

Rpt. 4.

REPORT ON MACHINERY

No. 16329

WED. OCT. - 9. 1912

Date of writing Report 19 When handed in at Local Office 3/10/12 Port of Greenock
 No. in Survey held at Port Glasgow Date, First Survey 25th Dec. 1912. Last Survey 27th Sept. 1912
 Reg. Book. on the SCREWSTEAMER "FORDONIAN" (Number of Visits 72) Gross 2368 Tons Net 1905
 Master Built at Port Glasgow By whom built Clyde S.B. Eng. Co. Lim. When built 1912.
 Engines made at Port Glasgow By whom made Clyde S.B. Eng. Co. Lim. when made 1912.
 Boilers made at Port Glasgow By whom made Clyde S.B. Eng. Co. Lim. when made 1912.
 Registered Horse Power Owners Port belonging to
 Nom. Horse Power as per Section 28 188 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Diesel Oil Engines. 2 Cyls S.A. No. of Cylinders Four No. of Cranks Four
 Dia. of Cylinders 18.1" Length of Stroke 32.25" Revs. per minute 116" Dia. of Screw shaft as per rule 10.5" Material of screw shaft 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 the length 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 3' 5 5/8"

Dia. of Tunnel shaft as per rule 11 1/2" Dia. of Crank shaft journals as per rule 11 1/2" Dia. of Crank pin 11 1/2" Size of Crank webs 2 1/4 x 7/8 Dia. of thrust shaft under
 collars 11 1/2" Dia. of screw 11.9" Pitch of Screw 9' 0" No. of Blades 4 State whether moveable Yes Total surface 45.59 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 23 1/2" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 3 1/4" Stroke 23 1/2" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps 9" x 12", 6" x 4", 4" x 3", 4" x 2", 4" x 1.5", 4" x 1", 4" x 0.5", 4" x 0.25" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room One 3 1/2" dia. In Holds, &c. No. 1 HOLD. One 3 1/2" dia. No. 2 HOLD. One 3 1/2" dia.

No. 3 HOLD. One 3 1/2" dia. No. 4 HOLD. One 3 1/2" dia.
 No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump Ballast Is a separate Donkey Suction fitted in Engine room & size Yes. 3 1/2" dia.

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 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 29/6/12 of Stern Tube 29/6/12 Screw shaft and Propeller 4/8/12.

Is the Screw Shaft Tunnel watertight None Is it fitted with a watertight door worked from

WINCH.
 BOILERS, &c.—(Letter for record S.) Manufacturers of Steel J. Dunlop 1601

Total Heating Surface of Boilers 753 sq. ft. Is Forced Draft fitted No. No. and Description of Boilers 1. Cylindrical. Single
 Working Pressure 100 lbs Tested by hydraulic pressure to 200 lbs Date of test 8/8/12 No. of Certificate 1066.

Can each boiler be worked separately Area of fire grate in each boiler None Oil fuel No. and Description of Safety Valves to
 each boiler 2. Quiet Spring Area of each valve 5.9 sq. in. Pressure to which they are adjusted 104 lbs Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 16" Mean dia. of boilers 10' 0" Length 10' 0" Material of shell plates Steel
 Thickness 9/16" 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 J.B.S. Diameter of rivet holes in long. seams 3/4" Pitch of rivets 4 1/2", 2 1/2" Lap of plates or width of butt straps 8 3/4"
 Per centages of strength of longitudinal joint plate 82.5 Working pressure of shell by rules 105 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 33 x 27 x 7/16 No. and Description of Furnaces in each boiler 2: Plain Material Steel Outside diameter 36 1/2"
 Length of plain part top 6' 0" Thickness of plates crown 1/2" Description of longitudinal joint Weld. No. of strengthening rings None.
 bottom 6' 0" Thickness of plates bottom 1/2"

Working pressure of furnace by the rules 102 lbs Combustion chamber plates: Material Steel Thickness: Sides 1/2" Back 1/2" Top 1/2" Bottom 1/4"
 Pitch of stays to ditto: Sides 7 1/2 x 9 1/2 Back 9 x 8 Top 9 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 100 lbs.

Material of stays Steel Diameter at smallest part 1 1/8" Area supported by each stay 73 sq. in. Working pressure by rules 103 lbs End plates in steam space:
 Material Steel Thickness 3/32" Pitch of stays 23 1/2 x 13 How are stays secured Nuts Working pressure by rules 100 lbs Material of stays Steel.

Diameter at smallest part 2 3/32" Area supported by each stay 209 sq. in. Working pressure by rules 116 lbs Material of Front plates at bottom Steel.
 Thickness 3/32" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays 14" Working pressure of plate by rules 103 lbs.

Diameter of tubes 3 1/2" Pitch of tubes 4 1/4 x 4 5/8 Material of tube plates Steel Thickness: Front 3/32" Back 5/8" Mean pitch of stays 11 1/4"
 Pitch across wide water spaces 14 1/2" Working pressures by rules 145 lbs 102 lbs Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 7 1/4 x 1 1/2 Length as per rule 31 1/8 Distance apart 9 3/4 Number and pitch of stays in each 3: 7 1/2"

Working pressure by rules 111 lbs 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

1m. 110-7.

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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 Sa
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:— 2 Propeller blades, 2 top head Bolts & nuts, 2 Bolt: head Bolts & nuts, 14 Coupling Bolts & nuts, 2 main Bearing Bolts & nuts, 1 set Relief pump valves, 12 Piston Rings, 4 Pulverisers, 4 valves, 12 Combustion Plates for fuel valves, 1 set Spiral Springs, 1 set Rings for Compressor, 2 Section 2 Delivery valves for fuel pump, 3 Springs for air starting valve, 4 Seawater valves with nuts & handles complete The foregoing is a correct description, 1 set Seawater pump Rings, 2 sets Compressor valves & spring (main & 1 set Circulating pump valves, 6 Bolts & nuts, 2 Check valves, 1 Safety valve 1 set Cylinder Over studs & nuts, 1 Cylinder cover, 4 Spare Clams, 8 Fuel pump Springs, 50 Bolts & nuts assorted sizes 2 Cuts Iron plates Brass Iron.

Dates of Survey while building	During progress of work in shops --	1911 Dec. 25-29, 1912 Jan. 17-18, 25-26, 27-31, Feb. 3-7, 9-12, 15-16, 20-22, 25-29, March 1-4, 6-8, 12-20, 22-26, April 1-3, 5-16, 19-23, 25-29, May 1-6, 14-16, 21-22, 27-30, June 6-11, 15-19, 24-26, 29, July 23-26, 30, Aug. 7-8, 12-14, 16-19, 21-23, 26-28, 31
	During erection on board vessel --	Sept. 2-4, 6-10, 12-15, 20-21, 23
	Total No. of visits	72

Is the approved plan of main boiler forwarded herewith ☒ Yes

Dates of Examination of principal parts—Cylinders	21/9/12	Slides	✓	Covers	24/9/12	Pistons	11/6/12	Rods	11/6/12
Connecting rods	11/6/12	Crank shaft	8/4/12	Thrust shaft	1/5/12	Tunnel shafts	✓	Screw shaft	29/6/12
Stern tube	29/6/12	air	✓	Steam pipes tested	27/6/12	Engine and boiler seatings	8/8/12	Engines holding down bolts	12/9/12
Completion of pumping arrangements	12/9/12	Boilers fixed	4/9/12	Engines tried under steam	21/9/12				
WINCH.		Main boiler safety valves adjusted	12/9/12	Thickness of adjusting washers	FORWARD 5 1/2 Aft 8 1/2				
Material of Crank shaft	Steel	Identification Mark on Do.	1133	Material of Thrust shaft	Steel	Identification Mark on Do.	2760		
Material of Tunnel shafts	✓	Identification Marks on Do.	✓	Material of Screw shafts	Steel	Identification Marks on Do.	2750		
Material of ^{Compressor air} Steam Pipes	Copper	Test pressure	1000 lbs"						

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

The Diesel Engines of this vessel were built under special license and the workmanship is good. On completion they underwent exhaustive speed and manœuvring tests and were found to work satisfactorily.

Several items of spare Gear as detailed below are yet to be supplied. The machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of **LMC. 9.12.** marked in the Society's Register Book when the following articles of Spare Gear have been placed on board viz. one fuel valve and chest complete, 2 Rollers & Pins for fuel valves, Four plungers for fuel pumps, Four levers for fuel pumps, Four brass gland nuts for fuel pumps 2 Section and 2 Delivery valves for fuel pumps, 1 Spring for air stop valve 2 Rollers & pins for Seawater valves and one Intermediate lever.

The amount of Entry Fee	.. £ 2 :	When applied for,	5/10/12
Special £ 28 4 :	When received,	30.10.12
Donkey Boiler Fee £ :		
Travelling Expenses (if any) £	: :		

Committee's Minute GLASGOW 9- OCT 1912

Assigned Deferred for compl'n

GLASGOW 29 APR 1913

Defd for compl'n

GLASGOW 7- MAY 1913

Chief Engineer's recommendations approved

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