

Rpt. 4b

Date of writing report 24th March, 1964.

Received London

Port GENOA

No. 291291

Survey held at TURIN

No. of visits In shops 46 On vessel 50

First date 12/4/1963 13/12/1963

Last date 18/2/1964 6/7/1964

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name m.t. "GIORDANO BRUNO"

Gross tons 31,294

Owners BLACK SEA STATE STEAMSHIP LINE

Managers

Port of Registry ODESSA

Hull built at GENOA SESTRI

By S.A. ANSALDO CANTIERE NAVALE

Yard No. 1595

Year Month

Main Engines made at TURIN

By FIAT S.G.M.

Eng. No. 5065

When

Gearing made at

By

Gear No.

When 1964/2

Aux./donkey boilers made at GENOA SAMPIERDARENA

By ANSALDO S.A. STABILIMENTO MECCANICO

Blr. Nos. 6810 & 6811

When

Machinery installed at GENOA SESTRI

By ANSALDO-CANTIERE NAVALE

When 1963-12

Particulars of restricted service of ship, if limited for classification none

Particulars of vegetable or similar cargo oil notation, if required none

If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3 yes: ice class 3

Is ship an oil tanker? yes

Is refrigerating machinery fitted? domestic only

If so, is it for cargo purposes? no

Type of refrigerant

Is the refrigerating machinery compartment isolated from the propelling machinery space? no

Is the refrigerated cargo installation intended to be classed? no

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line should be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but all other relevant particulars must be given and the port and report number should be stated.

No. of main engines one No. of propellers one

Brief description of propulsion system one direct reversing oil engine directly coupled to intermediate and screwshaft

MAIN RECIPROCATING ENGINES.

Licence Name and Type No. FIAT airless injection type 909S supercharged

No. of cylinders per engine 9 Dia. of cylinders 900mm. stroke(s) 1600mm. 2 or 4 stroke cycle 2 Single or double acting single

Maximum BHP per engine approved for this installation 19000 at 122 RPM of engine and 122 RPM of propeller.

Corresponding MIP 8.97 Kg/cm2 (For DA engines give MIP top & bottom) Maximum cylinder pressure 70 Kg/cm2 Machinery numeral 3800

Are the cylinders arranged in Vee or other special formation? in one vertical line If so, number of crankshafts per engine

TWO STROKE ENGINES. Is the engine of opposed piston type? no If so, how are upper pistons connected to crankshaft?

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? through ports No. and type of mechanically driven scavenge pumps or blowers per engine and how driven 9 reciprocating type pumps driven by the main engine crossheads

No. of exhaust gas driven scavenge blowers per engine 4 Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action?

If a stand-by or emergency pump or blower is fitted, state how driven 2nd stage No. of scavenge/air coolers 5 Scavenge air pressure at full power 0.99 Kg/cm2 Are scavenge manifold explosion relief valves fitted? yes

TWO AND FOUR STROKE ENGINES. Is the engine supercharged? yes 1st stage Are the undersides of the pistons arranged as supercharge pumps? no No. of exhaust gas driven blowers per engine 4 No. of supercharge air coolers per engine 2 Supercharge air pressure 0.99 Kg/cm2 Can engine operate without supercharger? yes

No. of valves per cylinder: Fuel one Inlet none Exhaust none Starting one Safety one

Material of cylinder covers S.M. steel Material of piston crowns S.M. Steel Is the engine equipped to operate on heavy fuel oil? yes

Cooling medium for: Cylinders F.W. Pistons lub. oil Fuel valves F.W. Overall diameter of piston rod for double acting engines

Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate yes Frames? yes Entablature? yes Is the crankcase separated from the underside of pistons? yes

Is the engine of crosshead or trunk piston type? cross-head Total internal volume of crankcase 236 M3 No. and total area of explosion relief devices 9 - 30300 cm2

Are flame guards or traps fitted to relief devices? yes Is the crankcase readily accessible? yes If not, must the engine be removed for overhaul of bearings, etc? no

Is the engine secured directly to the tank top or to a built-up seating? built up seating How is the engine started? by compressed air

Can the engine be reversed? yes If not, how is reversing obtained?

Has the engine been tested working in the shop? yes How long at full power? 3 hrs. at 19000 BHP-122RPM and 1 hr. at 20900 BHP-126RPM

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 18/7/1963 State barred speed range(s), if imposed

for working propeller For spare propeller Is a governor fitted? yes Is a torsional vibration damper fitted to the shafting? yes

Where positioned? fwd. end of crankshaft Type FIAT No. of main bearings 11 Are main bearings of ball or roller type? no

Distance between inner edges of bearings in way of crank(s) 1220mm. Distance between centre lines of side cranks or eccentrics of opposed piston engines

Crankshaft type: Built, semi-built, solid. (State which) semi-built

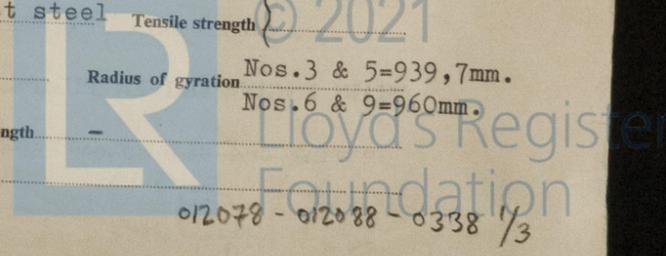
Diameter of journals 700mm. Diameter of crankpins 700mm. Breadth of webs at mid-throw 1330mm. Axial thickness of webs 420mm.

If shrunk, radial thickness around eyeholes 312.5mm. Are dowel pins fitted? no Crankshaft material: Journals S.M. forged steel Pins S.M. cast steel Minimum 55 Kg/mm2

Diameter of flywheel 2870mm. Weight 3800 Kg. Are balance weights fitted? yes Total weight 5960Kg. Webs S.M. cast steel Tensile strength

Diameter of flywheel shaft see thrust Material Minimum approved tensile strength

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) integral with thrustshaft



MAIN GAS TURBINES. Name and Type No.

No. of sets of turbines \_\_\_\_\_ Open or closed cycle \_\_\_\_\_ BHP per set \_\_\_\_\_ at \_\_\_\_\_ RPM of output shaft \_\_\_\_\_

How is drive transmitted to propeller shaft? \_\_\_\_\_

ARRANGEMENT OF TURBINES. HP drives \_\_\_\_\_ at \_\_\_\_\_ RPM HP gas inlet temperature \_\_\_\_\_ pressure \_\_\_\_\_  
 (A small diagram should be attached showing gas cycle.)  
 IP drives \_\_\_\_\_ at \_\_\_\_\_ RPM IP gas inlet temperature \_\_\_\_\_ pressure \_\_\_\_\_  
 LP drives \_\_\_\_\_ at \_\_\_\_\_ RPM LP gas inlet temperature \_\_\_\_\_ pressure \_\_\_\_\_

No. of air compressors per set \_\_\_\_\_ Centrifugal or axial flow type? \_\_\_\_\_ Material of turbine blades \_\_\_\_\_ Material of compressor blades \_\_\_\_\_  
 No. of air coolers per set \_\_\_\_\_ No. of heat exchangers per set \_\_\_\_\_ How are turbines started? \_\_\_\_\_

How is reversing effected? \_\_\_\_\_ Are the turbines operated in conjunction with free piston gas generators? \_\_\_\_\_

Total No. of free piston gas generators \_\_\_\_\_ Diameter of working pistons \_\_\_\_\_ Diameter of compressor pistons \_\_\_\_\_ No. of double strokes per minute at full power \_\_\_\_\_ Gas delivery pressure \_\_\_\_\_ Gas delivery temperature \_\_\_\_\_ Have the turbines and attached equipment been tested working in the shop? \_\_\_\_\_ How long at full power? \_\_\_\_\_

ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d. State Port and report No.)

No. of generators \_\_\_\_\_ KW per generator \_\_\_\_\_ at \_\_\_\_\_ RPM AC or DC? \_\_\_\_\_ Position \_\_\_\_\_

No. of propulsion motors \_\_\_\_\_ SHP per motor \_\_\_\_\_ at \_\_\_\_\_ RPM Position \_\_\_\_\_

How is power obtained for excitation of generators? \_\_\_\_\_ Motors? \_\_\_\_\_

REDUCTION GEARING (Reciprocating engines or gas turbines. Full particulars to be reported on Form 4e.) Port \_\_\_\_\_

Report No. \_\_\_\_\_

CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated.

Can the main engine be used for purposes other than propulsion when declutched? \_\_\_\_\_ If so, what? \_\_\_\_\_

STRAIGHT SHAFTING. Diameter of thrustshaft 700mm. Material S.M. forged steel Minimum approved tensile strength 55 Kg/mm<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? separate from crankshaft Diameter of intermediate shaft 580mm. Material S.M.

Minimum approved tensile strength 55 Kg/mm<sup>2</sup> Diameter of screwshaft cone at large end 625mm. Is screwshaft fitted with a continuous liner? yes

Diameter of tube shaft. (If these are separate shafts) \_\_\_\_\_ Is tube shaft fitted with a continuous liner in way of stern tube \_\_\_\_\_ Thickness of screw/tube shaft liner at bearings 55mm. Thickness between bearings 43mm. How is the after end of the liner made watertight in the propeller boss? rubber ring

Material of screw/tube shaft S.M. Minimum approved tensile strength 55Kg/mm<sup>2</sup> Is an approved oil gland fitted? no If so, state type \_\_\_\_\_

Length of bearing next to and supporting propeller 3100mm. Material of bearing lignum vitae In multiple screw vessels is the liner between stern tube and "A" bracket continuous? \_\_\_\_\_ If not, is the exposed length of shafting between liners readily visible in dry dock? \_\_\_\_\_

PROPELLER. If of special design, state type no Is it of reversible pitch type? no

If so, is it of approved design? no State method of control \_\_\_\_\_

Propeller	Diameter	Pitch	Built or solid	Total developed surface	No. of blades	Blade thickness at top of root fillet	Blade material	Tensile strength Kg/mm <sup>2</sup>	Design moment of inertia of propeller (dry)	For Class 1 or 2 ice strengthening only			Rake of blade
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius	
Working	6.6	4.553	S	-	4	249mm	Ni-Al-Mn bronze	46.94	182.000				Class III
Spare	6.48	VAR.	S	-	4	275mm	steel	46.94	182.000				

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine none Can they be declutched? \_\_\_\_\_

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate)  
 2 off. 405 m<sup>3</sup>/hr each. Elect. drive. Port tw. dk. level LA SPEZIA cert. no. \_\_\_\_\_  
 1 off. 60m<sup>3</sup>/hr " " outbd. of above LA SPEZIA cert. No. \_\_\_\_\_  
 1 off. 15m<sup>3</sup>/hr hand start diesel driven outbd. of above.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 3 main, port comp. flat 9m<sup>3</sup> each Gen/cert.  
 1 aux. comp. flat fwd. 500 liters. Mil. A. 113. ✓  
 1 aux. port E.R. floor 200 liters. Mil. ✓  
 1 aux. fwd. fore-castle dk. 200 liters. Mil. ✓

How are receivers first charged? hand start diesel comp. Maximum working pressure of starting air system 30 Kg/cm<sup>2</sup> Are the safety devices \_\_\_\_\_

accordance with the Rules? yes Has the starting of the main engines been tested and found satisfactory? yes

COOLERS. No. of main engine fresh water coolers three No. of main engine lubricating oil coolers four

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure two boiler fuel port side Blr. room.

One stbd. E.R. flat - (diesel oil)

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One lub. oil circ. chain driven from Intermediate shaft 500m<sup>3</sup>/hr

driving one oil meter directly coupled to one S.W. circ. pump and one F.W. circ. pump.

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X														
	SUCTION							DELIVERY							
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
Oily water separator Port fwd.															
Electr. recip. 56m <sup>3</sup> /hr	X	X													
Diesel alt. circ. Stbd.															oily water separator
Electr. cent. 20m <sup>3</sup> /hr						X				X					
F/A cond. extract Stbd.															
Electr. cent. 6m <sup>3</sup> /hr															
Blr. circ. Stbd. aft.															
Electr. cen. 50m <sup>3</sup> /hr								X							
Blr. F/O Blr. rm.															
Electr. cen. 3.5x0.3m <sup>3</sup> /hr															
Blr. feed Stbd. aft.															Blrs.
Electr. cen. 8m <sup>3</sup> /hr															
F/O trans. Port						X					X				
Electr. cen. 20m <sup>3</sup> /hr															
F.E. F/O booster-Fwd.															X
Electr. cen. 8.6m <sup>3</sup> /hr															
F.E. fuel valve clg. Stbd. Fwd.															Main eng.
Electr. cen. 17m <sup>3</sup> /hr															M.E. fuel valves
Comp. S/W circ. Port fwd.															
Electr. cen. 22m <sup>3</sup> /hr															Main air compressors
Comp. S/W circ. Port fwd.															Aux. air compressor
Electr. cen. 1.5m <sup>3</sup> /hr															
Aux. diesel O/F Fwd.															
Electr. cen. 1m <sup>3</sup> /hr															X
Aux. diesel pre. Lub. Stbd. Fwd.															
Electr. cen. 16m <sup>3</sup> /hr															

-MAIN CARGO PUMPROOM-			
Bilge Port fwd.			
Steam duplex 40m <sup>3</sup> /hr		Pumproom bilges	
Ballast Stbd. aft.			Overboard
Electr. cent. 1250m <sup>3</sup> /hr		X	X

-FWD. PUMPROOM-			
Bilge & ballast Mid. aft.			
Steam duplex 250m <sup>3</sup> /hr	X	X	X
Fuel oil trans. Stbd.			Fuel oil or ballast tks.
Steam duplex 100m <sup>3</sup> /hr		X	X
Emerg. fire Port			X overboard
Diesel 250m <sup>3</sup> /hr			X

Fwd. pump room	No. 00507 Diesel-ALFA ROMEO ALFA ROMEO Milan 53.	Emergency fire pump 250 m <sup>3</sup> /hr
Port comp. flat	Diesel hand start REGGIO EMILIA	Emergency air comp. 15m <sup>3</sup> /hr

Is electric current used for essential services at sea? yes If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea one - 450 kW

Is an electric generator driven by Main Engine? no

STEAM INSTALLATION. No. of aux./donkey boilers burning oil fuel two W.P. 12 Kg/cm<sup>2</sup> Type Foster Wheeler W/T(10.5m<sup>3</sup>/hr)

Position port & stbd. aft. eng. rm. flat. (enclosed space upto upper deck level)

Is a superheater fitted? no Are these boilers also heated by exhaust gas? no No. of aux./donkey boilers heated by exhaust gas only one W.P. 12 Kg/cm<sup>2</sup>

Type "Diesecon G" Position just below funnel casing Can the exhaust heated boilers deliver steam directly to the steam range of do they operate only as economisers in conjunction with oil fired boilers? yes Steam at 8Kg/cm<sup>2</sup> can be delivered to turbo alternator.

boilers E.G. Milan No. 42 O/F GENOVA Is steam essential for operation of the ship at sea? yes Are any steam pipes over 3 ins. bore? yes If so, what is their material? M.S. solid drawn and copper For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? yes No. of oil burning pressure units two No. of steam condensers one No. of Evaporators two

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering)

Hasties 9135.6 Two electric motors driving two hydraulic pumps operating four rams. Greenock Cert. No.

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes. Brief description of arrangements Steam smothering in Blr. Rm. & cargo tanks. CO<sub>2</sub> in E.R., Blr. Rm. and emerg. diesel gr. Rm. Foam ext. in all cargo tanks. Fixed and portable exts. throughout ship. Hydrants & hoses with spray and jet nozzles throughout ship.

Has the spare gear required by the Rules been supplied? yes Has all the machinery been tried under full working conditions and found satisfactory? yes Date and duration of full-power sea trials of main engines 30th June, 1964-12 hours. Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)

ANSAALDO S.p.A. - CAN

STABILIMENTO GRANDI MOTORI

Lloyd's Register

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**GENERAL REMARKS**

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

**GENERAL REMARKS**

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X														
	SUCTION						DELIVERY								
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
Cond. circ. Stbd. fwd. elect. centrif. 600m <sup>3</sup> /hr						X									
Blr. feed Stbd. aft. elect. centrif. 35m <sup>3</sup> /hr							X								
Atmos. cond. circ. Stbd. electr. cent. 300m <sup>3</sup> /hr									X						
F.O. trans. Stbd. fwd. Electr. cent. 72m <sup>3</sup> /hr						X				X					
Daily service F/O trans. - Stbd. Fwd. Electr. cent. 36m <sup>3</sup> /hr					X							X			
M.E. lub. oil Stbd. aft. electr. cent. 500m <sup>3</sup> /hr							X						X		
F/W & S/W circ. M.E. Stbd. electr. cent. 800/600m <sup>3</sup> /hr					X			X						X	
Aux. S/W circ. Stbd. electr. cent. 120m <sup>3</sup> /hr					X	X			X	X					
General service Port fwd. electr. cent. 100m <sup>3</sup> /hr	X	X													
Bilge Port fwd. Steam duplex 40m <sup>3</sup> /hr	X								X						
Ballast and fire Port electr. cent. 250m <sup>3</sup> /hr					X									X	
Fire pump Port electr. cent. 250m <sup>3</sup> /hr					X									X	
Bilge Port fwd. electr. cent. 120m <sup>3</sup> /hr	X	X												X	

**BILGE SUCTIONS.** No. and size in each hold, deep tank or pump room  
 Main pump Rm. One fwd. One aft. 100mm.  
 Fwd. pump Rm. One cent. 63mm.  
 Boatswains store. Two P&S 63mm.  
 Chain locker. One. 63mm.  
 No. and size connected to main bilge line in main engine room One aft. tunnel well 125mm. Two P&S fwd. 100mm.  
 In aux. engine room two - P&S fwd. 65mm. Two P&S fwd. M.E. coff. 100mm. three P. cent. S. fwd. coff. 50mm.  
 two - P&S aft. 80mm.  
 Size and position of direct bilge suction in machinery spaces two - P&S mid. eng. Rm. 150mm. one - Fwd. eng. Rm. 100mm. one - stbd. E.R. 350mm.  
 Size and position of emergency bilge suction in machinery spaces one - stbd. E.R. 350mm.

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? yes  
 Do the piping arrangements comply with the Rules including special requirements for oil tankers, ships carrying cargo oil or classed for navigation in ice Class 1, 2 or 3? (Strike out words not applicable) Class III - yes

**STEAM & OIL ENGINE AUXILIARIES**

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port	Diesel Sulzer	C.R.D.A.	5811 TRIESTE	550 kW
Stbd. Inbd.	" "	C.R.D.A.	5810 CERT. No.	550 kW
Stbd. Outbd.	" "	C.R.D.A.	5812 5636	550 kW
Stbd. Tween deck	303099 " M.A.N.	M.A.N.	Harbour service-200 kW	550 kW
Stbd. tween deck	Steam turbine 1764	ANSALDO WRECC.	GENOVA attached.	450 kW
Stbd. boat deck	Diesel-Breda No.00507	BREDA	Milan 47	150 kW
Fwd. pump room	Diesel-ALFA ROMEO	ALFA ROMEO	Milan 53.	Emergency fire pump 250 m <sup>3</sup> /hr
Port comp. flat	Diesel hand start	REGGIO EMILIA		Emergency aircomp. 15m <sup>3</sup> /hr

Is electric current used for essential services at sea? yes  
 If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea one - 450 kW  
 Is an electric generator driven by Main Engine? no  
**STEAM INSTALLATION.** No. of aux./donkey boilers burning oil fuel two W.P. 12 Kg/cm<sup>2</sup> Type Foster Wheeler W/T (10.5m<sup>3</sup>/hr)  
 Position port & stbd. aft. eng. rm. flat. (enclosed space upto upper deck level)  
 Is a superheater fitted? no Are these boilers also heated by exhaust gas? no No. of aux./donkey boilers heated by exhaust gas only? one W.P. 12 Kg/cm<sup>2</sup>  
 Type "Diesecon G" Position just below funnel casing Can the exhaust heated boilers deliver steam directly to the steam range of do they operate only as economisers in conjunction with oil fired boilers? yes Steam at 8Kg/cm<sup>2</sup> can be delivered to turbo alternator.  
 boilers E.G. Milan No. 42, O/R GENOVA same No. attached. Is steam essential for operation of the ship at sea? yes Are any steam pipes over 3 ins. bore? yes If so, what is their material? M.S. solid drawn and cop-per For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? yes  
 units two No. of steam condensers one No. of Evaporators two

**STEERING GEAR.** (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering)  
Hasties 0135.6  
Two electric motors driving two hydraulic pumps operating four rams.  
Greenock Cert No.  
 Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements Steam smothering in Blr. Rm. & cargo tanks. CO2 in E.R., Blr. Rm. and emerg. diesel gen. Rm. Foam ext. in all cargo tanks. Fixed and portable exts. throughout ship. Hydrants & hoses with spray and jet nozzles throughout ship.  
 Has the spare gear required by the Rules been supplied? yes Has all the machinery been tried under full working conditions and found satisfactory? yes Date and duration of full-power sea trials of main engines 30th June, 1964 - 12 hours.  
 Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)  
**ANSALDO S.P.A. - CAN**  
 Stabilimento Grandi Motori  
 Genova, Italia  
 Builder

**PROPELLER.** If of special design, state type no Is it of reversible pitch type? no  
 If so, is it of approved design? no State method of control -

Propeller	Diameter	Pitch	Built or solid	Total developed surface	No. of blades	Blade thickness at top of root fillet	Blade material	Tensile strength Kg/mm <sup>2</sup>	Design moment of inertia of propeller (dry)	For Class 1 or 2 ice strengthening only				
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius	Rake of blade	
Working	6.6	4.553	S	-	4	249mm.	Ni-Al-Mn bronze	46.94	182.000					Class III
Spare	6.48	VAR.	S	-	4	275mm.	steel							

**AIR COMPRESSORS & RECEIVERS.** No. of main engine driven compressors per engine none Can they be declutched? -  
 No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate)  
2 off. 405 m<sup>3</sup>/hr each. Elect. drive. Port tw. dk. level LA SPEZIA cert. n.0.  
1 off. 60m<sup>3</sup>/hr " " " outbd. of above LA SPEZIA cert. n.0.  
1 off. 15m<sup>3</sup>/hr hand start diesel driven outbd. of above.  
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 3 main, port comp. flat 9m<sup>3</sup> each Gen/cert.  
1 aux. comp. flat fwd. 500 liters. Mil. A. 113.  
1 aux. port E.R. floor 200 liters. Mil.  
1 aux. fwd. fore-castle dk. 200 liters. Mil.  
 How are receivers first charged? hand start diesel comp. Maximum working pressure of starting air system 30 Kg/cm<sup>2</sup> Are the safety devices in accordance with the Rules? yes Has the starting of the main engines been tested and found satisfactory? yes

**COOLERS.** No. of main engine fresh water coolers three No. of main engine lubricating oil coolers four

**OIL FUEL TANKS.** No. and position of oil fuel settling or service tanks not forming part of hull structure two boiler fuel port side Blr. room.  
One stbd. E.R. flat - (diesel oil)

**MAIN ENGINE DRIVEN PUMPS** (No. and Purpose) One lub. oil circ. chain driven from Intermediate shaft 500m<sup>3</sup>/hr  
driving one oil motor directly coupled to one S.W. circ. pump and one F.W. circ. pump.



GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The machinery of this vessel has been constructed under special survey of tested materials and in accordance with the approved plans, Secretary's letters and Rules Requirements.

The material and workmanship are good.

The complete installation has been tried under working conditions at full power and found satisfactory.

The torsional vibration characteristics of the main machinery shafting installation have been approved for a service speed of 122 RPM.

The machinery of this vessel is eligible to be classed in the Society's Register Book with the notation "+LMC". 7/64 ~~Oil Engine~~ - Oil Engine".

*R. Elliott*  
(R. ELLIOTT & S. DINNEN)  
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS (Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

Connecting rods:- 67,69,70,72,637,638,640,642,899-LLOYD'S TEST GEN.R.E. 12/11/63.  
upper piston rods:- N.8532,8533,8530,8501, LLOYD'S TEST GEN.R.E.8/11/63; N.8536,8534,8531,8502,8536, LLOYD'S TEST GEN.R.E. 8/11/63.  
lower piston rods:- 880,881,883,885,886,887,893-LLOYD'S TEST GEN. R.E. 29/10/63; 884,892, LLOYD'S TEST GEN.R.E. 8/11/63.  
CRANKSHAFT OR ROTORSHAFT fwd. and after sections LLOYD'S DSF.10/4/63.W.S.  
FLYWHEEL SHAFT } LLOYD'S TEST GEN. 73. R.E. 12/4/63: thrust collar; LLOYD'S TEST GEN.P.4673 R.E. 15/11/62.  
THRUSTSHAFT }  
GEARING  
INTERMEDIATE SHAFTS S.1073. G.M. 17/2/64-GEN- *Robbin. 5781 21.76 x GBH*  
SCREW AND TUBE SHAFTS S.1034.GM.3/2/1964-GEN-  
" spare S.1114.G.M.3/2/1964-GEN-  
PROPELLERS P.485 G.M. 15/2/1964-GEN-  
" spare:-S.V.27345 A.H.H.9/4/1964-OSLO-ST.5700.  
OTHER IMPORTANT ITEMS Exhaust gas driven scavenge blowers. Genoa Cert.M.7160  
Main engine crossheads:-LLOYD'S TEST GEN. 575(3),229,576, R.E. 7/11/63.  
LLOYD'S TEST GEN. 229(2),576,577, R.E. 25/10/63.

Is the installation a duplicate of a previous case? Yes If so, state name of vessel m.s. "LEONARDO DA VINCI"  
Date of approval of plans for crankshaft 27/8/62 Straight shafting 23/10/62 Gearing - Clutch -  
Separate oil fuel tanks 25/10/63 Pumping arrangements 12/3/1963 Oil fuel arrangements 30/3/1962  
Cargo oil pumping arrangements 5/4/1962 Air receivers 14/8/1962 Aux. donkey boilers O.F. 24/5/62  
E.G. 18/1/63  
Dates of examination of principal parts:-  
Fitting of stern tube 17/12/63 Fitting of propeller 30/3/64 Completion of sea connections 15/12/63 Alignment of crankshaft in main bearings 16/3/1964  
Engine chocks & bolts 28/5/1964 Alignment of gearing - Alignment of straight shafting 28/5/1964 Testing of pumping arrangements 30/6/64  
Oil fuel lines 3/19-6-64 Donkey boiler supports 17-2-64 Steering machinery 30-6-64 Windlass 30/6/64

Date of Committee FRIDAY 30 OCT 1964  
Decision + LMC ES  
ABS } 7.64  
TJ(4) }  
SIS }

Special Survey Fee DURING CONSTRUCTION  
Lit. 1391.250 plus fee for parts lit. 97.090 = Lit. 1488.  
Expenses - Lit. 6.000  
A/c. dd. 23/3/64 R.T. --- Lit. 49.000  
Special Survey Fee during install Lit. 800.000  
Exp. (see Rpt. 1)  
Date when A/c rendered 23/6/1964

