

REPORT ON MACHINERY.

No. 15026.

Port of Greenock

TUES. APL 23 1907

Received at London Office

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 9.6 Material of 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 _____ If two

liners are fitted, is the shaft lapped or protected between the liners _____ Length of stern bush 41

Dia. of Tunnel shaft 8.63 Dia. of Crank shaft journals 9.08 Dia. of Crank pin 9.4 Size of Crank webs 6x17 Dia. of thrust shaft under

collars 9.4 Dia. of screw 11.6 Pitch of Screw 12.6 No. of Blades 4 State whether moccable No. Total surface 4159 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 pumps

In 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 _____

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 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 6th dim.

Total Heating Surface of Boilers 2482 ft² Is Forced Draft fitted No. No. and Description of Boilers Two: Cylind. Mult. 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 to

each 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 Straps Diameter of rivet holes in long. seams 1.76 Pitch of rivets 8 1/4 Lap of plates on width of butt straps 1 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 33 x 27 x 1.8 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 Field No. of strengthening rings None

Working pressure of furnace by the rules 188 lb. Combustion chamber plates: Material Steel Thickness: Sides 3/32 Back 8 Top 3/32 Bottom 7/64

Pitch of stays to ditto: Sides 8 1/2 x 7/4 Back 9 x 8 Top 8 1/2 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 1/2 Area supported by each stay 42 Working pressure by rules 196 lb. End plates in steam space:

Material Steel Thickness 1 1/32 Pitch of stays 18 x 14 1/2 How are stays secured With nuts Working pressure by rules 184 lb. Material of stays Steel

Diameter at smallest part 2 1/16 Area supported by each stay 322 Working pressure by rules 213 lb. Material of Front plates at bottom Steel

Thickness 1 3/16 Material of Lower back plate Steel Thickness 1 3/16 Greatest pitch of stays 1 1/2 Working pressure of plate by rules 186 lb.

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

Pitch across wide water spaces 14 1/4 Working pressures by rules 236 lb. Girders to Chamber tops: Material Steel Depth and

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

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 House Lim.*

No. *One* Description *Vertical with three cross water tubes.*
Made at *Stockton* By whom made *Ally Bros. (Boilermakers) Lim.* 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 *578* Fire grate area *2.3 sq ft* 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 HP. piston valve rings, 1 Thrust shaft, 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 sigs, 1 Slide spindle, 1 Feed pump plunger, 1 Belge pump plunger, 1 Air pump rod, Extra set Feed Selp and Air pump valves, 1/2 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 *Port PL. 7/8 5/16 3/4 1/2 1/4 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 1/18446744073709551616 1/36893488147419103232 1/73786976294838206464 1/147573952589676412928 1/295147905179352825856 1/590295810358705651712 1/1180591620717411303424 1/2361183241434822606848 1/4722366482869645213696 1/9444732965739290427392 1/18889465931478580854784 1/37778931862957161709568 1/75557863725914323419136 1/151115727451828646838272 1/302231454903657293675544 1/604462909807314587351088 1/1208925819614629174702176 1/2417851639229258349404352 1/4835703278458516698808704 1/9671406556917033397617408 1/19342813113834066795234816 1/38685626227668133590469632 1/77371252455336267180939264 1/15474250491067253436187528 1/30948500982134506872375056 1/61897001964269013744750112 1/12379400392853802748950224 1/24758800785707605497900448 1/49517601571415210995800896 1/99035203142830421991601792 1/198070406285660843983203584 1/396140812571321687966407168 1/792281625142643375932814336 1/1584563250285286751865628672 1/3169126500570573503731257344 1/6338253001141147007462514688 1/12676506002282294014925029376 1/25353012004564588029850058752 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1/68056473384187703178209420992190464 1/136112946768375406356418841984380928 1/272225893536750812712837693976765456 1/5444517870735016254256753879535311104 1/10889035741470032508513507759070622208 1/21778071482940065017027015518141244416 1/43556142965880130034054031036282488832 1/87112285931760260068108062072564977664 1/174224571863520520136216124145129955328 1/348449143727041040272432248290259110656 1/696898287454082080544864496580518221312 1/1393796574908164161089728993161036442624 1/2787593149816328322179457866322072885248 1/557518629963265664435891573264415377088 1/1115037259926531328871783146528830754176 1/223007451985306265774356629305766150832 1/4460149039706125315487132586115323016164 1/892029807941225063097426517222646032328 1/1784059615882450126194853034453292064656 1/3568119231764900252389706068906584131312 1/7136238463529800504779412137813168262624 1/14272476927059601009558824275626336452448 1/28544953854119202019117648551252672904896 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