

REPORT ON MACHINERY.

No. **H4399**
-4 MAR 1925

Received at London Office

Date of writing Report

When handed in at Local Office

28.2.25 Port of **Glasgow**

No. in Survey held at Reg. Book. on the

Glasgow
S.S. "TONGARIRO"

Date, First Survey **30.11.20** Last Survey **25-2-25** 19

(Number of Visits **121**)

Tons { Gross **8729**
Net **5501**

Master Built at **Port-Glasgow** By whom built **Wm Hamilton & Co. Ltd. (N=323)** When built **1925**

Engines made at **Glasgow** By whom made **D. Rowan & Co. Ltd. (N=671)** when made **1925**

Boilers made at **Glasgow** By whom made **D. Rowan & Co. Ltd. (N=671)** when made **1925**

Registered Horse Power **1195** Owners **The New Zealand Shipping Co. Ltd.** Port belonging to **Plymouth**

Shaft Horse Power at Full Power **5500** Is Refrigerating Machinery fitted for cargo purposes **yes** Is Electric Light fitted **yes**

URBINE ENGINES, &c.—Description of Engines **Rateau Impulse Single Red. Geared Turbines** No. of Turbines **2**

Diameter of Rotor Shaft Journals, H.P. **7"** L.P. **7"** Diameter of Pinion Shaft **7 1/2"**

Diameter of Journals **7 1/2"** Distance between Centres of Bearings **3'-3"** Diameter of Pitch Circle **10.26"**

Diameter of Wheel Shaft **18"** Distance between Centres of Bearings **7'-1 1/2"** Diameter of Pitch Circle of Wheel **145.62"**

Width of Face **202-1 1/2"** Diameter of Thrust Shaft under Collars **17 3/4"** Diameter of Tunnel Shaft as per rule **16.47"** as fitted **17"**

No. of Screw Shafts **one** Diameter of same as per rule **16.55"** as fitted **18 1/2"** Diameter of Propeller **18'-6"** Pitch of Propeller **16'-0"**

No. of Blades **4** State whether Moveable **yes** Total Surface **118 sq** Diameter of Rotor Drum, H.P. **2'-6"** L.P. **4'-10"** Astern **3'-6"**

Thickness at Bottom of Groove, H.P. **Solid** L.P. **Wheels** Astern **Wheels** Revs. per Minute at Full Power, Turbine **1348** Propeller **95**

ARTICULARS 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									
2ND									
3RD									
4TH									
5TH									
6TH									
7TH									
8TH									

See Manchester Report

No. and size of Feed pumps **2 Main 14" x 10 1/2" x 26"** **1 Aux. 9 1/2" x 7" x 18"**

No. and size of Bilge pumps **10 6 1/2" x 12"**, **10 10 1/2" x 7" x 10"**, **10 6" x 6" x 6"**; Ballast Donkey **12" x 12" x 12"**; Oil Drain Pump **13 1/2" x 9" x 12"**

No. and size of Bilge suction in Engine Room **20 3 1/2"** and **40 3 1/2"** in Stokehold; **20 3 1/2"** to each Cofferdam

In Holds, &c. **20 3 1/2"** to each of the 5 Holds; **10 3"** to Tunnel Well

No. of Bilge Injections **one** sizes **12"** Connected to condenser, or to circulating pump **yes** Is a separate Donkey Suction fitted in Engine Room & size **10 3 1/2"**

Are all the bilge suction pipes fitted with roses **yes** 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** worked from **Upper Deck**

BOILERS, &c.—(Letter for record **S**) Manufacturers of Steel **W. Beardmore & Co. Ltd.**; **Partington & Co. Ltd.**; **Protheroe & Co. Ltd.**

Total Heating Surface of Boilers **16940 sq** Is Forced Draft fitted **yes** No. and Description of Boilers **553** **Five Single-Ended**

Working Pressure **180 lbs./sq** Tested by hydraulic pressure to **320 lbs./sq** Date of test **13.8.24 (2)** **19.8.24 (3)** No. of Certificate **16575** **16582**

Are each boiler worked separately **yes** Area of fire grate in each boiler **77 sq** No. and Description of Safety Valves to

boiler **Two Spring loaded** Area of each valve **12.56 sq** Pressure to which they are adjusted **185** Are they fitted with easing gear **yes**

Smallest distance between boilers or uptakes and bunkers or woodwork **30** Mean dia. of boilers **17'-6"** Length **12'-0"** Material of shell plates **Steel**

Thickness **1 5/8" x 1 1/4"** Range of tensile strength **30/34 tons/sq** Are the shell plates welded or flanged **no** Descrip. of riveting: cir. seams **D.R. lap.**

long. seams **T.R.D.B.S.** Diameter of rivet holes in long. seams **1 3/8"** Pitch of rivets **9.3/25"** Lap of plates or width of butt straps **20 1/4"**

rivets **90.3** Working pressure of shell by rules **180 lbs./sq** Size of manhole in shell **19 1/2" x 15 1/2"**

plates **85.23** Size of compensating ring **35" x 31" x 1 5/16"** No. and Description of Furnaces in each Boiler **4** **Dighton** Material **Steel** Outside diameter **3'-10 3/32"**

Length of plain part top **39"** Thickness of plates crown **39"** Description of longitudinal joint: **weld** No. of strengthening rings **none**

bottom **64"** Working pressure of furnace by the rules **211 lbs./sq** Combustion chamber plates: Material **Steel** Thickness: Sides **2 1/32"** Back **5/8"** Top **2 1/32"** Bottom **1 3/16"**

Pitch of stays to ditto: Sides **9 3/8" x 8 3/4"** Back **8 3/8" x 8 3/4"** Top **9 3/8" x 8 3/4"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **180 lbs./sq**

Material of stays **Steel** Diameter at smallest part **2.07"** Area supported by each stay **82 sq** Working pressure by rules **227 lbs./sq** End plates in steam space

Material **Steel** Thickness **1 3/32"** Pitch of stays **21 1/2" x 18 3/4"** How are stays secured **D. nuts** Working pressure by rules **181 lbs./sq** Material of stays **Steel**

Diameter at smallest part **7.06" x 6.94"** Area supported by each stay **408" x 345"** Working pressure by rules **180 lbs./sq** Material of Front plates at bottom **Steel**

Thickness **7/8"** Material of Lower back plate **Steel** Thickness **1 3/16"** Greatest pitch of stays **13 1/4" x 8 7/8"** Working pressure of plate by rules **180 lbs./sq**

Diameter of tubes **3"** Pitch of tubes **4 3/8" x 4 1/4" x 4 3/16"** Material of tube plates **Steel** Thickness: Front **3 1/32"** Back **2 5/32"** Mean pitch of stays **10 13/16"**

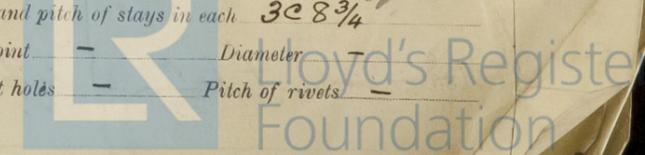
Pitch across wide water spaces **14"** Working pressures by rules **184 lbs./sq** Girders to Chamber tops: Material **Steel** Depth and

thickness of girder at centre **9 3/4" x 20 13/16"** Length as per rule **2'-10 17/32"** Distance apart **9 3/8"** Number and pitch of stays in each **30 8 3/4"**

Working pressure by rules **183 lbs./sq** 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 **-**



SUPERHEATER. Type *Smoke tube* Date of Approval of Plan *26.6.23* Tested by Hydraulic Pressure to *540 lbs*
 Date of Test *18.6.23* 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"* Pressure to which each is adjusted *707 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:— *All as per Rule requirements and, in addition, One Propeller Pinion shaft. Two turbine bearing bushes. two end pinion bushes. one centre pinion bush one main wheel bush. one adjusting block. one set of studs and nuts for one propeller blade one auxiliary engine complete for either main circulating pump or fan. one air pump rod one valve chest complete for steam end of air pump. one set of air pump valves. one set of lubricating pump valves. Circulating pump impeller shaft.*

The foregoing is a correct description,
 For *David Rowan & Co. Ltd* Manufacturer.
Archd. W. Grierson

Dates of Survey while building
 During progress of work in shops: *1920 Nov. 30. 1921 Jan 28 Feb 16 Mar 8 11 Apr 18 25 May 18 23 Nov 1. 1923 May 28 June 4 18 Aug 5 18 Sept 6 10 20 26 Oct 2 8 10 17 19 24 29 Nov 2 17 20 22 28 29 Dec 4 10 18 24 1924 Jan 8 9 22 25 30 Feb 4 6 13 18 28 Mar 4 5 12 24 26 27 Apr 8 9 11 18 25 May 1 5 14 20 28 June 2 5 11 16 22 24 27 July 9 11 Aug 1 12 13 19 22 28 Sept 12 17 22 23 Oct 3 15 31 Nov 7 21 25 28 Dec 11 23 24 29 30*
 During erection on board vessel: *1920 July 7 10 13 15 16 21 22 26 27 29 30 Feb 2 4 5 6 9 10 12 13 16 17 25*
 Total No. of visits *121*

Dates of Examination of principal parts—Casings *2.11.23* Rotors *Inch Rpt* Blading *Inch Rpt* Gearing *15.7.24*
 Rotor shaft *Inch Rpt* Thrust shaft *28.8.24* Tunnel shafts *15.10.24* Screw shaft *5.6.24* Propeller *5.6.24*
 Stern tube *28.8.24* Steam pipes tested/completed *4.2.25* Engine and boiler seatings *30-1-25* Engines holding down bolts *30-1-25*

Completion of pumping arrangements *4.2.25* Boilers fired *21-1-25* Engines tried under steam *25-2-25*
 Main boiler safety valves adjusted *17-2-25* Thickness of adjusting washer *donkey 3/8" St. and prop. bl. both 3/8" After the bl. both 3/8" After the bl. both 3/8"*
 Material and tensile strength of Rotor shaft *Inch Rpt* Identification Mark on Do. *-*

Material and tensile strength of Pinion shaft *Nickel Steel 40/42 tons* Identification Mark on Do. *-*
 Material of Wheel shaft *Steel* Identification Mark on Do. *LLOYD'S No 6604 H.C.F. 15.5.24* Material of Thrust shaft *Steel* Identification Mark on Do. *LLOYD'S No 6604 H.C.F. 15.7.24*

Material of Tunnel shafts *Steel* Identification Marks on Do. *LLOYD'S No 6604 H.C.F. 15.10.24* Material of Screw shafts *Steel* Identification Marks on Do. *LLOYD'S No 6604 H.C.F. 15.10.24*
 Material of Steam Pipes *Lap welded wrought iron* Test pressure *540 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, except* If so, state name of vessel *S.S. THURAKINA - Glasgow Rpt. N°*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The materials and workmanship are good. The machinery has been constructed under special Survey in accordance with the Rules. It has been satisfactorily fitted in the vessel tested and found good and is eligible in our opinion for classification and the Records + LMC 2,25 and Fitted for oil fuel 2,25. F.P. above 150°F

It is submitted that this vessel is eligible for THE RECORD. + LMC 2.25. FD. CL. 2 Steam Turbines SR Geared to 1 Screw Shaft. Fitted for oil fuel 2.25. F.P. above 150°F. 1194 NHP.

The amount of Entry Fee ... £ 6 : 0 : 0 When applied for, *2/3/25*
 Special ... £ 129 : 17 : 6
 Donkey Boiler Fee ... £ : : :
 Travelling Expenses (if any) £ : : :
H.B. Forster Engineer Surveyor to Lloyd's Register of Shipping. *5/3/25*

Committee's Minute *GLASGOW 3-MAR 1925*
 Assigned *+ LMC 2,25 7D. Fitted for oil fuel 2,25 F.P. above 150°F*

Glasgow

a.l.
27/2/25

Certificate (if required) to be sent to...

