

# REPORT ON MACHINERY

JUN. 2-1914

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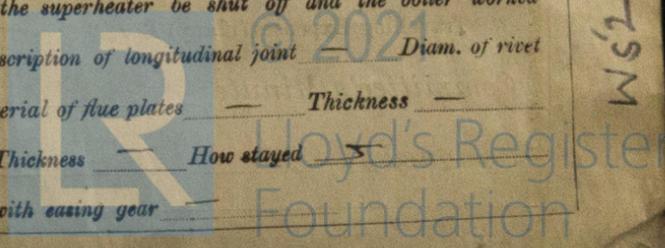
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Date of writing Report 16 Aug 1914 When handed in at Local Office 17/11 to the Port of West Hartlepool  
 No. in Survey held at West Hartlepool Date, First Survey 13<sup>th</sup> June 1913 Last Survey 6<sup>th</sup> January 1914  
 Reg. Book. on the S. S. San Francisco (Number of Visits 69) Tons Gross 1145 Net 1145 When built 1914  
 Master Built at Londonderry By whom built North of Ireland Ship Co. Ltd. when made 1914  
 Engines made at Hartlepool By whom made Richardsons, Westgarth & Co. Ltd. when made 1914  
 Boilers made at Hartlepool By whom made Richardsons, Westgarth & Co. Ltd. when made 1914  
 Registered Horse Power Owners Isomian S. S. Co. Ltd Port belonging to London  
 Nom. Horse Power as per Section 28 525 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes.

ENGINES, &c.—Description of Engines Triple Expansion (Inverted) No. of Cylinders Three No. of Cranks Three  
 Dia. of Cylinders 24, 45, 45 Length of Stroke 51 Revs. per minute 40 Dia. of Screw shaft as per rule 15.1 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 continuous 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 5-3/2  
 Dia. of Tunnel shaft as per rule 13.68 Dia. of Crank shaft journals as per rule 14.36 Dia. of Crank pin 15 Size of Crank webs 9 1/2 x 23 Dia. of thrust shaft under  
 collars 15 1/4 Dia. of screw 18-0 Pitch of Screw 14-6 No. of Blades four State whether moveable yes Total surface 98  
 No. of Feed pumps no Diameter of ditto 4 1/2 Stroke 24 Can one be overhauled while the other is at work yes.  
 No. of Bilge pumps no Diameter of ditto 4 1/2 Stroke 24 Can one be overhauled while the other is at work yes.  
 No. of Donkey Engines no Sizes of Pumps General service 4 1/2 x 5 x 6 1/2 No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 2-3 1/2 & 1 special 3 1/2 Blk Room 2-3 1/2 In Holds, &c. Fore hold 2-3 1/2 : Fore Main 2-3 1/2  
Deep tank 2-3 1/2 : after hold 2-3 1/2 : Journal well 1-3  
 No. of Bilge Injections one size 9 1/2 Connected to condenser, or to circulating pump (continuous) 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 none  
 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 \_\_\_\_\_  
 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 22.12.13 of Stern Tube 23.2.14 Screw shaft and Propeller 5.3.14  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from top platform  
 BOILERS, &c.—(Letter for record S) Manufacturers of Steel Spencer & Sons Ltd, Leeds Spencer & Sons Ltd, Leeds

Total Heating Surface of Boilers 445 Is Forced Draft fitted yes. No. and Description of Boilers Three single Ended Cyl. Matt.  
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 24/10/13 No. of Certificate 3344  
 Can each boiler be worked separately yes. Area of fire grate in each boiler 61.2 No. and Description of Safety Valves to  
 boiler no, direct spring Area of each valve 12.50 Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes  
 Greatest distance between boilers or uptakes and bunkers or woodwork 11 1/2 Mean dia. of boilers 15-0 1/2 Length 12-0 Material of shell plates steel  
 Thickness 3/4 Range of tensile strength 29 to 32.4 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 2 1/2 x 7 R  
 long. seams 5/8 x 7 R Diameter of rivet holes in long. seams 1 1/2 Pitch of rivets 8 1/8 Lap of plates or width of butt straps 1 1/2  
 Per centages of strength of longitudinal joint rivets 84.5 Working pressure of shell by rules 180 lbs Size of manhole in shell 13 x 16 1/2  
 plate 85.03 Size of compensating ring 8 x 1 1/2 No. and Description of Furnaces in each boiler Three Suspension Material steel Outside diameter 48 3/4  
 Length of plain part top \_\_\_\_\_ Thickness of plates crown 3 1/8 Description of longitudinal joint Weld No. of strengthening rings \_\_\_\_\_  
 bottom \_\_\_\_\_ bottom 3 1/2 Working pressure of furnace by the rules 194 lbs Combustion chamber plates: Material steel Thickness: Sides 19/32 Back 5/8 Top 19/32 Bottom 24/32  
 Pitch of stays to ditto: Sides 1/4 x 1/4 Back 8 1/8 x 1/4 Top 1/4 x 1/4 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 211.5  
 Material of stays steel Diameter at smallest part 1 3/8 Area supported by each stay 8 1/8 x 1/8 Working pressure by rules 185.3 End plates in steam space:  
 Material steel Thickness 1 1/8 Pitch of stays 16 1/4 x 20 1/2 How are stays secured DN + W Working pressure by rules 180 lbs Material of stays steel  
 Diameter at smallest part 3 3/2 Area supported by each stay 16 1/4 x 21 1/2 Working pressure by rules 216.5 Material of Front plates at bottom steel  
 Thickness 15/16 Material of Lower back plate steel Thickness 13/16 Greatest pitch of stays 13 x 8 1/2 Working pressure of plate by rules 181 lbs  
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 3/4 Material of tube plates steel Thickness: Front 3/16 Back 3/4 Mean pitch of stays 9 3/8  
 Pitch across wide water spaces 13 1/2 Working pressures by rules 185 lbs Girders to Chamber tops: Material steel Depth and  
 thickness of girder at centre 8 x 13 1/4 Length as per rule 32 3/8 Distance apart 4 1/8 Number and pitch of stays in each three 1/4  
 Working pressure by rules 181 lbs Superheater or Steam chest; how connected to boiler \_\_\_\_\_ 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  
 \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Diameter of flue \_\_\_\_\_ Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_  
 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 \_\_\_\_\_

WS2-0042



**VERTICAL DONKEY BOILER—** Manufacturers of Steel

No.	Description	When made	Where fixed
Made at	By whom made	No. of Certificate	Fire grate area
Working pressure	tested by hydraulic pressure to	Date of test	Description of Safety
Values	No. of Safety Valves	Area of each	Pressure to which they are adjusted
If fitted with casing gear	If steam from main boilers can enter the donkey boiler		Date of adjustment
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
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.
Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates
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:— *Two Top end, two bottom end & two main bearing bolts & nuts, one set of emptying bolts, one set of feed & bilge pump valves, one propeller shaft, two propeller blades, one crank pin bearing, one eccentric strap, one set of air pump valves, 12 condenser tubes, 5 boiler tubes, 3 main check valves, 3 auxiliary check valves & mounted bolts & nuts.*

The foregoing is a correct description,

FOR RICHARDSONS, WEST GARTH & CO. LIMITED

Manufacturer.

Dates of Survey while building	During progress of work in shops	1913. June 13. 26. 30. July 7. 8. 11. 14. 15. 16. 17. 21. 24. 25. 28. Aug. 1. 12. 13. 15. 21. 25. Sep. 2. 4. 5. 6. 8. 9. 12. 16. 17. 19. 22. 23. 24. 25. 26. Oct. 1. 2. 3. 6. 7. 9. 10. 13. 14. 15. 16. 17. 21. 23. 24. 27. 28. 29. 31. Nov. 3. 5. 7. 10. Dec. 1. 11.
	During erection on board vessel	13. 17. 22. 23. 24. 31. 1914. Jan. 5. 6. Dec. 22. to 20 <sup>th</sup> May 1914
	Total No. of visits	81

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

Dates of Examination of principal parts—	Cylinders	9/10/13	Slides	23/10/13	Covers	24/9/13	Pistons	10/10/13	Rods	19/8/13	
Connecting rods	25/9/13	Crank shaft	12/9/13	Thrust shaft	12/8/13	Tunnel shafts	2/10/13	Screw shaft	5/1/14	Propeller	5/6/14
Stern tube	16/10/13	Steam pipes tested	24/12/13	Engine and boiler seatings	5-3-14	Engines holding down bolts	2-4-14				
Completion of pumping arrangements	18-5-14	Boilers fixed	2-4-14	Engines tried under steam	19-5-14						
Main boiler safety valves adjusted	18-5-14	Thickness of adjusting washers	P.B. 5 7/16	Control 4 5 7/16	Stack 2 1/2						
Material of Crank shaft	steel	Identification Mark on Do.	5376	Material of Thrust shaft	steel	Identification Mark on Do.	5376				
Material of Tunnel shafts	steel	Identification Marks on Do.	5276	Material of Screw shafts	steel	Identification Marks on Do.	5276				
Material of Steam Pipes	brought iron lapwelded.	Test pressure	540 lbs as per spec 12/1/14								

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

*Evaporator body & insul. total to 50 lbs + 400 lbs. resp. 18/8/13. Contact full boiler total 50 lbs marked 4/9/13*

The Engines & Boilers of this vessel have been constructed under Special Survey, the material & workmanship sound & good. The Boilers & steam pipes have been tested by hydraulic pressure in accordance with the Rules.

The machinery was tried under steam & found satisfactory. The engines & boilers were securely fixed aboard, and found sound when under trial.

This vessel is eligible in Our Opinion to have the Notation (LMC) in the Register Book.

It is submitted that this vessel is eligible for THE RECORD. + LMC 5. 14. F.D.

The amount of Entry Fee	£ 3	When applied for.	19/1/14
Special	£ 30-16-8	When received.	19/5/14
Donkey Boiler Fee	£ 15-8-4		
Travelling Expenses (if any)	£ 12-2-0		

Committee's Minute Assigned

+ LMC 5. 14. F.D.

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



Lloyd's Register Foundation

TRI. SER. 25. 1914