

REPORT ON MACHINERY.

Port of Sunderland

Received at London Office WED. APL 9 1902

No. in Survey held at Sunderland Date, first Survey 11th Sept 1901 Last Survey 27th March 1902
Reg. Book. (Number of Visits 16)

on the Screw Steamer "Embircos." Tons { Gross 2811
Net 1993
When built 1902

Master M. Embircos Built at Sunderland By whom built J. Blumer & Co

Engines made at Sunderland By whom made J. De Kinson & Sons Ltd when made 1902

Boilers made at Sunderland By whom made J. Dickinson & Sons Ltd when made 1902

Registered Horse Power _____ Owners S. & M. Embircos Port belonging to R. E. Andros.

Nom. Horse Power as per Section 28 260 Is Refrigerating Machinery fitted no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 23-28-62 Length of Stroke 42 Revs. per minute 70 Dia. of Screw shaft 12.5 Lgh. of stern bush 4'-3"
 as per rule 11.05 as fitted 11.3 as per rule 11.86 as fitted 11.3

Dia. of Tunnel shaft 11.3/4 Dia. of Crank shaft journals 11.3/4 Dia. of Crank pin 11.3/4 Size of Crank webs Natural Dia. of thrust shaft under collars 11.3/4 Dia. of screw 15-9 Pitch of screw 16'-9" No. of blades 4 State whether moveable no Total surface 680 feet

No. of Feed pumps Two Diameter of ditto 3 1/4" Stroke 21" Can one be overhauled while the other is at work yes

No. of Bilge pumps Two Diameter of ditto 4 1/4" Stroke 21" Can one be overhauled while the other is at work yes

No. of Donkey Engines Two Sizes of Pumps 7 1/2 x 4 1/2 x 7. Coupled feed No. and size of Suctions connected to both Bilge and Donkey pumps 8 x 7 x 9 Ballant

In Engine Room Two 3" Engine room In Holds, &c. Two 3" in each hold
Two-3" Stokehold

No. of bilge injections 1 sizes 4 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 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

When were stern tube, propeller, screw shaft, and all connections examined in dry dock never 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) Total Heating Surface of Boilers 4118 Is forced draft fitted no

No. and Description of Boilers Two S.E. Q. 1st Multitubular Working Pressure 160 lb Tested by hydraulic pressure to 320 lb

Date of test _____ Can each boiler be worked separately yes Area of fire grate in each boiler 55 1/2 ft² No. and Description of safety valves to each boiler Two direct spring Area of each valve 8.3 Pressure to which they are adjusted 165 lb Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 15'-0" Length 10'-6" Material of shell plates Steel

Thickness 13/32 Range of tensile strength 28-32 Are they welded or flanged no Descrip. of riveting: cir. seams S.P. Lap long. seams N.A.D.B.S

Diameter of rivet holes in long. seams 1 3/16 Pitch of rivets 8 3/16 Lap of plates or width of butt straps 17 5/8

Per centages of strength of longitudinal joint rivets 91.9 Working pressure of shell by rules 160 lb Size of manhole in shell 16 x 12
 plate 85.5

Size of compensating ring 8 3/8 x 13 1/2 No. and Description of Furnaces in each boiler 3 plain Material Steel Outside diameter 3'-6"

Length of plain part top 4.1 Thickness of plates crown 4.4 Description of longitudinal joint Weld No. of strengthening rings yes
 bottom 6.4

Working pressure of furnace by the rules 162 lb Combustion chamber plates: Material Steel Thickness: Sides 5/8 Back 1/16 Top 5/8 Bottom 1/8

Pitch of stays to ditto: Sides 9 1/2 x 9 1/2 Back 10 x 9 1/2 Top 9 1/2 x 9 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 162 lb

Material of stays Steel Area at smallest part 2.03 Area supported by each stay 10 x 9 1/2 Working pressure by rules 167 End plates in steam space: Material Steel Thickness 1 1/32 Pitch of stays 16 1/2 x 18 1/4 How are stays secured S. Nut Working pressure by rules 168 lb Material of stays W. Iron

Area at smallest part 6.7 Area supported by each stay 16 1/2 x 18 1/4 Working pressure by rules 167 Material of Front plates at bottom Steel

Thickness 3/4 Material of Lower back plate Steel Thickness 1 1/16 Greatest pitch of stays 13 1/4 x 10 Working pressure of plate by rules 142

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

Pitch across wide water spaces 15 1/4 Working pressures by rules 195 lb Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/2 x 3/4 (2) Length as per rule 30 1/16 Distance apart 9 1/8 Number and pitch of Stays in each 2 of 9 1/2 pitch

Working pressure by rules 161 lb 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— No. *one* Description *Cylindrical multitubular (two plain furnaces)*
 Made at *Gunderland* By whom made *John Dickinson & Sons Ltd* When made *8.2.02* Where fixed *on deck*
 Working pressure *80* tested by hydraulic pressure to *160* No. of Certificate *2015* Fire grate area *22 1/2* Description of safety valves *direct spring*
 No. of safety valves *2* Area of each *7.0* Pressure to which they are adjusted *80 lb* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
 Dia. of donkey boiler *9'-0"* Length *8'-6"* Material of shell plates *Steel* Thickness *1/2"* Range of tensile strength *28/32* Descrip. of riveting long. seams *in Riv Rap* Dia. of rivet holes *1 1/8"* Whether punched or drilled *D* Pitch of rivets *3 1/8"*
 Lap of plating *5 1/8"* Per centage of strength of joint *76.5%* Rivets *17.2%* Thickness of shell *cross* plates *6H* Radius of do. *pitch* No. of Stays to do. *16 1/2 x 16 1/2*
 Dia. of stays *(2) 2 1/8" washer riveted + 2 1/8" dia* Diameter of furnace *For 2'-6"* Bottom *✓* Length of furnace *5'-6"* Thickness of furnace plates *3/32* Description of joint *weld* Thickness of furnace *cross* plates *1/2* Stayed by *1 1/4" S.S. + 1 3/8" riveted 9x8 1/2"* Working pressure of shell by rules *86 lb*
 Working pressure of furnace by rules *88 lb* Diameter of uptake *3 1/4"* Thickness of uptake plates *5.4 1/2 3 1/2 1/16* Thickness of water tubes *1/4" pitch 13 1/2"*

SPARE GEAR. State the articles supplied: *Two top end bolts and nuts, two bottom end bolts and nuts two main bearing bolts and nuts, set of coupling bolts and nuts, spare feed and bilge pump valves, assorted iron bolts and nuts - spare propeller.*

The foregoing is a correct description,
John Dickinson & Sons, Limited. Manufacturer.

Director. *1901 - Sept. 11, 12, 15, 19, Oct. 17, 30, Nov. 7, 12, 19, 1902 - Jan. 28, Feb. 8, 14, Mar. 6, 7, 11, 27.*
 Dates of Survey while building: During progress of work in shops - - - - -
 During erection on board vessel - - - - -
 Total No. of visits *16*
 Is the approved plan of main boiler forwarded herewith *no*
 " " " donkey " " " *no*

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

Material of screw shaft *iron - iron* 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
 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 *✓*
 If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The machinery built under Special Survey the material and workmanship found good and efficient
The main boilers and steam pipes tested under hydraulic pressure to 320 lb per square inch, the donkey boiler tested under hydraulic pressure to 160 lb and were found sound and efficient in every respect at these pressures
The Engines tried under steam at their working pressures and found Satisfactory -
In my opinion this vessel is worthy of the notification of R.M.C. 3.02. to be made in the Register Book -

It is submitted that this vessel is eligible for THE RECORD + LMC 3.02

The amount of Entry Fee.	£	2	:	When applied for,	3.4.1902
Special	£	33	3	When received,	4.4.1902
Donkey Boiler Fee	£		:		
Travelling Expenses (if any) £			:		

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

Committee's Minute
 Assigned *+ L.M.C. 3.02*

FRI, 11 APL 1902



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Certificate (if required) to be sent to the Registrar of Shipping (to be sent to the Registrar of Shipping)