

REPORT ON MACHINERY.

No. 2157

Received at London Office - 1 JAN 1926

Date of writing Report 29th Decr. 1925 When handed in at Local Office 20th Decr. 1925 Port of Barrow-in-Yorruiss

No. in Survey held at Barrow Date, First Survey 15th August 1924 Last Survey 25th December 1925
Reg. Book. on the Steel Twin Screw steamer "Otranto" (Builder's No. 619) (Number of Visits 89)

Tons { Gross 20032
Net 12031

Master Built at Barrow By whom built Bickers Ltd. When built 1925

Engines made at Barrow By whom made Bickers Ltd. when made 1925

Boilers made at nominal By whom made Owners Orient Steam Navigation Co. Ltd. when made 1925

Registered Horse Power 4005 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 Inds. 8" Centre 9" Distance between Centres of Bearings 3'-3" Diameter of Pitch Circle 10' 4/88

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" as fitted 19 1/4"

No. of Screw Shafts Two Diameter of same as per rule 20" as fitted 21" Diameter of Propeller 20'-6" Pitch of Propeller 28'-0"

No. of Blades 4 State whether Moveable Yes Total Surface 140 sq 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 1873.7 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.
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 1/4"	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"	10	6 9/16"	6'-1 1/2"	1	5"	4'-10"	2
1st "	2 1/2"	3'-5"	4	4 7/16"	6'-3 3/4"	1	5"	4'-10"	2
2nd "	3 3/8"	3'-6 3/4"	4	11"	6'-10"	1			
3rd "	4 7/8"	3'-9 1/2"	4	11"	6'-10"	1			
4th "	6 1/4"	4'-0 1/2"	4	11"	6'-10"	1			
5th "	6 3/4"	4'-1 1/2"	4	11"	6'-10"	1			

No. and size of Feed pumps 1 Main Dept. 20" x 14" x 24"; 1 Turbo Main 240000; 1 Turbo Main 200000; 1 Auxiliary Main Dept. 10 1/2" x 8" x 22"

No. and size of Bilge pumps Two in E.R.: 1 three throw 4 1/2" x 9"; 1 two throw 4" x 8"; Two in Boiler rooms: 9" x 10" x 10"; Emergency in Refrig. 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 funnels

No. and size of Bilge injections Two sizes 2 1/2" Connected to condenser, or to circulating pump On pumps Is a separate Donkey Suction fitted in Engine Room & size 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

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 navigating Bridge

BOILERS, &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

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 rivets Working pressure of shell by rules Size of manhole in shell

Size of compensating ring top No. and Description of Furnaces in each Boiler Material Outside diameter

Length of plain part bottom Thickness of plates bottom Description of longitudinal joint No. of strengthening rings

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; 120 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, HP & LP 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 eye 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,
J. Callender Manufacturer.

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, 18, 19, 21, 25, 26 Dec 1, 2, 3, 6, 9, 12, 16, 17, 24, 30 1924	Is the approved plan of main boiler forwarded herewith <i>Yes</i>	
		During erection on board vessel - - -		1925 - June 9, 10, 17, 20, July 1, 7, 10, 13, 17, 20, 21, 28 Aug 13, 14, 24 Sept 3, 10, 11, 15, 25, 30 Oct 10, 15, 16, 17, 19, 20, 23, 28, 29, 30 Nov 3, 6, 10, 30 Dec 1, 2, 3, 6, 7, 9, 14, 16, 19, 20, 21, 23, 25, 29, 30
		Total No. of visits		189

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 fired 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 to 38 tons* Identification Mark on Do. *391 100*
 Material and tensile strength of Pinion shaft *nickel steel 42 to 46 tons* Identification Mark on Do. *391 100*
 Material of Wheel shaft *Ingot steel* Identification Mark on Do. *1391 100* Material of Thrust shaft *Ingot steel* Identification Mark on Do. *1391 100*
 Material of Tunnel shafts *Ingot steel* Identification Marks on Do. *1391 100* Material of Screw shafts *Ingot steel* Identification Marks on Do. *1391 100*
 Material of Steam Pipes *Solid drawn steel* ✓ Test pressure *64 1/2 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 *U.S.S. "Orama" (Barrow) 12091*

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 superheaters 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 **12.25**.*

12.25 - made in the Register Books
Screw Shaft fitted with continuous liner.

The amount of Entry Fee ...	£ 6 : 0	When applied for, 23rd Dec 1925
Special ...	£ 200 : 2 - 6	
Donkey Boiler Fee ...	£ - : -	When received, 26th Dec 1925
Travelling Expenses (if any) ...	£ 3 : 7 - 0	

It is submitted that this vessel is eligible for **THE RECORD. + LMC 12. 25. FD. CL.**
 6 Steam Turbines SR geared to 2 Screw Shafts, Fitted for oil fuel 12. 25. FP above 150°F.
Wm Cowie
 Engineer Surveyor to Lloyd's Register of Shipping. 1/1/26

Committee's Minute **TUES. 5 JAN 1926**
 Assigned *+ Lmc 12. 25 - H.D. C.L.*
Lined for oil fuel 12.25 - F.P. above 150°F.



tested by hydraulic pressure to 243 lb Date of test ^{15-5-25. 24-5-25} _{2-6-25. 20-6-25} No. of Certificate 395. 396. 397 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.

Part of Barrow in Lumen. Continuation of Report No. 2157 dated 30th Decr 1925 on the Y. I. S. "Otranto"

Thickness of Safety valve washers.

	No 1 boiler:	Port fd.	13/32	Port Aff.	1/16	Starboard fd.	25/64	Starboard Aff.	13/32
1391 40	No 2 "	"	11/32	"	23/64	"	11/32	"	11/32
1391 41	No 3 "	"	25/32	"	3/8	"	3/8	"	23/64
	No 4 "	Forward	3/8	Aft	5/16				
	No 5 "	"	5/16	"	11/32				
No 2091	No 6 "	Port fwd.	13/32	Port Aft.	13/32	Starboard fwd.	13/32	Starboard Aft.	13/32
	No 7 "	"	25/64	"	21/64	"	13/32	"	1/16
	No 8 "	"	11/32	"	13/32	"	13/32	"	1/16
Superhe	No 9 "	Forward	1/16	Aft	13/32				
	No 10 "	"	5/16	"	3/8				

Wm Cowie



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Diameter { At body of stay, or Over threads } No. of threads per inch 6 Area supported by each stay 276.3
 Working pressure by Rules 237 lb. Screw stays: Material Steel Tensile strength 26 to 30 tons