

# REPORT ON MACHINERY.

Port of Sunderland

No. in Survey held at Sunderland

Date, first Survey 4<sup>th</sup> March Last Survey 10<sup>th</sup> Nov 1893

Reg. Book.

Received at London Office

(Number of Visits 34)

on the S.S. "Umfuli"

Master R G Bringle Built at Sunderland By whom built James Laing

Tons { Gross 2369  
Net 1512  
When built 1893

Engines made at Sunderland By whom made George Clark (Ld)

when made 1893

Boilers made at Sunderland By whom made George Clark (Ld)

when made 1893

Registered Horse Power 300

Owners Messrs Bullard King & Co Port belonging to London

Com. Horse Power as per Section 28 244

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

Diameter of Cylinders 23, 38 & 62" Length of Stroke 42" Revolutions per minute 40 Diameter of Screw shaft as per rule 11 1/4"

Diameter of Tunnel shaft as per rule 10 7/16" Diameter of Crank shaft journals 11 3/4" Diameter of Crank pin 11 3/4" Size of Crank webs 22 x 4 1/8"

Diameter of screw 16-3" Pitch of screw 14-6" No. of blades 4 State whether moveable not Total surface 456

No. of Feed pumps 2 Diameter of ditto 3" Stroke 26" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 1/4" Stroke 26" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps 8x10 & 5 1/4 x 3 1/2 x 5" No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room three 3 1/2" In Holds, &c. Fore Hold two 3" main hold two 3"

No. of bilge injections 1 sizes 5" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room yes size 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 4<sup>th</sup> Nov 1893 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 3690

No. and Description of Boilers 2 ordinary marine type Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs

Date of test 5-6-93 Can each boiler be worked separately yes Area of fire grate in each boiler 55 No. and Description of safety valves to each boiler 2 direct spring Area of each valve 40 Pressure to which they are adjusted 160 lbs Are they fitted with casing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 20" Mean diameter of boilers 14-3 1/2"

Length 10-6" Material of shell plates Steel Thickness 1 1/4" Description of riveting: circum. seams dup lap long. seams treble riv'd. b.s.

Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 5/16" Lap of plates or width of butt straps 19"

Percentages of strength of longitudinal joint 84.9 Working pressure of shell by rules 148 lbs Size of manhole in shell 16x13"

Size of compensating ring flanged 3" deep No. and Description of Furnaces in each boiler 3 Purves's pk Material Steel Outside diameter 3-5 1/4"

Length of plain part top 1 1/2" Thickness of plates bottom 1 1/2" Description of longitudinal joint welded No. of strengthening rings 25

Working pressure of furnace by the rules 168 lbs Combustion chamber plates: Material Steel Thickness: Sides 1/16" Back 4/16" Top 1/16" Bottom 3/16"

Thickness of stays to ditto: Sides 10x8 3/4" Back 9 3/16" Top 10x9" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 163 lbs

Material of stays iron Diameter at smallest part 1 5/8" Area supported by each stay 840 Working pressure by rules 144 lbs End plates in steam space:

Material Steel Thickness 1 1/4" Pitch of stays 14 3/4 x 19 1/2" How are stays secured nuts Working pressure by rules 149 lbs Material of stays Steel

Diameter at smallest part 3" Area supported by each stay 3240 Working pressure by rules 149 lbs Material of Front plates at bottom Steel

Thickness 2 3/4" Material of Lower back plate Steel Thickness 4/16" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 160 lbs dbling

Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" Material of tube plates Steel Thickness: Front 27/32" Back 24/32" Mean pitch of stays 9 1/2"

Thickness across wide water spaces 14 1/2" Working pressures by rules 160 lbs dbling Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 3/4 x 3 3/4 x 2 Length as per rule 2-9" Distance apart 9" Number and pitch of Stays in each 2 stays 10x9"

Working pressure by rules 164 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 \_\_\_\_\_

Pitch of rivets \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Diameter of flue \_\_\_\_\_ Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_

Stays 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 casing gear \_\_\_\_\_

**DONKEY BOILER**— Description *Vertical. Cochran's patent.*  
 Made at *Birkenhead* By whom made *Cochran & Co* When made *31-4-93* Where fixed *Stokehold*  
 Working pressure *60 lbs* tested by hydraulic pressure to *120 lbs* No. of Certificate *1176* Fire grate area *18 1/2 sq ft* Description of safety valves *direct spring*  
 No. of safety valves *2* Area of each *5.9 sq ft* Pressure to which they are adjusted *60 lbs* fitted with easing gear *yes* If steam from main boilers enter the donkey boiler *no* Diameter of donkey boiler *6'-0"* Length *13'-6"* Material of shell plates *steel* Thickness *3/8"*  
 Description of riveting long. seams *double riv lap* Diameter of rivet holes *3/4"* Whether punched or drilled *drilled* Pitch of rivets *2 1/2"*  
 Lap of plating *3 1/8"* Per centage of strength of joint *4/20%* Thickness of shell crown plates *3/8"* Radius of do. *3'-0"* No. of Stays to do. *no*  
 Dia. of stays. *—* Diameter of furnace Top *2'-6" radius* Bottom *5'-0" dia.* Length of furnace *—* Thickness of furnace plates *15/32"* Description of joint *single riv lap* Thickness of furnace crown plates *15/32"* Stayed by *hemispherical* Working pressure of shell by rules *40 lbs*  
 Working pressure of furnace by rules *90 lbs* Diameter of uptake *16"* Thickness of uptake plates *1/2"* Thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *Top & bottom end connecting rod bolts & nuts, two main bearing bolts, one set of coupling bolts, crank pin bolt, feed & bilge pump valves, bolts nuts & iron etc.*

The foregoing is a correct description,  
**FOR GEORGE CLARK LIMITED.** Manufacturer of main engines & boilers.  
*George Clark*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*The machinery of this Vessel has been constructed under special survey, the material and workmanship are good and effective and the engines when tried under steam worked satisfactorily. The main steam pipes have been tested by hydraulic pressure to 320 lbs & the watertight doors, sluice valves & pumps are in efficient working order. In my opinion this Vessel is eligible for the record of LMC 11-93. A report on the electric light will be forwarded when filled.*

It is submitted that  
 this vessel is eligible for  
 THE RECORD + LMC 11-93 —  
*Pat Salmon*  
 13/11/93 —

MACHINERY CERTIFICATE

Certificate (if required) to be sent to **WRITTEN**  
 The amount of Entry Fee. . . £ *2* : : When applied for,  
 Special . . . . . £ *32* : *4* : *11 Nov 1893*  
 Donkey Boiler Fee . . . . . £ : :  
 Travelling Expenses (if any) £ : : *5/11/93*

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

Committee's Minute **FRI 17 NOV 1893**  
 Assigned *+ LMC 11, 93*

