

Rpt. 4b/4f REPORT ON **INSTALLATION OF INTERNAL COMBUSTION MACHINERY**
(Inst) (Sheet 1)

Received London

FOR CONSIDERATION BY THE COMMITTEE OF LLOYD'S REGISTER OF SHIPPING

Ship's Name m.s. "RAPHAEL"

Port GENOA

Processing Number: LR - Date of completing rpt. 25/5/1965

Rpt. No. 30070

Gross tons 31,133 Place of survey, if different from above as above

No. of visits:

In shops - First date - Last date -

On ship 50 First date 9/11/1964 Last date 22/5/1965

Owners BLACKSEA STATE STEAMSHIP LINES, U.S.S.R. Port of registry NOVOROSSISK

Ship built by S.A. ANSALDO-CANTIERE NAVALE Yard No. 1598 When 1965 5

Main engines made by S.A. ANSALDO-STAB. MECCANICO Engine No. 909003 When 1965

Gearing made by none Gear No. - When -

Aux. ~~boilers~~ boilers made by S.A. ANSALDO STAB. MECCANICO Boiler No. 505,506 When 1965-5

Machinery installed by S.A. ANSALDO-CANTIERE NAVALE When 1965-5

Particulars of service of ship if limited for classification } none

Particulars of vegetable oil or other special cargo notation, if required } none

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

Is ship an oil tanker? yes Is refrigerating machinery fitted? yes

If so, is it for cargo purposes? no Type of refrigerant -

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

Is the refrigerated cargo installation to be classed?

No. of main engines one Brief description of propulsion system One direct reversing oil engine directly coupled to the intermediate shaft and screw-shaft.

No. of propellers one

Fee Lit. 800.000

Expenses (See Rpt. 1)

MAIN INTERNAL COMBUSTION RECIPROCATING ENGINE

To be reported on Rpt. 4b (Cons) Port GENOA Rpt. No. Same No. attached

~~XXXXXXXX TURBINES~~
To be reported on Rpt. 4f (Cons) Port - Rpt. No. -

~~ELECTRIC PROPULSION~~ (Internal combustion reciprocating engines or gas turbines)

Electrical particulars to be reported on Rpt. 4d Port - Rpt. No. -

~~REDUCION GEARLINE~~ (Internal combustion reciprocating engines or gas turbines)

To be reported on Rpt. 4e Port - Rpt. No. -

*Are flame guards or traps fitted to crankcase relief devices? yes

	MAIN	AUX.
No. of lub. oil coolers	4	3

*Is a ~~axial~~ axial vibration damper ~~ax~~ ~~axial~~ detuner fitted to the shafting? yes

Is engine fitted directly on tank top, or on a built-up seating? built up seating

*Where positioned? fwd. end crankshaft

*Can engine ~~be~~ be reversed? yes

*If not, how is reversing effected? -

*Type FIAT

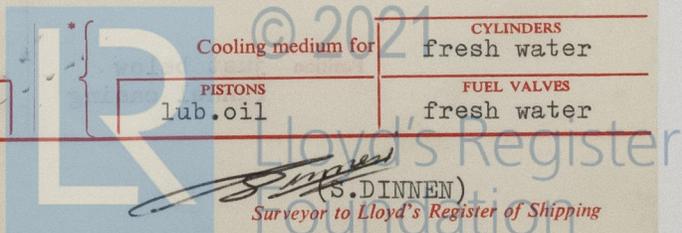
Is the engine equipped to operate on heavy fuel? yes

Cooling medium for CYLINDERS fresh water

	MAIN	AUX.
No. of fresh water coolers	3	4

PISTONS lub. oil FUEL VALVES fresh water

Note.—The particulars in this report are to 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 items are marked with an asterisk* the particulars need not be repeated here if they have already been given on the relevant Rpt. 4b (Cons) or 4f (Cons). Wording not applicable to be cancelled.



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

NONE

If main engine can be used for purposes other than propulsion when declutched, state what purpose also at what maximum B.H.P. & R.P.M.

NONE

AIR COMPRESSORS AND RECEIVERS

State No. of independently driven air compressors, also capacity of each and whether a separator or filter is provided between each compressor and the air receivers, type of prime mover, position in ship, Port and No. of cert.

2 off. 405m³/hr. each electr.driven. Port comp. flat separate oil filter. LA SPEZIA M.548.
 1 off. 60m³/hr. - " " " " " " " " " " M.521.
 1 off. 15m²/hr hand start diesel driven " " " " " " " " " "

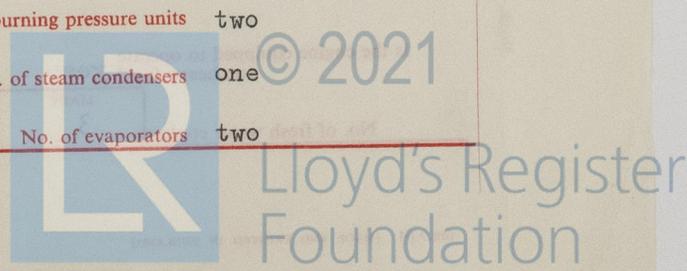
State No. of starting air receivers, both main and auxiliary, capacity of each, position in ship, Port and No. of cert.

3 off.main 9m³ each port comp.flat. Genoa M.7670.
 1 off.aux.200 litres. Port E.R. Floor. Milan A/83.
 1 off.aux.500 litres Fwd.comp.flat. Milan A/116.
 1 off.aux.200 litres forecastle. Milan A/83.

How are air receivers first charged?	Hand start diesel compressor.	Are the safety devices in accordance with the Rules?	yes
		Are bursting discs or flame arresters fitted at the starting air valves on each cylinder?	yes
Maximum working pressure of starting air system	30 Kg/cm ²	Has the starting of the main engines been tested and found satisfactory?	yes

STEAM INSTALLATION

No. of aux./ auxiliary boilers (see Key to R.B.) burning oil fuel	two	Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil-fired boilers?	yes steam at 8Kg/cm ² can be delivered to turbo alternator.
Working pressure	12 Kg/cm ²		
Type	ANSALDO FOSTER WHEELER W/T	Port and rpt. or cert. Nos. for aux./ auxiliary boilers	Two W/T O/F-Genoa same No.attached. One E/G Milan No. 56.
Position	Port & Stbd.aft. E.R.flat.		
Enclosed space upto	upper deck level		
Is a superheater fitted?	no	Is steam essential for the operation of the ship at sea?	yes
Are these boilers also heated by exhaust gas?	no	If so, are any steam pipes over 3 ins. bore?	yes
No. of aux./ auxiliary boilers (see Key to R.B.) heated by exhaust gas only	one	What is their material?	solid drawn. M.S. " " "copper.
Working pressure	8 Kg/cm ² 12 Kg/cm ²	For oil-fired boilers, is the arrangement of pipes, valves, controls, &c., in accordance with Rules?	yes
Type	CASINGHINI "DIESECON G"	No. of oil-burning pressure units	two
Position	just below funnel casing	No. of steam condensers	one
		No. of evaporators	two



Ship's Name "RAPHAEL"

Port GENOA

Rpt. No. 30070

Date of approval of torsional vibration characteristics of the propelling machinery system with:— 27.8.62

Particulars of barred speed range(s) if imposed, with:—

(a) Working propeller 30/5/1963 11.7.63

(a) Working propeller none

(b) Spare propeller 30/5/1963

(b) Spare propeller none

STRAIGHT SHAFTING

Max. BHP/THRUST approved for each line of shafting THRUST SHAFT. Separate or integral with crank, ~~stock~~ ~~electric motor~~ shaft?

19,000

Corresponding RPM of propeller

122

MN 3800

separate

Thickness of liner between bearings
How is the after end of the liner made watertight in the propeller boss?

43mm.

rubber ring

Diameter adjacent to collar

700 mm.

Material of screw/~~axle~~ shaft

S.M. steel

Material

S.M. forged steel

Minimum approved tensile strength

55 Kg/cm2

Minimum approved tensile strength

55 Kg/mm2

Is an oil gland fitted?

no

INTERMEDIATE SHAFT

Diameter

580mm.

Material

S.M.

Minimum approved tensile strength

55 Kg/mm2

Length of bearing next to and supporting propeller

3100 mm.

SCREWSHAFT. Dia. of cone at large end

625mm.

Material of bearing

lignum vitae

Is screwshaft fitted with a continuous liner?

yes

Material of stern tube

S.M. steel

TUBE SHAFT (if separate) Diameter

none

Is tube shaft fitted with a continuous liner in way of stern tube?

-

Thickness of screw/~~axle~~ shaft liner at bearings

55mm.

Is stern tube fabricated?
~~the liner between stern tube & bracket continuous~~
~~Is the stern tube fitted with a continuous liner at bearing between stern tube & ready visible to deck?~~

- no -

PROPELLER

If of special design, state type

no

~~State method of control~~

Is it of reversible pitch type?

no

~~Is it of approved design?~~

-

PROPELLER	BLADE MATERIAL	TENSILE STRENGTH	BUILT OR SOLID	LEFT HAND (LH) OR RIGHT HAND (RH)	NO. OF BLADES	DIAMETER	PITCH	TOTAL DEVELOPED SURFACE
Working	Ni-Al-Mn-Bronze steel	58Kg/mm2	Solid	Rh.	4	6480mm.	4620mm.	18.40m2
Spare	Aq45 - Uni3158	45Kg/mm2	Solid	Rh.	4	6480mm.	4553mm.	18.80m2

PROPELLER	DESIGN MOMENT OF INERTIA OF PROPELLER (DRY) G.D.2	CLASS 1, 2 OR 3	THICKNESS OF BLADES			LENGTH OF BLADE SECTION AT 25% RADIUS	RAKE OF BLADES
			AT TOP OF ROOT FILLET	AT 25% RADIUS	AT TIP		
Working	152000m2/Kg.	3	249mm.	230mm.	22mm.	1504mm.	Negative
Spare	187500m2/Kg.	3	298mm.	275mm.	22mm.	1504mm.	Negative

OIL FUEL TANKS

No. and position of oil fuel settling or service tanks not forming part of ship structure } Two boiler or sett. tanks port side blr. Rm.
One stbd. E/R flat diesel fuel.

LUBRICATION

One-chain driven from inter. shaft.
one electr. driven.

No. of lub. oil pumps and how driven

No. of oil coolers four

Can normal supply be maintained with any one pump out of action? yes

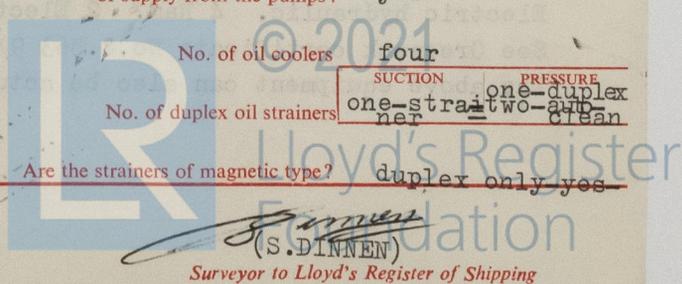
No. of duplex oil strainers one-strainer two-~~duplex~~ clean

Is an emergency supply automatically available as per Rule 7 (Turbines only)

-

Are the strainers of magnetic type? duplex only yes

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INDEPENDENT PUMPS	SERVICE FOR WHICH EACH PUMP IS CONNECTED TO BE MARKED THUS ×													
	SUCTION							DELIVERY						
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel Tanks	Condenser Extraction	Sea	Feed Tanks	Lub. oil	Boiler Feed	Main Condenser	Oil Fuel Burners	Oil Fuel Tanks	Fire Main	Overboard
Cond. circ. Stbd. fwd. elect. centrif. 600m ³ /hr						X								
Blr. feed Stbd. aft. Electr. centrif. 35m ³ /hr							X		X					
Atmos. cond. circ. Stbd. Electr. cent. 300m ³ /hr						X								
F.O. trans. Stbd. fwd. Electr. cent. 72m ³ /hr				X						X				
Daily service F/O trans - Stbd. Fwd. Electr. cent. 36m ³ /hr				X						X				
M.E. lub. oil Stbd. aft. Electr. cent. 500m ³ /hr							X							
F/W & S/W circ. M.E. Stbd. Electr. cent. 800/600m ³ /hr						X		X						
Aux. S/W circ. Stbd. Electr. cent. 120m ³ /hr						X								
General service Port fwd. Electr. cent. 100m ³ /hr	X	X				X								
Bilge port fwd. steam duplex 40m ³ /hr	X					X								
Ballast and fire. Port Electr. cent. 250m ³ /hr						X							X	
Fire pump port Electr. cent. 250m ³ /hr						X							X	
Bilge port fwd. Electr. cent. 120m ³ /hr	X	X												
Oily water separator - port fwd. Electr. recip. 56m ³ /hr	X	X												oily water separator
Diesel alt. circ. stbd. Electr. cent. 20m ³ /hr						X								
T/A cond. extract Stbd. Electr. cent. 6m ³ /hr														

BILGE SUCTIONS
 No. and size in each hold, deep tank, cofferdam and pump room

Pump room. One fwd. one aft. 100mm.
 Fwd. pump room. One centre. 63mm.
 P&S Boatswains store. 63mm.
 One chain locker. 63mm.

Sizes and positions of direct suctions in machinery spaces

2 - P&S mid. E.R. - 150mm.
 1 - fwd. E.R. - 100mm.

No. and size connected to main bilge line in:-

Main engine room 1 - Aft. tunnel well 125mm.
 1 - Aft. E.R. 100mm.
 2 - P&S fwd. 125mm.
 2 - P&S fwd. (off) 100mm.
 3 - P.C.&S. fwd. (off) 50mm.

Aux. Boiler room 2 - P&S fwd. 65mm.
 2 - P&S aft. 80mm.

Sizes and positions of emergency suctions in machinery spaces

1 - Stbd. E.R. - 350mm.

Are all suctions of non-return type? yes

Has the bilge or ballast system means for separating oily water on the overboard discharge side? yes

Do the pumping arrangements comply with the Rules, including special requirements for oil tankers, ships classed for navigation in ice Class ~~1~~ 3? (Strike out words not applicable) yes

If to be classed for navigation in ice, state means provided for clearing ice from ship's side valves & recirculation of Eng. cooling water at inlets.

STEERING GEAR. (State type, also No. of steam engines, electric motors, hydraulic pumps and other particulars, including particulars of the alternative means of steering)

Electric hydraulic. 4 Ram. 2 Elect. motors. 2 hydraulic pumps.
 See Greenock certificate No. C.563 9/4/65.
 The above equipment can also be actuated by hand.



INDEPENDENT PUMPS	SERVICE FOR WHICH EACH PUMP IS CONNECTED TO BE MARKED THUS ×													
	SUCTION							DELIVERY						
Name below each essential pump and state its position. Give capacities of bilge pumps	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel Tanks	Condenser Extraction	Sea	Feed Tanks	Boiler Feed	Main Condenser	Oil Fuel Burners	Oil Fuel Tanks	Fire Main	Overboard	
Blr. circ. Stbd. aft.														
Electr. cen. 50m ³ /hr							X	X						
Blr. F/O Blr. rm.														
Electr. cen. 3.5x0.3m ³ /hr														
Blr. feed Stbd. aft.														
Elect. cen. 8m ³ /hr						X		X						
LO/ trans. Port														
Electr. cen. 20m ³ /hr							X							
M.E.F/O booster Fwd.														
Electr. cen. 8.6m ³ /hr														
M.E. fuel valve clg. Stbd. fwd.														M.E. fuel valves
Electr. cen. 17m ³ /hr														
Comp. S/W circ. Port fwd.														Main air compressors
Electr. cen. 22m ³ /hr						X								
Comp. S/W circ. Port fwd.														
Electr. cen. 1.5m ³ /hr						X					X			
Aux. diesel O/F fwd.														
Electr. cen. 1m ³ /hr														
Aux. diesel pre. lub. Stbd. fwd.														
Electr. cen. 16m ³ /hr														
Bilge Port fwd.														
Steam duplex 40m ³ /hr														MAIN CARGO PUMPROOM
Ballast Stbd. aft.														Pumproom bilges
Electr. cent. 1250m ³ /hr			X			X								Overboard
Bilge & ballast Mid. aft.														
Steam duplex 250m ³ /hr	X		X			X								FWD. PUMPROOM
Fuel oil trans. Stbd.														Fuel oil or ballast tks.
Steam duplex 100m ³ /hr			X			X								X overboard
Emerg. fire Port														
Diesel 250m ³ /hr						X								X



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Lloyd's Register
Foundation

Ship's Name "RAPHAEL"

Port GENOA

Rpt. No.

STEAM AND OIL ENGINE AUXILIARIES

REF	POSITION OF EACH	TYPE	MADE BY
a	PORT E.R. tank top 5813	Sulzer 6BCAH 29	C.R.D.A., TRIESTE
b	Stbd. Inbd. " " 5819	" "	" "
c	Stbd. Outbd. " " 5820	" "	" "
d	Stbd. E.R. flat (tween dk level)	Man. W8V.17.5	M.A.N.
e	Stbd. Outbd. E.R. flat " "	Stm. turbine	ANSALDO MECCANICO
f	Stbd. boat deck aft.	026.S.6V.AR.1627	BREDA
g	Fwd. pump room.	D.V. 550	ALFA ROMEO
h			

REF	PORT & No. OF REPORT OR CERTIFICATE	DRIVEN MACHINERY (for electric generators state kw, volts & amps)
a	TRIESTE No. 16475	690 kVA 400 Volts
b	" " 16307	690 kVA 400 Volts
c	" " 16307	690 kVA 400 Volts
d	AUGSBERG NO. 1803	400 Volts
e	MILAN NO. 58	560 kVA 400 volts
f	MILAN No. 52	188 kVA 400 Volts
g		
h		

If electric current is used for essential services at sea, state the minimum No. and capacity of generators required

- (1) So that the ship may operate at sea one 690 kVA
- (2) For refrigerated cargo purposes -

Has the spare gear required by the Rules been supplied? **yes**
Has all the machinery been tried under full working conditions & found satisfactory? **yes**

Date & duration of full-power sea trials of main engines **May, 1965 - 8hrs.**
Has the manœuvring of the main engines been tried and found satisfactory? **yes (15/5/65)**

DECLARATION TO BE SIGNED BY INSTALLING ENGINEERS

To the best of our knowledge this machinery has been installed in conformity with the Rules, Regulations and requirements of Lloyd's Register of Shipping, and the foregoing particulars of main and auxiliary machinery and pressure vessels (as shown on sheets 1, 2 & 3) are correct.

ANSALDO S.P.A. - CAN

15 GIU. 1965

(date)

(signature)

A previous similar case was "GIUSEPPE VERDI" for (name)

Port and Rpt. No. GENOA No. 29569.

IDENTIFICATION MARKS (copies of certificates to be forwarded)

Thrust shaft S.S.103 G.E.28/7/62.
" disc. S.S.105 B.83407.

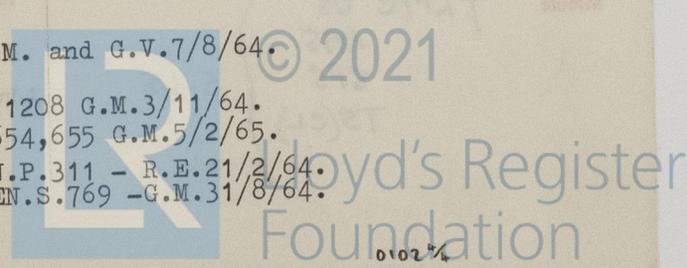
Intermediate shafts LLOYD'S GEN.S.1048 G.M. & G.V. 10/8/64.

Screw and other shafts LLOYD'S GEN.S.1033 G.M. and G.V. 7/8/64.

Propellers Working - LLOYD'S GEN.P.1208 G.M. 3/11/64.
Spare - LLOYD'S DTM. 654,655 G.M. 5/2/65.

Other important items Stern tube. LLOYD'S GEN.P.311 - R.E. 21/2/64.
Bobbin Rece. LLOYD'S GEN.S.769 - G.M. 31/8/64.

NOTE: - The particulars in this report are to 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. Wording not applicable to be cancelled.



DATES OF APPROVAL OF PLANS		
Straight shafting	23/10/62	Oil burning arrangements 12/12/63
		Compressed air system 2/7/62
		Main steam pipes 16/4/62
Air receivers	14/8/62	Boiler feed system 4/12/62
Reversing gear & control		Main boilers
Flexible coupling		Superheaters
Separate fuel tanks	25/10/63	
General pumping arrangements	12/3/63	
Bilge, ballast & oil fuel pumping arrangements in the machinery space	30/3/62	Aux. boilers Oil fired. 24/5/62 Exh. Gas 18/1/63
		Dunkley boilers
		Feed water economisers (exh. gas blr.)
Oil fuel piping & fittings at settling & service tanks	30/3/62	Steam heated steam generators Propeller working 12/10/62 (including spare, if supplied) spare 31/10/62
Cargo oil pumping arrangements	5/4/62	Stern gear 30/5/1963 Oil retaining gland if not shown on submitting plan

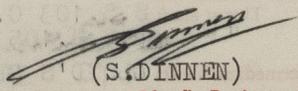
DATES OF EXAMINATION OF:-		
Fitting of stern tube	24/11/64	Alignment* of straight shafting 5/5/65
Fitting of propeller	14/1/65	Testing of pumping arrangements 15/5/65
Completion of sea connections	28/11/64	Oil fuel lines 11/5/65
Alignment* of crankshaft on board	24/3/65 (UGHT)	Boiler supports 4/12/64
Alignment* of machinery engines & gears	5/5/65	Steering machinery 22/5/65
Holding down bolts & chocks	5/5/65	Windlass 15/5/65

*State if aligned when ship in light, ballast or loaded condition

† The machinery reported above has been constructed and installed under Special Survey in accordance with the Rules, approved plans and Secretary's letters. The materials and workmanship are good, the spare gear required by the Rules has been supplied and the machinery is eligible, in my opinion, to be classed. ‡

+L.M.C. 5/65 C.L. OIL ENGINE.

NOTE—Where existing machinery is submitted for classification, the circumstances are to be explained as fully as possible, and the recommendation should be suitably amended.


(S. DINNEN)

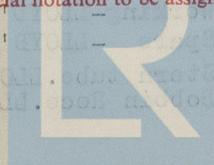
Surveyor to Lloyd's Register of Shipping

Date of Committee **FRIDAY - 3 SEP 1965**

Minute

+LMC ES
ABS
SPS
TS(CL) } 5.65

- † (a) If the installation contains any features of a novel or experimental nature, give particulars.
(b) If centralised and/or bridge control is fitted for main propelling and/or essential auxiliary machinery, state on a Rpt.-(cont.) where the control room is situated, the machinery controlled from it and give a brief description of the control system, including any automatic system for controlling essential auxiliary machinery.
‡ Include any special notation to be assigned.



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