

REPORT ON MACHINERY.

No. 23631

Port of Sunderland

Received at London Office

Made No 5413

FRI. 6 MAR 1908

MUN. 50 MAR 1908

No. in Survey held at Sunderland

Date, first Survey 11th Oct 1904 Last Survey 3rd March 1908

Reg. Book. on the Twin Screw Steamer "Baro"

(Pub) 25th Jan (Number of Visits 38) 20th Mar 1908

Tons { Gross Net }
When built 1908

Master Built at Middlesbrough By whom built Messrs W. Harkness & Sons Ltd

Engines made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1908

Boilers made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1908

Registered Horse Power _____ Owners _____ Port belonging to _____

Nom. Horse Power as per Section 28 132 Is Refrigerating Machinery fitted for cargo purposes _____ Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Inverted triple expansion (2 Sets) No. of Cylinders 3 to each No. of Cranks 3 to each

Dia. of Cylinders 13", 21", 34" Length of Stroke 24" Revs. per minute 100 Dia. of Screw shaft 6.5" 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

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 3.0 3/8"

Dia. of Tunnel shaft 6.21" Dia. of Crank shaft journals 6.53" Dia. of Crank pin 6.5" Size of Crank webs 4 3/4" x 1 1/2" Dia. of thrust shaft under

collars 6.7" Dia. of screws 2.9" Pitch of Screw 11.6" No. of Blades 4 State whether moveable No Total surface 25 1/2 to each

No. of Feed pumps one to each Diameter of ditto 3" Stroke 12" Can one be overhauled while the other is at work Yes

No. of Bilge pumps one to each Diameter of ditto 3" Stroke 12" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 7 x 4 x 6" + 3 x 6 x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 3 of 2" + 1 of 2 1/2" In Holds, &c. Two 2" fore hold Three 2" after hold.

No. of Bilge Injections 2 sizes 3" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes 2 1/2"

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

Dates of examination of completion of fitting of Sea Connections 11/2/08 of Stern Tube 19.2.08 Screw shaft and Propeller 19.2.08

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper platform

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

Total Heating Surface of Boilers 2265 Is Forced Draft fitted no No. and Description of Boilers 2 S.E. Cylindrical Mult?

Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs Date of test 16.1.08 No. of Certificate 2688

Can each boiler be worked separately Yes Area of fire grate in each boiler 36.6 sq ft No. and Description of Safety Valves to

each boiler 2 spring Area of each valve 3.97 sq in Pressure to which they are adjusted 165 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 11.6" Length 10.4" Material of shell plates steel

Thickness 15/16" Range of tensile strength 20/32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d. r. lap.

long. seams l. r. d. b. s. Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 7 3/16" Lap of plates or width of butt straps 15 5/8"

Per centages of strength of longitudinal joint rivets 97.8 Working pressure of shell by rules 176.59 lbs Size of manhole in shell 19 x 14 1/2" Manhole 16 x 2

Size of compensating ring 15" flanged and Description of Furnaces in each boiler 2 Brown & Napier Material steel Outside diameter 41"

Length of plain part top _____ bottom _____ Thickness of plates crown 1/2" Description of longitudinal joint weld No. of strengthening rings ✓

Working pressure of furnace by the rules 169.7 lbs Combustion chamber plates: Material steel Thickness: Sides 11/16" Back 11/16" Top 11/16" Bottom 7/8"

Pitch of stays to ditto: Sides 9 1/2 x 10" Back 9 1/2 x 10" Top 9 1/2 x 9 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 171.7 lbs

Material of stays steel Diameter at smallest part 2.03" Area supported by each stay 95 sq in Working pressure by rules 192.3 lbs End plates in steam space:

Material steel Thickness 1" Pitch of stays 16 1/4 x 16 1/4" How are stays secured d. r. w. Working pressure by rules 164.5 lbs Material of stays steel

Diameter at smallest part 5.25" Area supported by each stay 272.25 sq in Working pressure by rules 192 lbs Material of Front plates at bottom steel

Thickness 25/32" Material of Lower back plate steel Thickness 15/16" Greatest pitch of stays 13 3/4 x 9 1/2" Working pressure of plate by rules 163.3 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 1/2" Material of tube plates steel Thickness: Front 25/32" Back 25/32" Mean pitch of stays 9 x 13 1/2"

Pitch across wide water spaces 14" Working pressures by rules 221 lbs Girders to Chamber tops: Material steel Depth and

thickness of girder at centre 7 1/2 x 15 1/8" Length as per rule 27 1/2" Distance apart 9 7/8" Number and pitch of stays in each 2-9 1/2"

Working pressure by rules 161 lbs Superheater or Steam chest; how connected to boiler _____ 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 ✓

Lloyd's Register Foundation
w1121-0126

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:— Propeller shaft, 2 Propellers, 1 H. Valve spindle, 1 L.P. Valve spindle, 2 sets Crank pin braces, 2 top end, 2 bottom end, 2 main bearings & 1 set of coupling bolts, 1 Air pump rod, 1 set feed and bilge pump valves, 1 set piston pins for each piston, Bolts & Nuts assorted and iron of sizes

The foregoing is a correct description,

Manufacturer.

Hugo MacColl
Managing Director

1908:-
Dates of Survey while building
During progress of work in shops - 1907: Oct 11, 16, 23, 29, Nov: 4, 8, 11, 14, 20, 25, 28 Dec: 3, 5, 11, 13, 16, 18, 20, 24, 30, Jan: 3, 4, 11, 13, 15, 16, 22, 29, 31,
During erection on board vessel - Feb: 11, 14, 19, 21, 24, 25, 24, 29, (Mdb) 1908 Jan 25, Feb 11, Mar 20
Total No. of visits 38. (Mdb) 3
Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders 25.11.07 Slides 28.11.07 Covers 20.11.07 Pistons 3.12.07 Rods 5.12.07
Connecting rods 16.12.07 Crank shaft 16.12.07 Thrust shaft 11.12.07 Tunnel shafts 13.1.08 Screw shaft 17.2.08 Propeller 22.1.08
Stern tube 25.11.07 Steam pipes tested 21 & 24.2.08 Engine and boiler seatings 17.2.08 Engines holding down bolts 21.2.08
Completion of pumping arrangements 19.2.08 Boilers fixed 21.2.08 Engines tried under steam 29.2.08
Main boiler safety valves adjusted 29.2.08 Thickness of adjusting washers P.S. 3/8", P.P. 13/32", S.S. 3/8", S.P. 11/32"
Material of Crank shaft Steel Identification Mark on Do. 196 J.W.D. Material of Thrust shaft Steel Identification Mark on Do. 6002 J.M. 45 R.M.
Material of Tunnel shafts Steel Identification Marks on Do. 3679, 3680, 3681 Material of Screw shafts Steel Identification Marks on Do. 3660, 3671 K.M. 598 R.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 ahead & astern and worked satisfactorily

We beg to recommend that this vessel is eligible in our opinion to have the record **L.M.C. 3-08** in the Register Book

It is submitted that this vessel is eligible for **THE RECORD. L.M.C. 3.08.**

ELEC. LIGHT. 30.3.08.

The amount of Entry Fee.	£ 2 : 0 : 0	When applied for,	
Special	£ 19 : 19 : 0	5.3.08	
Donkey Boiler Fee	£ : : :	When received,	
Travelling Expenses (if any)	£ : : :	14.3.08	

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

Committee's Minute
Assigned
TUES 31 MAR 1908
+ L.M.C. 308
elec. light



MACHINERY CERTIFICATE WRITTEN.

Sunderland.

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