

# REPORT ON MACHINERY.

Port of Greenock Received at London Office 11th APL 22 1902

No. in Survey held at Port Glasgow Date, first Survey 15th Oct Last Survey 8th April 1902  
(Number of Visits 50)

Book 67 on the Screw Steamer Princess Louise Tons { Gross 541  
Net 352

Master A. Reid Built at Glasgow By whom built D. W. Henderson & Co When built 1888-4

Engines made at Port Glasgow By whom made Blyde Shipt & Engineer & Co Ltd when made 1902

Boilers made at Port Glasgow By whom made Blyde Shipt & Engineer & Co Ltd when made 1902

Registered Horse Power \_\_\_\_\_ Owners M. Langlands & Sons Port belonging to Glasgow

Indicated Horse Power as per Section 28 136 Is Refrigerating Machinery fitted No Is Electric Light fitted Yes

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

No. of Cylinders 17 Length of Stroke 33" Revs. per minute 80 Dia. of Screw shaft 9.6" Lgth. of stern bush 3' 10 1/2"

No. of Tunnel shaft 2 Dia. of Crank shaft journals 9 1/2" Dia. of Crank pin 9 1/2" Size of Crank webs 18 x 6" Dia. of thrust shaft under 9 1/2"

No. of Bilge pumps 2 Diameter of ditto 2 1/4" Stroke 18 1/4" Can one be overhauled while the other is at work Yes

No. of Donkey Engines one Sizes of Pumps As originally fitted No. and size of Suctions connected to both Bilge and Donkey pumps \_\_\_\_\_

Engine Room As originally fitted In Holds, &c. As originally fitted

No. of bilge injections 1 sizes 3 1/2" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room & size Yes

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 \_\_\_\_\_

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 24th March 02 Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Top platform in Engine room

BOILERS, &c. — (Letter for record B) Total Heating Surface of Boilers 2328 sq ft Is forced draft fitted No

No. and Description of Boilers one Cylindrical Single ended Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs

Date of test 6/2/02 Can each boiler be worked separately Yes Area of fire grate in each boiler 40 sq ft No. and Description of safety valves to \_\_\_\_\_

each boiler 2 Direct Spring Area of each valve 9.62 sq in Pressure to which they are adjusted 155 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork about 10" Mean dia. of boilers 16' 6" Length 11' 0" Material of shell plates Steel

Thickness 1 1/2" Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams double long. seams Double Butt Straps

Diameter of rivet holes in long. seams 1 3/32" Pitch of rivets 8 1/4" 4 1/6" Gap of plates or width of butt straps 1' 1/2"

Per centages of strength of longitudinal joint \_\_\_\_\_ Working pressure of shell by rules 181 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 26" x 32" x 1 1/2" No. and Description of Furnaces in each boiler 4 Purves Material Steel Outside diameter 43"

Length of plain part 7' 7" Thickness of plates 3" Description of longitudinal joint kneld No. of strengthening rings None

Working pressure of furnace by the rules 162 lbs Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 3/4"

Pitch of stays to ditto: Sides 8" x 8 1/4" Back 8" x 8" Top 8" x 8 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 163 lbs

Material of stays Steel Diameter at smallest part 1 1/8" Area supported by each stay 66 sq in Working pressure by rules 178 lbs End plates in steam space: \_\_\_\_\_

Material Steel Thickness 1 1/16" Pitch of stays 14 1/2" x 16" How are stays secured Double nuts Working pressure by rules 221 lbs Material of stays Steel

Diameter at smallest part 2 1/32" Area supported by each stay 280 sq in Working pressure by rules 187 lbs Material of Front plates at bottom Steel

Thickness 3/32" Material of Lower back plate Steel Thickness 25/32" Greatest pitch of stays 14" Working pressure of plate by rules 162 lbs

Diameter of tubes 3 1/2" Pitch of tubes 4 1/4" x 4 1/4" Material of tube plates Steel Thickness: Front 27/32" Back 7/8" Mean pitch of stays 9 1/4"

Pitch across wide water spaces 14 1/2" Working pressures by rules 281 lbs Girders to Chamber tops: Material Steel Depth and \_\_\_\_\_

thickness of girder at centre 9 1/2" x 1 1/2" Length as per rule 2' 8 1/2" Distance apart 8 1/4" Number and pitch of Stays in each 3' 8"

Working pressure by rules 217 lbs Superheater of Steam chest, not connected to boiler None Can the superheater be shut off and the boiler worked \_\_\_\_\_

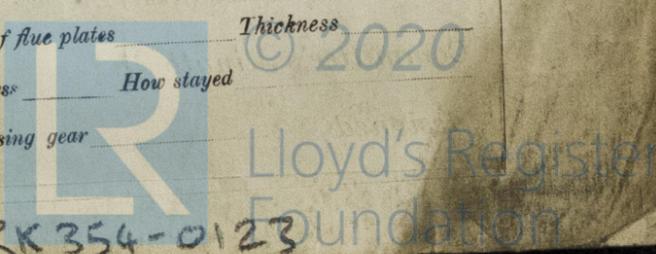
separately \_\_\_\_\_ Diameter \_\_\_\_\_ Length \_\_\_\_\_ Thickness of shell plates \_\_\_\_\_ Material \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ Diam. of rivet \_\_\_\_\_

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 \_\_\_\_\_

See Correspondence attached  
Shaft 9 1/2" with continuous lines now fitted 5 1/2"  
if fitted with continuous lines a new shaft with continuous lines - 9 1/2" dia.  
see letter from GRK 25.3.02  
WP in manhole not to exceed 150 lb with 1/2" increase



GRK 354-0123

**DONKEY BOILER**— No. *one* Description *Vertical, with 5 cross water tubes.*  
 Made at *Port Glasgow* By whom made *Bladeshipley & Co. 6" dia.* When made *1902* Where fixed *In Stokeloid.*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *568* Fire grate area *20 sq ft* Description of safety valves *Over Spring*  
 No. of safety valves *2* Area of each *4.9 sq ft* Pressure to which they are adjusted *82 lbs* If fitted with easing gear *Yes*. If steam from main boilers can enter the donkey boiler *No*. Dia. of donkey boiler *6' 3"* Length *19' 2 1/2"* Material of shell plates *Steel* Thickness *5/8"* Range of tensile strength *27-32* Descrip. of riveting long. seams *Butt Straps* Dia. of rivet holes *3/4"* Whether punched or drilled *Drilled* Pitch of rivets *3 1/2"*  
 Rivets *2 1/2" dia* Per centage of strength of joint *76.9* Thickness of shell crown plates *1 1/16"* Radius of do. *Flat* No. of Stays to do. *3*  
 Dia. of stays. *2"* Diameter of furnace Top *4' 7 1/8"* Bottom *5' 2 1/8"* Length of furnace *11' 0"* Thickness of furnace plates *9/16"* Description of joint *Welded S.S.* Thickness of furnace crown plates *5/8"* Stayed by *Dished to 4' 6" rad. & 4' 2" stays* Working pressure of shell by rules *129 lbs*  
 Working pressure of furnace by rules *80 lbs approx* Diameter of uptake *2 1/2"* Thickness of uptake plates *9/16"* Thickness of water tubes *7/16" & 1/2" dia.*

**SPARE GEAR.** State the articles supplied:— *2 Check valves, 2 Safety valve springs, 2 Relief valve springs, 2 sets Coupling Bolts & nuts, 2 Foot valves for air pump, 2 Bucket valves, 2 Delivery valves, 2 Feed pump valves & seats, 2 Relief pump valves & seats, 2 Crosshead Bolts & nuts, 2 Crank pin Bolts & nuts, 2 main Bearing Bolts & nuts, Ramelbottom Keys for Sp. Air Cyls.*  
 The foregoing is a correct description, Quantity of Iron assortment.

**THE CLYDE SHIPBUILDING & ENGINEERING CO., Manufacturer.**

*John D. ... Director*

Dates of Survey while building	During progress of work in shops—	1901. Oct 15. 21. 28. 30. Nov 4. 6. 8. 16. 21. 23. 27. 28. Dec 2. 5.
	During erection on board vessel—	9. 11. 13. 16. 18. 21. 24. 27. 1902. Jan 8. 10. 14. 21. 23. 27. 31. Feb 4. 6. 11. 13. 17. 19. 21. 25. 27. Mar 3. 7. 11. 19. 22. 24.
	Total No. of visits	25. 27. April 2. 4. 7. 8. — 50 —
	Dates of survey on sea-cocks, propeller & stern tube fastenings etc.	1902. Jan 24. 31. Feb 3. 5. 7. 13. 18. 21. March 4. 10. 19. 24. — 10 —
		Is the approved plan of main boiler forwarded herewith <i>Yes.</i>
		" " " donkey " " " <i>Yes.</i>

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

Material of screw shaft 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  
 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 *Yes.*

The Engines and Boilers of this vessel have been built under Special Survey and the materials and workmanship are good.

All sea cocks and valves and the propeller and stern tube fastenings were examined and found in good condition. The diameter of the stern bush was found to be worn so slightly, as not to require renewal. The propeller and intermediate shafts originally fitted have been retained and on examination were found in good condition. Their present dimensions are given herein. A new propeller shaft of a size required by the new Rules is now being prepared and will be fitted at the earliest opportunity. Inasmuch as the pressure of the main Boiler has been fixed at 150 lbs per sq. inch as per Secretary's letter of the 27<sup>th</sup> ult.

On completion of the work the Engines were examined when working under full power and were found to run satisfactorily. The machinery throughout is now in good and efficient condition and eligible in my opinion to have the records of *A. 8. 4. 02.* and *L. M. 6. 4. 02.* marked in the Society's Register Book.

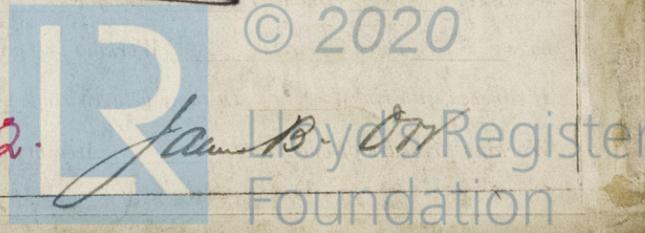
The amount of Entry Fee..	£ 2	When applied for,	17. 4. 1902
Special ..	£ 20 8	When received,	19. 4. 1902
Donkey Boiler Fee ..	£ ..		
Travelling Expenses (if any) £	..		

*Wm. R. Austin*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

Assigned

*A. 8. 4. 02. LMB. 4. 02.*



Certificate (if required) to be sent to Greenock.

The Surveyors are requested not to write on or below the space for Committee's Minute.