

Report on Steam Turbine Machinery.

No. 20595
11 MAR 1955

Rpt. 4a.

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Date of writing Report 16-2-55 1955 When handed in at Local Office 7/3/1955 Port of GENOA

No. in Survey held at GENOA Date, First Survey 30-11-53 Last Survey 15-2-55 1955

Reg. Book GENOA (Number of Visits 99) Tons (Gross 20771) (Net 12472)

✓ on the SINGLE SCREW "ARGEA PRIMA"

Built at GENOA - SESTRI By whom built S.A. ANSALDO CANTIERI NAV. Yard No. 1494 When built 1955

Engines made at GENOA - SAMPIERDARENA By whom made S.A. ANSALDO - STABILIM. Engine No. 1513 When made 1954

Boilers made at - ditto - By whom made - ditto - Boiler No. 5916 When made 1954

Shaft Horse Power at Full Power 14500 HORSE Owners "ARGEA" COMP. di NAVIGAZIONE S.P.A. Port belonging to PALERMO

Nom. Horse Power as per Rule 2900 Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES

Trade for which Vessel is intended CARRYING PETROLEUM IN BULK.

2 - COUNTING OF TWO STEAM TURBINES DOUBLE SHAFT

Trade for which Vessel is intended CARRYING PASSENGERS

STEAM TURBINE ENGINES, &c.—Description of Engines: ONE SET CONSISTING OF TWO STEAM TURBINES DOUBLE REDUCTION GEARED TO ONE PROPELLER SHAFT.

TWO Direct coupled, ONE propelling shafts. No. of primary pinions to each set of reduction gearing.....

STEAM TURBINE ENGINES.

No. of Turbines ^{Ahead} TWO ~~Direct coupled,~~ ^{single reduction geared} to ONE propelling shafts. No. of primary pinions to each set of ONE propelling shafts. ^{Astern} ONE ~~double reduction geared~~

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

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.

ASTERN.

| | | | | |
|--------------------------------------|-------------------------|----------|------------------------------------|--|
| | Kilowatts | Volts at | Revolutions per | |
| TURBINE BLADING. | H. P. | I. P. | L. P. DOUBLE FLOW | ASTERN. IN L.P. TURBINE CASING TWO WHEELS WITH TWO ROWS EACH. |
| Impulse { No. of rows | ONE WHEEL WITH TWO ROWS | ✓ | ✓ | ✓ |
| Blading { No. of stages | 7 | ✓ | 15 STAGES IN EACH FLOW | ✓ |
| Reaction { No. of rows in each stage | 5-6-5-5-5-5-5 | ✓ | 3-3-2-2-2-1-1-1-1- 1-1-1-1-1-1- | ✓ |
| | | | H. P. 2619.6 | 1st reduction wheel 704. |

Blading { No. of rows in each stage 5-6-5-5-5-5-5

Shaft Horse Power at each turbine { H.P. 7250 I.P. ✓ L.P. 7250 }
Revolutions per minute, at full power, of each Turbine Shaft { 1st reduction wheel 391.238 }
Width of { 1st reduction wheel 2 x 400 mm }

[illegible]

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings } 2nd pinion 845-1730 $\frac{m}{m}$. main wheel 1290 $\frac{m}{m}$. 1st 377.058 $\frac{m}{m}$

Pinion Shafts, diameter at bearings

| | | | | |
|----------|-----------------------|-----------------------|------------------------------------|---------------------------|
| External | 1st 250 $\frac{m}{m}$ | 2nd 430 $\frac{m}{m}$ | diameter at bottom of pinion teeth | 2nd 576.021 $\frac{m}{m}$ |
| Internal | 1st $\frac{m}{m}$ | 2nd 180 $\frac{m}{m}$ | cent. hole. | |

| | | | | | |
|------------------------------------|-----------------------------------|--------------------------------------|---------------------------|--|---|
| Pinion Shafts, diameter | 1st $249 \frac{1}{2} \text{ in.}$ | Pinion Shafts, diameter at bearings | Internal | 1st \checkmark | Cent. hole. |
| | 2nd $520 \frac{1}{2} \text{ in.}$ | | | Generator Shaft, diameter at bearings \checkmark | |
| Wheel Shafts, diameter at bearings | 1st $430 \frac{1}{2} \text{ in.}$ | 180 $\frac{1}{2}$ ϕ cent. hole. | diameter at wheel shroud, | 1st \checkmark | Propelling Motor Shaft, diameter at bearings \checkmark |
| | 2nd $600 \frac{1}{2} \text{ in.}$ | | | 140 $\frac{1}{2}$ ϕ cent. hole. | |
| | | | | as per rule, \checkmark as approved | |
| | | | | 551 $\frac{1}{2}$ ϕ cent. hole. | |

Wheel Shafts, diameter at bearings { main 600 m. 140% of cent. hole. ✓ as per rule. 25 approved. }
 Intermediate Shafts, diameter as fitted 520 m. ✓ as per rule. 25 approved. }
 Thrust Shaft, diameter at collars as fitted 545 m. 140% of cent. hole. ✓ as per rule. 25 approved. }
 Is the { 1 screw } shaft fitted with a continuous liner { YES ✓ }

Intermediate Shafts, diameter as fitted..... $\frac{25}{64}$ " Is the shaft fitted with a screw coupling?.....☒ Yes

Screw Shaft, diameter as per rule..... $\frac{25}{64}$ " Is the screw coupling.....☒ Approved

Tube Shaft, diameter as fitted..... $\frac{25}{64}$ " Is the after end of the liner made watertight in the thickness between bushes.....☒ Yes

Liner thickness in way of bushes as per rule..... $\frac{27.5}{64}$ " Thickness between bushes as fitted..... $\frac{19.5}{64}$ " Is the after end of the liner made watertight in the thickness of the liner.....☒ Yes

Bronze Liners, thickness in way of bushes as fitted... 27.5% Thickness of... as fitted... 27.5%

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... ✓

Is an approved **Oil Gland** or other appliance fitted at the after end of the tube... ✓

Supporting propeller... 2600%

If the liner does not fit tightly at the part between the bearings..... ✓ Is an approved Oil Gland or other appliance.....
If two liners are fitted, is the shaft lapped or protected between the liners..... Length of Bearing in Stern Bush next to and supporting propeller..... 2600 mm
shaft..... No If so, state type..... ✓ State whether Moveable..... SOLID Total Developed Surface..... 16.40 square ft
Pitch 6300 mm 5335 mm No. of Blades..... Four Can the H.P. & L.P. Turbines exhaust direct to the sea..... YES

Propeller, diameter. 6300 mm Pitch. 5335 mm No. of Blades. Four State whether: YES Can the H.P. ~~and~~ Turbines exhaust direct to sea? YES
If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine YES No. and size. TWO @ 76 Tons/h - ONE @ 80 Tons/h.
If Double Screw, are arrangements made so that steam can be led direct to the L.P. Turbine YES How driven. STEAM TURBINE DRIVEN
No. of Turbines fitted with astern wheels. ONE Feed Pumps ONE 40 Tons/h IN FORWARD ROOM: ONE @ 100 Tons/h

Condenser.....YES..... No. of Turbines fitted with astern wheels.....ONE..... Feed Pumps.....ONE..... How driven.....How driven.....
 IN FORTH PUMP ROOM: ONE @ 100 Ton/h.
 Pumps connected to the Main Bilge Line { No. and size.....TWO @ 100 Ton/h., ONE @ 40 Ton/h...... STEAM DRIVEN.
 How driven.....ELECTRICALLY
 IN FORTH: ONE @ 100 T/h. - ELECT. DRIVEN...... STEAM DRIVEN
 Lubricating Oil Pumps, including Spare Pump, No. and size.....TWO @ 110 Ton/h.
 Bath to Main Bilge Pumps and Auxilian

Pumps connected to the main engine: 2 (How driven) ELECT. DRIVEN. Lubricating Oil Pumps, including Spare Pump, No. and size: 1 100 T/H.

Ballast Pumps, No. and size: 1 100 T/H. (How driven) STEAM DRIVEN. Suctions, connected both to Main Bilge Pumps and Auxiliaries: 1 100 T/H.

Are two independent means arranged for circulating water through the Oil Coolers: YES

In Engine and Boiler Room: 2 150 T/H. - 4 100 T/H. - 2 80 T/H. In Coff: 24/25 - 1 100 T/H. In Pump Room: 43/44 - 24

Are two independent means of bilge suction. 2 ϕ 150 mm - 4 ϕ 100 mm
 Bilge Pumps, No. and size:—In Engine and Boiler Room 2 ϕ 150 mm - 4 ϕ 100 mm
In Hold, &c. IN FORWARD PUMP ROOM: 1 ϕ 175 mm - 1 ϕ 80 mm
 Main Water Circulating Pump Direct Bilge Suctions, No. and size ONE ϕ 500 mm Independent Power Pump Direct Suctions to the Engine Room ONE ϕ 500 mm
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. ✓
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with straight tail pipes to the bilges. ✓

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 TO SWEET YES Are the Overboard Discharges above or below the deep YES
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates YES Are the Blow Off Cocks fitted with a spigot and YES
line BELOW Are they each fitted with a Discharge Valve always accessible on the plating of the vessel YES How are they protected YES

line. BELOW Are they each fitted with a discharge valve and a covering plate. YES What pipes pass through the bunkers. ✓ Have they been tested as per rule. ✓
What pipes pass through the deep tanks. ✓ Have they been tested as per rule. YES
Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times. YES
Water passing from the sea or from water tanks into the cargo or machinery spaces. ✓

Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all cocks, valves and pumps in connection with the cargo or machinery spaces, or from one compartment to another. YES Is the Shaft Tunnel watertight. ✓ Is it fitted with a watertight door. ✓ worked from. ✓

Testing Surface of Boilers as per RULES: 3627 sq. m.

Weight of Boilers 49 Kg/cm

spaces, or from one compartment to another. YES 13 No. and Description of Boilers 25 per RULES: 3000
BOILERS, &c.—(Letter for record.....) Total Heating Surface of Boilers 25 per RULES: 3000
Is Forced Draft fitted YES No. and Description of Boilers THREE: TWO DRUM FOSTER WHEELER Working Pressure 47 Kg/cm²

Is Forced Draft fitted.....~~YES~~.....
Is a Report on Main Boilers now forwarded?.....~~YES~~.....
012656-012662-0038 1/2

012656-012662-0038 1/2

Is ☒ a Donkey ☒ Boiler fitted? ☒ If so, is a report now forwarded? ☒

Is the donkey boiler intended to be used for domestic purposes only? ☒

Plans. Are approved plans forwarded herewith for Shafting 28/8/53, 3/9/53 Main Boilers 18/4/54 Auxiliary Boilers ☒ Donkey Boilers ☒
(If not, state date of approval) 10/5/54, 25/6/54, 6/7/54

Superheaters 18/1/54 General Pumping Arrangements 23/7/54, 25/10/54 Oil Fuel Burning Arrangements 13/8/54

Geared turbines situated aft. Have torsional vibration characteristics of system been approved. ☒ YES Date of approval SEE SECRETARY'S LETTER dated 18/1/54.

SPARE GEAR.

Has the spare gear required by the Rules been supplied. ☒ YES

State the principal additional spare gear supplied. ONE SCREW SHAFT.
ONE CAST IRON PROPELLER.
ONE 1st RED. PINION

ANSALDO S. A.
STABILIMENTO MECCANICO

The foregoing is a correct description.

Manufacturer.

Dates of Survey while building

| | | |
|--------------------------------------|---------------|-------------|
| During progress of work in shops - - | FROM 30-11-53 | To 20-12-54 |
| During erection on board vessel - - | FROM 29-9-54 | To 15-2-55 |
| Total No. of visits. | 99 | |

Dates of Examination of principal parts—Casings FROM 28-12-53 To 4-8-54 Rotors FROM 25-2-54 To 11-10-54 Blading FROM 23-4-54 To 11-10-54 Gearing FROM 30-11-53 To 16-9-54

Wheel shaft. 26-8-54 Thrust shaft. 26-8-54 Intermediate shafts. 7-1-55 Tube shaft. ☒ Screw shaft. 17-9-54

Propeller. 7-10-54 Stern tube. 29-9-54 Engine and boiler seatings. 7-10-54 Engine holding down bolts. 28-12-54

Completion of fitting sea connections. 7-10-54 Completion of pumping arrangements. 31-1-55 Boilers fixed. 27-11-54 Engines tried under steam. 8x12-2-55

Main boiler safety valves adjusted. 7-2-55 Thickness of adjusting washers. SEE SEPARATE SHEET.

Rotor shaft, Material and tensile strength. HP. N. CR. MO. STEEL. U.T.S. 63/75 Kg/mm² Identification Mark. SEE SEPARATE SHEET

Astern Impulse Wheel. HP. N. CR. MO. STEEL. U.T.S. 53/60 Kg/mm² Identification Mark. SEE SEPARATE SHEET

Pinion shaft, Material and tensile strength. Ni. CR. MO. STEEL. U.T.S. 63/75 Kg/mm² Identification Mark. SEE SEPARATE SHEET

Chemical analysis. C: 0.24/0.25. Ni: 3.25/3.75. V: 0.15. S & P < 0.035

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment. 3/9/53

1st Reduction Wheel Shaft, Material and tensile strength. Ni. V. STEEL. U.T.S. ≥ 75 Kg/mm² Identification Mark. SEE SEPARATE SHEET

Wheel shaft, Material. S.M. STEEL Identification Mark. SEE SEPARATE SHEET

Intermediate shafts, Material. S.M. STEEL Identification Mark. SEE SEPARATE SHEET

Screw shaft, Material. S.M. STEEL Identification Mark. SEE SEPARATE SHEET

Steam Pipes, Material. CR. MO. STEEL FOR SUPERHEATED STEAM Test pressure. 95 Kg/cm²

Date of test. FROM 28-12-54 To 31-1-55 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 the use of oil as fuel been complied with. ☒ YES

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

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. ☒ 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 OF TESTED MATERIALS AND IS IN ACCORDANCE WITH THE APPROVED PLANS, SECRETARY'S LETTERS AND RULE REQUIREMENTS. THE MATERIALS AND WORKMANSHIP ARE GOOD. THE COMPLETE INSTALLATION HAS BEEN TRIED UNDER WORKING CONDITION AT FULL POWER AND FOUND SATISFACTORY. AFTERWARDS THE FABRICATED 2P TURBINE CASING, GEAR CASE AND GEAR WHEELS HAVE BEEN SPECIALLY EXAMINED AND FOUND, SO FAR AS COULD BE SEEN, SOUND AND FREE FROM DEFECTS.

THIS VESSEL IS WORTHY TO BE CLASSED IN THE SOCIETY'S REGISTER BOOK WITH THE RECORD: + L.M.C. 2-55, C.L. AND NOTATION: "FITTED FOR OIL FUEL F.P. ABOVE 150°F," & "TWO STEAM TURBINES D.R. GEARED TO PROPELLER SHAFT."

FIRST ENTRY FEE DURING CONSTRUCTION:
41.638.500 = 41.638.500
CAR FUND - 15.824.000
REV. TAX - 63.544.000
TOTAL - 121.006.500
When applied for. 9/12/54

Special 100% ... 41.465.375 = 9/3/1955
CAR FUND
Donkey Boiler Fee ... 41.465.375
When received.

Travelling Expenses (if any) 61.45.322
REV. TAX ... 41.15.462
Committee's Minute

Assigned + L.M.C. 2-55

Fitted for O.F. 2.55 etc.
3 WTS 668 lb.
CL.

Rpt. 9a

Port of GENOA.

Continuation of Report No. 20595 dated 16/2/55 on the "ARCEA PRIMA"

"IDENTIFICATION MARKS"

| | H.P. TURBINE | L.P. TURBINE |
|--|------------------------------------|--|
| | | FORWARD SECTION |
| | | 21070'S S. 3194 A.G. 20-8-54 |
| | | AFTER SECTION |
| | | 21070'S S. 3160 A.G. 20-8-54 |
| - TURBINE ROTOR | 21070'S S. 3258 A.G. 9-9-54 | ASTERN IMPULSE WHEEL 21070'S S. 3257 A.G. 20-8-54 |
| - PINION SHAFT | 21070'S S. 3130 A.G. 20-5-54 | 21070'S S. 3186 A.G. 20-5-54 |
| - 1st RED. GEAR WHEEL SHAFT AND 2nd RED. PINION | 21070'S S. 3184 A.G. 16-9-54 | 21070'S S. 3200 A.G. 13-9-54 |
| - 1st RED. GEAR WHEEL RIM. | 21070'S S. 2076 A.G. 16-9-54 | 21070'S S. 2004 A.G. 13-9-54 |
| - MAIN GEAR WHEEL RIM. | | 21070'S S. 3017 A.G. 26-8-54 |
| - MAIN GEAR WHEEL SHAFT & THRUST SHAFT | | 21070'S S. 3098 A.G. 26-8-54 |
| - INTERMEDIATE SHAFT | | 21070'S S. 3283 A.G. 2-8-54 |
| - SCREW SHAFT | | 21070'S S. 3237 A.G. 3-8-54 |
| - PROPELLER | | 21070'S S. 3232 G.M. 6-8-54 |

W.T. BOILERS: THICKNESS OF ADJUSTING WASHERS OF SAFETY VALVES:

| | SATURATED STEAM. | SUPERHEATED STEAM | FORN. |
|------------------|------------------|-------------------|---------|
| | | AFT. | |
| PORT BOILER | 9.3 mm | 11.6 mm | 12 mm |
| CENTRE BOILER | 11.6 mm | 10.7 mm | 11.6 mm |
| STARBOARD BOILER | 9.3 mm | 11.6 mm | 12 mm |