

Rpt. 4b

Date of writing report 14.9.1959 Received London 27 SEP 1959 Port of SPLIT No. 2163
Survey held at Brodogradilište "SPLIT" No. of visits 18 In shops 6.4.1959 Last date 17.7.1959
On vessel 35 First date 11.5.1959 Last date 31.8.1959

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 40231 Name M/S "CHOPIN" Gross tons OSD 7136.24 CSD 9147.85
Owners POLSKIE LINIE OCEANICZNE Managers Port of Registry GDYNIA 1959-8
Hull built at SPLIT By Messrs. Brodogradilište "SPLIT" Yard No. 152 When 1959-8
Main Engines made at TORINO By Messrs. FIAT - S.G.M. Eng. No. 4341 When 1959
Gearing made at By Tvor. Par. Kot. 1521 When 1959
Donkey boilers made at Zagreb-oil fired Kiel - exhaust gas By Messrs. Kieler Howaldstw. AG Blr. Nos. 402 When 1958
Machinery installed at SPLIT By Messrs. Brodogradilište "SPLIT" When 1959

Particulars of restricted service of ship, if limited for classification
Particulars of vegetable or similar cargo oil notation, if required
Is ship to be classed for navigation in ice? Is ship intended to carry petroleum in bulk?
Is refrigerating machinery fitted? only for dom. use If so, is it for cargo purposes? Type of refrigerant
Is the refrigerating machinery compartment isolated from the propelling machinery space? Is the refrigerated cargo installation intended to be classed?

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 may 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 the port and report number should be stated.

No. of main engines One No. of propellers One Brief description of propulsion system One oil engine directly coupled to the Int. shaft

MAIN RECIPROCATING ENGINES. Licence Name and Type No. See report Genoa No. 24122 Supercharged.
No. of cylinders per engine 6 Dia. of cylinders 750 stroke(s) 1320 2 or 4 stroke cycle 2 Single or double acting SA
Maximum approved BHP per engine 6000 at 125 RPM of engine and RPM of propeller.
Corresponding MIP (For DA engines give MIP top & bottom) Maximum cylinder pressure Machinery numeral 1200
Are the cylinders arranged in Vee or other special formation? If so, number of crankshafts per engine

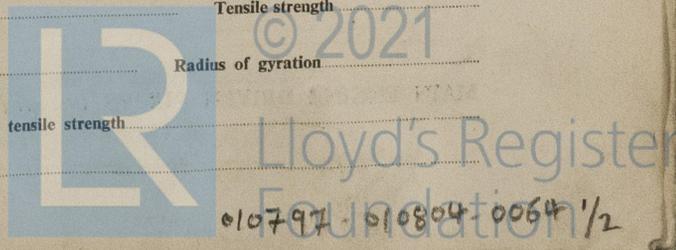
TWO STROKE ENGINES. Is the engine of opposed piston type? If so, how are upper pistons connected to crankshaft?
Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? No. and type of mechanically driven scavenge pumps or blowers per engine and how driven 6
No. of exhaust gas driven scavenge blowers per engine 2 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 No. of scavenge air coolers Scavenge air pressure at full power

FOUR STROKE ENGINES. Is the engine supercharged? Are the undersides of the pistons arranged as supercharge pumps? No. of exhaust gas driven blowers per engine 1900
No. of supercharge air coolers per engine Supercharge air pressure Can engine operate without supercharger?

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel Inlet Exhaust Starting Safety Yes
Material of cylinder covers Material of piston crowns Is the engine equipped to operate on heavy fuel oil?
Cooling medium for :-Cylinders Pistons Fuel valves Overall diameter of piston rod for double acting engines
Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? Frames? Entablature? Is the crankcase separated from the underside of pistons?
Is the engine of crosshead or trunk piston type? Total internal volume of crankcase No. and total area of explosion relief devices
Are flame guards or traps fitted to relief devices? Is the crankcase readily accessible? If not, must the engine be removed for overhaul of bearings, etc?
Is the engine secured directly to the tank top or to a built-up seating? built up seating How is the engine started?
Can the engine be directly reversed? If not, how is reversing obtained?

Has the engine been tested working in the shop? How long at full power? 11/12/59 415.L.
CRANK & FLYWHEEL SHAFING. Date of approval of torsional vibration characteristics of the propelling machinery system State barred speed range(s), if imposed for working propeller 63770
For spare propeller 6176 Is a governor fitted? Is a torsional vibration damper or detuner fitted to the shafting?
Where positioned? Type No. of main bearings Are main bearings of ball or roller type?
Distance between inner edges of bearings in way of crank(s) Distance between centre lines of side cranks or eccentrics of opposed piston engines

Crankshaft type: Built, semi-built, solid. (State which)
Diameter of journals Diameter of crankpins Centre Breadth of webs at mid-throw Axial thickness of webs
Side Pins Minimum
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Approved
Webs Tensile strength
Diameter of flywheel Weight Are balance weights fitted? Total weight Radius of gyration
Diameter of flywheel shaft Material Minimum approved tensile strength
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which)



**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.)

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. A small line sketch should be attached showing arrangement of gearing.)

Is gearing of single or double helical type? \_\_\_\_\_ If single, position of gear thrust bearing \_\_\_\_\_ Is gearing of epicyclic type? \_\_\_\_\_

PCD of pinions: First reduction \_\_\_\_\_ Second reduction \_\_\_\_\_ PCD of wheels: First reduction \_\_\_\_\_ Main \_\_\_\_\_

Material of pinions \_\_\_\_\_ Tensile strength \_\_\_\_\_ Material of wheel rims \_\_\_\_\_ Tensile strength \_\_\_\_\_

Are gear teeth surface hardened? \_\_\_\_\_ How are teeth finished? \_\_\_\_\_ Diameter of pinion journals \_\_\_\_\_ Wheel shaft journals \_\_\_\_\_ Are the wheels of welded construction? \_\_\_\_\_ Is gearcase of welded construction? \_\_\_\_\_ Has the wheel/gearcase been heat treated on completion of welding? \_\_\_\_\_ Where is the propeller thrust bearing located? \_\_\_\_\_ Are gear bearings of ball or roller type? \_\_\_\_\_

**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 \_\_\_\_\_ See Rpt.No. 24122 \_\_\_\_\_ Material \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_

Shaft separate or integral with crank or wheel shaft? \_\_\_\_\_ Diameter of intermediate shaft 396 mm \_\_\_\_\_ Material S.M. Steel \_\_\_\_\_

Minimum approved tensile strength 44 kg/sq.cm \_\_\_\_\_ Diameter of screwshaft cone at large end 474 mm \_\_\_\_\_ 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 screwshaft liner at bearings aft 25.5 mm fwd. 24.5 mm \_\_\_\_\_ Thickness between bearings 19 mm \_\_\_\_\_ Material of screwshaft S.M. Steel \_\_\_\_\_ Minimum approved tensile strength 44 kg/sq.cm \_\_\_\_\_ Aft 2000 m/m Fwd. 1845 m/m \_\_\_\_\_

Is an approved oil gland fitted? \_\_\_\_\_ If so, state type \_\_\_\_\_ Length of bearing next to and supporting propeller \_\_\_\_\_

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.** Diameter of propeller 5000 mm \_\_\_\_\_ Pitch 3875 mm \_\_\_\_\_ Built up or solid Solid \_\_\_\_\_ Total developed surface 11.0 m<sup>2</sup> \_\_\_\_\_

No. of blades 4 \_\_\_\_\_ Blade thickness at top of root fillet 8.25" \_\_\_\_\_ Blade material Bronze \_\_\_\_\_ Moment of inertia of dry propeller 49000 kg m<sup>2</sup> \_\_\_\_\_

If propeller is of special design, state type \_\_\_\_\_ Is propeller of reversible pitch type? \_\_\_\_\_ If so, is it of approved design? \_\_\_\_\_

State method of control \_\_\_\_\_ Material of spare propeller not supplied \_\_\_\_\_ Moment of inertia \_\_\_\_\_

**AIR COMPRESSORS & RECEIVERS.** No. of main engine driven compressors per engine \_\_\_\_\_ Can they be declutched? \_\_\_\_\_

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) Two 220 m<sup>3</sup>/h el. motor E.R. Port fwd. outb. and inboard Kiel Cert. No. 58/2822 and 58/2821; One 13.5 m<sup>3</sup>/h diesel platform P.S. Hamburg Cert. No. 58/3207

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two 10,000 litres capacity each, E.R.P.s. fwd. outboard Köln C. 58/1167 and E.R.P.s. No. 3 Hannover C. 58/804; One 60 litres Mast house port.s. Split C. No. 2818; One 60 litres Pump room Stbd.s. Hannover C. 58/643; One 60 litres E.R. platform

How are receivers first charged? by hand compressor \_\_\_\_\_ Maximum working pressure of starting air system 30 kg/sq.cm \_\_\_\_\_ 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 Two \_\_\_\_\_

**OIL FUEL TANKS.** No. and position of oil fuel settling or service tanks not forming part of hull structure Nil \_\_\_\_\_

**MAIN ENGINE DRIVEN PUMPS** (No. and Purpose) \_\_\_\_\_

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	Deep tank	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	Sea	Oil w. sep	
1x Bilge recip. P.E.R. Stbd.s. El. driv. 50/100 m <sup>3</sup> /h	X	X	X	X	X													X	X
1x Gen. serv. cent. P.E.R. Stbd.s. El. driv. 80 m <sup>3</sup> /h						X	X											X	Aft Peak
1x Ball. cent. P.E.R. Stbd.s. El. driv. 200/50 m <sup>3</sup> /h	X	X	X			X												X	Only w. sep
1x Veg. oil p. cent. Pump room Port.s. El. driv. 100 t/h									X									X	Outb. Deep tank
1x Bilg. rec. p. Pump room cent. El. driv. 100/50 t/h		X	X			X												X	Ball. Decept.
1x Ball. cent. p. Pump room sths. El. driv. 200/50 t/h		X	X			X												X	Ball. t
2x Salt w. cir. P.E.R. P.s. fwd El. driv. 300 t/h						X					X								
2x Fresh w. cir. P.E.R. P.s. fwd El. driv. 300 t/h					X	X						X							
2x Lubr. oil sc. P.E.R. stb. fwd El. driv. 300 t/h																			X
2x Boil. feed pist. P.E.R. stbd. s. aft. El. driv. 4 t/h							X	X		X									
1x Aux. fr. salt w. circ. P.E.R. stbd.s. El. driv. 40 t/h					X	X					X	X							
2x Booster p. heavy f. oil ER stbd.s. El. driv. 4 t/h				X															M. Eng.
2x Transf. heavy fuel oil ER stbd.s. cent. El. driv. 40 t/h				X															X

**BILGE SUCTIONS.** No. and size in each hold, deep tank or pump room. Hold No. 1 Two 83/74 fwd. p.s.s. and two 83/74 aft; Hold No. 2 Two 83/74 fwd. p.s.s. and two 83/74 aft; Hold No. 3 Two 95/86 fwd. p.s.s. and two 95/86 aft; Hold No. 4 Two 95/86 fwd. p.s.s. and two 95/86 aft; Hold No. 5 89/80 fwd. p.s.s. and two 89/80 aft; Port Deep tank; One 100/108 p.s.s.; Stbd. Deep t.; One 100/108 stbd.s. Pump room: two 89/80 p.s.s. aft

No. and size connected to main bilge line in main engine room One 133/125 (Bilge); One 133/125 (Ballast) One 89/80 aft

In aux. engine room \_\_\_\_\_ Size and position of direct bilge suction in machinery spaces One 76/67 aft cent. Two p.s. fwd. \_\_\_\_\_ Size and position of emergency bilge suction in machinery spaces One 267/254 centr. fwd. \_\_\_\_\_

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 ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (strike out words not applicable.) 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 s. fwd. inb. ER	V6M 536	Klockner-Humboldt Deutz AG	Köln Rpt. No. 406	Generator 300 KVA
Stbd. fwd. E.R.	"	"	No. 405	Generator 300 KVA
Stbd. aft E.R.	"	"	No. 404	Generator 300 KVA
No. 3 Mast House Port s.	A6M 517	"	Hamburg Cert. No. 58/2982	Generator 65 KVA

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 Two - each 240 Kw. \_\_\_\_\_ Is an electric generator driven by Main Engine? No \_\_\_\_\_

**STEAM INSTALLATION.** No. of donkey boilers burning oil fuel One W.P. 7 kg/sq.cm Type Cylindrical scotch boiler

Position platform centre aft \_\_\_\_\_

Is a superheater fitted? No \_\_\_\_\_ Are these boilers also heated by exhaust gas? No \_\_\_\_\_ No. of donkey boilers heated by exhaust gas only? One W.P. 7 kg/sq.cm

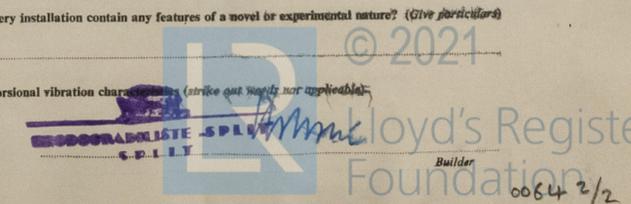
Type La Mount Type Exh. gas Position Funnel \_\_\_\_\_ Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? economiser \_\_\_\_\_ Port and No. of report on donkey boilers Kiel Rpt. No. 2077 (exhaust gas) Rijska Rpt. No. 790 (oil fired) \_\_\_\_\_ Is steam essential for operation of the ship at sea? No \_\_\_\_\_ Are any steam pipes over 3 ins. bore? \_\_\_\_\_ If so, what is their material? \_\_\_\_\_ For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes \_\_\_\_\_ No. of oil burning pressure units built in \_\_\_\_\_ No. of steam condensers \_\_\_\_\_ No. of Evaporators One \_\_\_\_\_

**STEERING GEAR.** (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Electric-Hydraulic Steering gear No. H.G. 7339/40 - Four 7" cast iron hydr. cylinders and P.S. rams two H.P. 9 Hele Shaw pump port s. No. 11549 and Stbd. No. 11550; two elec. motors 20 HP, 380 Volts, 31 Amps made by Messrs. Laurence Scott & Electromotors Port.s. No. M 293027 and Stbd. S M 293028

Have the Rules Requirements for fire extinguishing arrangements been complied with? Yes \_\_\_\_\_ Brief description of arrangements CO<sub>2</sub> Kidde Extinguishing system in E.R. - 11 pieces of 10 litres of froth; 2 pieces of 45 litres of froth and 4 pieces of 6 lits of powder type T 16 S. Pump Room: 2 pieces of 10 litres of froth and two pieces of 5 litres of powder. \_\_\_\_\_

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 24.8.1959 - 3 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.)



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 have been installed under Special Survey in accordance with the Rules of the Society's approved plans and Secretary's letters. The material and workmanship are good. On completion of installation, the main engine fitted with exhaust gas driven blowers auxiliary machinery, steering gear and windlass have been examined under full working conditions, both alongside the quay and under full power at sea with satisfactory results.

The boilers have been satisfactory installed on board. Safety valves of both boilers have been adjusted under steam at 7 kg/sq.cm. and accumulation test carried out satisfactory. Basing gear is fitted to chests of both boilers. Exhaust gas boiler: Two safety valves now fitted of 2 x 70 mm dia.

Graphical records of the torsional vibration stresses of the complete installation of the Main Engine have been taken by Messrs FIAT and will be forwarded in due course.

A notice board has been fitted at the Control Station stating that the M. engine is not to be operated continuously between 63 and 75 R.P.M. and the engine tachometer has been marked accordingly.

The machinery is, in my opinion, eligible to be classed in the Society's Register Book with the record of  $\pm$  LMC 8/59; TS(CL) and 2 db 7 kg/sq.cm  
 (Ing. M. Brajnović)  
 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.)

RODS See Rpt. Genoa No. 24122

CRANKSHAFT OR ROTORSHAFT See Rpt. Genoa No. 24122

FLYWHEEL SHAFT -"

THRUSTSHAFT -"

GEARING

INTERMEDIATE SHAFTS LLOYD'S SPT. No. 1001  
 LLOYD'S Bf.F. No. 59/1088  
 LLOYD'S Df.N. No. 59/9811  
 SCREW AND TUBE SHAFTS fitted LLOYD'S Spt. No. 1025 SPARE: LLOYD'S SPT. No. 1038

PROPELLERS LLOYD'S London D. 62903

OTHER IMPORTANT ITEMS

Is the installation a duplicate of a previous case? If so, state name of vessel

Date of approval of plans for crankshaft Straight shafting 22.11.1957 Gearing Clutch

Separate oil fuel tanks Pumping arrangements 6.2.59; 20.3.59; 12.8.59 Oil fuel arrangements 4.2.1959  
 See C. Koln No. 58/1166; 58/1167 See Rpt. Rka 1521

Cargo oil pumping arrangements Air receivers " " Split No. 2818 Donkey boilers " " Kiel 207  
 " " Hannover No. 58/804; 58/582; 58/643

Dates of examination of principal parts:-

Fitting of stern tube 11.5.1959 Fitting of propeller 15.5.1959 Completion of sea connections 20.8.1959 Alignment of crankshaft in main bearings 29.7.1959  
 9.6.59; 2.8.1959

Engine checks & bolts 29.7.1959 Alignment of gearing 21.5.1959 (Oil.f.) Alignment of straight shafting Testing of pumping arrangements

Oil fuel lines 9.6.1959 Donkey boiler supports 14.7.1959 (Exh. gas) Steering machinery 24.8.1959 Windlass 24.8.1959

Date of Committee FRIDAY 23 OCT 1959 Special Survey Fee £156- 0- 0  
 and Din. 87.360.-

Decision See Rpt. 1 Expenses



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