

## REPORT ON MACHINERY.

No. 1924

THU. 24 NOV. 1921

Date of writing Report 14<sup>th</sup> Nov<sup>r</sup> 1921 When handed in at Local Office 23<sup>rd</sup> Nov<sup>r</sup> 1921 Port of Bartow-in-Furness  
 No. in Survey held at Bartow-in-Furness Date, First Survey 20<sup>th</sup> Oct<sup>r</sup> 1919 Last Survey 13<sup>th</sup> Nov<sup>r</sup> 1921  
 Reg. Book. 24815 on the T.S.S. "MORETON BAY" (Number of Visits 195)

Master ✓ Built at Bartow-in-Furness By whom built Vickers Ltd (S/S No 573) When built 1921  
 Engines made at Bartow-in-Furness By whom made Vickers Ltd. (Eng. No 573) when made 1921  
 Boilers made at Bartow-in-Furness By whom made Vickers Ltd when made 1921  
 Nominal Registered Horse Power 1944 Owners The Rt. Hon. William Morris Hughes P.C. M.P.  
Prime Minister of the Commonwealth of Australia. Port belonging to Brisbane  
 Shaft Horse Power at Full Power 9000 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Parsons' Impulse Reaction Turbines No. of Turbines 2 H.P. ahead 2 Astern  
 Diameter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 4" Diameter of Pinion Shaft 1 7/8" H.P., 12 3/8" L.P., 19" 2<sup>nd</sup> Reduction  
 Diameter of Journals 5 1/2" 1<sup>st</sup> Red<sup>n</sup>, 11 1/2" 2<sup>nd</sup> Red<sup>n</sup> Distance between Centres of Bearings 2-7 1/4" 6-8" Diameter of Pitch Circle 8-546 H.P. 13-032 L.P. 20-541 2<sup>nd</sup> Red<sup>n</sup>  
 Diameter of Wheel Shaft 16" Distance between Centres of Bearings 4-2 1/2" Diameter of Pitch Circle of Wheel 103-805 Main 60-464 1<sup>st</sup> Red<sup>n</sup>  
 Width of Face 39" 18" Diameter of Thrust Shaft under Collars 16" Diameter of Tunnel Shaft as per rule 14-73" as fitted 15 1/4"  
 No. of Screw Shafts 2 CL See Buss M<sup>s</sup> 10.12.21 Diameter of same as fitted 16 1/2" Diameter of Propeller 19'-0" Pitch of Propeller Set to 18'-6" adjustable from 17'-6" to 19'-6"  
 No. of Blades 4 State whether Moveable Yes Total Surface 113 ft<sup>2</sup> developed Diameter of Rotor Drum, H.P. 14" L.P. 31 1/4" astern 36"  
 Thickness at Bottom of Groove, H.P. Solid L.P. Discs Astern Discs Revs. per Minute at Full Power, Turbine H.P. 3200 L.P. 2100 Propeller 90

## PARTICULARS OF BLADING.

H.P.

L.P.

ASTERN.

	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	2 Rows Impulse Wheel	2'-9" Mean dia.		2 1/2"	36"	4	3 Rows Impulse Wheel	4'-7" Mean dia.	
2ND	1 1/8"	19 1/4"	6	3 1/4"	34 1/2"	4	1 1/4"	38 1/2"	2
3RD	1 1/2"	20"	6	4 1/4"	39 1/2"	4	2 1/8"	40 1/4"	2
4TH	2"	21"	6	3"	51"	2	3"	42"	1
5TH	2 5/8"	22 1/4"	6	3 7/8"	52 3/4"	2	3"	42"	1
6TH	3 1/2"	24"	6	4 1/2"	54"	1	3"	42"	1
7TH				5 3/8"	55 3/4"	1			
8TH				6 3/8"	57 3/4"	1			
				4 1/2"	60"	3			

No. and size of Feed pumps 3 off 12" x 9" x 24"  
 No. and size of Bilge pumps 2 off 8" x 10" x 10" in E.R. + Motor-driven Emergency pump in B.R. dual 9 1/2" x 9"  
 No. and size of Bilge suction in Engine Room 6-3 1/2", 2 Bofferdam suction 3 1/2" In tunnel 3-3 1/2"  
In Boiler Room 6-3 1/2" + 1-7" direct to Emergency pump In Holds, &c. Nos 1, 2, 3 holds each 2-3 1/2" Gross Bunker 2-3 1/2" (portable)  
 No 4 hold 2-3 1/2", No 5 hold 1-3 1/2", No 6 hold 1-3 1/2"  
 No. of Bilge Injections 2 sizes 14" Connected to condenser, or to circulating pump Pumps Is a separate Donkey Suction fitted in Engine Room & size Yes 1-6 1/2"  
 Are all the bilge suction pipes fitted with roses strainers, others with mudboxes Are the roses in Engine room 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 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 None How are they protected ✓  
 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  
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes - two worked from Bridge, Bulkhead deck & at doors.

OILERS, &c.—(Letter for record (r)) Manufacturers of Steel Beardmore & Co., Spencer & Sons, Bessemer & Co.  
 Total Heating Surface of Boilers 25923 ft<sup>2</sup> Is Forced Draft fitted Yes No. and Description of Boilers 3 Double Ended, 2 Single Ended Multi  
 Working Pressure 220 lbs Tested by hydraulic pressure to 385 lbs Date of test 4/3/21, 12/7/21 No. of Certificate 318, 319, 320, 321  
 Can each boiler be worked separately Yes Area of fire grate in each boiler 165.54 ft<sup>2</sup> DEB. 82.9 ft<sup>2</sup> SEB No. and Description of Safety Valves to  
 each boiler Spring loaded Double SEB Area of each valve 11.04 ft<sup>2</sup> Pressure to which they are adjusted 223 lbs Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 14" Mean dia. of boilers 17'-6" Length 22'-6" Material of shell plates Steel  
 Thickness 1 1/2" Range of tensile strength 30/34 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams DEB, DR, TR Lap  
 long. seams TR Double Butt Straps Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 23 5/8"  
 Per centages of strength of longitudinal joint rivets 88.9% plates 84.2% Working pressure of shell by rules 223 lbs Size of manhole in shell 21" x 17"  
 Size of compensating ring 40" x 36 1/2" x 1 1/2" No. and Description of Furnaces in each Boiler SEB. 4 Motion DEB. 8 Material Steel Outside diameter 4'-0 7/8"  
 Length of plain part top ✓ crown 11/16" bottom ✓ Description of longitudinal joint Weld No. of strengthening rings ✓  
 Working pressure of furnace by the rules 221 lbs Combustion chamber plates: Material Steel Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 13/16"  
 Pitch of stays to ditto: Sides 9 7/8" x 8" Back 10" x 7 7/8" Top 9 7/8" x 8" If stays are fitted with nuts or riveted heads Both Working pressure by rules 225 lbs  
 Material of stays Iron Diameter at smallest part 1-606" Area supported by each stay 78.75 ft<sup>2</sup> Working pressure by rules 230 lbs End plates in steam space  
 Material Steel Thickness 1 1/4" Pitch of stays 18" x 17 5/8" How are stays secured Double Nuts Working pressure by rules 220 lbs Material of stays Steel  
 Diameter at smallest part 3" Area supported by each stay 317.25 ft<sup>2</sup> Working pressure by rules 244 lbs Material of Front plates at bottom Steel  
 Thickness 1" Material of Lower back plate Steel Thickness 29/32" Greatest pitch of stays 18" x 7" Working pressure of plate by rules 268 lbs  
 Diameter of tubes 2 3/4" Pitch of tubes 4" x 4" Material of tube plates Steel Thickness: Front 1" Back 15/16" Mean pitch of stays 10"  
 Pitch across wide water spaces 14 3/4" Working pressures by rules 240 lbs Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 9" x 1 1/2" Length as per rule 30-35" Distance apart 8" Number and pitch of stays in each 2-9 7/8"  
 Working pressure by rules 290 lbs Steam dome: description of joint to shell None 10 of strength of joint ✓ Diameter ✓  
 Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diameter of rivet holes ✓ Pitch of rivets ✓  
 Working pressure of shell by rules ✓ Crown plates: Thickness ✓ How stayed ✓



Tested by Hydraulic Pressure to 10% Elements 240

## IS A DONKEY BOILER FITTED?

If so, is a report now forwarded? ✓

*The foregoing is a correct description,*  
**FOR VICKERS LIMITED,**

Manufacturer.

Dates of Examination of principal parts—Casings <sup>2/8/20, 1/10/20</sup> 24/2/21, 12/5/21. Rotors <sup>31/5/20 12/9/20</sup> 24/9/20 31/5/21. Blading 12/5/21, 31/5/21. Gearing 24/5/21, 30/6/21, 9/9/21.  
Rotor shafts 12/8/20, 31/5/21. Thrust shafts 18/5/21, 9/6/21. Tunnel shafts 25/4/21. Screw shafts 8/4/21, 13/4/21. Propellers 4/3/21, 8/4/21.  
Stern tubes 12/4/21. Steam pipes tested 12/4/21 to 15/10/21. Engine and boiler seatings <sup>15/2/21</sup> 8/6/21. Engines holding down bolts 4/10/21.

Completion of pumping arrangements	2/11/21	Boilers fixed	11/8/21	Engines tried under steam	10/11/21 to 13/11/21
Main boiler safety valves adjusted	26/10/21	Thickness of adjusting washers	DEB. Stand. S.V. 1 3/32" P.V. 2 5/64" Sup. 3/5" Port. S.F. 2 3/64" S.A. 2 3/64" P.F. 3/8" P.A. 1 3/32" " 3/8" " 7/16"		
Material and tensile strength of Rotor shafts	34/38 ton steel			Identification Mark on Do.	LLOYD'S N° 167 J.H.
Material and tensile strength of Pinion shafts	Nickel steel, 40/45 tons tensile			Identification Mark on Do.	LLOYD'S N° 167 J.H.
Material of Wheel shaft	34/38 ton steel	Identification Mark on Do.		Material of Thrust shaft	28/32 ton steel Identification Mark on Do.
Material of Tunnel shafts	28/32 ton steel	Identification Marks on Do.		Material of Screw shafts	28/32 ton steel Identification Marks on Do.
Material of Steam Pipes	Solid drawn steel ✓			Test pressure	660 lbs per sq. in. ✓

Is an installation fitted for burning oil fuel. yes. ✓ Is the flash point of the oil to be used over 150°F. yes. ✓  
Have the requirements of Section 49 of the Rules been complied with yes, with the exception stated below. ✓  
Is this machinery a duplicate of a previous case. No. ✓ If so, state name of vessel ✓

*General Remarks* (State quality of workmanship, opinions as to class, &c.) The Machinery of this Vessel has been built under special survey, in accordance with the rules & the approved plans, & the material & workmanship are sound & good. The boilers have been tested by hydraulic pressure 385 lbs per sq. in., & on completion of fitting out their safety valves also the safety valves on the superheaters, were adjusted under steam to 223 lbs per sq. in. Accumulation tests were carried out on the safety valves with satisfactory results. Steam trials on all the auxiliary machinery & on the Main Engines have been carried out in dock & at sea, when everything worked satisfactorily.

The following item remains to be completed: - The control wires to the quick closing  
Burnbull valves on the oil fuel suction, where they enter the machinery space, require  
to be fitted in place & worked, & it is understood that this will be carried out  
on the vessel's arrival at London.

The Machinery of this Vessel is in my opinion, eligible to be classed in the Register Book with the notation **+I.M.C.H-21**, "Fitted for oil fuel 11-21, F.P. above 150° Fahr." when the survey is completed by the carrying out of the above outstanding item.

The amount of Entry Fee	...	£	6	:	0	:	0	When applied for,
Special	...	£	149	:	8	:	6	23 <sup>rd</sup> Nov <sup>r</sup> 1921
Donkey Boiler Fee	...	£		:		:		When received,
Travelling Expenses (if any)	£	8	:	10	:	6	12.12.21	

John Houston.  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 9 DEC. 1921

*Assigned*

+ L. Inc. 11.21

7. D.

Heated for oil fuel 11.21 F.P. above  $150^{\circ}\text{F}$ .

MACHINERY CERT  
WRITTEN 7

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Foundation