

# REPORT ON MACHINERY.

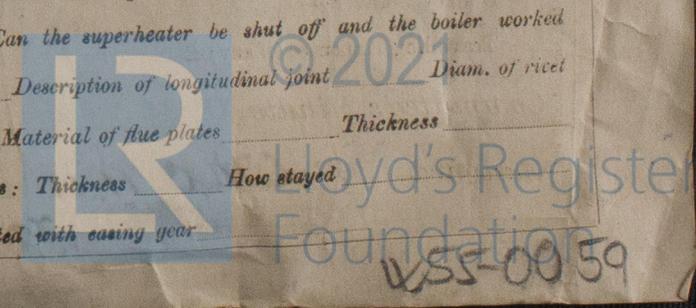
No. 38317

Received at London Office WED. 20 NOV. 1918

Date of writing Report \_\_\_\_\_ When handed in at Local Office \_\_\_\_\_ 10 Port of Glasgow  
 Date, First Survey 12/7/18 Last Survey 3<sup>rd</sup> Feb 1918  
 (Number of Visits 106)  
 Survey held at Glasgow  
 on the SS "WAR ARYAN"  
 Built at Glasgow By whom built Harland & Wolff Ltd No 528 When built 1918  
 Engines made at Glasgow By whom made Harland & Wolff Ltd No 531 when made 1918  
 Boilers made at do. By whom made Do W Henderson No 539 when made 1918  
 Registered Horse Power \_\_\_\_\_ Owners Shipping Controller (Anglo American Oil Co Ltd) Port belonging to London  
 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 27-44-73 Length of Stroke 48 Revs. per minute 77 Dia. of Screw shaft 15 1/2 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  
 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 yes If two  
 liners are fitted, is the shaft lapped or protected between the liners \_\_\_\_\_ Length of stern bush 5.0 1/2  
 Dia. of Tunnel shaft 13 1/2 Dia. of Crank shaft journals 14 1/2 Dia. of Crank pin 14 1/2 Size of Crank webs 28x9 Dia. of thrust shaft under  
 bars 14 3/4 Dia. of screw 17-6 Pitch of Screw 16-6 No. of Blades 4 State whether moveable no Total surface 102 ft  
 No. of Feed pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 3 Sizes of Pumps \_\_\_\_\_ No. and size of Suctions connected to both Bilge and Donkey pumps  
Engine Room two 3 1/2, one 2 1/2, Stokholm two 3 1/2 In Holds, &c. two 3, cross bunker two 3 1/2,  
aft Hold two 3, Tunnel well one 3, Tunnel fore end one 3.  
 No. of Bilge Injections 1 sizes 8 Connected to condenser, or to circulating pump no Is a separate Donkey Suction fitted in Engine room of 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 Bilge oil Suctions How are they protected wood, iron 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 23.9.18 of Stern Tube 23.9.18 Screw shaft and Propeller 23.9.18  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door no worked from Entry by trunkway

BOILERS, &c.—(Letter for record S) Manufacturers of Steel See separate Rpt  
 Total Heating Surface of Boilers 7668 Is Forced Draft fitted yes No. and Description of Boilers 3 S.S. 3SB  
 Working Pressure 180 Tested by hydraulic pressure to 360 Date of test 29.5.18 No. of Certificate 14439  
 Can each boiler be worked separately yes Area of fire grate in each boiler 63.3 ft No. and Description of Safety Valves to  
 each boiler 1 Pair direct Spring Area of each valve 9.625 Pressure to which they are adjusted 185 Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 1-9 Mean dia. of boilers \_\_\_\_\_ Length \_\_\_\_\_ Material of shell plates  
 Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Are the shell plates welded or flanged \_\_\_\_\_ Descrip. of riveting: cir. seams  
 g. seams \_\_\_\_\_ Diameter of rivet holes in long. seams \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plates or width of butt straps  
 Percentages of strength of longitudinal joint \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Size of manhole in shell  
 No. and Description of Furnaces in each boiler \_\_\_\_\_ Material \_\_\_\_\_ Outside diameter \_\_\_\_\_  
 Length of plain part \_\_\_\_\_ Thickness of plates \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ No. of strengthening rings  
 Working pressure of furnace by the rules \_\_\_\_\_ Combustion chamber plates: Material \_\_\_\_\_ Thickness: Sides \_\_\_\_\_ Back \_\_\_\_\_ Top \_\_\_\_\_ Bottom  
 No. of stays to ditto: Sides \_\_\_\_\_ Back \_\_\_\_\_ Top \_\_\_\_\_ If stays are fitted with nuts or riveted heads \_\_\_\_\_ Working pressure by rules  
 Material of stays \_\_\_\_\_ Diameter at smallest part \_\_\_\_\_ Area supported by each stay \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ End plates in steam space:  
 Material \_\_\_\_\_ Thickness \_\_\_\_\_ Pitch of stays \_\_\_\_\_ How are stays secured \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ Material of stays  
 Diameter at smallest part \_\_\_\_\_ Area supported by each stay \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ Material of Front plates at bottom  
 Thickness \_\_\_\_\_ Material of Lower back plate \_\_\_\_\_ Thickness \_\_\_\_\_ Greatest pitch of stays \_\_\_\_\_ Working pressure of plate by rules  
 Diameter of tubes \_\_\_\_\_ Pitch of tubes \_\_\_\_\_ Material of tube plates \_\_\_\_\_ Thickness: Front \_\_\_\_\_ Back \_\_\_\_\_ Mean pitch of stays  
 Deck across wide water spaces \_\_\_\_\_ Working pressures by rules \_\_\_\_\_ Girders to Chamber tops: Material \_\_\_\_\_ Depth and  
 Thickness of girder at centre \_\_\_\_\_ Length as per rule \_\_\_\_\_ Distance apart \_\_\_\_\_ Number and pitch of stays in each  
 Working pressure by rules \_\_\_\_\_ 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  
 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. *None* Description *Vertical Donkey Boiler*

Made at *Warrington* By whom made *Warrington* When made *1918* Where fixed *Warrington*

Working pressure tested by hydraulic pressure to *150 lbs* Date of test *13/11/18* No. of Certificate *1118* Fire grate area *15* Description of So *Vertical Donkey Boiler*

Valves *2* No. of Safety Valves *2* Area of each *15* Pressure to which they are adjusted *150* Date of adjustment *13/11/18*

If fitted with casing gear *No* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *15* Length *15*

Material of shell plates *Steel* Thickness *1/2"* Range of tensile strength *35* Descrip. of riveting long. seams *Longitudinal*

Dia. of rivet holes *1/4"* Whether punched or drilled *Drilled* Pitch of rivets *2"* Lap of plating *1"* Per centage of strength of joint *100* Rivets *100* Plates *100*

Working pressure of shell by rules *150* Thickness of shell crown plates *1/2"* Radius of do. *15* No. of stays to do. *15* Dia. of stays *1/2"*

Diameter of furnace Top *15* Bottom *15* Length of furnace *15* Thickness of furnace plates *1/2"* Description of joint *Longitudinal*

Working pressure of furnace by rules *150* Thickness of furnace crown plates *1/2"* Radius of do. *15* Stayed by *15*

Diameter of uptake *15* Thickness of uptake plates *1/2"* Thickness of water tubes *1/2"* Dates of survey *13/11/18*

**SPARE GEAR.** State the articles supplied:— *2 top end & 2 bottom end & 2 main bearings & 6 coupling bolts & nuts, set of feed and bilge pump valves, assortment iron bolts nuts, and other spares as required by specification.*

The foregoing is a correct description,  
*J. E. Rebeck*

Manufacturer.

**FOR HARLAND & WOLFE LTD.**  
**GENERAL MANAGERS**  
**DIESEL ENGINE WORKS**

|                                |                                  |   |
|--------------------------------|----------------------------------|---|
| Dates of Survey while building | During progress of work in shops | 1917 July 12-26 Aug 2-8-9-20-29-26-30-31 Sept 8-12-18-21 Oct 11-17-26-31 Nov 3-12-13-14-20-23-27 Dec 5-8-11-13-18-21-24   |
|                                | During erection on board vessel  | 1918 Jan 8-10-16-17-22-29 Feb 5-8-13-20-25-26 Mar 7-11-13-18-19-21-22-26-28 Apr 6-5-11-15-17-23-30 May 3-16-21-22-27 June 3-5-12-19-24-27 July 1-3-5-8-10-11-24-29-30-31 Aug 2-19-22-26-27-28 Sept 9-13-17-19-24-26 Oct 3-10-15-21-25-30 Nov 5-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31 |
|                                | Total No. of visits              | 105   |

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

Dates of Examination of principal parts—Cylinders 8.5.18 Slides 23.5.18 Covers 23.5.18 Pistons 23.5.18 Rods 3.6.18

Connecting rods 3.6.18 Crank shaft 12.6.18 Thrust shaft 3.7.18 Tunnel shafts 3.7.18 Screw shaft 30.7.18 Propeller 30.7.18

Stern tube 30.7.18 Steam pipes tested 6.9.17 Engine and boiler seatings 13.9.18 Engines holding down bolts 15.10.18

Completion of pumping arrangements 5.11.18 Boilers fixed 15.10.18 Engines tried under steam 25.10.18 8.11.18

Main boiler safety valves adjusted 25.10.18 Thickness of adjusting washers Sta B. Sta C. Pt 2/8. Sta B. Sta C. Pt 2/8. Sta B. Sta C. Pt 2/8

Material of Crank shaft *Steel* Identification Mark on Do. *531 J.E.* Material of Thrust shaft *Steel* Identification Mark on Do. *1629-3897-3904-3822-3820-3822-3892 J.P.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *3897-3904-3822-3820-3822-3892 J.P.* Material of Screw shafts *Steel* Identification Marks on Do. *3391*

Material of Steam Pipes *Iron* Test pressure: *540 lb*

**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 approved plans, and has been seen working under steam satisfactorily.*

*The machinery is eligible in my opinion to be classed L.M.C.I.*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 11.18. F.D.

*J. E. Rebeck*  
21/11/18

|                              |          |                   |
|------------------------------|----------|-------------------|
| The amount of Entry Fee      | £        | When applied for, |
| Special                      | £ 146 .. | 13/11/18          |
| Donkey Boiler Fee            | £        | When received,    |
| Travelling Expenses (if any) | £        | 14/11/18          |

Committee's Minute **GLASGOW** 19 NOV 1918

Assigned *L.M.C. 11.18*

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



MACHINERY CERTIFICATE WRITTEN 20/11/18

Certificate (if required) to be sent to

*J.E.*  
19.11.18