

REPORT ON MACHINERY.

No. 15026.

Port of *Greenock*

TUES. APR 23 1907

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19

No. in Survey held at *Port Glasgow*Date, first Survey *12th Nov. 1906* Last Survey *16th April 1907*

Reg. Book.

(Number of Visits *44*.)on the **SCREW STEAMER MAKAMBO.**Master *Williams* Built at *Port Glasgow* By whom built *Clyde S.B. & Eng. 6th dim.* When built *1904*Engines made at *Port Glasgow* By whom made *Clyde S.B. & Eng. 6th dim.* when made *1904*Boilers made at *Port Glasgow* By whom made *Clyde S.B. & Eng. 6th dim.* when made *1904*Registered Horse Power Owners *Burns, Philp & Co.* Port belonging to *Sydney*Nom. Horse Power as per Section 28 *145* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*ENGINES, &c.—Description of Engines *Triple Expansion* No. of Cylinders *Three* No. of Cranks *Three*Dia. of Cylinders *17-27-45* Length of Stroke *53* Revs. per minute *100* Dia. of Screw shaft as per rule *9.6* 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 tightin 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 partbetween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *Yes* If twoliners are fitted, is the shaft lapped or protected between the liners Length of stern bush *41*Dia. of Tunnel shaft as per rule *8.63* Dia. of Crank shaft journals as per rule *9.08* Dia. of Crank pin *9.4* Size of Crank webs *6x17* Dia. of thrust shaft undercollars *9.4* Dia. of screw *11.6* Pitch of Screw *12.6* No. of Blades *4* State whether movable *No* Total surface *41.59* sq. ft.No. of Feed pumps *2* Diameter of ditto *2.2* Stroke *15* Can one be overhauled while the other is at work *Yes*No. of Bilge pumps *2* Diameter of ditto *2.2* Stroke *15* Can one be overhauled while the other is at work *Yes*No. of Donkey Engines *Four* Sizes of Pumps *5x3.5x6 (7x4x8) (4x3.5x5)* No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room *Four 2.2 dia.* In Holds, &c. *Forward Hold Two 2.2 dia.**After Hold Two 3.2 dia. Tunnel Mill One 2.2 dia.*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 2.2*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 *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 *13/3/07* of Stern Tube *5/3/07* Screw shaft and Propeller *13/3/07*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 *Clydebridge Steel 6.7 dim.*Total Heating Surface of Boilers *2482* sq. ft. Is Forced Draft fitted *No* No. and Description of Boilers *Two: Cylindrical Multi Single Ended*Working Pressure *180 lb.* Tested by hydraulic pressure to *360 lb.* Date of test *6/3/07* No. of Certificate *815*Can each boiler be worked separately *Yes* Area of fire grate in each boiler *42* sq. ft. No. and Description of Safety Valves toeach boiler *2: Over Spring* Area of each valve *4.9* Pressure to which they are adjusted *185 lb.* Are they fitted with easing gear *Yes*Smallest distance between boilers or uptakes and bunkers or woodwork *12* Mean dia. of boilers *12.6* Length *10.0* Material of shell plates *Steel*Thickness *1.8* Range of tensile strength *28.5 to 32 tons* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *Lap Double*long. seams *Butt Strap* Diameter of rivet holes in long. seams *1.3* Pitch of rivets *8* Lap of plates on width of butt straps *1.4*Per centages of strength of longitudinal joint rivets *91.5* Working pressure of shell by rules *201 lb.* Size of manhole in shell *16" x 12"*Size of compensating ring *33x27x1.8* No. and Description of Furnaces in each boiler *2: Dightons* Material *Steel* Outside diameter *50*Length of plain part top *7.10* Thickness of plates crown *1.9* Description of longitudinal joint *Weld* No. of strengthening rings *None*bottom *7.10* Thickness of plates bottom *3.2* Working pressure of furnace by the rules *188 lb.* Combustion chamber plates: Material *Steel* Thickness: Sides *3.2* Back *8* Top *3.2* Bottom *7.6*Pitch of stays to ditto: Sides *8.5 x 7.2* Back *9 x 8* Top *8.5 x 9* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *188 lb.*Material of stays *Steel* Diameter at smallest part *1.5* Area supported by each stay *42* Working pressure by rules *196 lb.* End plates in steam space:Material *Steel* Thickness *1.5* Pitch of stays *18 x 14.8* How are stays secured *With nuts* Working pressure by rules *184 lb.* Material of stays *Steel*Diameter at smallest part *2.76* Area supported by each stay *322* Working pressure by rules *213 lb.* Material of Front plates at bottom *Steel*Thickness *1.3* Material of Lower back plate *Steel* Thickness *1.6* Greatest pitch of stays *1.3* Working pressure of plate by rules *186 lb.*Diameter of tubes *3.4* Pitch of tubes *4.3 x 4.2* Material of tube plates *Steel* Thickness: Front *1.5* Back *3.4* Mean pitch of stays *9*Pitch across wide water spaces *14.4* Working pressures by rules *236 lb.* Girders to Chamber tops: Material *Steel* Depth andthickness of girder at centre *8.5 x 1.2* Length as per rule *27.8* Distance apart *9* Number and pitch of stays in each *2: 8.5*Working pressure by rules *225 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

VERTICAL DONKEY BOILER—Manufacturers of Steel *Spencer & Sons Ltd.*

No. *One* Description *Vertical with three cross water tubes.*
 Made at *Stockton* By whom made *Ally Bros. (Boilermakers) Ltd.* When made *1907* Where fixed *In Stockton*
 Working pressure *100 lb* tested by hydraulic pressure to *200 lb* Date of test *19/3/07* No. of Certificate *3878* Fire grate area *23 1/2* Description of Safety
 Valves *Three Spring* No. of Safety Valves *2* Area of each _____ Pressure to which they are adjusted *100 lb* Date of adjustment *2/4/07*
 If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *See report* Length attached _____
 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:— *1/2 Crank shaft, 1 Propeller shaft, 1 set Crank pin Bushes, 1 set*
44 piston valve rings, 1 Thrust shoe, 12 Condenser tubes, 2 main Bearing Bolts, 2 Crank pin Bolts,
2 Crosshead Bolts, 1 set Coupling Bolts, 1 Safety valve Spring, 6 Boiler tubes, Propeller, Bolt & nut
Iron granon sign, 1 Slide Spindle, 1 Feed pump plunger, 1 Belgi pump plunger, 1 Air pump rod,
extra set Feed Pump and Air pump valves, 1 set valves for auxiliary
pumps.

The foregoing is a correct description,

John Brown

Manufacturer.

Director.

Dates of Survey while building
 During progress of work in shops— *1906. Nov. 12. 27. 29. Dec. 3. 4. 6. 7. 14. 19. 20. 26. 28. 1907. Jan. 11. 14. 16. 18. 22.*
 During erection on board vessel— *30. Feb. 6. 12. 13. 15. 18. 20. 21. 27. March 5. 6. 8. 13. 18. 20. 21. 23. 25. 26. 29. April 2. 4. 5. 9. 11. 13. 16.*
 Total No. of visits *44.* Is the approved plan of main boiler forwarded herewith *Yes.*

Dates of Examination of principal parts—Cylinders *13/4/07* Slides *13/4/07* Covers *13/4/07* Pistons *8/3/07* Rods *8/3/07*
 Connecting rods *8/3/07* Crank shaft *13/2/07* Thrust shaft *22/1/07* Tunnel shafts *22/1/07* Screw shaft *13/3/07* Propeller *13/3/07*
 Stern tube *5/3/07* Steam pipes tested *26/3/07* Engine and boiler seatings *4/4/07* Engines holding down bolts *4/4/07*
 Completion of pumping arrangements *4/4/07* Boilers fixed *4/4/07* Engines tried under steam *13/4/07*
 Main boiler safety valves adjusted *2/4/07* Thickness of adjusting washers *Boiler 1 1/2" 5/16" 3/16" 1/8" 1/16" 1/32" 1/64" 1/128" 1/256" 1/512" 1/1024" 1/2048" 1/4096" 1/8192" 1/16384" 1/32768" 1/65536" 1/131072" 1/262144" 1/524288" 1/1048576" 1/2097152" 1/4194304" 1/8388608" 1/16777216" 1/33554432" 1/67108864" 1/134217728" 1/268435456" 1/536870912" 1/1073741824" 1/2147483648" 1/4294967296" 1/8589934592" 1/17179869184" 1/34359738368" 1/68719476736" 1/137438953472" 1/274877906944" 1/549755813888" 1/1099511627776" 1/2199023255552" 1/4398046511104" 1/8796093022208" 1/17592186044416" 1/35184372088832" 1/70368744177664" 1/140737488355328" 1/281474976710656" 1/562949953421312" 1/1125899906842624" 1/2251799813685248" 1/4503599627370496" 1/9007199254740992" 1/18014398509481984" 1/36028797018963968" 1/72057594037927936" 1/144115188075855872" 1/288230376151711744" 1/576460752303423488" 1/1152921504606846976" 1/2305843009213693952" 1/4611686018427387904" 1/9223372036854775808" 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