

REPORT ON MACHINERY.

No. 29325

Received at London Office

Date of writing Report

19

When handed in at Local Office 10-11-1919

Port of Glasgow

No. in Survey held at Reg. Book.

Date, First Survey 9th Sept. 1918. Last Survey 29th Oct 1919

on the

S.S. **WARHINDOO** (Standard Z)

Tons } Gross
Net

Master Built at Glasgow By whom built W Hamilton & Co Ltd (No 371) When built 1919

Engines made at Glasgow By whom made Do Rowan & Co Ltd (No 318) when made 1919

Boilers made at Do By whom made Do (No 318) when made 1919

Registered Horse Power Owners Shipping Controller Port belonging to London

Nom. Horse Power as per Section 28 517 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 81 Dia. of Screw shaft as per rule 14.7 as fitted 15.2 Material of screw shaft Iron

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 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 as per rule 13.3 as fitted 13.2 Dia. of Crank shaft journals as per rule 14 as fitted 14.2 Dia. of Crank pin 14.2 Size of Crank webs 28x9 Dia. of thrust shaft under collars 14.2

Dia. of screw 17-6 Pitch of Screw 16-6 No. of Blades 4 State whether moceable No Total surface 98.2 sq 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, Feed 10 1/2 x 14 x 24 No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room (2) 3 1/2 " 80 kabal (3) 3 1/2 " 9 1/2 x 7 x 18 In Holds, &c. aft hold (2) 3 1/2 " Tunnel well (1) 3 1/2 "

Cross bunker (2) 3 1/2 " No. of Bilge Injections 1 sizes 12 Connected to condenser, or to circulating pump Pump 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 Some

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 7 d 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 19/9/19 of Stern Tube 19/9/19 of Screw shaft and Propeller 29/9/19

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door No worked from trunk way access from deck

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Steel Co of Scotland Ltd

Total Heating Surface of Boilers 7668 sq ft Is Forced Draft fitted Yes No. and Description of Boilers 3 Single ended

Working Pressure 180 lb Tested by hydraulic pressure to 360 lb Date of test 21.8.19 No. of Certificate 14864

Can each boiler be worked separately Yes Area of fire grate in each boiler 63.33 sq ft No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 9.60 Pressure to which they are adjusted 185 lb Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 1-6 Mean dia. of boilers 15-6 Length 11-6 Material of shell plates Steel

Thickness 1 1/4 Range of tensile strength 25432 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap long. seams T.R. D.B.S. Diameter of rivet holes in long. seams 1 5/16 Pitch of rivets 9 1/8 Lap of plates or width of butt straps 19 1/2

Per centages of strength of longitudinal joint rivets 85.3 plate 85.6 Working pressure of shell by rules 183 Size of manhole in shell 16 x 12

Size of compensating ring and flange No. and Description of Furnaces in each boiler 3 Corrugated Material Steel Outside diameter 4-2 3/8

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

Working pressure of furnace by the rules 188 Combustion chamber plates: Material Steel Thickness: Sides 3/32 Back 1/16 Top 3/32 Bottom 3/32

Pitch of stays to ditto: Sides 10 5/8 x 9 1/4 Back 10 1/4 x 8 3/4 Top 10 5/8 x 9 1/4 If stays are fitted with nuts or riveted heads No Working pressure by rules 180

Material of stays Steel Diameter at smallest part 2.395 Area supported by each stay 98 sq in Working pressure by rules 219 End plates in steam space: Material Steel Thickness 1 1/32 Pitch of stays 21 3/4 x 20 1/2 How are stays secured Nuts Working pressure by rules 181 Material of stays Steel

Diameter at smallest part 8.29 Area supported by each stay 445 sq in Working pressure by rules 198 Material of Front plates at bottom Steel Thickness 7/8 Material of Lower back plate Steel Thickness 3/32 Greatest pitch of stays 13 5/8 Working pressure of plate by rules 187

Diameter of tubes 2 3/4 Pitch of tubes 4 x 3 3/8 Material of tube plates Steel Thickness: Front 3/32 Back 3/4 Mean pitch of stays 9 5/8

Pitch across wide water spaces 13 5/8 Working pressures by rules 181 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10 x 7/8 (2) Length as per rule 35 9/16 Distance apart 10 5/8 Number and pitch of stays in each (3) 9 1/4

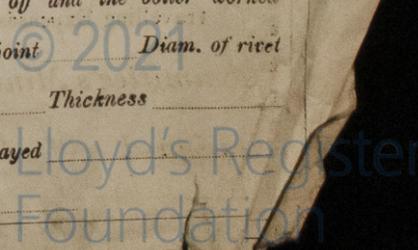
Working pressure by rules 188 Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately

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? Is a Report also sent on the Hull of the Ship?



VERTICAL DONKEY BOILER—

Manufacturers of Steel

None

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 casing 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:— *2 top and bolts & nuts 2 bottom end bolts & nuts 2 main bearing bolts & nuts, 6 coupling bolts & nuts set of feed and bilge Pump Valves assorted Iron bolts and nuts and other spares as required by Specification.*

The foregoing is a correct description,

Dand Kovan Co Ltd Manufacturers.

Dates of Survey while building: During progress of work in shops --- 1918 Sept. 9. 10. 26. Nov. 4. Dec. 11. 1919 Jan. 22. Feb. 6. 11. Mar. 6. 11. 24. 28. Apr. 1. 14. 16. 17. 28. May 2. 7. 8. During erection on board vessel --- 16. 22. 28. June 3. 18. 21. 23. 25. 26. July 1. 4. 11. 14. Aug 1. 21. 25. 29. Sept. 10. 11. 15. 16. 25. Oct. 1. 6. 7. 8. 16. 23. 24. Total No. of visits *52.*

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

Dates of Examination of principal parts—Cylinders 6.2.19 Slides 11.3.19 Covers 11.3.19 Pistons 3.6.19 Rods 3.6.19

Connecting rods 3.6.19 Crank shaft 28.5.19 Thrust shaft 17.4.19 Tunnel shafts 22.5.19 Screw shaft 15.9.19 Propeller 15.9.19

Stern tube 11.9.19 Steam pipes tested 14.4.19. 1.7.19 Engine and boiler seatings 23.10.19 Engines holding down bolts 23.10.19

Completion of pumping arrangements 25.10.19 Boilers fixed 23.10.19 Engines tried under steam 25.10.19 29.10.19

Main boiler safety valves adjusted 25.10.19 Thickness of adjusting washers *Stab 5/16" 1/4" Centre 5/16" 1/4" Bolt 5/16" 3/8"* LR4798

Material of Crank shaft *Steel* Identification Mark on Do. *718 28.5.19 JE* Material of Thrust shaft *Steel* Identification Mark on Do. *17.4.19 JE*

Material of Tunnel shafts *Steel* Identification Marks on Do. *** Material of Screw shafts *Iron* Identification Marks on Do. *2708 AF 23.10.19*

Material of Steam Pipes *Steel* Test pressure *540 lbs*

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

** 2510 2362 2199 658 2360 857*
781 709 639 698 707 697
22.5.19 JE 22.5.19 JE 22.5.19 JE 22.5.19 JE 22.5.19 JE 22.5.19 JE

The machinery of this vessel has been constructed under Special Survey in accordance with the Rules and approved Plans and has been seen working satisfactorily under Steam. Materials and workmanship are good.

The machinery is eligible in our opinion to be classed + LMC 10-19 and to have record of Fitted for oil fuel 10.19 F.P. above 150° F.

It is submitted that this vessel is eligible for THE RECORD + LMC. 10. 19. F.D. Fitted for oil fuel 10.19. F.P. above 150° F.

The amount of Entry Fee £ 146. 11. 0
 Special _____
 Donkey Boiler Fee _____
 Travelling Expenses (if any) £ _____

When applied for, 11/11/19
 When received, 13/11/19

J.W.D. 15/11/19
J.P.R.
 as Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **GLASGOW 11 NOV 1919**
 Assigned + LMC 10-19 F.D.
 Fitted for oil fuel 10.19 F.P. above 150° F.



GLASGOW

AC. 10.11.19

Certificate (if required) to be sent to the Registrar (The Registrar are requested not to write on or below the space for Committee's Minute.)

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