

# REPORT ON MACHINERY.

No. 34565

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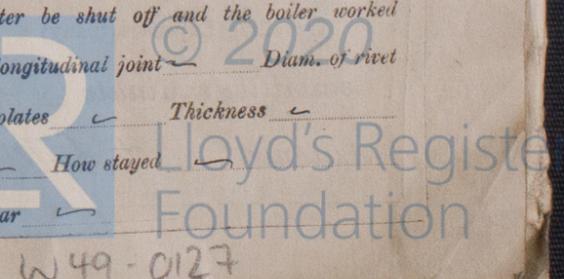
Date of writing Report 19 \_\_\_\_\_ When handed in at Local Office 19 \_\_\_\_\_ Port of Glasgow  
 No. in Survey held at Glasgow Date, First Survey 19/12/13 Last Survey 19/11 1914  
 Reg. Book. \_\_\_\_\_ (Number of Visits 37)  
 on the S.S. Mahanada  
 Master Legg Built at Glasgow By whom built C. Connell & Co (361) Tons { Gross 7196  
 Engines made at Newcastle-on-Tyne By whom made Parsons Marine Steam Turbine Co when made 1914 Net 4522  
 Boilers made at Glasgow By whom made D. Rowan & Co (612) when made 1914  
 Registered Horse Power 3600 Owners J. & J. Brocklebank & Co Port belonging to Liverpool  
 Nom. Horse Power as per Section 28 729 <sup>not for Reg. Bk.</sup> Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

**ENGINES, &c.**—Description of Engines  geared turbines No. of Cylinders 2 ahead No. of Cranks 1  
 Dia. of Cylinders \_\_\_\_\_ Length of Stroke propeller Revs. per minute 90 Dia. of Screw shaft as per rule 1.5 7/8 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 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 yes If two  
 liners are fitted, is the shaft lapped or protected between the liners \_\_\_\_\_ Length of stern bush 5'-10"  
 Dia. of Tunnel shaft as per rule 14 7/8 Dia. of Crank shaft journals as per rule Dia. of Crank pin \_\_\_\_\_ Size of Crank webs \_\_\_\_\_ Dia. of thrust shaft under  
 collars 15 1/2 Dia. of screw 18.0 Pitch of Screw 16.6 No. of Blades 4 State whether moveable yes Total surface 104 1/2  
 No. of Feed pumps 2 Diameter of ditto 9 1/2 x 7 x 2 1/2 Stroke \_\_\_\_\_ Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 10 x 8 x 15 Stroke \_\_\_\_\_ Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 5 Sizes of Pumps 10 1/2 x 12 x 18, 4 x 5 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room (1) 3 1/2 (1) 2 1/2 In Holds, &c. (2) 3 1/2 in each hold (3) 3 1-Turned well

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump pump 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 below  
 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 for bilge & ballast suction How are they protected wood casing  
 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 7/9/14 of Stern Tube 7/9/14 Screw shaft and Propeller 7/9/14  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight doors yes worked from top platform

**BOILERS, &c.**—(Letter for record 7) Manufacturers of Steel The Steel Company of Scotland Ltd.  
 Total Heating Surface of Boilers 2195 1/2 (Is Forced Draft fitted no) No. and Description of Boilers 2 double ended cylindrical  
 Working Pressure 180 Tested by hydraulic pressure to 300 Date of test 7/9/14 No. of Certificate 12859  
 Can each boiler be worked separately yes Area of fire grate in each boiler 107 1/2 No. and Description of Safety Valves to  
 each boiler 1 pair dual spring Area of each valve 11.04 Pressure to which they are adjusted 185 1/2 Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork about 12" Mean dia. of boilers 16-6" Length 18-3 Material of shell plates steel  
 Thickness 1 1/2 Range of tensile strength 25 to 32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 2 1/2 Lap  
 long. seams double butt Diameter of rivet holes in long. seams 1 3/16 Pitch of rivets 9 1/16 Lap of plates or width of butt straps 21"  
 Per centages of strength of longitudinal joint rivets 94.4 Working pressure of shell by rules 183 Size of manhole in shell 16 x 12"  
 Size of compensating ring 2-11 1/2 x 2-7 1/2 No. and Description of Furnaces in each boiler 6 reissons Material steel Outside diameter 4'-4"  
 Length of plain part top \_\_\_\_\_ bottom \_\_\_\_\_ Thickness of plates crown \_\_\_\_\_ bottom \_\_\_\_\_ Description of longitudinal joint welded No. of strengthening rings \_\_\_\_\_  
 Working pressure of furnace by the rules 193 Combustion chamber plates: Material steel Thickness: Sides 5 1/8 Back \_\_\_\_\_ Top 5 1/8 Bottom 5 1/8  
 Pitch of stays to ditto: Sides 8 x 9 Back \_\_\_\_\_ Top 8 x 9 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 187  
 Material of stays steel Diameter at smallest part 2.07 Area supported by each stay 72 Working pressure by rules 215 End plates in steam space:  
 Material steel Thickness 1 1/2 Pitch of stays 24 x 22 How are stays secured 2 nuts Working pressure by rules 194 Material of stays steel  
 Diameter at smallest part 8.29 Area supported by each stay 5.30 Working pressure by rules 180 Material of Front plates at bottom steel  
 Thickness 5/8 Material of Lower back plate \_\_\_\_\_ Thickness \_\_\_\_\_ Greatest pitch of stays \_\_\_\_\_ Working pressure of plate by rules \_\_\_\_\_  
 Diameter of tubes 3 1/2 Pitch of tubes 4 1/2 x 1 1/2 Material of tube plates steel Thickness: Front 1" Back 3/2 Mean pitch of stays 11 1/8  
 Pitch across wide water spaces 14 1/2 Working pressures by rules 214 Girders to Chamber tops: Material steel Depth and  
 thickness of girder at centre 11 1/2 x 13 Length as per rule 3-10 1/2 Distance apart 8" Number and pitch of stays in each (4) 9"  
 Working pressure by rules 200 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 \_\_\_\_\_

Assigned See minute on accompanying



**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 Safe \_\_\_\_\_

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 \_\_\_\_\_ Lay 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:— 6 coupling bolts & nuts, 1 rotor shaft adjusting block, 1 pinion shaft, 1 turbine bearing, 2 propeller blades, 1 air pump rod & valve, 1 circulating pump shaft & impeller, 1 feed pump rod, feed and ludge pump valves, 5% total blading for all rotors, 2 segments of blading for 1st & 2nd H.P. expansion.

The foregoing is a correct description, iron, bolts & nuts etc.

for David Rowan *Manufacturer.*

Dates of Survey while building: During progress of work in shops -- 1913 Dec 19, 29 - 1914 Jan 13-30 Mar 3-28 Apr 6-23 May 14 June 1-9, 25 July 6-28 29. Aug 3-25-26 Sept 2-7. During erection on board vessel --- Sept 16-21-22-30 Oct 2-5-7-12-13-15-20-23-28 Nov 3-5-9-10. Total No. of visits 37.

Is the approved plan of main boiler forwarded herewith *yes*

Is the approved plan of donkey boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders \_\_\_\_\_ Slides \_\_\_\_\_ Covers \_\_\_\_\_ Pistons \_\_\_\_\_ Rods \_\_\_\_\_

Connecting rods  Crank shaft  Thrust shaft 25/8/14 Tunnel shafts 6/7/14 Screw shaft 26/8/14 Propeller 25/6/14

Stern tube 26/8/14 Steam pipes tested 23/9/14 to 28/10/14 Engine and boiler seatings 7/9/14 Engines holding down bolts 2/10/14

Completion of pumping arrangements 5/11/14 Boilers fixed 30/9/14 Engines tried under steam 9/11/14

Main boiler safety valves adjusted 5/11/14 Thickness of adjusting washers *Forst Boiler 3/8, After Boiler 1 1/2, 3/2, 3/2, 3/2, 3/2*

Material of Crank shaft  Identification Mark on Do.  Material of Thrust shaft *Steel* Identification Mark on Do. *9047, 25/8/14*

Material of Tunnel shafts *Steel* Identification Marks on Do. *772, 27/11/14* Material of Screw shafts *Steel* Identification Marks on Do. *9213, 27/11/14*

Material of Steam Pipes *lapwelded iron* Test pressure *540 lbs*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *This machinery has been well fitted on board and tried under steam, and is in my opinion eligible to have notification + L.M.C 11-14 in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C 11-14.

2 Steam Turbines geared to 1 Screw Shaft.

*J.W.D.*  
20/11/14  
*A.R.B.*

The amount of Entry Fee .. £ 3 : : When applied for, 16/11/14

Special .. £ 56 . 9 : : When received, 20/11/14

Donkey Boiler Fee .. £ (37) due twice a/c) : : 23/11

Travelling Expenses (if any) £ : : ..

*A.M. Kland*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute **GLASGOW** 17 NOV. 1914

Assigned + L.M.C 11-14



GLASGOW

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

*2/11/14*

*18/11/14*