

## Rpt. 4b

Date of writing report 6.12.61 Received London                      Port Rijeka No. 1349  
 Survey held at Rijeka In shops 46 First date 4.11.60 Last date 26.9.61  
 No. of visits 43 On vessel                     

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 40641 Name m.v. "JOZEF CONRAD" Gross tons 7200  
 Owners Polish Government Managers Polish Ocean Lines Port of Registry Gdynia  
 Hull built at Rijeka By Brodogradiliste "3 Maj" Yard No. 480 Year Month 10 1961  
 Main Engines made at Rijeka By Brodogradiliste "3 Maj" Eng. No. 005 When 1961  
 Gearing made at - By -  
 Donkey boilers made at Zagreb By Tvornica Parnih Kotlova Blr. Nos. 2720 & 2888 When 1961  
 Machinery installed at Rijeka By Brodogradiliste "3 Maj" When 1961

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? No  
 Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? No Type of refrigerant dichlorodifluoromethane  
 Is the refrigerating machinery compartment isolated from the propelling machinery space? Yes 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 Heavy Oil Engine driving direct through line shafting to screw propeller

MAIN RECIPROCATING ENGINES. Licence Name and Type No. "3 Maj" Sulzer

No. of cylinders per engine 6 Dia. of cylinders 760 mm stroke(s) 1550 mm 2 or 4 stroke cycle 2 Single or double acting single

Maximum approved BHP per engine 7800 at 119 RPM of engine and 119 RPM of propeller.

Corresponding MIP 115 lb/sq.in (For DA engines give MIP top & bottom) Maximum cylinder pressure 850 lb/sq.in Machinery numeral 1560

Are the cylinders arranged in Vee or other special formation? No 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? Ports No. and type of mechanically driven scavenge pumps or blowers per engine and how driven None

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

If a stand-by or emergency pump or blower is fitted, state how driven - No. of scavenge air coolers Two Scavenge air pressure at power 0,595 Kg/sq.cm Are scavenge manifold explosion relief valves fitted? Yes

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                      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 One Inlet - Exhaust - Starting One Safety One

Material of cylinder covers Cast steel Material of piston crowns forged steel Is the engine equipped to operate on heavy fuel oil? Yes

Cooling medium for :-Cylinders Fresh water Pistons Lub. oil Fuel valves Fresh water 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? crosshead Total internal volume of crankcase 86,4 cu.m No. and total area of explosion relief

devices 6-10,38 sq.cm 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? - Is the engine secured directly to the tank top or to a built-up seating? Built-up seating How is the engine started? compressed air

Can the engine be directly reversed? Yes If not, how is reversing obtained? -

Has the engine been tested working in the shop? Yes How long at full power? 14 hrs

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 15.8.60 State barred speed range(s), if imposed

for working propeller None For spare propeller None Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? No

Where positioned? - Type - No. of main bearings 7 Are main bearings of ball or roller

type? No Distance between inner edges of bearings in way of crank(s) 1000 mm 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 550 mm Diameter of crankpins 550 mm Breadth of webs at mid-throw 900 mm Axial thickness of webs 300 mm

If shrunk, radial thickness around eyeholes 252,5 mm Are dowel pins fitted? No Crankshaft material Journals SM steel Approved 50 kg/sq.mm

Webbs SM steel Tensile strength                     

Diameter of flywheel 2365 Weight 1300 Kg Are balance weights fitted? No Total weight - Radius of gyration -

Diameter of flywheel shaft 550 mm Material SM steel Minimum approved tensile strength 50 kg/sq.mm

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

CRANKCASE RELIEF DEVICES.

Crankcase Size of Buge Sections in CR.

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# 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 550 mm ✓ Material SM steel Minimum approved tensile strength 50 kg/sq.mm

Shaft separate or integral with crank or wheel shaft? Integral flywheel shaft ✓ Diameter of intermediate shaft 400 mm Material SM steel  
 Minimum approved tensile strength 44 kg/sq.mm Diameter of screwshaft cone at large end 498 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 screw/tube shaft liner at bearings 25 mm Thickness between bearings 24 mm Material of screw/tube shaft SM steel Minimum approved tensile strength 44 kg/sq.

Is an approved oil gland fitted? No If so, state type ..... Length of bearing next to and supporting propeller 2530 mm

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 5200 mm Pitch 4647 VAR Built up or solid Solid Total developed surface 9,874 sq.m

No. of blades 4 Blade thickness at top of root fillet 207 mm Blade material Mang. Bronze Moment of inertia of dry propeller 49250 kg.sq.m

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 Bronze Moment of inertia 59,240 kg/sq.m

## 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) Two Main 239 cu.m/hr Stbd. side E.R. Southampton No. D 16447 & D 16448 One diesel driven stbd. side E.R. Kiel 60/4626 ✓

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main-Two starboard side E.R. 8.5 cu.m Lloyds Test RCA No. 9151A & 9151B Aux. Two stbd. side E.R. Lloyds Test SPT No. 3096 & 3093 7.7.69 ✓

How are receivers first charged? Hand start Diesel driven 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 Two 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 4 off two D.O. Daily service upper platform level, after E.R. bulkhead; One H.O. and One D.O. tank for Boiler, Upper platform Port s.e.

## MAIN ENGINE DRIVEN PUMPS (No. and Purpose) Fuel Oil Pressure pumps only

| INDEPENDENT PUMPS<br>Name below essential pumps, state position and<br>how driven. Give capacity of bilge pumps. | Service for which each pump is connected to be marked thus X |                 |                 |             |                                |     |               |             |               |                | DELIVERY                      |                                |                      |              |             |                        |   | D.O.<br>tanks | O/B tanks | Ball.<br>tanks |
|--|--|-----------------|-----------------|-------------|--------------------------------|-----|---------------|-------------|---------------|----------------|-------------------------------|--------------------------------|----------------------|--------------|-------------|------------------------|---|---------------|-----------|----------------|
|  | Bilge<br>Main  | Bilge<br>Direct | Ballast<br>Main | Oil<br>Fuel | Fresh<br>Water<br>Cool-<br>ing | Sea | Feed<br>Tanks | Lub.<br>Oil | D.O.<br>tanks | Boiler<br>Feed | Salt<br>Water<br>Cool-<br>ing | Fresh<br>Water<br>Cool-<br>ing | Oil<br>Fuel<br>Tanks | Fire<br>Main | Lub.<br>Oil | Piston<br>Cool-<br>ing |   |               |           |                |
| 350 cu.m/hr E.R.s.s.f.d. ballast pump el. drive  | X  | X               | X               |             |                                | X   |               |             |               |                |                               |                                |                      |              |             |                        |   | X             | X         |                |
| E.R.stbd.s. 8.5 cu.m/hr bilge & fire service   | X  | X               | X               |             |                                | X   |               |             |               |                |                               |                                |                      | X            |             |                        |   | X             | X         |                |
| E.R.stbd.s. outboard fire main & wash dr.  |  |                 |                 |             |                                | X   |               |             |               |                |                               |                                |                      |              | X           |                        |   |               |           |                |
| E.R. for & stbd.s. M.E.F.W. cooling el. dr. 2 off  |  |                 |                 |             | X                              |     |               |             |               |                |                               | X                              |                      |              |             |                        |   |               |           |                |
| E.R. Ford. port M.E.S.W. cooling el. dr. 2 off   |  |                 | X               | X           |                                | X   |               |             |               |                | X                             |                                |                      |              |             |                        |   | X             |           |                |
| Injection valve C.W. el. dr. 2 off   |  |                 |                 |             | X                              |     |               |             |               |                |                               | X                              |                      |              |             |                        |   |               |           |                |
| E.R. port s. M.E. Lub. oil 2 off el. dr.   |  |                 |                 |             |                                |     |               | X           |               |                |                               |                                |                      |              | X           |                        |   |               |           |                |
| E.R. port s. aft bulkh'd F.O. transfer el. dr.   |  |                 |                 | X           |                                |     |               |             |               |                |                               |                                | X                    |              |             |                        |   |               |           |                |
| Boiler room el. dr. boiler feed water 2' off   |  |                 |                 |             |                                |     | X             |             |               |                | X                             |                                |                      |              |             |                        |   |               |           |                |
| Boiler room el. dr. Exh. gas boiler circulating  |  |                 |                 |             |                                |     |               |             |               |                |                               |                                |                      |              |             |                        |   |               |           |                |
| D.O. transfer el. dr.  |  |                 |                 |             |                                |     |               |             | X             |                |                               |                                |                      |              |             |                        | X |               |           |                |
| Aux. W. cooling el. dr.  |  |                 |                 |             | X                              | X   |               |             |               |                | X                             | X                              |                      |              |             |                        |   |               |           |                |
| Aux. S.W. cooling el. dr.  |  |                 |                 | 1           | X                              | X   |               |             |               |                | X                             | X                              |                      |              |             |                        |   |               |           |                |
| FUEL OIL BOOSTER (2 off)   |  |                 |                 |             |                                |     |               |             |               |                |                               |                                |                      |              |             |                        |   |               |           |                |

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room No. 1 - 2 @ 100 mm; No. 2 - 2 @ 100 mm; No. 3 - 2 @ 100 mm

No. 4 - 2 @ 100 mm; No. 5 - 1 @ 100 mm. 100 mm on Port s.e. side

No. and size connected to main bilge line in main engine room 2-125mm P & S Ford E.R. 3-100 mm Purifier space In tunnel 2-100 mm F & A

In aux. engine room Size and position of direct bilge suction in machinery spaces One-port side Ford. One-stbd. s. Ford. Size and position of emergency bilge suction in machinery spaces 250mm suction forward (Main Circ)

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? Yes

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) |
|---------------------------|----------|--------------------------|-------------------------------|--|
| Engine Room Starbd. Ford  | 5 BAH 29 | Jugoturbina              | Rijeka No. 8922               | 400 KVA alternator                                       |
| Engine Room Starbd. after | 5 BAH 29 | Jugoturbina              | Rijeka No. 8915               | 400 KVA alternator                                       |
| Engine Room port          | 5 BAH 29 | Jugoturbina              | Rijeka No. 8619               | 250 KVA alternator                                       |
| E.R. stbd. Outboard       | GKN      | W. Poppe GmbH Kiel-Pries | Mannheim M. 60/562            | 2 stage Air compressor                                   |
| Tunnel aft                | AVA 2    | Petters                  | Falmouth SC 151               | emergency fire pump                                      |

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 - 400 KVA alternator 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 Vertical Water tube

Position Engine Room Lower Platform Starboard side forward

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 Mont W.T. Position Funnel casing Can the exhaust heated boilers deliver steam directly to aux.

the steam range or do they operate only as economisers in conjunction with oil fired boilers? direct to range Port and No. of report on donkey

boilers Rijeka No. 1211 & 1233 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? steel 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 one No. of steam condensers none No. of Evaporators One - vacuum distilling plant.

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) One - 4 ram electric-hydraulic

steering gear with two electric motor driven pumps. No. HQ 8117/B. Greenock Cert. No. 7899

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements Hoses and hydrants with jet

and spray nozzles. CO2 fixed system. Portable fire extinguishers.

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 3.11.61 8 hours Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)

No

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).

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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.

The machinery of this ship has been constructed and installed under Special Survey in accordance with the Society's Rules, approved plans and Secretary's letters.

The materials and workmanship are good.

On completion of installation the machinery, boilers, steering gear and windlass were examined under full working conditions at sea with satisfactory results.

The auxiliary boilers were examined under steam and safety valves adjusted to 7 kg/sq.cm (100 lb/sq.in). An accumulation test was carried out on the oil fired auxiliary boiler with satisfactory results.

The machinery of this ship is in my opinion eligible to be classed with the Society having the following notation:-

+ LMC 11.61 T.S.C.L. 2 WT Aux.B. 7 kg/sq.cm.

*Fred. G. Burn for Self and M. Furlanis*  
F.G. Burn & M. Furlanis

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 connecting: RKA. 7118; 7190; 7191; 7192; 7193; 7192

Piston KLN F.No. 60/89

CRANKSHAFT OR ROTOR SHAFT GEN No. 4 M 5075

FLYWHEEL SHAFT } DOF No. 60/387

THRUST SHAFT } DOF No. 60/487

GEARING: 1st L.R.GEN. SS 8689 2nd L.R.GEN. SS 8688 3rd L.R.GEN. SS 8693 4th L.R.GEN. SS 8690

INTERMEDIATE SHAFTS: GM. 3.11.60 GM. 28.11.60 GM. 28.11.60 GM. 3.11.60

SCREW AND TUBE SHAFTS: FGB. 26.4.61 FGB. 26.4.61 FGB. 26.4.61 FGB. 26.4.61

PROPELLERS: L.R.LON.D 77087 Z 3355 RH 16.2.61 L.R.CLS. 70527 ZVY 3358 31.3.61 A.B.S.

OTHER IMPORTANT ITEMS

Is the installation a duplicate of a previous case? No If so, state name of vessel  
Date of approval of plans for crankshaft 15.8.60 Straight shafting 14.7.60 Gearing 27.9.60 Clutch  
Separate oil fuel tanks Pumping arrangements 27.9.60 Oil fuel arrangements  
Cargo oil pumping arrangements Air receivers 11.8.60 Donkey boilers 21.4.59  
Dates of examination of principal parts:-  
Fitting of stern tube 8.7.61 Fitting of propeller 18.7.61 Completion of sea connections 4.3.61 Alignment of crankshaft in main bearings 27.10.60  
Engine checks & bolts 17.10.61 Alignment of gearing - Alignment of straight shafting 26.8.61 Testing of pumping arrangements 23.10.61  
Oil fuel lines 10.10.61 Donkey boiler supports 12.6.61 Steering machinery 3.11.61 Windlass 31.10.61

Date of Committee FRIDAY 23 MAR 1962 Eng. construc. Special Survey Fee £ 266-00-00 + 558.600. f Su

Decision + LMC ES } ABS } 11.61 Mach. inst. £ 148-00-00 + 310.800. - wh

TS(C/L) } SPS } Expenses 19.910.-din. nild

Date when A/c rendered

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