

# REPORT ON MACHINERY.

Port of Newcastle.

Received at London Office UES. 23 SEP 1902

No. in Survey held at Newcastle. Date, first Survey Nov. 24 Last Survey Sep 12 1902  
Reg. Book. (Number of Visits 27)

on the S/S "Gracchus"

Master W. Smith Built at Jarrow By whom built Palmer & Co Ltd Tons { Gross 3750  
Net 2360

Engines made at Jarrow By whom made Palmer & Co Ltd When built 1902

Boilers made at " By whom made " when made 1902

Registered Horse Power \_\_\_\_\_ Owners Archibald Burns & Co when made 1902

Nom. Horse Power as per Section 28 483 Is Refrigerating Machinery fitted No. Is Electric Light fitted yes. Port belonging to Melbourne.

ENGINES, &c. — Description of Engines In C.P.D. No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 27" 4 5/8" Length of Stroke 48 Revs. per minute 78 Dia. of Screw shaft as per rule 15" Dia. of Tunnel shaft as fitted 13 5/8" Dia. of Crank shaft journals as per rule 14" 0/8 Dia. of Crank pin 1 1/4" Dia. of thrust shaft under

Collars 1 1/4" Dia. of screw 18" 3/8" Pitch of screw 18" 6" No. of blades 4 State whether moveable yes Total surface 86.5 sq

No. of Feed pumps 2 Diameter of ditto 4" Stroke 27" Can one be overhauled while the other is at work yes.

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 27" Can one be overhauled while the other is at work yes.

No. of Donkey Engines three Sizes of Pumps 11" x 11" x 12" 7 1/2" x 5" x 8" 6" x 5 3/4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room three of 3 1/2" In Holds, &c. nos 1-2-3 two of 3 1/2" 2 1/4-3 of

No. of bilge injections 1 sizes 6" Connected to condenser, or to circulating pump C.P.D. Is a separate donkey suction fitted in Engine room & size 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 none

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 new vessels 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 6768 sq Is forced draft fitted yes.

No. and Description of Boilers 3 Mult. H. S. & C. Working Pressure 180 Tested by hydraulic pressure to 360

Date of test 14.5.02 Can each boiler be worked separately yes. Area of fire grate in each boiler 50.5 sq No. and Description of safety valves to

each boiler 2 Spring Area of each valve 7.06. Pressure to which they are adjusted 185 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork about 20" Mean dia. of boilers 13 9/16" Length 11 ft Material of shell plates S.

Thickness 1 1/2" Range of tensile strength 29-32 Are they welded or flanged end Descrip. of riveting: cir. seams D.R. long. seams D. Butt.

Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 3/4" Lap of plates or width of butt straps 19 1/2"

Percentages of strength of longitudinal joint rivets 85 Working pressure of shell by rules 202 1/2 Size of manhole in shell END 16 x 12"

Area of compensating ring flanged. No. and Description of Furnaces in each boiler 3 depth Material S. Outside diameter 3 5/8"

Length of plain part top 29 Thickness of plates crown 2 1/2" Description of longitudinal joint welded. No. of strengthening rings -

Working pressure of furnace by the rules 183 Combustion chamber plates: Material S. Thickness: Sides 5/8 3/32 Back 5/8 3/32 Top 5/8 3/32 Bottom 3/4 3/32

Choice of stays to ditto: Sides 9 x 8 1/4 Back 9 x 8 3/4 Top 9 1/4 x 8 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 186

Material of stays S. Diameter at smallest part 2 1/8" Area supported by each stay 88.6" Working pressure by rules 240 End plates in steam space:

Material S. Thickness 1 1/2 3/32 Pitch of stays 18" x 16" How are stays secured a nuts Working pressure by rules 242 Material of stays S.

Diameter at smallest part 5 7/8 Area supported by each stay 288 1/2 Working pressure by rules 200 Material of Front plates at bottom S.

Thickness 1 1/16 Material of Lower back plate S. Thickness 7/8 3/32 Greatest pitch of stays 14" Working pressure of plate by rules 185 1/2

Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 5/8 Material of tube plates S. Thickness: Front 1 1/16 Back 1 3/16 3/32 Mean pitch of stays 7 3/8"

Thickness across wide water spaces 13 1/2 Working pressures by rules 185 Girders to Chamber tops: Material S. Depth and

Thickness of girder at centre 8 1/4 x 15" Length as per rule 27 1/2" Distance apart 9 1/4" Number and pitch of Stays in each 2 @ 8 1/2"

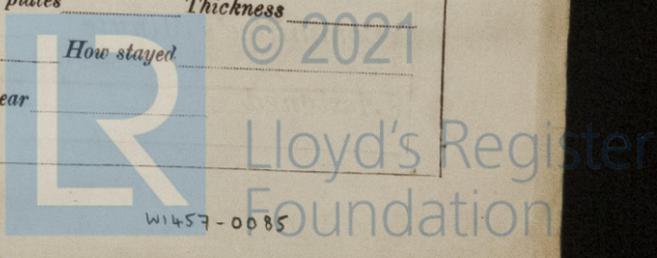
Working pressure by rules 252 1/2 Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked

separately \_\_\_\_\_ Diameter \_\_\_\_\_ Length \_\_\_\_\_ Thickness of shell plates \_\_\_\_\_ Material \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_

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

Are they fitted 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. \_\_\_\_\_ Description \_\_\_\_\_

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

Working pressure tested by hydraulic pressure to \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of safety valves \_\_\_\_\_

No. of safety valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ 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 \_\_\_\_\_ 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 \_\_\_\_\_

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

Working pressure of furnace by rules \_\_\_\_\_ Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— *2 main bearing bolts & nuts. 2 top end bolts & nuts. 2 bottom end bolts & nuts. 1 re-coupling bolt. 1 feed the pump valves. 4 prop. blades. 1 set rings for each piston. prop. shaft. 2 safety valve springs.*

*Patersons Shipbuilding & Iron Co. Ltd.*  
 the foregoing is a correct description,  
 Manufacturer.

**Engine Works Manager**

Dates of Survey while building: During progress of work in shops— *1902. Mar. 27. Apr. 5. 10. 15. 20. 25. 29. June 2. 5. 6. 9. 10. 12. 23. July 7. 10. 16. 24. 25. 28. Aug.*

During erection on board vessel— *6. 8. 13. 19. 21. 25. Sept. 5. 9. 10. 11. 12.*

Total No. of visits *34.*

Is the approved plan of main boiler forwarded herewith *yes*

“ “ “ donkey “ “ “ *yes*

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

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 ✓

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 ✓

*Machinery and boilers constructed under Special Survey. Materials and workmanship good and efficient. Engines and boilers examined under steam and found satisfactory. In my opinion this vessel is now eligible for the record in the Register Book of T.L.M.C. 9.02.*

Certificate (if required) to be sent to Newcastle-on-Tyne.

It is submitted that this vessel is eligible for THE RECORD. *T.L.M.C. 9.02. FD. Elec. light.*

*CM. 25.9.02*

*J.S.*  
*24.9.02*

The amount of Entry Fee £ *3* : : : When applied for, *22 SEP 1902*

Special .. £ *44* : : : When received, *18/10/02*

Donkey Boiler Fee .. £ : : : *18/10/02*

Travelling Expenses (if any) £ : : : *18/10/02*

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

Committee's Minute *FRI. 26 SEP 1902*

Assigned *+ T.L.M.C. 9.02*

*F. D. Elect. light.*

MACHINERY CERTIFICATE WRITTEN.

