

# REPORT ON MACHINERY.

No. 24630

Port of Sunderland

Received at London Office FRI. 21 OCT 1910

No. in Survey held at Reg. Book.

Sunderland  
S S Umona

Date, first Survey 31 March Last Survey 11 10 - 1910.

(Number of Visits 23)

Master Mitchell

Built at Sunderland

By whom built Messrs Sir J. Laing & Sons Ltd

Tons Gross 375.7  
Net 238.8  
When built 1910

Engines made at Sunderland

By whom made Messrs G. Clark Ltd

No 932. when made 1910

Boilers made at do

By whom made do do

when made 1910

Registered Horse Power

Owners Messrs Bullard, King & Co

Port belonging to London

Nom. Horse Power as per Section 28 494.

Is Refrigerating Machinery fitted for cargo purposes no

Is Electric Light fitted yes

## ENGINES, &c.—Description of Engines

Triple expansion

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders 24" x 14" x 43"

Length of Stroke 48"

Revs. per minute 65

Dia. of Screw shaft as per rule 14.53"

Material of screw shaft Steel

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 yes

in the propeller boss yes If the liner is in more than one length are the joints burned yes

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 yes

If two liners are fitted, is the shaft lapped or protected between the liners yes

Length of stern bush 5'-6"

Dia. of Tunnel shaft as per rule 13.33"

Dia. of Crank shaft journals as per rule 14.96"

Dia. of Crank pin 14.4"

Size of Crank webs 21" x 9 3/4"

Dia. of thrust shaft under collars 14 3/8"

Dia. of screw 1 1/2"

Pitch of Screw 18-9 1/2"

No. of Blades 4

State whether moveable no

Total surface 88.45 sq ft

No. of Feed pumps 2

Diameter of ditto 3 1/2"

Stroke 30"

Can one be overhauled while the other is at work yes

No. of Bilge pumps 2

Diameter of ditto 4 3/8"

Stroke 30"

Can one be overhauled while the other is at work yes

No. of Donkey Engines 3

Sizes of Pumps Ballast 9" x 10" x 10"

Feed 8" x 5" x 8"

No. and size of Suctions connected to both Bilge and Donkey pumps General service 6" x 4" x 6"

In Engine Room 4 @ 3 1/2"

In Holds, &c. 2 - 3 1/2" suction in each hold

No. of Bilge Injections 1

sizes 6 1/2" Connected to condenser, or to circulating pump C.P.

Is a separate Donkey Suction fitted in Engine room & size yes 5"

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 yes

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

Dates of examination of completion of fitting of Sea Connections 15-8-10

of Stern Tube 15-8-10

Screw shaft and Propeller 12-9-10

Is the Screw Shaft Tunnel watertight yes

Is it fitted with a watertight door yes

worked from Top Platform.

## BOILERS, &c.—(Letter for record (B))

Manufacturers of Steel J. Spence & Sons

Total Heating Surface of Boilers 4180

Is Forced Draft fitted yes

No. and Description of Boilers Three single ended

Working Pressure 180

Tested by hydraulic pressure to 360

Date of test 29.7.10

No. of Certificate 2852

Can each boiler be worked separately yes

Area of fire grate in each boiler 54.4 sq ft

No. and Description of Safety Valves to each boiler Two direct spring

Area of each valve 10.321 sq in Pressure to which they are adjusted 183 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 20"

Mean dia. of boilers 14'-6"

Length 11'-6"

Material of shell plates Steel

Thickness 1 5/16"

Range of tensile strength 28.5-39

Are the shell plates welded or flanged no

Descrip. of riveting: cir. seams P.R. lap

long. seams T.R.D.B.S.

Diameter of rivet holes in long. seams 1 3/8"

Pitch of rivets 9 5/16"

Lap of plates or width of butt straps 20 3/8"

Per centages of strength of longitudinal joint rivets 90.5

plate 85.25

Working pressure of shell by rules 208 lbs

Size of manhole in End 16 x 13

Size of compensating ring 9 x 1 3/8"

No. and Description of Furnaces in each boiler 3 Corcomb

Material Steel Outside diameter 43 1/4"

Length of plain part top 2'-5 3/4"

bottom 2'-5 3/4"

Thickness of plates crown 5"

Description of longitudinal joint weld

No. of strengthening rings Two

Working pressure of furnace by the rules 180 lbs

Combustion chamber plates, Material Steel

Thickness: Sides 2 3/8"

Back 1 3/4"

Top 3 3/8" Bottom 1"

Pitch of stays to ditto: Sides 10 x 9 1/4"

Back 10 x 9 1/4"

Top 1 1/4 x 1 1/2"

If stays are fitted with nuts or riveted heads nuts

Working pressure by rules 192 lbs

Material of stays Steel

Diameter at smallest part 1 1/2"

Area supported by each stay 83.75 sq in

Working pressure by rules 219 lbs

End plates in steam space: yes

Material Steel

Thickness 1 1/16"

Pitch of stays 23 3/4 x 20 3/4"

How are stays secured nuts

Working pressure by rules 188 lbs Material of stays Steel

Diameter at smallest part 2'-9 1/4"

Area supported by each stay 20 1/4 x 20 1/4"

Working pressure by rules 209 lbs

Material of Front plates at bottom Steel

Thickness 2 1/2"

Material of Lower back plate Steel

Thickness 1 5/16"

Greatest pitch of stays 15 1/4 x 18 3/4"

Working pressure of plate by rules 183 lbs

Diameter of tubes 2 3/4"

Pitch of tubes 3 1/16 x 4"

Material of tube plates Steel

Thickness: Front 2 1/2"

Back 3/4" Mean pitch of stays 9"

Pitch across wide water spaces 13 3/4"

Working pressures by rules 311 lbs

Girders to Chamber tops: Material Steel

Depth and thickness of girder at centre 10" x 1 3/4"

Length as per rule 33 3/8"

Distance apart 11 7/8"

Number and pitch of stays in each 3 @ 4 1/4"

Working pressure by rules 184 lbs

Superheater or Steam chest; how connected to boiler none

Can the superheater be shut off and the boiler worked separately yes

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

If stiffened with rings

Distance between rings

Working pressure by rules

End plates: Thickness

How stayed

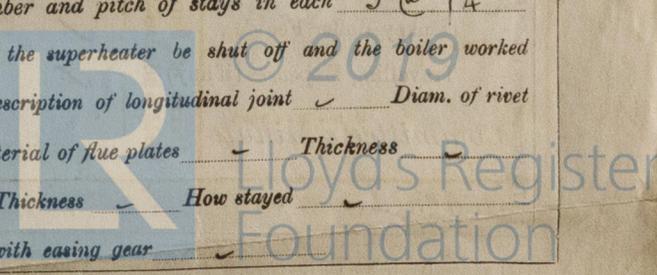
Working pressure of end plates

Area of safety valves to superheater

Are they fitted with easing gear yes

If not, state whether, and when, one will be sent?

W 97-0050



**VERTICAL DONKEY BOILER—** Manufacturers of Steel

No. \_\_\_\_\_ Description \_\_\_\_\_

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Safety \_\_\_\_\_

Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with easing gear \_\_\_\_\_ If steam from main boilers can enter the donkey boiler \_\_\_\_\_ Dia. of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_

Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Descrip. of riveting long. seams \_\_\_\_\_

Dia. of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_

Working pressure of shell by rules \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of stays to do. \_\_\_\_\_ Dia. of stays \_\_\_\_\_

Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_

Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— Two low Rod Bp end bolts & nuts, 2 low Rod Bottom end bolts & nuts, 2 Main Bearing bolts & nuts, 1 set coupling bolts & nuts, 1 set of valves for all pumps, 1 set of piston pumps, 1 Propeller Air Pump bucket & rod, Air pump bucket & rod, 1 pair low Rod Bottom end braces, assorted bolts, nuts & iron.

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

Dates of Survey while building	During progress of work in shops - -	1910 Mar 31 Apr 28 May 3 14 24 31 Jun 6 15 30 Jul 7 11 14 22 29
	During erection on board vessel - -	Aug 3 10 15 16 23 25 30 Sep 7 12 14 15 19 20 21 23 29 Oct 5 7 11
	Total No. of visits	(33)

Is the approved plan of main boiler forwarded herewith  Yes

" " " donkey " " "  Yes

Dates of Examination of principal parts—Cylinders	29-9-10	Slides	23-8-10	Covers	23-8-10	Pistons	23-8-10	Rods	10-8-10
Connecting rods	10-8-10	Crank shaft	30-6-10	Thrust shaft	23-8-10	Tunnel shafts	7-9-10	Screw shaft	7-9-10
Stern tube	10-8-10	Steam pipes tested	2-9-10, 20-9-10	Engine and boiler seatings	15-8-10	Engines holding down bolts	21-9-10		
Completion of pumping arrangements	21-9-10	Boilers fixed	21-9-10	Engines tried under steam	11-10-10				
Main boiler safety valves adjusted	23-9-10	Thickness of adjusting washers	Stand Blw. P 3/4 5 1/2 Cent Blw. P 1 1/2 5 3/8 Port Blw. P 1 1/2 5 3/8						
Material of Crank shaft	Steel	Identification Mark on Do.	5681, 2056 K.H. H.K.	Material of Thrust shaft	Steel	Identification Mark on Do.	6425 J.M.		
Material of Tunnel shafts	Steel	Identification Marks on Do.	5682 K.H., 5684 K.H., 5688 K.H., 3474 P.A., 5698 K.H.	Material of Screw shafts	Steel	Identification Marks on Do.	6426 J.M.		
Material of Steam Pipes	Solid drawn copper	5" dia. x 4 W.G.	Test pressure	Hoolles					

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

The Machinery of this vessel has been built under special survey and the materials & workmanship are of good quality. The Boilers were tested satisfactorily by hydraulic pressure & their safety valves adjusted under steam. The engines were tried under steam & worked satisfactorily.

The Machinery of this vessel is in good & safe working condition and eligible in my opinion to be classed & have record **L.M.C. 10-10** in the Register's Book.

It is submitted that this vessel is eligible for **THE RECORD. + L.M.C. 10.10.**

*William Butler*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee..	£ 3 - - -	When applied for,	15 10 19 10
Special .. .. .	£ 44 - 19 - 0		
Donkey Boiler Fee .. .. .	£ ✓ :	When received,	29 10 10
Travelling Expenses (if any) £	✓ :		

Committee's Minute  
 Assigned  
 TUE. 25 OCT 1910  
 + L.M.C. 10-10

MACHINERY CERTIFICATE WRITTEN.



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