

REPORT ON MACHINERY.

No. 22433

Date of writing Report 0-1-1912 When handed in at Local Office 10-3-1913 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 9-1-12 Last Survey 7-3-1913
 Reg. Book. on the T/S/S Canberra (Number of Visits 66)
 Master Built at Glasgow By whom built Alex Stephen & Sons Ltd (H&S) Tons Gross 7707 Net 4307
 Engines made at Glasgow By whom made Alex Stephen & Sons Ltd (H&S) when made 1913
 Boilers made at ditto By whom made ditto when made 1913
 Registered Horse Power Owners Howard Smith & Co Port belonging to Melbourne
 Nom. Horse Power as per Section 28 1202 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c. Description of Engines Quadruple Expansion (2 Sets) No. of Cylinders 8 No. of Cranks 8
 Dia. of Cylinders 24 1/2 - 35 - 50 - 40 Length of Stroke 48 Revs. per minute 100 Dia. of Screw shaft as per rule 14.02 Material of screw shaft S
 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 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 5-8
 Dia. of Tunnel shaft as per rule 13.16 Dia. of Crank shaft journals as per rule 13.81 Dia. of Crank pin 14 3/4 Size of Crank webs 26 x 9 1/2 Dia. of thrust shaft under collars 14 1/4 Dia. of screw 16.3 Pitch of Screw 19.6 No. of Blades 3 State whether moveable Yes Total surface 49.5
 No. of Feed pumps 2 Diameter of ditto Stroke 10 x 12 x 12 Dupl. 8 x 9 x 8 Dupl. Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto Stroke 10 x 12 x 12 Dupl. 8 x 9 x 8 Dupl. Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 3 Sizes of Pumps 4d 1 1/2 x 5 x 10 Bal 10 1/2 x 12 1/2 Fed 2 1/2 x 5 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 3 at 3 1/2 2 at 2 1/2 Stokehold 2 - 3 1/2 In Holds, &c. 5 @ 3 1/2 Gross Number 2.3 1/2
 Tunnel 1 at 3 1/2
 No. of Bilge Injections 2 sizes 8 Connected to condenser, or to circulating pump Yes 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 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 Both
 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 Bilge Ballast Suction How are they protected Wood Casings
 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 8-10-12 of Stern Tube 8-10-12 Screw shaft and Propeller 8-10-12
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from U & R Platform

BOILERS, &c. Letter for record Suppliers Manufacturers of Steel Colville Steel Co of Scotland
 Total Heating Surface of Boilers 18808 Is Forced Draft fitted Yes No. and Description of Boilers 6 Single Ended
 Working Pressure 215 Tested by hydraulic pressure to 430 Date of test 23-9-12 28-9-12 1-10-12 No. of Certificate 11757, 11777, 11794
 Can each boiler be worked separately Yes Area of fire grate in each boiler 77 1/2 No. and Description of Safety Valves to each boiler Double Spring Area of each valve 96 Pressure to which they are adjusted 220 Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 18 Mean dia. of boilers 16 - 10 29/32 Length 12.3 13/32 Material of shell plates S
 Thickness 129/32 Range of tensile strength 28/32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams DR
 long. seams TR & DBS Diameter of rivet holes in long. seams 129/32 Pitch of rivets 10 1/2 Top of plates or width of butt straps 26
 Per centages of strength of longitudinal joint rivets 106-25 plate 81-84 Working pressure of shell by rules 249 Size of manhole in shell 16 x 12
 Size of compensating ring M'Neil No. and Description of Furnaces in each boiler 4 Deighton Material S Outside diameter 3-10 1/2
 Length of plain part top bottom Thickness of plates crown bottom 143/64 Description of longitudinal joint weld No. of strengthening rings 3/4
 Working pressure of furnace by the rules 227 Combustion chamber plates: Material S Thickness: Sides 23/32 Back 11/16 Top 23/32 Bottom 11/16
 Pitch of stays to ditto: Sides 8 3/4 x 19 Back 7 x 10 Top 8 x 9 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 217
 Material of stays S Area at smallest part 179.2127 Area supported by each stay 70 Working pressure by rules 216 End plates in steam space: Material S Thickness 15/64 Pitch of stays 18 7/8 x 16 How are stays secured DN Working pressure by rules 216 Material of stays S
 Area at smallest part 7.22 Area supported by each stay 302 Working pressure by rules 245 Material of Front plates at bottom S
 Thickness 7/8 Material of Lower back plate S Thickness 15/16 Greatest pitch of stays 13 1/2 x 7 Working pressure of plate by rules 297
 Diameter of tubes 2 3/4 Pitch of tubes 3 7/8 x 4 1/8 Material of tube plates S Thickness: Front 7/8 DP Back 7/8 Mean pitch of stays 8
 Pitch across wide water spaces 13 1/2 Working pressures by rules 220 Girders to Chamber tops: Material S Depth and thickness of girder at centre 10 7/8 9 3/4 (2) Length as per rule 3-0 Distance apart 9 x 10 1/2 Number and pitch of stays in each 3 at 8
 Working pressure by rules 221 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 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

In a Report also sent on the Hull of the Ship

VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description			When made	Where fixed
Made at	By whom made				
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	
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 Connecting Rod bolts Nuti for bottom, ditto for top 2 main bearing bolts 1 set of coupling bolts 1 set of Feed & Bilge Pump valves 1 set of Piston Rings, a quantity of assorted bolts nuts, iron of various sizes, 2 Propeller blades, 2 Propeller Bolts 2 Propeller Shafts, Air Pump Rod, Bucket 2 Pair of Beach Pulley Blocks

The foregoing is a correct description,
 Alex. Stephens & Sons Ltd. Manufacturer.

Dates of Survey while building	During progress of work in shops --	1912. Jan. 9-15-29. Feb. 5-7-14-26. March 12-21-26. April 2-3-9-16-25-29. May 2-7-10-17-27.
	During erection on board vessel ---	June 12-17-20-27. July 1-8-30. Aug. 2-16-20-22-28. Sept. 3-5-13-23. Oct. 1-8-14-19-22-23-24-28.
	Total No. of visits	66.

Is the approved plan of main boiler forwarded herewith Yes
 " " " donkey " " " " None

Dates of Examination of principal parts—	Cylinders 22-8-12	Slides 8-10-12	Covers 23-9-12	Pistons 2-8-12	Rods 2-8-12
Connecting rods	20-6-12	Crank shaft 30-7-12	Thrust shaft 30-7-12	Tunnel shafts 1-10-12	Screw shaft 23-9-12
Stern tube	23-9-12	Steam pipes tested 11/12 24/10/23/2/12	Engine and boiler seatings 8-10-12	Engines holding down bolts 3-12-12	
Completion of pumping arrangements	3-12-12	Boilers fixed 27-11-12	Engines tried under steam	4-3-13	
Main boiler safety valves adjusted	26-12-12	Thickness of adjusting washers	SAB 15/32 7/16 13/32 7/16 15/32 1/2 3/8 3/8 13/32 13/32 7/16 7/16	CAB PAB FEB CFB S.FB	
Material of Crank shaft	Steel	Identification Mark on Do.	LLOYDS 452 WGM	Material of Thrust shaft	Steel
Material of Tunnel shafts	Steel	Identification Marks on Do.	ditto	Material of Screw shafts	Steel
Material of Steam Pipes	Steel	Test pressure	645	Identification Marks on Do.	ditto

General Remarks (State quality of workmanship, opinions as to class, &c.) These engines & boilers have been built under special survey in accordance with the approved plan & the workmanship & material are of good quality. The machinery is eligible in my opinion for the record of L M C 3-13

It is submitted that this vessel is eligible for the Record + L M C 3.13

F.D. J.W.D. 13/3/13
 Wm Gordon Muirhead
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee	£ 3 : -	When applied for,
Special	£ 75 : -	6-5-13
Donkey Boiler Fee	£ : -	When received,
Travelling Expenses (if any)	£ : -	7-3-13

Committee's Minute GLASGOW 11 MAR. 1913
 Assigned + L M C 3.13

MACHINERY CERTIFICATE WRITTEN



Glasgow

Certificate (if required) to be sent to

(The Surveyors are requested not to write on or below the space for Committee's Minute.)

L.M.C. 7/3/13