

# REPORT ON MACHINERY.

No. 2157

Received at London Office -1 JAN 1926

Date of writing Report 29<sup>th</sup> Dec 1925 When handed in at Local Office 29<sup>th</sup> Dec 1925 Port of Barrow in Furness  
No. in Survey held at Barrow Date, First Survey 15<sup>th</sup> August 1924 Last Survey 25<sup>th</sup> December 1925  
Reg. Book. on the Helium Screw steamer "Otranto" (Lickers 44619) (Number of Visits 59)  
Tons { Gross 20032  
Net 12031  
Master Built at Barrow By whom built Lickers & Co. When built 1925  
Engines made at Barrow By whom made Lickers & Co. when made 1925  
Boilers made at Barrow By whom made Lickers & Co. when made 1925  
Registered Horse Power 4005 Owners Orient Steam Navigation Co. Ltd. Port belonging to Barrow  
Shaft Horse Power at Full Power 19500 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Parsons Turbines No. of Turbines 3 per Shaft  
Diameter of Rotor Shaft Journals, H.P. 8" I.P. 8" L.P. 9 1/2" Diameter of Pinion Shaft 8"  
Diameter of Journals Ind. 8" Centre 9" Distance between Centres of Bearings 3'-3" Diameter of Pitch Circle 10' 1/88  
Diameter of Wheel Shaft 21" Distance between Centres of Bearings 8'-2 1/4" Diameter of Pitch Circle of Wheel 155' 9946  
Width of Face 4'-2" total Diameter of Thrust Shaft under Collars 20 1/2" Diameter of Tunnel Shaft as per rule 18 1/4  
No. of Screw Shafts Two Diameter of same as per rule 20 1/4 Diameter of Propeller 20'-6" Pitch of Propeller 28'-0"  
No. of Blades 4 State whether Moveable Yes Total Surface 140 ft Diameter of Rotor Drum, H.P. 2'-9" L.P. 5'-0" Astern 4'-0"  
Thickness at Bottom of Groove, H.P. 1 1/2" I.P. 1 1/2" L.P. 1 1/2" Astern 1 1/2" Revs. per Minute at Full Power, Turbine 1873 1/2 Propeller 95

ARTICULARS OF BLADING.				H. P.			L. P.			ASTERN.		
2 Row Impulse Wheel. 5'-5" Mean Dia.				HEIGHT OF BLADES.			HEIGHT OF BLADES.			2 Row Impulse Wheel. 5'-5 3/4" Mean Dia.		
ST EXPANSION				1 3/8"	2'-11 3/4"	12	4'	5'-8"	2	2 1/2"	4'-5"	2
ND				1 3/4"	3'-0 1/2"	10	4 1/8"	5'-9 3/4"	2	3 1/2"	4'-7"	2
RD				2 1/8"	3'-1 1/2"	10	6"	6'-0"	2	5"	4'-10"	2
TH				2 5/8"	3'-2 1/4"		6 5/8"	6'-1 1/2"	1	5"	4'-10"	2
1 <sup>st</sup>				2 1/2"	3'-5"	4	9 1/8"	6'-3 3/4"	1	5"	4'-10"	2
2 <sup>nd</sup>				3 3/8"	3'-6 3/4"	4	11"	6'-10"	1			
3 <sup>rd</sup>				4 7/8"	3'-9 1/2"	4						
4 <sup>th</sup>				6 1/4"	4'-0 1/2"	4						
5 <sup>th</sup>				6 3/4"	4'-1 1/2"	4						

No. and size of Feed pumps 1 Main (cap. 20' x 14" x 24") 1 Turbo (cap. 240000) 1 Turbo (cap. 200000) 1 Auxiliary (cap. 10 1/2' x 8" x 22")  
No. and size of Bilge pumps 2 in E.R. 1 three throw 4 1/2' x 9" 1 two throw 4' x 8" 2 in Boiler rooms 9' x 10" x 10" Emergency in Ref. room 10' x 10"  
No. and size of Bilge suction in Engine Room Two of 4 1/2" Two of 3 1/2" Three of 3 1/2" in After Boiler room Three of 3 1/2" in forward Boiler room Four of 3 1/2" in  
Tunnels.  
In Holds, &c. One of 3 1/2" in H. 1 Two of 3 1/2" in H. 2 Two of 3 1/2" in H. 3 Two of 3 1/2" in H. 4 Two of 2 1/2" in Ref. room Two of 2 1/2" in H. 4 Two of 2 1/2" in H. 5 2 1/4" scupper drainage from H. 6 & 7 holds to Tunnels.  
No. of Bilge Injections Two sizes 22" Connected to condenser, or to circulating pump On pump Is a separate Donkey Suction fitted in Engine Room & size 4 1/2" 6 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  
That 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 navigating Bridge

OILERS, &c.—(Letter for record (S) Manufacturers of Steel  
Total Heating Surface of Boilers 50554 Is Forced Draft fitted yes No. and Description of Boilers 6 DB & 4 SB  
Working Pressure 215 lb Tested by hydraulic pressure to Date of test No. of Certificate  
Can each boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to  
each boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear  
Smallest distance between boilers or uptakes and bunkers or woodwork 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  
Long. seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps  
Percentage of strength of longitudinal joint Working pressure of shell by rules Size of manhole in shell  
Size of compensating ring No. and Description of Furnaces in each Boiler Material Outside diameter  
Length of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings  
bottom  
Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom  
Pitch 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  
Pitch 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 Steam dome: description of joint to shell % 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

Date of Approval of Plan

Tested by Hydraulic Pressure to

Date of Test

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve

Pressure to which each is adjusted

Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

no

If so, is a report now forwarded?

SPARE GEAR.

State the articles supplied:— 2 Bolts and nuts & Studs for each size of Rotor bearing; 2 Bolts & nuts for main gear wheel bearings; 2 Bolts & nuts for Pinion bearings; 18 Coupling bolts & nuts; 100 total number of bolts & nuts for Gear & Turbine casing joints; 6 Thermometers for Oil circulating system; 4 main gear wheel bearings; 6 Rotor bearing bushes; 12 Pinion bearing bushes; 9 main Thrust Pads & Pins; 12 Thrust Pads; 4 P & L adjusting block; Adjusting block liners in halves; 12 Thrust Pad. IP Block; 8 Adjusting liners in halves; 1 Set of Feed pump valves, bucket and rods; 1 pump impeller; Shaft and turbine wheel for each size of pump; Lubricating pump bucket and rod, and valves; 1 valve spring for each size fitted; Assorted bolts & nuts; rod and chest steel; Propeller shaft and 4 blades, 3 pinions etc.

The foregoing is a correct description,

FOR VICKERS LIMITED,

Manufacturer.

J. Callander

DIRECTOR

Dates of Survey while building	During progress of work in shops --	1924: Aug 15, 18, 25, Sept 29, Oct 3, 10, 17, 24, 28, Nov 5, 12, 19, 24, 25, 26, Dec 1, 2, 3, 6, 9, 12, 16, 17, 24, 30, 1925: Jan 6, 9, 14, 15, 19, 24, 25, 28, Feb 2, 10, 13, 16, 17, 19, 23, 24, 27, Mar 3, 6, 9, 10, 11, 17, 18, 19, 24, 25, 27, 30, Apr 1, 2, 3, 6, 7, 9, 14, 16, 21, 22, 23, 24, 25, 29, 30, May 2, 4, 6, 7, 8, 11, 12, 15, 19, 20, 22, 25, 26, 27, 28, 29, June 2, 3, 4, 5, 10, 12, 15, 16, 19, 20, 22, 23, 25, 27, 29, 30, July 2, 3, 4, 6, 9, 1925: June 9, 10, 14, 26, July 1, 4, 10, 13, 17, 20, 21, 23, 24, 29, 30, Aug 1, 2, 3, 5, 12, 13, 25, Sept 4, 9, 12, 17, 18, 22, 24, 29, 30, Oct 1, 2, 3, 7, 8, 12, 14, 21, Nov 5, 12, 13, 17, 24, 25, 28, Dec 2, 5, 7, 9, 10, 12, 13, 19, 20, 21
Total No. of visits		189

Is the approved plan of main boiler forwarded herewith

yes

Is the approved plan of donkey boiler forwarded herewith

yes

Dates of Examination of principal parts—Casings 29-5-25 Rotors 29-5-25 Blading 29-5-25 Gearing 29-5-25

Rotor shaft 29-5-25 Thrust shafts 14-4-25 Tunnel shafts 22-4-25 Screw shaft 24-4-25 Propeller 30-4-25

Stern tube 11-5-25 Steam pipes tested 10-9-25 to 13-11-25 Engine and boiler seatings 10-6-25 Engines holding down bolts 9-9-25

Completion of pumping arrangements 19-12-25 Boilers fixed 9-9-25 Engines tried under steam 19-12-25

Main boiler safety valves adjusted 24-11-25 Thickness of adjusting washers See separate sheet

Material and tensile strength of Rotor shaft Siemens Steel 32 1/2 x 38 1/2 in Identification Mark on Do. 391 100

Material and tensile strength of Pinion shaft Nickel steel 42 1/2 x 46 1/2 in Identification Mark on Do. 391 100

Material of Wheel shaft Ingot steel Identification Mark on Do. 10391 100 Material of Thrust shaft Ingot steel Identification Mark on Do. 10391 100

Material of Tunnel shafts Ingot steel Identification Marks on Do. 10391 100 Material of Screw shafts Ingot steel Identification Marks on Do. 10391 100

Material of Steam Pipes Solid drawn steel Test pressure 64 1/2 lb 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 U.S.S. "Orama" (Barrow 402091)

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

The machinery of this vessel is a duplicate of the U.S.S. "Orama", excepting that in this vessel the Superheater have been eliminated

The machinery and boilers of this vessel have been constructed under special supervision the materials and workmanship are good. They have been efficiently fitted on board and proved satisfactory under working conditions.

In my opinion the vessel is eligible to have the notation of *h.m.*

It is submitted that this vessel is eligible for

THE RECORD. + LMC 12. 25. FD. CL. 6 Steam Turbines S.R. geared to 2 Screw Shafts. Fitted for oil fuel 12. 25. FP above 150°F.

12. 25. made in the Register Book

Screw Shaft fitted with continuous liner.

The amount of Entry Fee	£ 6 : 0	When applied for,
Special	£ 200 : 2 - 6	23rd Dec 1925
Donkey Boiler Fee	£ - : -	When received,
Travelling Expenses (if any)	£ 3 : 7 - 0	1st Jan 1926

Committee's Minute TUES. 5 JAN 1926

Assigned

+ L.M.C. 12. 25 -  
H.D. C.L.

Lined for oil fuel 12. 25 - F.P. above 150°F.



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tested by hydraulic pressure to 243 lb Date of test 2-6-25 No. of Certificate 398 400 Can each boiler be worked separately Yes  
Area of Firegrate in each Boiler 384 sq ft No. and Description of safety valves to each boiler Four direct spring loaded. High lift.

pt. 9a.

Port of Barrow in Lumen.

Continuation of Report No. 2154 dated 30th Dec 1925 on the

Y. I. S. "Otranto"

Thickness of Safety valve washers.

No 1 boiler: Port fd.  $\frac{13}{32}$  Port Aft.  $\frac{7}{16}$  Starboard fd.  $\frac{25}{64}$  Starboard Aft.  $\frac{13}{32}$   
No 2 " " "  $\frac{11}{32}$  " "  $\frac{23}{64}$  " "  $\frac{11}{32}$  " "  $\frac{11}{32}$   
No 3 " " "  $\frac{25}{32}$  " "  $\frac{3}{8}$  " "  $\frac{3}{8}$  " "  $\frac{23}{64}$   
No 4 " Forward  $\frac{3}{8}$  Aft.  $\frac{5}{16}$   
No 5 " "  $\frac{5}{16}$  "  $\frac{11}{32}$   
No 6 " Port fwd.  $\frac{13}{32}$  Port Aft.  $\frac{13}{32}$  Starboard fwd.  $\frac{13}{32}$  Starboard Aft.  $\frac{13}{32}$   
No 7 " "  $\frac{25}{64}$  "  $\frac{21}{64}$  " "  $\frac{13}{32}$  " "  $\frac{7}{16}$   
No 8 " "  $\frac{11}{32}$  "  $\frac{13}{32}$  " "  $\frac{13}{32}$  " "  $\frac{7}{16}$   
Superheater No 9 " Forward  $\frac{7}{16}$  Aft.  $\frac{13}{32}$   
No 10 " "  $\frac{5}{16}$  "  $\frac{3}{8}$

Wm Cowie



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Diameter { At body of stay, 2 1/2  
or  
Over threads. ✓ No. of threads per inch 6 Area supported by each stay 246.3  
Working pressure by Rules 234 lb. Screw stays: Material Steel Tensile strength 26 to 30 tons