

## REPORT ON STEAM TURBINE MACHINERY. No. 7869

Received at London Office 19 MAR 1928

Date of writing Report Mar 7 1928 When handed in at Local Office Mar 14 1928 Port of Trieste

No. in Survey held at Trieste Date, First Survey 16 Nov. 1926 Last Survey 24 Feb 1928

Reg. Book. Suppl. (Number of Visits 200)

40225 on the STEEL T.W. SC. "CONTE GRANDE" Tons { Gross 25661 Net 15303

Built at Trieste By whom built Stabilimento Tecnico Triestino Yard No. 764 When built 1928

Engines made at Trieste By whom made Stabilimento Tecnico Triestino Engine No. 7871 When made 1928

Boilers made at Panpiardarena, Genoa By whom made Ansaldo S. A. Boilers No. 2974-5-6-7-8-9 When made 1928

Shaft Horse Power at Full Power 25,000 Owners Lloyd Sabando S. A. per Azioni Port belonging to Genoa

Nom. Horse Power as per Rule 4512 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes

Trade for which Vessel is intended

TEAM TURBINE ENGINES, &c.—Description of Engines Double Reduction Geared Steam Turbines

No. of Turbines Ahead 2 H.P. 2 L.P. Discot coupled, single reduction geared } to two propelling shafts. No. of primary pinions to each set of reduction gearing two

Astern 2 L.P. double reduction geared }

direct coupled to { Alternating Current Generator — phase — periods per second } rated — Kilowatts. — Volts at — revolutions per minute;

for supplying power for driving — Propelling Motors, Type —

rated — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE BLADING.	H. P.			I. 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.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.				
1ST EXPANSION .....	70 <sup>7</sup> / <sub>16</sub> "	578 <sup>7</sup> / <sub>16</sub> "	7	/	/	/	102 <sup>7</sup> / <sub>16</sub> "	1322 <sup>7</sup> / <sub>16</sub> "	4	41 <sup>7</sup> / <sub>16</sub> "	1402 <sup>7</sup> / <sub>16</sub> "	2				
2ND " .....	80 "	630 "	6				130 "	1378 "	4	82 "	1484 "	2				
3RD " .....	88 "	690 "	5				165 "	1448 "	4	118 "	1556 "	3				
4TH " .....	92 "	768 "	4				114 "	1804 "	2	Impulse	1667 "	1				
5TH " .....	118 "	820 "	4				149 "	1874 "	2							
6TH " .....	Impulse	950 <sup>7</sup> / <sub>16</sub> "	1				172 "	1920 "	1							
7TH " .....							200 "	1976 "	1	54 "	1698 "	1				
8TH " .....	43 <sup>7</sup> / <sub>16</sub> "	950 <sup>7</sup> / <sub>16</sub> "	1				238 "	2052 "	1	80 "	1731 "	1				
9TH " .....	103 "	1010 "	1				286 "	2148 "	3	Impulse	1667 "	1				
10TH " .....	Impulse	950 <sup>7</sup> / <sub>16</sub> "	1				Impulse	1667 "	1							
11TH " .....																
12TH " .....																

Shaft Horse Power at each turbine { H.P. 6250 I.P. — L.P. 6250 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 3012 I.P. — L.P. 1612 } 1st reduction wheel 442 main shaft 103

Rotor Shaft diameter at journals { H.P. 140 3/4" I.P. — L.P. 235 3/4" } Pitch Circle { 1st pinion HP 275-7213 3/4" LP 515-1635 3/4" } 1st reduction wheel 1879-2584 3/4" Width of { 1st reduction wheel 2@381 3/4" main wheel 2@623 3/4"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 457 3/4" 2nd pinion 1537 3/4" } main wheel 1537 3/4" 3022 3/4"

Flexible Pinion Shafts, diameter { 1st — 2nd — } Pinion Shafts, diameter at bearings { External 1st 1774 3/4" Internal 1st 178 3/4" 2nd 76 3/4" } Generator Shaft, diameter at bearings — Propelling Motor Shaft, diameter at bearings —

Wheel Shafts, diameter at bearings { 1st 406 3/4" main 584 3/4" } diameter at wheel shroud, { 1st 1774 3/4" main 3046 3/4" }

Intermediate Shafts, diameter { as per rule 503 3/4" as fitted 521 3/4" } Thrust Shaft, diameter at collars { as per rule 528 3/4" as fitted 549 3/4" } Tube Shaft, diameter { as per rule — as fitted — }

Screw Shaft, diameter { as per rule 545 3/4" as fitted 559 3/4" } the { tube screw } shaft fitted with a continuous liner { yes } Bronze Liners, thickness in way of bushes { as per rule 24.4 3/4" as fitted 25.5 3/4" }

Thickness between bushes { as per rule 18.3 3/4" as fitted 24.5 3/4" } Is the after end of the liner made watertight in the propeller boss. yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner. — If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive fits full len. If two liners are fitted, is the shaft lapped or protected between the liners. — Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft no Length of Bearing in Stern Bush next to and supporting propeller 3080 3/4"

Propeller, diameter 5960 3/4" Pitch 7210 3/4" No. of Blades 4 State whether Moveable yes Total Developed Surface 11-12 square ft.

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine. — Can the H.P. or L.P. Turbine exhaust direct to the Condenser yes No. of Turbines fitted with astern wheels two Feed Pumps { No. and size 3 @ 550 x 350 x 700 3/4" 1 Ans. 270 x 180 x 500 3/4" How driven Steam

Pumps connected to the Main Bilge Line { No. and size Two duplex 190 x 180 x 250 3/4" How driven Steam

Ballast Pumps, No. and size Two duplex 250 x 300 x 300 3/4" Lubricating Oil Pumps, including Spare Pump, No. and size Four 270 x 230 x 550 3/4"

Are two independent means arranged for circulating water through the Oil Cooler yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size: — In Engine and Boiler Room 2 @ 90 3/4" After Boiler Room 2 @ 90 3/4" Eng. Room 2 @ 90 3/4"

In Holds, &c.

Main Water Circulating Pump Direct Bilge Suctions, No. and size 2 @ 460 3/4" Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 2 @ 90 3/4" (1 @ 16 3/4") Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges yes

Are all Sea Connections fitted direct on the skin of the ship yes Are they fitted with 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 Overboard Discharges above or below the deep water line at the W.L.

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 pass through the bunkers — How are they protected —

What pipes pass through the deep tanks Oil fuel and bilge suction Have they been tested as per rule yes

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another yes Is the Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Deck & Nav. Bridge

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BOILERS, &c.—(Letter for record *S*) Total Heating Surface of Boilers *4672 m<sup>2</sup> (50290 ft<sup>2</sup>)*  
Is Forced Draft fitted *Oil Fuel Yes* No. and Description of Boilers *7 Double Ended and 2 Single Ended* Working Pressure *15.46 kg/cm<sup>2</sup> (220 lb/sq in)*  
Is a Report on Main Boilers now forwarded? *yes*  
Is *a Donkey* Boiler fitted? *no* If so, is a report now forwarded? *—*  
Is *an Auxiliary* Boiler fitted? *no*  
Plans. Are approved plans forwarded herewith for Shafting *yes* Main Boilers *yes* Auxiliary Boilers *—none* Donkey Boilers *none*  
(If not state date of approval)

Superheaters *yes* General Pumping Arrangements *yes* Oil Fuel Burning Arrangements *no*  
Spare Gear. State the articles supplied:— *All as per Rule requirements and, in addition, a large quantity of other items including the following:— One propeller shaft; one air pump rod with bucket and valves; one circulating pump impeller and shaft; one set of safety valve springs for double Ended, and one set for single Ended boilers; one set of superheater safety valve springs for double Ended, and one set for single Ended boilers; a number of boiler tubes; a number of main and auxiliary condenser tubes and ferrules; a number of oil cooler tubes, etc.*

Stabilizing Technico Triestino  
Fabbri S. Andrea, Trieste  
Manufacturer.

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops -- } *See attached list*  
{ During erection on board vessel -- }  
Total No. of visits *200*

Dates of Examination of principal parts—Casings *30.3.27 to 28.5.27* Rotors *27.1.27 to 28.5.27* Blading *24.6.27 to 4.10.27* Gearing *22.8.27 to 15.11.27*  
Wheel shaft *24.9.26* Thrust shaft *3.2.27* Intermediate shafts *17.3.27 to 20.4.27* Tube shaft *—* Screw shaft *17.3.27 to 31.5.27*  
Propeller *28.6.27* Stern tube *15.6.27 + 18.6.27* Engine and boiler seatings *10.6.27, 15.9.27, 28.12.27* Engine holding down bolts *30.12.27*

Completion of pumping arrangements *24.2.28* Boilers fixed *28.12.27* Engines tried under steam *19.2.27, 20.2.27, + 23.2.27*  
Main boiler safety valves adjusted *17.2.28* Thickness of adjusting washers *8 1/2, 8 1/2, 9 1/2, 8 1/2, 10.10 1/2* Identification Mark *H.P.R. 448 AG. 11.9.26. L.P.P. AG. 11.9.26. H.P.S. 450 AG. 11.9.26. L.P.S. 449 AG. 11.9.26.*

Rotor shaft, Material and tensile strength *S.M.I.S. 34/38 ton/in<sup>2</sup>* Identification Mark *—*  
Flexible Pinion Shaft, Material and tensile strength *—* Identification Mark *—*

Pinion shaft, Material and tensile strength *Nickel Steel 41.5/43.4 ton/in<sup>2</sup>* Identification Mark *7002, 7003 H.K. 15.10.26*  
1st Reduction Wheel Shaft, Material and tensile strength *Nickel Steel 41.8/45 ton/in<sup>2</sup>* Identification Mark *7028, 7029 (7030), 7031 H.K. 15.10.26*

Wheel shaft, Material *S.M.I.S. Steel* Identification Mark *397 G.B. 24.9.26* Thrust shaft, Material *S.M.I.S. Steel* Identification Mark *384, 385 G.B. 31.5.27*  
Intermediate shafts, Material *S.M.I.S. Steel* Identification Marks *371 G.B. 24.9.26, 373, 399, 396, G.B. 17.3.27-392, 403 A.S.M. 20.4.27-374, 410 G.B. 8.4.27 PORT.*

Screw shaft, Material *S.M.I.S. Steel* Identification Marks *400, 365 G.B. 17.3.27-401 A.S.M. 20.4.27-391, 407, 409, 411 G.B. 8.4.27 STARB*  
Steam Pipes, Material *Steel* Test pressure *660 lbs/in<sup>2</sup>*

Date of test *Various dates from 20.8.27 to 24.1.28* 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 the Rules for carrying and burning oil fuel been complied with *yes*

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 constructed under Special Survey in accordance with the rules and approved plans; the materials and workmanship are good. The machinery has been efficiently installed on board the vessel, examined under full working conditions and found satisfactory, and is eligible, in our opinion, for classification, and to have the record L.M.C. 2.28 - C.L. in the Register Book. At the conclusion of the trials one blade of the starboard propeller was bent by fouling the quay wall, the vessel was afterwards placed on the pontoon at Pola and a new blade fitted.*

The amount of Entry Fee *Lire 555.-* When applied for, *15/3/28*  
Special *Lire 11.812.-* When received, *2.5.28*  
Donkey Boiler Fee *£*  
Travelling Expenses (if any) *Lire 1.276.-*  
*Sum, Holiday plate fee* *Lire 1.005.-*  
Committee's Minute *TUES. 3 APR 1928*  
Assigned *+ L.M.C. 2.28 C.L. F.D.*  
*Fitted for Oil Fuel, 2.28 F.P. above 150°F.*

Certificate (if required) to be sent to...  
The Surveyors are requested not to write on or below the space for Committee's Minute.