rivet holes — Pitch of rivets — Working pressure of shell by rules — Diameter of flue — Material of flue plates — Thickness —

If stiffened with rings — Distance between rings — Working pressure by rules — End plates: Thickness — How stayed —

Working pressure of end plates — Area of safety valves to superheater — Are they fitted with easing gear —



**DONKEY BOILER**— Description *Cochran's Patent.*  
 Made at *Birkenhead* By whom made *Cochran & Co* When made *3/96* Where fixed *Stoke hole*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *1357* Fire grate area *21 sq ft* Description of safety valves *Spring*  
 No. of safety valves *2* Area of each *5.9 sq ft* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no.* Diameter of donkey boiler *6' 6"* Length *14' 0"* Material of shell plates *S* Thickness *15/32"*  
 Description of riveting long. seams *double riveted* Diameter of rivet holes *7/8"* Whether punched or drilled *drilled* Pitch of rivets *2 1/16"*  
 Lap of plating *4* Per centage of strength of joint Rivets *68.8* Thickness of shell crown plates *7/16"* Radius of do. *11 pack* No. of Stays to do. *—*  
 Dia. of stays. *—* Diameter of furnace Top *2' 8"* Bottom *5' 4"* Length of furnace *Circular* Thickness of furnace plates *9/16"* Description of joint *S.R. lap* Thickness of furnace crown plates *9/16"* Stayed by *Hemispherical* Working pressure of shell by rules *89 lbs*  
 Working pressure of furnace by rules *86 lbs* Diameter of uptake *15" x 17"* Thickness of uptake plates *1/2"* Thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *1 set of connecting rod top and bottom end bolts + nuts. 2 main bearing bolts + nuts. 1 set of coupling bolts and nuts. 1 set of feed & bilge pump valves.*

The foregoing is a correct description,  
 FOR **GEORGE CLARK LIMITED.**  
*James C. Clark* Manufacturer. main engines

Dates of Survey while building  
 During progress of work in shops— *1896 Feb 17, 20, 21, 24, 25, 26, 27, 28. Mch 7, 9, 10, 11, 16, 19, 20, 24, 25, 27, 31. Apr 1, 5, 10, 13, 15, 16, 17, 20, 21.*  
 During erection on board vessel— *May 7, 9, 12, 13, 18, 19, 20. June 1, 15, 16. Aug. 19.*  
 Total No. of visits *39.*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*Machinery and boilers constructed under Special Survey: materials and workmanship good. Main steam pipes tested to double the working pressure & found sound. Machinery examined under steam and found satisfactory. In my opinion this vessel is eligible for the record in the Register Book of L.M.C. 8/96.*

*It is submitted that this vessel is eligible for THE RECORD. L.M.C. 8.96. T.D. Elec: Light.*

*J.C.C.*  
*26. 8. 96*  
*Emd.*  
*26. 8. 96*

The amount of Entry Fee. . . £ *3* : . . .  
 Special . . . . . £ *38* : *19* : . . .  
 Donkey Boiler Fee . . . . . £ . . . : . . .  
 Travelling Expenses (if any) £ . . . : . . .

When applied for, *25 Aug 1896*  
 Received, *26. 8. 96*  
*J. Y. Hindley*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. AUG 28 1896**  
 Assigned *+ L.M.C. 8, 96 T.D. Elec. Light*



Form No. 10. I. E. F. m. P. n. 3. FR. RE. Lo. Bo. To. Ri. Sa. EC. Nu. Cer. 29. 29. 29. 29. Ir. o. B. P. W. E. W. C. N. O. S.

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

MACHINERY CERTIFICATE WRITTEN.