

REPORT ON MACHINERY.

TUES. JUL 30 1901

Port of *Sunderland*

Received at London Office

13

No. in Survey held at *Sunderland* Date, first Survey *21st Feb'y* Last Survey *24th July 1901*
 Book. *S. S. "Gratia"* Number of Visits *30*
 (sup) on the *S. S. "Gratia"* Tons { Gross *1889*
 Net *1174*
 Master *A. T. Sko* Built at *Sunderland* By whom built *Strand Slipway Co.* When built *1901*
 Engines made at *Sunderland* By whom made *George Clark & Co.* when made *1901*
 Boilers made at *Sunderland* By whom made *George Clark & Co.* when made *1901*
 Registered Horse Power Owners *Hucksher & Sons* Port belonging to *Copenhagen*
 Horse Power as per Section 28 *174* Is Refrigerating Machinery fitted *No* Is Electric Light fitted *No*

GINES, &c.—Description of Engines *Triple - Expansion* No. of Cylinders *3* No. of Cranks *3*
 of Cylinders *19 1/2" 32 1/2" 53"* Length of Stroke *36"* Revs. per minute *70* Dia. of Screw shaft as per rule *10 1/16"*
 as fitted *11 3/8"* Lgth. of stern bush *3'-10"*
 of Tunnel shaft as fitted *9 7/8"* Dia. of Crank shaft journals as fitted *9 1/8"* Dia. of Crank pin *10"* Size of Crank webs *15 x 7"* Dia. of thrust shaft under
 of 11" Dia. of screw *13'-6"* Pitch of screw *15'-0"* No. of blades *4* State whether moveable *No* Total surface *56.5 sq ft*
 of Feed pumps *2* Diameter of ditto *2 3/4"* Stroke *20"* Can one be overhauled while the other is at work *Yes*
 of Bilge pumps *2* Diameter of ditto *3 1/2"* Stroke *20"* Can one be overhauled while the other is at work *Yes*
 of Donkey Engines *2* Sizes of Pumps *7 1/4" x 9" 10 1/8" 5 1/4" 3 1/2" x 5"* No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room *Three of 2 1/2" dia.* In Holds, &c. *Two in each hold of 2 1/2" dia.*

of bilge injections *1* sizes *4"* Connected to condenser, or to circulating pump *B. T.* Is a separate donkey suction fitted in Engine room & size *Yes 4"*
 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*
 all connections with the sea direct on the skin of the ship *Yes* Are they Valves or Cocks *Both*
 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*
 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*
 pipes are carried through the bunkers *None* How are they protected *✓*
 all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times *Yes*
 the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges *Yes*
 were stern tube, propeller, screw shaft, and all connections examined in dry dock *New Vessel* Is the screw shaft tunnel watertight *Yes*
 fitted with a watertight door *Yes* worked from *Top platform*

ERS, &c.— (Letter for record *3*) Total Heating Surface of Boilers *2700 sq ft* Is forced draft fitted *No*
 and Description of Boilers *Two Single Ended Ordinary Marine* Working Pressure *160 lbs* Tested by hydraulic pressure to *220 lbs*
 of test *11-6-01* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *39.4 sq ft* No. and Description of safety valves to
 boiler *Two direct spring* Area of each valve *5.9 sq in* Pressure to which they are adjusted *160 lbs* Are they fitted with easing gear *Yes*
 test distance between boilers or uptakes and bunkers or woodwork *18"* Mean dia. of boilers *12'-3"* Length *10'-0"* Material of shell plates *S*
 stress *2 1/32"* Range of tensile strength *28 1/2-32* Are they welded or flanged *Flanged* Descrip. of riveting: cir. seams *D. R.* long. seams *J. R. D. R. S.*
 ter of rivet holes in long. seams *1"* Pitch of rivets *6 1/16"* Lap of plates on width of butt straps *1'-3 1/4"*
 ntages of strength of longitudinal joint rivets *96* Working pressure of shell by rules *160 lbs* Size of manhole in shell *16 x 13"*
 plate *85*
 compensating ring *8 3/4" x 7 1/8"* No. and Description of Furnaces in each boiler *2 Plain* Material *S* Outside diameter *44.5"*
 of plain part top *5'-9 1/4"* Thickness of plates crown *2 3/32"* Description of longitudinal joint *Welded* No. of strengthening rings *1/2 on bot*
 bottom *5'-6"* bottom *2 3/32"*
 ing pressure of furnace by the rules *164 lbs* Combustion chamber plates: Material *S* Thickness: Sides *1 1/16"* Back *2 1/32"* Top *1 1/16"* Bottom *1 1/16"*
 of stays to ditto: Sides *10"* Back *10 1/4"* Top *10"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *162 lbs*
 ial of stays *S* Diameter at smallest part *1.6"* Area supported by each stay *100 sq in* Working pressure by rules *196 lbs* End plates in steam space:
 ial *S* Thickness *1 1/16"* Pitch of stays *17 1/16 x 17 1/16"* How are stays secured *Nuts* Working pressure by rules *163 lbs* Material of stays *S*
 ter at smallest part *2.5"* Area supported by each stay *309 sq in* Working pressure by rules *163 lbs* Material of Front plates at bottom *S*
 ess *3 1/4"* Material of Lower back plate *S* Thickness *1 1/16"* Greatest pitch of stays *14"* Working pressure of plate by rules *166 lbs*
 ter of tubes *3 1/4"* Pitch of tubes *4 3/8"* Material of tube plates *S* Thickness: Front *1 1/16"* Back *2 3/32"* Mean pitch of stays *8 3/4"*
 across wide water spaces *14 1/4"* Working pressures by rules *160 lbs* Girders to Chamber tops: Material *S* Depth and
 ss of girder at centre *8 1/4" x 7 1/4" x 2"* Length as per rule *2'-8"* Distance apart *10"* Number and pitch of Stays in each *2 stays 10" p.*
 ing pressure by rules *161 lbs* Superheater or Steam chest; how connected to boiler *None* Can the superheater be shut off and the boiler worked
 ely *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivet
✓ Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thickness *✓*
 ned with rings *✓* Distance between rings *✓* Working pressure by rules *✓* End plates: Thickness *✓* How stayed *✓*
 ing pressure of end plates *✓* Area of safety valves to superheater *✓* Are they fitted with easing gear *✓*

DONKEY BOILER— No. 1 Description *Blakes Patent (wet back)*
Made at *Middlebro'* By whom made *Richardsons, Westgarth & Co* When made *18.5.01* Where fixed *Stokehold*
Working pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate *2480* Fire grate area *24 sq* Description of safety valves *direct spring*
No. of safety valves *1* Area of each *9.6 sq* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *7'-0"* Length *16'-0"* Material of shell plates *Steel* Thickness *15/32"* Range of tensile strength *27-32* Descrip. of welding long seams *D. R. Lap* Dia. of rivet holes *15/16"* Whether punched or drilled *drilled* Pitch of rivets *3"*
Lap of plating *4 7/8* Per centage of strength of joint *68.7* Thickness of shell crown plates *15/32"* Radius of do. *Unmpt.* of Stays to do. *✓*
Dia. of stays. *✓* Diameter of furnace Top *30"* Bottom *64"* Length of furnace *72"* Thickness of furnace plates *19/32"* Description of joint *Lap S. J.* Thickness of furnace crown plates *9/16"* Stayed by *1 1/2" off s. str. m. 12x10 1/2"* Working pressure of shell by rules *87.7 lbs*
Working pressure of furnace by rules *82.7 lbs* Diameter of *tubes* *2 3/4"* Thickness of *tube* plates *7/8"* Thickness of *water* tubes *7/16"*

SPARE GEAR. State the articles supplied: *Top and bottom end connecting rod, bolts and nuts, two main bearing bolts and nuts, one set of coupling bolts, feed and bilge pump valves, bolts, nuts, and iron assorted, propeller &c*

The foregoing is a correct description,

FOR GEORGE CLARK LIMITED.

Manufacturer. of *main Elgin boilers*

Dates of Survey { During progress of work in shops - *1901: Feb 21. Mar 8. 12. April 3. 10. 12. 15. 17. 19. 29. 30. May 3. 17. 20. 22.*
while building { During erection on board vessel - *23. June 5. 8. 11. 14. 17. 20. 22. 24. July 6. 9. 12. 17. 18. 24.*
Total No. of visits *30.*

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

donkey .. *No*

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

Material of screw shaft *Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *No*
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 *No*
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 *No*

The machinery of this vessel has been constructed under Special Survey. The material and workmanship being good and efficient, and the engines when tried under steam worked satisfactorily

The pumps, watertight doors, and steam steering gear are in good working order, and the main steam pipes have been tested by hydraulic pressure to 400 lbs per square inch.

In my opinion this vessel is eligible for the notification in the Register Book of * *L.M. 6.7-1901.*

It is submitted that this vessel is eligible for THE RECORD. *+ L.M. 6.7.01*

The amount of Entry Fee. £ *2.* When applied for, *29.7.01*
Special £ *26.* 2: {
Donkey Boiler Fee £ : {
Travelling Expenses (if any) £ : {
When received, *1.8.01*

Committee's Minute

FRI. AUG 2 1901

Assigned

+ L.M. 6.7.01

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



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MACHINERY CERTIFICATE
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