

REPORT ON MACHINERY.

No. 17068.

Date of writing Report 3/11/1916 When handed in at Local Office 3/11/1916 Port of Greenock
 No. in Survey held at Port Glasgow Date, First Survey 16.2.14 Last Survey 3.11.1916
 Reg. Book. on the S.S. "ARDCRANGE." (Number of Visits 96)
 Master John E. Davis Built at Port Glasgow By whom built Russell & Co. Ltd. Tons { Gross 4543
 Engines made at Port Glasgow By whom made Clyde S.B. Eng. Coy. Ltd. when made 1916 Net 2875
 Boilers made at Port Glasgow By whom made Clyde S.B. Eng. Coy. Ltd. when made 1916
 Registered Horse Power 4 Owners Steamship Company Ltd. (Lang & Fulton Lines) Port belonging to Greenock
 Nom. Horse Power as per Section 28 491 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks Three
 Dia. of Cylinders 26-42-70 Length of Stroke 48 Revs. per minute 75 Dia. of Screw shaft 14.66 Material of Iron
 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 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 No If two
 liners are fitted, is the shaft lapped or protected between the liners No Length of stern bush 5-0 1/2
 Dia. of Tunnel shaft 12.98 Dia. of Crank shaft journals 13.12 Dia. of Crank pin 13 1/8 Size of Crank webs 25x8 1/2 Dia. of thrust shaft under
 collars 13 1/8 Dia. of screw 18-0 Pitch of Screw 19-0 No. of Blades 4 State whether moveable No Total surface 102 1/2
 No. of Feed pumps 2 Diameter of ditto 3 1/2 Stroke 24 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 24 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 2 Sizes of Pumps 9x10x10, 8x6x8, 8x4x2 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 4 at 3 1/2 In Holds, &c. 1 at 2 1/2, 8 at 3 1/2, 2 at 3 1/2 in No. 1,
2 at 3 1/2 in No. 2, 2 at 3 1/2 in No. 3, 2 at 3 1/2 in No. 4
 No. of Bilge Injections 1 sizes 8 Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes 3 1/2
 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 No
 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 No
 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 14/6/16 of Stern Tube 5/6/16 Screw shaft and Propeller 14/6/16
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Engine room grating

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Clyde S.B. Eng. Coy. Ltd. & Steel Coy. Ltd. Glasgow
 Total Heating Surface of Boilers 7400 Is Forced Draft fitted Yes No. and Description of Boilers 3: Cylindrical, built: Single
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 12/5/14 No. of Certificate 1185 & 1191
 Can each boiler be worked separately Yes Area of fire grate in each boiler 49.99 sq ft No. and Description of Safety Valves to
 each boiler 2: Direct Spring Area of each valve 8.29 sq in 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 9-0 Mean dia. of boilers 15' 0" Length 11' 9" Material of shell plates Steel
 Thickness 1 1/2 Range of tensile strength 28 to 30 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap Butte
 long. seams Butt Strap Diameter of rivet holes in long. seams 1 1/4 Pitch of rivets 8 1/4" 4 3/8" Top of plates or width of butt straps 18 1/2
 Per centages of strength of longitudinal joint 85.6 Working pressure of shell by rules 183 lbs Size of manhole in shell 16" x 12"
 Size of compensating ring Plate No. and Description of Furnaces in each boiler 3: Morrison's Material Steel Outside diameter 4' 4"
 Length of plain part 7' 5" Thickness of plates 7/16 Description of longitudinal joint Weld No. of strengthening rings None
 Working pressure of furnace by the rules 187 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/2 Back 1 1/2 Top 1 1/2 Bottom 3/4
 Pitch of stays to ditto: Sides 8 1/4 x 8 Back 8 1/2 x 7 1/2 Top 8 x 8 1/4 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 185 lbs
 Material of stays Steel Diameter at smallest part 1 1/8 Area supported by each stay 66 Working pressure by rules 180 lbs End plates in steam space:
 Material Steel Thickness 1 Pitch of stays 15 1/4 x 15 1/2 How are stays secured Old nuts Working pressure by rules 183 lbs Material of stays Steel
 Diameter at smallest part 4' 3" Area supported by each stay 244 Working pressure by rules 183 lbs Material of Front plates at bottom Steel
 Thickness 7/8 Material of Lower back plate Steel Thickness 7/8 Greatest pitch of stays 13 1/4 Working pressure of plate by rules 184 lbs
 Diameter of tubes 2 1/2 Pitch of tubes 3 1/2 x 3 1/2 Material of tube plates Steel Thickness: Front 1 Back 3/4 Mean pitch of stays 4.6
 Pitch across wide water spaces 15 1/2 Working pressures by rules 194 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 36.2 Distance apart 8 Number and pitch of stays in each 3: 8 1/4
 Working pressure by rules 188 lbs Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked
 separately Yes Diameter 18 Length 18 Thickness of shell plates 1 1/2 Material Steel Description of longitudinal joint Weld Diam. of rivet
 holes 1 1/4 Pitch of rivets 8 1/4 Working pressure of shell by rules 188 lbs Diameter of flue 18 Material of flue plates Steel Thickness 1 1/2
 If stiffened with rings Yes Distance between rings 18 Working pressure by rules 188 lbs End plates: Thickness 1 1/2 How stayed By stays
 Working pressure of end plates 188 lbs Area of safety valves to superheater 18 Are they fitted with easing gear Yes

IS A DONKEY BOILER FITTED?

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— 2 main bearings, 2 connecting rod top end & 2 connecting rod bottom end both & nuts, 6 coupling bolts & nuts, 1 set feed & bilge pump valves & seats, 1 set piston rings, quantities of assorted iron, 120 assorted bolts & nuts, 1 propeller shaft, 1 propeller, 1 set escape valve spring, 6 bel cover studs & nuts, 1 main & 1 aux check valve, 30 condenser tubes 20 boiler tubes, 6 valve chest cover studs & nuts, 6 junk ring studs & nuts, 2 half bushes top end, & 2, do bottom end, 1 valve spindle, 1 spring for safety valves, 1 set air pump valves, 1 set circulating pump valves.

The foregoing is a correct description,

THE GLYDE SHIPBUILDING & ENGINEERING CO. LIMITED

W. J. J. J. J.

Director. Manufacturer.

Dates of Survey while building { During progress of work in shops - - (1914) Feb. 16, 18, 24, Mar. 6, 31, Apr. 3, 10, 13, 15, 20, 30, May 7, 12, 13, 19, 24, 26, 28, June 4, 5, 8, 11, 16, 19, 20, 22, 24, 30, Aug. 3, 7, 12, 14, 19, 20, 24, 27, 28, 31, Sep. 3, 7, 16, During erection on board vessel - - - Dec. 14, Dec. 7, 8, 11, 17, 22, 29 (1915), Jan. 8, 12, 19, 22, 25, 29, Feb. 4, 15, Mar. 12, June 7, July 19, 26, 29, Aug. 9, 19 (1916), Feb. 1, 7, 14, Apr. 18, May 26, 28, June 2, Total No. of visits 5, 12, 14, 20, 23, 26, 30, July 4, 12, 18, 24, 25, 31, Aug. 8, 22, 29, 30, Sep. 4, Is the approved plan of main boiler forwarded herewith *yes* 11, 15, Oct. 3, 6, 11, 19, 26, Nov. 3.

Dates of Examination of principal parts—Cylinders 8/12/14 Slides 12/14 Covers 3/11/16 Pistons 29/12/14 Rods 29/12/14 Connecting rods 11/6/14 Crank shaft 7/5/14 Thrust shaft 7/5/14 Tunnel shafts 14/10/14 Screw shaft 26/6/16 Propeller 5/6/16 Stern tube 5/6/16 Steam pipes tested 2/4/15 Engine and boiler seatings 4/7/16 Engines holding down bolts 11/9/16 Completion of pumping arrangements 23/10/16 Boilers fixed 11/9/16 Engines tried under steam 3/11/16 Main boiler safety valves adjusted 23/10/16 Thickness of adjusting washers $\frac{5}{8}$ $\frac{5}{8}$ $\frac{5}{8}$ $\frac{5}{8}$ $\frac{5}{8}$ $\frac{5}{8}$ Material of Crank shaft *Steel* Identification Mark on Do. 1303 Material of Thrust shaft *Steel* Identification Mark on Do. 1304 Material of Tunnel shafts *Steel* Identification Marks on Do. 1316 Material of Screw shafts *Iron* Identification Marks on Do. 198 Material of Steam Pipes *Steel* Test pressure 540

Is an installation fitted for burning oil fuel *No* Is the flash point of the oil to be used over 150°F. Have the requirements of Section 49 of the Rules been complied with *No* Is this machinery duplicate of a previous case *No* If so, state name of vessel

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

The engines & boilers of this vessel have been built under special survey. The materials, & workmanship are good. On completion they were examined while running full power trials in the Loch & found satisfactory. The machinery throughout is now in good & efficient condition, & eligible in my opinion to have the record **L MC 11-16** marked in the register book.

It is submitted that this vessel is eligible for THE RECORD + L MC 11. 16. F.D.

JWD. 10/11/16

ARR.

The amount of Entry Fee ... £ 3-0-0 When applied for, Special ... £ 44-11-0 4-11-1916 Donkey Boiler Fee ... £ : : When received, Travelling Expenses (if any) £ : : 21-11-1916

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

Committee's Minute GLASGOW 7 - NOV. 1916

Assigned + L MC 11, 16 *FD*

MACHINERY CERTIFICATE DATED 8/11/16

Certificate (if required) to be sent to. *yes* *Glasgow*

2nd *6/11/16*