

Report on Steam Turbine Machinery.

No. 19852

Rpt. 4a.

Received at London Office 19 MAR 1954

Date of writing Report 9th 3. 1954 When handed in at Local Office 15/3/1954 Port of Genoa
 No. in Survey held at Riva Trigoso Date, First Survey 29. 11. 52 Last Survey 4. 12. 1953
 Reg. Book UNICO CANTIERI NAVALI RIUNITI YARD 203 CONCA D'ORO Tons (Gross Net
 Built at PALERMO By whom built CANTIERI NAVALI RIUNITI Yard No. 203 When built 1954
 Engines made at RIVA TRIGOSO By whom made CANTIERI DEL TIRRENO Engine No. H078-b When made 1954
 Boilers made at By whom made Boiler No. When made
 Shaft Horse Power at Full Power 12,000 Owners 298 R.P.M. Port belonging to Owners
 Nom. Horse Power as per Rule 9,000 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes
 Trade for which Vessel is intended Carry in Petroleum in bulk

STEAM TURBINE ENGINES, &c.—Description of Engines One set consisting of two steam turbines, double reduction geared to one propeller shaft.
 No. of Turbines Ahead None Direct coupled, single reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing two
 Astern one double reduction geared
 direct coupled to Alternating Current Generator phase 3 periods per second rated 3600 Kilowatts Volts at 2300 revolutions per minute;
 Direct Current Generator
 for supplying power for driving Propelling Motors, Type Direct coupled, single or double reduction geared to propelling shafts.
 rated 3600 Kilowatts Volts at 2300 revolutions per minute.

TURBINE BLADING	H. P.	I. P.	L. P.	ASTERN.
No. of wheels	1 + 9			1 + 1
Impulse Blading	2 - 1 in each wheel		1 in each wheel	2 in each wheel
Reaction Blading				
No. of rows				
No. of rows in each stage				

Shaft Horse Power at each turbine
 H.P. 5150 ✓
 I.P. Revolutions per minute, at full power, of each Turbine Shaft
 L.P. 4850 ✓
 H.P. 4526 ✓ 1st reduction wheel 651 ✓
 I.P. main shaft 98 ✓
 L.P. 3685 ✓

Rotor Shaft diameter at journals
 H.P. 125 mm Pitch Circle Diameter
 I.P. 276.33 mm
 L.P. 125 mm
 1st pinion HP 226.4 mm 1st reduction wheel HP 1573.5 mm
 2nd pinion HP 466.6 mm main wheel HP 2 x 280 mm
 1st pinion HP 383.5 mm 1st reduction wheel HP 463.5 mm
 2nd pinion HP 680 mm main wheel HP 2 x 500 mm

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings
 1st pinion HP 157 mm External HP 180 mm 1st reduction wheel HP 350 mm
 2nd pinion HP 228 mm Internal HP 230 mm
 1st pinion HP 225 mm diameter at bottom of pinion teeth HP 216.6 mm
 2nd pinion HP 228 mm diameter at bottom of pinion teeth HP 266.5 mm
 1st pinion HP 157 mm Generator Shaft, diameter at bearings HP 1506 mm
 2nd pinion HP 228 mm Propelling Motor Shaft, diameter at bearings HP 1476 mm

Wheel Shafts, diameter at bearings
 1st HP 225 mm diameter at wheel shroud, main 528 mm
 2nd HP 228 mm
 Thrust Shaft, diameter at collars as per rule as appeared
 as fitted 487 mm
 Tube Shaft, diameter as per rule as appeared
 as fitted 530 - 487 mm
 Is the tube screw shaft fitted with a continuous liner yes

Bronze Liners, thickness in way of bushes as per rule as appeared
 as fitted 25 mm
 Thickness between bushes as per rule as appeared
 as fitted 14.5 mm
 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
 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

Propeller, diameter 630 mm Pitch 5.4 mm No. of Blades 4 State whether Moveable no Total Developed Surface 12.39 square feet
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine yes Can the H.P. or I.P. Turbines exhaust direct to the Condenser
 No. of Turbines fitted with astern wheels one Feed Pumps No. and size
 How driven As per rule as appeared

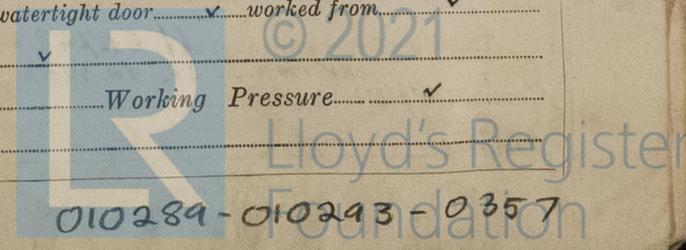
Pumps connected to the Main Bilge Line No. and size
 How driven As per rule as appeared
 Ballast Pumps, No. and size As per rule as appeared
 Lubricating Oil Pumps, including Spare Pump, No. and size As per rule as appeared
 Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room As per rule as appeared
 In Pump Room

Main Water Circulating Pump Direct Bilge Suctions, No. and size As per rule as appeared
 Independent Power Pump Direct Suctions to the Engine Room As per rule as appeared
 Bilges, No. and size As per rule as appeared
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes
 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
 Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges above or below the deep water line Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate What pipes pass through the bunkers How are they protected
 What pipes pass through the deep tanks Have they been tested as per rule

Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times
 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 Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers As per rule as appeared
 Working Pressure As per rule as appeared
 Is Forced Draft fitted No. and Description of Boilers As per rule as appeared
 Is a Report on Main Boilers now forwarded?

NOTE—The words which do not apply should be deleted.



Is a Donkey Boiler fitted? If so, is a report now forwarded?
 an Auxiliary Boiler
 Is the donkey boiler intended to be used for domestic purposes only?
 Plans. Are approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers
 (If not, state date of approval) 12-8-52
 22-11-53
 22-12-53
 Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements
 Geared turbines situated aft. Have torsional vibration characteristics of system been approved? Date of approval 5th 1-54

SPARE GEAR.

Has the spare gear required by the Rules been supplied?
 State the principal additional spare gear supplied.

To be supplied at Palermo

The foregoing is a correct description.

CANTIERI DEL TIRRENO

Spangheroni Manufacturer.

Dates of Survey while building: During progress of work in shops - - from 29th 11-52 to 4th 12-53
 During erection on board vessel - -
 Total No. of visits 40

Dates of Examination of principal parts: Casings 29-9-53-6-10-53 Rotors 2-10-53 Blading 29-9-53 Gearing 17-11-53
 Wheel shaft 2-10-53 Thrust shaft 2-9-53 Intermediate shafts Tube shaft Screw shaft
 Propeller Stern tube Engine and boiler seatings Engine holding down bolts
 Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam
 Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft; Material and tensile strength Cr. Mo. steel - U.T.S. 70,80 kg/cm² Identification Mark 44070'S 1442 1519 6V
 Flexible Pinion Shaft, Material and tensile strength HP Ni. Mo. steel - U.T.S. 70,2 kg/cm² Identification Mark 44070'S 55 3115-3183 6M
 Pinion shaft; Material and tensile strength HP. L.P. Cr. Ni. Mo. steel - U.T.S. 95,105 kg/cm² Identification Mark 44070'S 1442 1441 6V
 ; Chemical analysis C. 0.31 - Si. 0.29 - S. 0.008 - P. 0.017 - Mn. 0.66 - Cr. 0.62 - Ni. 2.87 - Mo. 0.38

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment. 21-1-53

1st Reduction Wheel Shaft, Material and tensile strength see flexible pinion shafts Identification Mark
 Wheel shaft, Material steel - U.T.S. 50,60 kg/cm² Identification Mark 44070'S 1434 6V Thrust shaft, Material steel - U.T.S. 50,60 kg/cm² Identification Mark 44070'S 1436 12 6V

Intermediate shafts, Material S.M. steel Identification Marks Tube shaft, Material Identification Marks
 Screw shaft, Material S.M. steel Identification Marks Steam Pipes, Material Test pressure
 Date of test U.T.S. 44,50 kg/cm² Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F? Have the requirements of the Rules for the use of oil as fuel been complied with?

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo? If so, have the requirements of the Rules been complied with?

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with.

Is this machinery a duplicate of a previous case? If so, state name of vessel yards 935-936 - Cantieri Navali Riuniti, Livorno

General Remarks. (State quality of workmanship, opinions as to class, &c.) The steam turbine and the reduction gearing have been constructed under special survey of tested materials and they are in accordance with the approved plans, Bentley's letter and Rule Requirements. The material and workmanship are good.

The parts are now being despatched to Palermo to be fitted on board by Messrs. Cantieri Navali Riuniti yard N° 903. When the machinery of this vessel have been installed and tried at full power to the satisfaction of the Palermo's Surveyors, the gear case and turbine casings specially examined on completion of a full power trials and found sound and free from defects, the vessel will be eligible to be classed in the Society's Register Book with the notation: "LMC (with date) Steam turbines D.P. geared to propeller shaft"

N.B. The gearing require to be specially examined and reported on after a period not exceeding 12 months on service.

The amount of Entry Fee 11% = £1,402.900 =	When applied for.
Special FUND... £1,12,087 =	10/3/1954
Donkey Boiler Fee ... £ :	When received.
Travelling Expenses (if any) £1,61,748 =	19
REV. TAX. - £1,14,303 =	

190 *Spangheroni*
 Engineer Surveyor to Lloyd's Register of Shipping.

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

FRIDAY 17 SEP 1954

Assigned See Rpt. 4.

