

# REPORT ON MACHINERY.

Port of Sunderland

Received at London Office **MON. 16 SEP 1907**

No. in Survey held at Sunderland Date, first Survey 4<sup>th</sup> March, of Last Survey 22<sup>nd</sup> August 1907

Reg. Book. on the S.S. 'Bottingham' (Number of Visits 43)

Master Gool Built at Gool By whom built Gool Shipbuilding Co When built 1907

Engines made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1907

Boilers made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1907

Registered Horse Power \_\_\_\_\_ Owners \_\_\_\_\_ Port belonging to \_\_\_\_\_

Nom. Horse Power as per Section 28 81 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Inverted triple expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 13", 21", 35" Length of Stroke 24" Revs. per minute 95 Dia. of Screw shaft 8" Material of screw shaft slut

Is the screw shaft fitted with a continuous liner the whole length of the stern tube no 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 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 no Length of stern bush 2.9"

Dia. of Tunnel shaft 6.48" Dia. of Crank shaft journals 6.48" Dia. of Crank pin 7" Size of Crank webs 10 1/2 x 4 1/2" Dia. of thrust shaft under collars 7"

Dia. of screw 10.0" Pitch of Screw 11.4" No. of Blades 4 State whether moveable no Total surface 38 1/2"

No. of Feed pumps 2 Diameter of ditto 2 1/4" Stroke 12" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 2 1/4" Stroke 12" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps 5 1/2 x 3 1/2 x 5" & 6 x 7 1/2 x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2 of 2" x 10 1/2" In Holds, &c. one each 2 1/2" to aft peak tank, tunnel well, fore hold, fore peak tank, two 2 1/2" to aft hold.

No. of Bilge Injections 1 sizes 3" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes - 3"

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 11.6.07 of Stern Tube 12.8.07 Screw shaft and Propeller 12.8.07

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.—(Letter for record S) Manufacturers of Steel W. Beardmore & Co. Palmers Shipbuilding & Iron Co.

Total Heating Surface of Boilers 1453.5 Is Forced Draft fitted no No. and Description of Boilers one S.E. Cylindrical Multi

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 18.7.07 No. of Certificate 2641

Can each boiler be worked separately yes Area of fire grate in each boiler 41 1/2 No. and Description of Safety Valves to each boiler 2 spring

Area of each valve 3.98 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 9" Mean dia. of boilers 12.6" Length 10.3" Material of shell plates steel

Thickness 1 1/2" Range of tensile strength 28/32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d.r. lap.

long. seams kn d.v.s. Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 7/8" Lap of plates or width of butt straps 15 3/4"

Per centages of strength of longitudinal joint rivets 91.01 Working pressure of shell by rules 182.2 lbs Size of manhole in shell 16 x 12"

plate 85.71 Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 plain Material steel Outside diameter 38"

Length of plain part top 6.0" bottom 6.0" Thickness of plates crown 3/16" bottom 1/4" Description of longitudinal joint weld No. of strengthening rings yes

Working pressure of furnace by the rules 190 lbs Combustion chamber plates: Material steel Thickness: Sides 1/16" Back 5/16" Top 1/16" Bottom 1"

Pitch of stays to ditto: Sides 9 3/4 x 9 3/4" Back 9 x 7 1/2" Top 9 x 8 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 197 lbs

Material of stays steel Diameter at smallest part 1.79" Area supported by each stay 67.5 Working pressure by rules 238 lbs End plates in steam space:

Material steel Thickness 1 1/2" Pitch of stays 17 x 15" How are stays secured d.u.w. Working pressure by rules 185 lbs Material of stays steel

Diameter at smallest part 5.05 Area supported by each stay 255 Working pressure by rules 206 lbs Material of Front plates at bottom steel

Thickness 1 1/2" Material of Lower back plate steel Thickness 2 1/2" Greatest pitch of stays 13 1/4 x 9" Working pressure of plate by rules 192 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 1/2" Material of tube plates steel Thickness: Front 1 1/16" Back 1 1/16" Mean pitch of stays 9 x 13 1/2"

Pitch across wide water spaces 13 1/4" Working pressures by rules 235 lbs Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8 1/2 x 1 1/2"

Length as per rule 31" Distance apart 8 1/2" Number and pitch of stays in each 2-9"

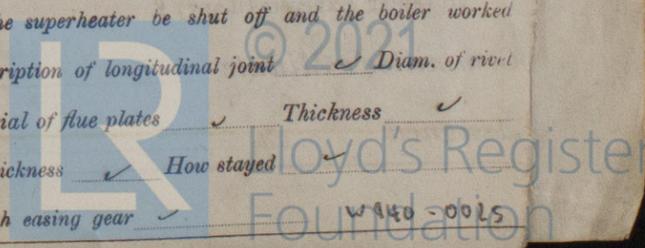
Working pressure by rules 185 lbs Superheater or Steam chest; how connected to boiler yes Can the superheater be shut off and the boiler worked separately yes

Diameter yes Length yes Thickness of shell plates yes Material yes Description of longitudinal joint yes Diam. of rivet holes yes

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

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

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



**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:— *2 stop end, 2 bottom end, 2 main bearing & 1 set of coupling bolts, 1 set feed and bilge pump valves, 1 main feed check valve, bolts & nuts assorted & iron of sizes*

The foregoing is a correct description,

Manufacturer.

MAC COLL & POLLOCK, LTD

*G. P. Pollock*  
Managing Director

Dates of Survey while building: During progress of work in shops— 07. *Mich. 4, 7, 25. Apr. 5, 9, 11, 12, 15, 17, 22, 25, 28, 29. May. 1, 2, 6, 8, 13, 15, 16, 24, 28, 30. June. 11, 7, 11.*

During erection on board vessel— 19. *25. July. 1, 2, 16, 18, 23, 30. Aug. 1, 7, 12, 14, 16, 17, 19, 22, 23.*

Total No. of visits *413* Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Cylinders *25.5.07* Slides *25.6.07* Covers *25.6.07* Pistons *13.5.07* Rods *9.4.07*

Connecting rods *6.5.07* Crank shaft *16.5.07* Thrust shaft *19.6.07* Tunnel shafts *19.6.07* Screw shaft *19.6.07* Propeller *19.6.07*

Stern tube *19.6.07* Steam pipes tested *16.8.07* Engine and boiler seatings *25.6.07* Engines holding down bolts *17.8.07*

Completion of pumping arrangements *22.8.07* Boilers fixed *14.8.07* Engines tried under steam *22.8.07*

Main boiler safety valves adjusted *22.8.07* Thickness of adjusting washers *Port 1/2" Starboard 1/4"*

Material of Crank shaft *Steel* Identification Mark on Do. *181 J.W.D.* Material of Thrust shaft *Steel* Identification Mark on Do. *17 J.H.M.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *59, 60 J.H.M.* Material of Screw shafts *Steel* Identification Marks on Do. *78 J.H.M.*

Material of Steam Pipes *Copper* Test pressure *400 lbs*

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *The Machinery of this vessel has been constructed under special survey, the workmanship and materials used are both of good quality, the Engines have been tried under steam & worked satisfactorily.*

*We beg to recommend that this vessel is eligible in our opinion to have the record **L.M.C. 07** in the Register Book*

It is submitted that this vessel is eligible for THE RECORD. **L.M.C. 8.07**

*J.P.M.*  
*16/9/07*

The amount of Entry Fee . . .	£ 1 : - : -	When applied for,
Special . . . . .	£ 12 : 3 : -	2.6.07 - 5.10.1907
Donkey Boiler Fee . . . . .	£ : : -	When received,
Travelling Expenses (if any) £	: : -	17.9.07

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

*James Barclay*

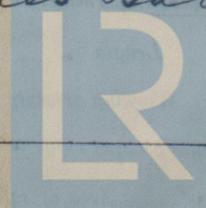
Committee's Minute

TUES. 17 SEP 1907

Assigned

*L.M.C. 8.07*

MACHINE WRITTEN CERTIFICATE



Lloyd's Register Foundation