

# REPORT ON MACHINERY.

No. 31511

Received at London Office

WED JUN 5 - 1912

Date of writing Report 1/6/12 when handed in at Local Office

1/6/12 Port of Glasgow

No. in Survey held at Glasgow Reg. Book. on the 1/5 Benefactor

Date, First Survey 6<sup>th</sup> October 1911 Last Survey 23<sup>rd</sup> May 1912

Master J. P. Atkinson Built at Glasgow

By whom built D. W. Henderson & Co. Ltd.

Tons Gross 5511 Net 3499 When built 1912

Engines made at Glasgow By whom made do when made 1912

Boilers made at do By whom made do when made 1912

Registered Horse Power 536

Owners J. & J. Harrison

Port belonging to Liverpool

Nom. Horse Power as per Section 28 536

Is Refrigerating Machinery fitted for cargo purposes no

Is Electric Light fitted yes

## ENGINES, &c.—Description of Engines Triple expansion

No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 24 1/2 - 42 1/2 - 42 Length of Stroke 54 Revs. per minute 80 Dia. of Screw shaft as per rule 15.33 as fitted 16 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 — 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 close fit 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 14.06 as fitted 14 1/2 Dia. of Crank shaft journals as per rule 14.4 as fitted 15 1/2 Dia. of Crank pin 15 1/2 Size of Crank webs 22x10 Dia. of thrust shaft under collars 15 1/2 Dia. of screw 18'-0" Pitch of Screw 19'-0" No. of Blades 4 State whether moveable yes Total surface 105 sq ft

No. of Feed pumps 2 Diameter of ditto 4 1/4 Stroke 27 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 3/4 Stroke 27 Can one be overhauled while the other is at work yes

No. of Donkey Engines 4 Sizes of Pumps 2 Weir fed 10 1/2 - 8 x 21 1 duplex 8 - 6 x 8 9 - 10 x 10 3 - 8 x 6 6 - 4 1/2 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2 of 3 1/2" stokehold 2 of 3 1/2" In Holds, &c. No 1 - 2 of 3 1/2" No 2 - 2 of 3 1/2" No 3 - 2 of 3 1/2" No 4 (dup tank) 2 of 3 1/2" No 5 2 of 3 1/2" No 6 - 1 of 3 1/2" Tunnel 1 of 3 1/2"

No. of Bilge Injections 1 sizes 9" Connected to condenser, or to circulating pump civil pp 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 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 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 2.3.3.12 of Stern Tube 2.3.3.12 Screw shaft and Propeller 2.3.3.12

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper deck.

## BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Steel Co of Scotland - D Colville & Sons - W Beardmore & Co

Total Heating Surface of Boilers 7875 sq ft Is Forced Draft fitted no No. and Description of Boilers Two - Double ended

Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 13.3.12 No. of Certificate 11446

Can each boiler be worked separately yes Area of fire grate in each boiler 114.8 sq ft No. and Description of Safety Valves to each boiler 2 spring loaded Area of each valve 9.62 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 24" Mean dia. of boilers 15'-0" Length 17'-8 1/4" Material of shell plates steel

Thickness 1 1/32" Range of tensile strength 29/32 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams DBS + TR lap

long. seams DBS - TR Diameter of rivet holes in long. seams 1 1/32" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 24 3/8"

Per centages of strength of longitudinal joint rivets 88.6 plate 84.9 Working pressure of shell by rules 251 Size of manhole in shell 20 x 16

Size of compensating ring 31 x 27 x 1 1/32 flanged No. and Description of Furnaces in each boiler 6 Morrison bulb Material steel Outside diameter 41 1/2"

Length of plain part top 19" bottom 32" Thickness of plates crown 19" bottom 32" Description of longitudinal joint welded No. of strengthening rings

Working pressure of furnace by the rules 229 1/2 Combustion chamber plates: Material steel Thickness: Sides 7/16" Back — Top 1/16" Bottom 1 1/2"

Pitch of stays to ditto: Sides 8 1/2" x 8 1/2" Back — Top 8 x 9 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 226 lbs

Material of stays steel Diameter at smallest part 1.99" Area supported by each stay 42" Working pressure by rules 250 End plates in steam space:

Material steel Thickness 1 3/8" Pitch of stays 19 1/2" x 21 How are stays secured DN + W Working pressure by rules 218 lbs Material of stays steel

Diameter at smallest part 10.12" Area supported by each stay 410" Working pressure by rules 256 Material of Front plates at bottom steel

Thickness 1" Material of Lower back plate — Thickness — Greatest pitch of stays — Working pressure of plate by rules —

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates steel Thickness: Front 1 1/8" - 1" Back 1" Mean pitch of stays 9"

Pitch across wide water spaces 14 1/2" Working pressures by rules 220 lbs Girders to Chamber tops: Material steel Depth and

thickness of girder at centre 2 plates 11 x 1" Length as per rule 40" Distance apart 9" Number and pitch of stays in each 4 of 8"

Working pressure by rules 245 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

If not, state whether, and when, one will be sent

Lloyd's Register Foundation

**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 \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_

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:— 4 top end, 2 bottom end, 2 main bearing and 3 sets of coupling bolts nuts— set of top end brasses, 1 eccentric sheave strap, 1 valve spindle, 1 pair bottom end brasses, air pump head valve seating rod, set of feed & bilge pump valves, Propeller shaft, Propeller boss & 2 blades, set of piston springs, assorted iron & bolts/nuts

The foregoing is a correct description,

FOR DAVID & WILLIAM HENDERSON & CO. LIMITED  
 \_\_\_\_\_  
 Manufacturer.

Dates of Survey while building

During progress of work in shops --- During erection on board vessel --- Total No. of visits	1911. Oct. 6. 13. 18. 21. 24.	Nov. 7. 14. 22. 28.	Dec. 4. 12. 18. 24.	1912. Jan. 2. 25. 31.	Feb. 7. 12. 16. 21.
	2). March 1. 18. 19. 23. Apr. 1. 12. 19. 25. 30. May 4. 9. 13. 23.				
	34.				

Is the approved plan of main boiler forwarded herewith  yes

auxiliary donkey " " "  yes

Dates of Examination of principal parts—

Cylinders	7.2.12 } 27.2.12	Slides	27.2.12	Covers	27.2.12	Pistons	25.1.12 } 27.2.12	Rods	27.2.12
Connecting rods	25.1.12	Crank shaft	25.1.12	Thrust shaft	25.1.12 } 27.2.12	Tunnel shafts	1.3.12	Screw shaft	13.3.12 } Propeller 1.3.12
Stern tube	27.2.12	Steam pipes tested	1.3.12 } 4.5.12	Engine and boiler seatings	23.3.12	Engines holding down bolts	13.5.12		
Completion of pumping arrangements	13.5.12	Boilers fixed	13.5.12	Engines tried under steam	23.5.12				

Main boiler safety valves adjusted 13.5.12 Thickness of adjusting washers SB PV  $\frac{3}{8}$  SV  $\frac{3}{8}$  PB PV  $\frac{3}{8}$  SV  $\frac{5}{16}$  full

Material of Crank shaft steel Identification Mark on Do. 478 H.C. Material of Thrust shaft steel Identification Mark on Do. 478 H.C.

Material of Tunnel shafts steel Identification Marks on Do. 478 H.C. Material of Screw shafts steel Identification Marks on Do. 478 H.C.

Material of Steam Pipes Iron & Copper Test pressure 645 + 430 lbs

**General Remarks** (State quality of workmanship, opinions as to class, &c. The machinery of this vessel has been constructed under special survey in accordance with the rules and plans enclosed and has been seen working under steam satisfactorily.

An amended plan of main boilers is enclosed with the approved plan, the former shewing minor alterations which have been made in these boilers.

This machinery is eligible in my opinion to be classed +LMC 5.12

It is submitted that this vessel is eligible for THE RECORD + LMC 5.12

*Harry Clarke*  
 5/6/12

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

The amount of Entry Fee .. £ 3 : 0 :  
 Special .. .. £ 46. 16 :  
 Donkey Boiler Fee .. .. £ : :  
 Travelling Expenses (if any) £ : :

When applied for, 3/6/12  
 When received, 27/6/12

Committee's Minute GLASGOW 4 - JUN. 1912

Assigned + LMC 5.12



Glasgow

Certificate (if required) to be sent to

L.M.C. 3/6/12