

REPORT ON MACHINERY.

No. 16109

Received at London Office WED. OCT. 11. 1911

When handed in at Local Office 6th Oct. 1911 Port of Greenock
 Date, First Survey 23rd January 1911 Last Survey 30th Sept. 1911
 Number of Visits 6

Survey held at Port Glasgow
 on the SCREW STEAMER EMERALD WINGS

Tons { Gross 3139
 Net 1985
 When built 1911

Master Halley Built at Port Glasgow. By whom built Russell 1864

Engines made at Port Glasgow By whom made Blyde S.S. Eng. Coy. Ltd. when made 1911

Milers made at Port Glasgow By whom made Blyde S.S. Eng. Coy. Ltd. when made 1911

Registered Horse Power _____ Owners King Steamship Coy. Ltd. Port belonging to London

Indicated Horse Power as per Section 28 284 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted No.

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

Dia. of Cylinders 23-37-61 Length of Stroke 42 Revs. per minute 68 Dia. of Screw shaft 12.8 Material of screw shaft Iron

Is the after end of the liner made water tight Yes Is 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 Yes If two liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 4.3

Dia. of Tunnel shaft 11.4 Dia. of Crank shaft journals 11.99 Dia. of Crank pin 12 Size of Crank webs 21.2 x 7.2 Dia. of thrust shaft under

Diaphragms 12 Dia. of screw 15.9 Pitch of Screw 15.6 No. of Blades 4 State whether moveable No. Total surface 84 Sq. ft.

No. of Feed pumps 2 Diameter of ditto 3.4 Stroke 21 Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 Stroke 21 Can one be overhauled while the other is at work Yes

No. of Donkey Engines 3 Sizes of Pumps 1/2 x 5/8 x 6, 9 x 12 x 10, 4 1/2 x 2 1/2 x 4 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room Four: 3 dia In Holds, &c. No. 1 HOLD. Two - 3 dia. No. 2 HOLD. Two - 3 dia.

No. of Bilge Injections 1 sizes 5 1/2 Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes: 3

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 & flush

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 None

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 30/8/11 of Stern Tube 30/8/11 Screw shaft and Propeller 12/9/11

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper platform

MILERS, &c.—(Letter for record \$) Manufacturers of Steel Steel Coy. of Scotland

Total Heating Surface of Boilers 4286 sq. ft. Is Forced Draft fitted No. No. and Description of Boilers 2 Cylindrical mult. Single

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 14/8/11 No. of Certificate 1018

Can each boiler be worked separately Yes Area of fire grate in each boiler 63 sq. ft. No. and Description of Safety Valves to each boiler 2: direct Spring Area of each valve 4.06 Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes

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

Thickness 1 1/2 Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams Lap double

long. seams Butt straps Diameter of rivet holes in long. seams 1 1/8 Pitch of rivets 8 1/2, 4 3/8 Lap of plates or width of butt straps 1 1/2

Percentages of strength of longitudinal joint rivets 89.5 plate 85 Working pressure of shell by rules 180 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring Ranged ring No. and Description of Furnaces in each boiler 3: Dighton's Material Steel Outside diameter 50 1/2

Length of plain part top 6 1/2 Thickness of plates crown 1.9 Description of longitudinal joint Weld No. of strengthening rings None

Working pressure of furnace by the rules 18 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5 1/8 Back 3 1/2 Top 8 Bottom 1 1/2

Pitch of stays to ditto: Sides 8 1/2 x 9 Back 8 1/2 x 7 1/2 Top 9 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 181 lbs.

Material of stays Steel Diameter at smallest part 1 1/2 Area supported by each stay 44 Working pressure by rules 247 lbs. End plates in steam space: Material Steel Thickness 1 1/2 Pitch of stays 19 x 16 1/2 How are stays secured Double nuts Working pressure by rules 182 lbs. Material of stays Steel

Diameter at smallest part 2 1/4 Area supported by each stay 309 Working pressure by rules 195 lbs. Material of Front plates at bottom Steel

Thickness 2 1/2 Material of Lower back plate Steel Thickness 1 1/2 Greatest pitch of stays 13 1/4 Working pressure of plate by rules 182 lbs.

Diameter of tubes 3 1/2 Pitch of tubes 4 1/2 x 4 3/8 Material of tube plates Steel Thickness: Front 1 1/8 Back 3/4 Mean pitch of stays 8.9

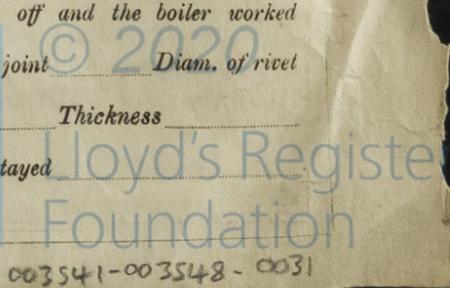
Pitch across wide water spaces 14 1/2 Working pressures by rules 224 lbs. 256 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 1/2 x 1 1/2 Length as per rule 32.6 Distance apart 9 Number and pitch of stays in each 3: 7 1/2

Working pressure by rules 195 lbs. Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately Yes

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 _____

Are they 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 _____

NOT TO WRITE ACROSS THIS MARGIN



003541-003548-0031

VERTICAL DONKEY BOILER— Manufacturers of Steel.

No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____

Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

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 _____ Radius of do. _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— Propeller, Propeller shaft, 1 set Coupling Bolts, 2 Conn. Rod Bolts, 2 Piston Rod Bolts, 2 main Bearing Bolts, 2 Holding down Bolts, 6 Joint Ring Bolts, Complete set of Piston Packing Rings, 3 Cylinder Cover Stud nuts, 3 Valve Chest Cover Stud nuts, 1 set Feed pump valves for each pump, Complete set of Safety valve springs, 12 Boiler tubes, 12 Condenser tubes, 150 Fire Bars etc. etc.

The foregoing is a correct description, 1 set Relp. pump valves. ✓
THE CLYDE SHIPBUILDING & ENGINEERING CO. LIMITED,
 Manufacturer.

John D. ...
 Director.

Dates of Survey while building: During progress of work in shops: 1911. Jan 23, 24, 26. Feby. 7, 10, 16, 24, 27. Mar. 3, 14, 17, 20, 21, 23, 27, 31. Apr. 4, 6, 11, 13, 14, 17, 19, 20, 25, 28, 30. During erection on board vessel: 2, 8, 16, 12, 16, 17, 19, 23, 29. June 2, 6, 7, 13, 16, 20, 24, 28, 29, 30. July 4, 18, 21, 24. Aug. 3, 9, 14, 16, 21, 25, 28, 30. Total No. of visits: 67.

Is the approved plan of main boiler forwarded herewith Yes ✓
 " " " donkey " " " Yes ✓

Dates of Examination of principal parts—Cylinders 30/9/11 Slides 11/4/11 Covers 30/9/11 Pistons 16/5/11 Rods 10/5/11
 Connecting rods 10/5/11 Crank shaft 28/9/11 Thrust shaft 13/6/11 Tunnel shafts 13/6/11 Screw shaft 21/8/11 Propeller 21/8/11
 Stern tube 21/8/11 Steam pipes tested *Seapen* Engine and boiler seatings 21/9/11 Engines holding down bolts 22/9/11
 Completion of pumping arrangements 28/9/11 Boilers fixed 28/9/11 Engines tried under steam 20/9/11
 Main boiler safety valves adjusted 28/9/11 Thickness of adjusting washers Donkey Bolts: FK 3/2" 4 1/4" Port Bolts: PK 3/2" 5 1/2" Stud Bolts: PK 4" 5 1/2" 7/8"

Material of Crank shaft Steel Identification Mark on Do. 1021 Material of Thrust shaft Steel Identification Mark on Do. 1022
 Material of Tunnel shafts Steel Identification Marks on Do. 1023, 1024 Material of Screw shafts Iron Identification Marks on Do. 1024
 Material of Steam Pipes Copper ✓ Test pressure 360 lb ✓

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

The engines and Boilers of this vessel were built under special survey and the workmanship is good. On completion the machinery was examined while developing its full power in the berth and found to work well. At the close of the trial a crack was found in the after condenser door. This has been repaired to enable the vessel to proceed to her loading ports, Swansea and Antwerp. The Guild have arranged for a new door to be fitted at the latter port and the Surveyors there have been advised.

The machinery is now in good and safe working condition and will be eligible in my opinion to have the record of ***LMC. 9, 11.** marked in the Society's Register Book when a new Condenser door has been supplied and fitted.

The amount of Entry Fee .. £ 2 : : When applied for.
 Special .. £ 34 : : 4/10/1911
 Donkey Boiler Fee .. £ : : When received,
 Travelling Expenses (if any) £ : : 18.10.1911

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

Committee's Minute **GLASGOW 10 OCT. 1911**

Assigned deferred for compln.

FRI. OCT. 13. 1911
 + L.M.C. 9. 11



Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.

Greenock