

REPORT ON MACHINERY.

No. 1971

Received at London office SAT. SEP. 29 1922

Date of writing Report 10th Aug. 1922. When handed in at Local Office 8th Sept. 1922 Port of Barrow-in-Furness
 No. in Survey held at Barrow-in-Furness Date, First Survey 16th Dec. 1919. Last Survey 4th Sept. 1922.
 Reg. Book. 19902 on the T.S.S. "Jervis Bay" (Number of Visits 167.)

Tons { Gross 138,387.74
 Net 84,425.52

Master ☒ Built at Barrow-in-Furness By whom built Vickers Ltd (Eng. No. 575) When built 1922

Engines made at Barrow-in-Furness By whom made Vickers Ltd (Eng. No. 575) when made 1922

Boilers made at Barrow-in-Furness By whom made Vickers Ltd when made 1922

Nominal Registered Horse Power 1944 Owners The Rt. Hon. William Morris Hughes P.C. M.P. Port belonging to Sydney

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 with double reduction helical gearing No. of Turbines 2 L.P. " 2 Astern

Diameter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 7" Diameter of Pinion Shaft 7 7/8" H.P. 12 3/8" L.P. 19" 2nd reduction.
 Diameter of Journals 5 1/2" Red. 11" 2nd 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" 2nd red.
 Diameter of Wheel Shaft 16" Distance between Centres of Bearings 7-2 1/2" Diameter of Pitch Circle of Wheel 60.464" 1st red.
 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 Two Diameter of same as per rule 16" 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 ft² 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 Propeller 90.
 L.P. 2100

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 Row Impulse Wheel	2'-9" mean diam.	2 1/2"	36"	4	3 Row Impulse Wheel	4'-7" mean diam.		
2ND	1 1/8"	19 1/4"	6	3 1/4"	37 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 3/8"	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			
				7 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 stokehold, dual 9 1/2" x 9"
 No. and size of Bilge suction in Engine Room 6-3 1/2", 2 buffers dam, Suctions 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. of Bilge Injections 2 sizes 1 1/4" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine Room & size 1-6 1/2" 1-3 1/2".
 Are all the bilge suction pipes fitted with roses Others with mud boxes & straight 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 Refrigerating brine pipes How are they protected Insulated & cased in
 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.

BOILERS, &c.—(Letter for record (r)) Manufacturers of Steel Beardmore & Co, Spencer & Son, Bessemer & Co.

Total Heating Surface of Boilers 25,923 ft² 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 12-12-21, 19-1-22, 22-12-21, 24-1-22 No. of Certificate 338, 339, 340, 341, 342,
 Can each boiler be worked separately yes Area of fire grate in each boiler 165.8 ft² DEB. 82.9 ft² SEB. No. and Description of Safety Valves to
 each boiler DEB. Quad. triple Spring SEB. Double 3 Loaded Area of each valve 11.04 ft² Pressure to which they are adjusted 224 lbs Are they fitted with easing gear yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 1'-2" Mean dia. of boilers 17'-6" Length 22'-6" 11'-6" Material of shell plates Steel
 Thickness 1 1/32" Range of tensile strength 30/34 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams DEB. DR Lap SEB. DR+TR Lap.
 long. seams TR Double Butt Strap Diameter of rivet holes in long. seams 1 2/32" 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 DEB. 8 " Material Steel Outside diameter 4'-0 7/8"
 Length of plain part top Thickness of plates crown 11/16" 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 ft² 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 ft² 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 17 1/4" Working pressures by rules 240 lbs Girders to Chamber tops: Material Steel 2020 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 % 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

Header 660 lbs.
10% Elements 1000 lbs.

UPPER HEATER. *Maine & Loco.* Type *Superheater Ltd.* Date of Approval of Plan *1/4/20* Tested by Hydraulic Pressure to *10% Elements 1000 lbs.*
Date of Test *4th Nov 1921* & subsequently Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes*
Diameter of Safety Valve *2 on S.E.B. 2 1/2 on D.E.B.* Pressure to which each is adjusted *225 lbs.* Is Easing Gear fitted *yes*

IS A DONKEY BOILER FITTED? *No* If so, is a report now forwarded? *✓*

SPARE GEAR. State the articles supplied:— *Main Engines:— Set of coupling bolts, turbine & gear casing joints bolts & studs with nuts; thermometers for oil & water services; 20 bearing brasses for turbine & gearing shafts; 2 studs & nuts for each size of turbine & gearing bearing; 1/2 set of packing rings & springs for each turbine gland; 8 thrust pads for main Michell thrust blocks; 24 thrust pads for turbine Michell thrust blocks; liners of various thicknesses for adjusting blocks; set of feed pump valves, steam & pump piston rings for one pump & steam valve chest complete; set of bilge pump valves, & piston & pump rings for one pump; set of sanitary pump valves; set of valves & springs & piston rings for lubrication oil pump, bucket & rod complete; 2 propeller blades; 100 tubes for main condensers, 50 tubes for aux² condensers, 50 oil cooler tubes; 1 escape valve spring of each size fitted, set of safety valve springs, assorted bolts & nuts & iron (In store ashore 1 H.P. & 1 L.P. pinion shaft, 1 2nd reduction wheel, shaft, pinions & 1 main gear wheel) *Gas pump:— Impeller, 1 set each of crosshead & crank pin brasses complete; Ballast pump:— Set of valves & springs piston & pump rings for one pump; Oil fuel pumps:— Valves & springs, piston & pump rings for one pump. Oil fuel transfer pump:— Valves & springs & pump bucket complete. Air pump:— Steam valve chest complete bucket & rings & valves. Emergency bilge pump 1 set of valves, water piston with rings, pump rod & nut & pump lines.**

The foregoing is a correct description,

FOR VICKERS LIMITED, Manufacturer.

Geo Davis

Decr 1919, 16-18. Jan^y 1920, 15-28 July 7 Aug 28 Sept 14-21 Oct 12, 20, 26 Dec^r 1 Jan^y 1921, 7-11-13-23 Feb^y 23 Mar 23 Apr 4-8-21-26 May 6-10-11-13-24-31 June 1-2-3-14-15-21-22 July 12-14-15-19-20-21 Aug 10-12-23-31 Sept 2-7-8-9-12-13-14-15-16-19-20-21-23-26-27-30 Oct 4-6-7-13-21-25-26-28-29-30 Nov 2-3-4-8-15-17-18-22-24-30 Dec^r 1-2-5-12-13-15-24 Jan^y 1922, 12-13-17 (Date of Launch) 19-20-26-30 Feb^y 2-6-8-9-10-14-15-16-17-21-23-24-27-28 Mar 1-2-6-10-15-16-21-22-24-28-29-30 Apr 4-5-7-10-13-18-19-21-25 May 1-2-3-10-14-15-16-17-21-23-24-27-28 June 7-12-19-20-27-28-30 July 4-5-6-7-8-10-11-12-13-14-15-17-19-21-22-24-25-26-28 Aug 1-2-3-4-8-15-17-18-22-24-30 Sept 1-2-5-12-13-15-24 Oct 1-2-5-12-13-15-24 Nov 2-3-4-8-15-17-18-22-24-30 Dec^r 1-2-5-12-13-15-24
Dates of Survey while building: During progress of work in shops -- 10-14-15-16-17-21-23-24-27-28 Mar 1-2-6-10-15-16-21-22-24-28-29-30 Apr 4-5-7-10-13-18-19-21-25 May 1-2-3-10-14-15-16-17-21-23-24-27-28 June 7-12-19-20-27-28-30 July 4-5-6-7-8-10-11-12-13-14-15-17-19-21-22-24-25-26-28 Aug 1-2-3-4-8-15-17-18-22-24-30 Sept 1-2-5-12-13-15-24
During erection on board vessel -- 12-17-19-23-24 June 7-12-19-20-27-28-30 July 4-5-6-7-8-10-11-12-13-14-15-17-19-21-22-24-25-26-28 Aug 1-2-3-4-8-15-17-18-22-24-30 Sept 1-2-5-12-13-15-24
Total No. of visits *164*
Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Casings *2-6-21, 12-8-21, 26-10-21, 17-11-21* Rotors *5-5-22, 17-5-22* Blading *26-10-21, 17-11-21* Gearing *4-11-21, 16-12-21*
Rotor shafts *14-6-21, 10-8-21* Thrust shafts *30-1-22* Tunnel shafts *21-12-21* Screw shaft *22-11-21* Propeller *17-11-21*
Stern tube *17-11-21* Steam pipes tested *30-11-21 to 17-7-22* Engine and boiler seatings *26-1-22* Engines holding down bolts *20-6-22*

Completion of pumping arrangements *28-7-22* Boilers fixed *20-6-22* Engines tried under steam *21-7-22, 4-9-22*
Main boiler safety valves adjusted *19-7-22, 21-7-22* Thickness of adjusting washers *DEB: Port. PF 27/64" PA 3/8" SF 13/64" SA 23/64" Super 29/64"*
Material and tensile strength of Rotor shafts *34/38 ton steel* *S.E.B. { Std. P 13/32" S 13/64" Sup 7/32" Identification Mark on Do. LLOYD'S N° 206 J.H.*

Material and tensile strength of Pinion shaft *Nickel steel 40 1/4 tons tensile* Identification Mark on Do. *LLOYD'S N° 206 J.H.*
Material of Wheel shaft *34/38 ton steel* Identification Mark on Do. *LLOYD'S N° 206 J.H.*
Material of Tunnel shafts *28/32 ton steel* Identification Marks on Do. *LLOYD'S N° 206 J.H.*
Material of Screw shafts *28/32 ton steel* Identification Marks on Do. *LLOYD'S N° 206 J.H.*

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*
Is this machinery a duplicate of a previous case *yes* If so, state name of vessel *T.S.S. "Moteton Bay", T.S.S. "Hobson Bay"*

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 materials & workmanship are sound & good. The boilers have been tested by hydraulic pressure to 385 lbs per sq in, & on completion of fitting out all safety valves were adjusted under steam. Accumulation tests were carried out on the safety valves with satisfactory results. Steam trials have been carried out in dock & at sea on all machinery, & everything worked satisfactorily. In my opinion the Machinery of this vessel is eligible to be classed in the Register Book with the notation + I.M.C. 9-22, "Fitted for oil fuel 9-22, F.P. above 150°F."*

The amount of Entry Fee ... £ 6 : 0 : 0 When applied for, *8th Sept 1922*
Special ... £ 149 : 8 : 6
Donkey Boiler Fee ... £ : : :
Travelling Expenses (if any) £ 2 : 18 : 6 When received, *14/9*

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

Committee's Minute *FRI. SEP. 15 1922*
Assigned *+ Lmb. 9.22 J.D. C.*
Fitted for oil fuel 9.22 J.P. above 150°F.