

# REPORT ON MACHINERY.

No. 32043

WED. NOV. 27 1912

Received at London Office

Date of writing Report 19 When handed in at Local Office 22. 11. 1912 Port of Glasgow  
 No. in Survey held at Dumbarton Date, First Survey 10. 10. 11 Last Survey 1. 11. 1912  
 Reg. Book. on the Twin S/s "Indarra" (Number of Visits 49.)  
 Master M. M. Osborne Built at Dumbarton By whom built Wm Denny & Bros Tons Gross 9735 Net 6051  
 Engines made at Dumbarton By whom made Denny & Co when made 1912  
 Boilers made at do By whom made do when made 1912  
 Registered Horse Power Owners Australasian United S S Co Port belonging to Fremantle  
 Nom. Horse Power as per Section 28 1378 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

**ENGINES, &c.**—Description of Engines Twin Screw-Quadruple Expansion No. of Cylinders 8 No. of Cranks 4 each ing  
 Dia. of Cylinders 26 1/2 - 38 - 54 - 46 Length of Stroke 48 Revs. per minute 90 Dia. of Screw shaft as per rule 14. 65 Material of steel as fitted 16" screw shaft  
 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 6'-0"  
 Dia. of Tunnel shaft as per rule 13. 74 Dia. of Crank shaft journals as per rule 14. 42 Dia. of Crank pin 15 1/2 Size of Crank webs 28 1/2 x 10 1/2 Dia. of thrust shaft under collars 15 1/4 Dia. of screw 16'-6" Pitch of Screw 19'-0" No. of Blades 3 State whether moveable yes Total surface 64 sq ft  
 No. of Feed pumps 3 Weirs Diameter of ditto 15 1/2 - 11 1/2 Stroke 26 Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 duplex Diameter of ditto 7-7 Stroke 8 Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 9 Sizes of Pumps 2 duplex 8 1/2 x 10 - 5 duplex 7-7 x 8 No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 2 of 3 1/2 Strokehold 2 of 3 1/2 and 2 direct of 3 1/2 In Holds, &c. No 1 Hold 2 of 3 1/2 No 2 Hold 2 of 3 1/2 Forward bunker 2 of 3 1/2 aft Hold 2 of 3 1/2 Tunnel well 1 of 3  
 No. of Bilge Injections 2 sizes 10" Connected to condenser, or to circulating pump civil pp Is a separate Donkey Suction fitted in Engine room & size yes 2 of 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 Bilge ballast & swimming bath How are they protected wood or iron 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 17-6-12 of Stern Tubes 10-6-12 Screw shaft and Propeller 17-6-12  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with 2 watertight doors yes worked from upper ER platform

**BOILERS, &c.**—(Letter for record 5) Manufacturers of Steel Lanarkshire Steel Co - Spencer & Sons. Steel Co of Scotland  
 Total Heating Surface of Boilers 21420 sq ft Is Forced Draft fitted yes No. and Description of Boilers 7 single ended.  
 Working Pressure 210 lbs sq in Tested by hydraulic pressure to 420 lbs sq in Date of test 17. 5. 12 - 10. 6. 12 No. of Certificate 11590 - 11634  
 Can each boiler be worked separately yes Area of fire grate in each boiler 80 sq ft No. and Description of Safety Valves to each boiler 2 spring loaded. Area of each valve 8.95 sq in Pressure to which they are adjusted 210 lbs sq in Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 16'-3 1/2" Length 11'-10" Material of shell plates steel  
 Thickness 1 5/8" Range of tensile strength 30/34 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams DR lap long. seams DBS TR. Diameter of rivet holes in long. seams 1 5/8" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 1'-11 1/2"  
 Per centages of strength of longitudinal joint rivets 90 plate 84.5 Working pressure of shell by rules 243 Size of manhole in shell 17 x 13  
 Size of compensating ring 34 x 34 x 1 5/8 No. and Description of Furnaces in each boiler 4 Morrison Material steel Outside diameter 44 3/4  
 Length of plain part top Thickness of plates crown 2 1/8" bottom 3/2" Description of longitudinal joint welded No. of strengthening rings  
 Working pressure of furnace by the rules 239 Combustion chamber plates: Material steel Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 1"  
 Pitch of stays to ditto: Sides 7 3/4 x 7 3/4 Back 7 3/4 x 7 3/8 Top 7 3/4 x 7 3/8 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 221  
 Material of stays steel Area at smallest part 1.69 sq in Area supported by each stay 61 sq in Working pressure by rules 221 End plates in steam space:  
 Material steel Thickness 1 3/2" Pitch of stays 16 x 16 3/4 How are stays secured DN + W Working pressure by rules 213 Material of stays steel  
 Diameter at smallest part 6.49 Area supported by each stay 267 sq in Working pressure by rules 252 Material of Front plates at bottom steel  
 Thickness 7/8 Material of Lower back plate steel Thickness 7/8 Greatest pitch of stays 13 1/2 Working pressure of plate by rules 274  
 Diameter of tubes 2 1/2 Pitch of tubes 3 1/2 x 3 3/4 Material of tube plates steel Thickness: Front 7/8 Back 31/32 Mean pitch of stays 7 1/4  
 Pitch across wide water spaces 13 1/2 doubled Working pressures by rules 263 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 2 plates 8 1/2 x 3 3/4 Length as per rule 2'-5" Distance apart 7 3/8 Number and pitch of stays in each 3 of 4 3/4  
 Working pressure by rules 238 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



**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 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 top end, 4 bottom end, 4 main bearing and 3 sets of coupling bolts nuts. 2 valve spindles. 2 pairs top end brasses. 2 eccentric straps. 2 impellers shafts good 1 crank shaft for circulating pump. Air pump bucket, rod, and head valve. Set of valves seats for each size feed, bilge auxiliary pumps. 2 main check valves. propeller shaft 4 propeller blades. Assorted iron, bolts, nuts.

The foregoing is a correct description,

*W. J. Clark* Manufacturer.

Dates of Survey while building: During progress of work in shops -- 1911 Oct. 10-17-23, Nov. 9-17, Dec. 8-14-20. 1912 Jan. 11-15-18-29, Feb. 8-20-21-26. March 7-11-14-19, April 2-10-15-24-25-30, May 14-17, June 5-10-17, July 3-20, Aug. 7-9-21-23-27-28. Sept. 4-5-10-18, Oct. 2-7-14-24-26, Nov. 1.

Total No. of visits 499.

Is the approved plan of main boiler forwarded herewith yes

" " " donkey " " " —

Dates of Examination of principal parts—Cylinders 18-1-12 7-3-12 Slides 10-4-12 Covers 7-3-12 Pistons 14-5-12 Rods 10-4-12 Connecting rods 20-2-12 Crank shaft 7-3-12-10-4-12 Thrust shaft 7-3-12-10-4-12 Tunnel shafts 20-2-12 15-4-12 Screw shaft 10-4-12 Propellers 10-6-12 Stern tubes 14-5-12 Steam pipes tested 25-4-12 to 10-9-12 Engine and boiler seatings 14-6-12 Engines holding down bolts 5-9-12 Completion of pumping arrangements 24-10-12 Boilers fixed 18-9-12 Engines tried under steam 24-10-12 Main boiler safety valves adjusted 24-10-12 Thickness of adjusting washers see below

Material of Crank shaft steel Identification Mark on Do. Y42 HC Material of Thrust shaft steel Identification Mark on Do. Y42 HC

Material of Tunnel shafts steel Identification Marks on Do. Y42 HC Material of Screw shafts steel Identification Marks on Do. Y42 HC

Material of Steam Pipes Iron Test pressure 630 lbs

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

Safety valve washers. APB PV  $\frac{21}{64}$  SV  $\frac{23}{64}$ . ACB FV  $\frac{29}{64}$  AV  $\frac{29}{64}$ . ASB PV  $\frac{21}{64}$  SV  $\frac{25}{64}$ . FPB PV  $\frac{29}{64}$  SV  $\frac{27}{64}$ . FCB FV  $\frac{25}{64}$  AV  $\frac{26}{64}$ . FSB PV  $\frac{3}{8}$  SV  $\frac{3}{8}$ . FB FV  $\frac{3}{8}$  AV  $\frac{3}{8}$ .

The machinery of this vessel has been constructed under special survey in accordance with the rules and approved plans enclosed, and has been run working under steam satisfactorily. Materials and workmanship are good.

This machinery is eligible in my opinion to be classed +LMC. 11.12.

It is submitted that this vessel is eligible for THE RECORD, +LMC 11.12 F.D.

The amount of Entry Fee .. £ 3 : 0 : When applied for, 11.11.12  
 Special .. £ 49 : 8 : 6  
 Donkey Boiler Fee .. £ : :  
 Travelling Expenses (if any) £ : : 14.11.12

*Harry Clarke*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **GLASGOW 26 NOV. 1912**  
 Assigned + LMC 11.12



Rpt. 13.

Port of ...

No. in Reg. Book ...

Owners ...

Yard No. 96

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Dyna

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Branch cables

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Upper

Stringer

FRAME

REVEE

bold

Form No. 1B.

Bow

Top

Rigging

Sails.