

REPORT ON MACHINERY.

Port of GreenockReceived at London Office 11th APR 22 1902No. in Survey held at Port GlasgowDate, first Survey 15th OctLast Survey 8th April 1902

1. Book.

67. on the Screw Steamer Princess Louise(Number of Visits 50)Tons { Gross 541
Net 352When built 1888-4Master A. ReidBuilt at GlasgowBy whom built D. & W. Henderson & CoEngines made at Port GlasgowBy whom made W. & A. R. & Co. Ltd. when made 1902Boilers made at Port GlasgowBy whom made W. & A. R. & Co. Ltd. when made 1902

Registered Horse Power

Owners M. Langlands & SonsPort belonging to GlasgowHorse Power as per Section 28 136Is Refrigerating Machinery fitted NoIs Electric Light fitted Yes

GINES, &c.—Description of Engines

Triple ExpansionNo. of Cylinders ThreeNo. of Cranks Threea. of Cylinders 14" 28" 45" Length of Stroke 33" Revs. per minute 80 Dia. of Screw shaft 9 1/2" Lgth. of stern bush 5' 10 1/2"a. of Tunnel shaft 8 1/2" 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"a. of Bars 9 1/2" Dia. of screw 12" 0" Pitch of screw 14" 0" No. of blades 4 State whether moveable No Total surface 446.5 sq. ft.a. of Feed pumps 2 Diameter of ditto 2 1/4" Stroke 18 1/4" Can one be overhauled while the other is at work Yesa. of Bilge pumps 2 Diameter of ditto 2 1/4" Stroke 18 1/4" Can one be overhauled while the other is at work Yesa. of Donkey Engines One Sizes of Pumps As originally fitted No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room As originally fitted In Holds, &c. As originally fittedNo. 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 YesAre 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 YesAre all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks BothAre 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 AboveAre 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 YesWhat pipes are carried through the bunkers None How are they protected YesAre all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times YesAre the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges YesWhen were stern tube, propeller, screw shaft, and all connections examined in dry dock 24th March 02 Is the screw shaft tunnel watertight YesIs it fitted with a watertight door Yes worked from Top platform in Engine roomBOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 2328 sq. ft. Is forced draft fitted NoNo. and Description of Boilers One Single ended Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbsDate 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 toeach boiler 2: Direct Spring Area of each valve 9.62" Pressure to which they are adjusted 155 lbs Are they fitted with easing gear YesSmallest distance between boilers or uptakes and bunkers or woodwork About 10" Mean dia. of boilers 16" 6" Length 11' 0" Material of shell plates SteelThickness 1 1/2" Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams Double butt long. seams Double buttDiameter of rivet holes in long. seams 1 3/8" Pitch of rivets 8 1/4" 4 1/2" 1' 7 1/2"Per centages of strength of longitudinal joint 88.5 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: Purnes Material Steel Outside diameter 43"Length of plain part 7' 7" Thickness of plates 1 1/2" Description of longitudinal joint Double butt No. of strengthening rings NoneWorking pressure of furnace by the rules 162 lbs Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 5/8"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 165 lbsMaterial of stays Steel Diameter at smallest part 1 1/8" Area supported by each stay 66" Working pressure by rules 178 lbs End plates in steam space:Material Steel Thickness 1 1/8" Pitch of stays 14 1/2" x 16" How are stays secured Double nuts Working pressure by rules 221 lbs Material of stays SteelDiameter at smallest part 2 3/8" Area supported by each stay 280" Working pressure by rules 187 lbs Material of Front plates at bottom SteelThickness 3/4" Material of Lower back plate Steel Thickness 25" Greatest pitch of stays 14" Working pressure of plate by rules 162 lbsDiameter 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 andthickness 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; None Can the superheater be shut off and the boiler workedseparately Yes 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

DONKEY BOILER— No. *one* Description *Vertical, with 5 cross water tubes.*
Made at *Port Glasgow* By whom made *Blayds Shipbuilding Co. Ltd.* When made *1902* Where fixed *In Stokerhold.*
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 *2 1/2"*
Butt Straps Lap of plating *1/2"* Per centage of strength of joint *76.9* Rivets *46.9* 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 *15"* 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 Let-Off Coupling Bolt 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 Bolt Nuts, 2 Crank pin Bolt Nuts, 2 main Bearing Bolt Nuts, Ramelbottom Rings for Sp. & P. Cyls.*
The foregoing is a correct description, Quantity of iron associated with.

THE CLYDE SHIPBUILDING & ENGINEERING CO., Manufacturer.
John Innes 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 -* Is the approved plan of main boiler forwarded herewith *Yes.*
Dates of survey on sea { 1902. Jan 24. 31. Feb 3. 5. 7. 13. 18. 21. " " " donkey " " " *Yes.*
propeller & stern tube fastenings etc } March 4. 10. 19. 24. - 10 -

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 dynamometer 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. Meanwhile the pressure of the main Boiler has been fixed at 150 lbs per sq inch as per Secretary's letter of the 27th 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 & B. 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 *21 APR 1902*
Assigned *1- A. 8. 25. 4. 02. - 1- LMB. 4. 02.*