

Rpt. 4b

Date of writing report 5th March, 1962

Survey held at Gdańsk &amp; Poznań

Received London

No. of visits In shops 28  
On vessel 96

Port

24-8-1959

First date 21.3.61

F.E.M. 060

Last date 16.2.1962

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.T. "BALACLAVA"

Owners U.S.S.R. Min. of Merch. Marine National Steamship Co.

Gross tons

Hull built at Gdańsk

Managers of Latvia

Port of Registry R I G A

Main Engines made at Poznań

By Stocznia Gdańska

Yard No. B 70/02

Year Month

Gearing made at -

By H.Cegielski

Eng. No. 006

When 1960 - 10

Aux

Boiler makers made at Gdańsk

By Stocznia Gdańska

Blr. Nos. GDK 068 &amp; 74

When 1961

Machinery installed at Gdańsk

By Stocznia Gdańska

When 1961-2

Particulars of restricted service of ship, if limited for classification No Restrictions

Particulars of vegetable or similar cargo oil notation, if required "Oil Tanker"

Is ship to be classed for navigation in ice? yes

Is ship intended to carry petroleum in bulk? yes

Is refrigerating machinery fitted? yes

If so, is it for cargo purposes? no

Type of refrigerant Dichloro-Difluoro-methane

Is the refrigerating machinery compartment isolated from the propelling machinery space? yes

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 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 H.O. Engine-direct coupled to screwshaft

MAIN RECIPROCATING ENGINES. Licence Name and Type No. "CEGIELSKI" SULZER" R.S.A.D.-76

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

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

Corresponding MIP 7,7kgs/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 60,1kgs/cm<sup>2</sup> Machinery numeral 1560

Are the cylinders arranged in Vee or other special formation? No - in 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? Ports

No. and type of mechanically driven scavenge pumps or blowers per

engine and how driven undersides of all six pistons

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 none No. of scavenge air coolers two Scavenge air pressure at full power 0,5kgs/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? yes

FOUR STROKE ENGINES. Is the engine supercharged? ~~no~~ Are the undersides of the pistons arranged as supercharger pumps? ~~no~~ No. of exhaust gas driven blowers per engine ~~two~~

~~Can the engine operate without supercharger?~~

TWO &amp; FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel one Inlet none Exhaust none Starting one Safety one

Material of cylinder covers Cast Steel (with C.I. valve housing) Material of piston crowns forged steel Is the engine equipped to operate on heavy fuel oil? yes

Cooling medium for :-Cylinders Fresh water Pistons Fresh water 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? none Is the crankcase separated from the underside of pistons? yes

Is the engine of crosshead or trunk piston type? head Total internal volume of crankcase 84 cu.m. No. and total area of explosion relief devices 6-9000 cm<sup>2</sup> 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? Tank Top How is the engine started? by 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? four and a half one hour, and one hour at 10% overload

CRANK &amp; FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 20.5.59 State barred speed range(s), if imposed for working propeller 75. 86 For spare propeller - 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-Plain Distance between inner edges of bearings in way of crank(s) 990mm 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 550mm Diameter of crankpins Centre 550mm Side - Breadth of webs at mid-throw 900mm Axial thickness of webs 340mm

If shrunk, radial thickness around eyeholes 252mm Are dowel pins fitted? No Crankshaft material Pins OH Steel Journals OH Steel Webs OH Steel Minimum Actual Tensile strength 51,3 kgs/mm<sup>2</sup> 52,0kgs/mm<sup>2</sup> 51,3 kgs/mm<sup>2</sup>

Diameter of flywheel 2365mm Weight 12500mm Are balance weights fitted? no Total weight - Radius of gyration -

Diameter of flywheel shaft 550mm Material OH Steel Minimum approved tensile strength 52,6 kgs/mm<sup>2</sup> Actual -

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

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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 550mm Material OH Steel Actual Minimum tensile strength 52,6kgs/mm<sup>2</sup>  
Integral with Wheelshaft Diameter of intermediate shaft 498 mm Material O.H.Steel  
Minimum tensile strength 49,0kgs/mm<sup>2</sup> Diameter of screwshaft cone at large end 582 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 22,5mm Thickness between bearings 16mm Material of screwshaft OH Steel Minimum tensile strength 55,5kgs  
Is an approved oil gland fitted? no If so, state type ..... Length of bearing next to and supporting propeller 2500mm  
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 5508mm Pitch 4245 mm Built up or solid solid Total developed surface 11.443 m<sup>2</sup>  
No. of blades four Blade thickness at top of root fillet 212mm Blade material Bronze Moment of inertia of dry propeller 76000 kgm<sup>2</sup>  
If propeller is of special design, state type no Is propeller of reversible pitch type? no If so, is it of approved design? -  
State method of control - Material of spare propeller Cast Steel Moment of inertia Not stated

## 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) 2-267m<sup>3</sup>/h El.Motor drive, E.R.Port upper Tweeneck, Inbd & outbd Certs.FOZ 008/60 EL;1-26m<sup>3</sup>/hr Diesel Eng.driven,Port FWD KIEL Cert. No.61/5374 X

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of certificate) 2 Main-8,5m<sup>3</sup> ER-Port Upper Tweeneck Inbd & Outbd (Polish Reg.Certs Nos.19/61 & 20/61; 2 Aux- 2,45m<sup>3</sup> each- E.R.Port Upper Tweeneck Upper & Lower KAT 506 & KAT 507 Certs; 1 Emerg- 1,55m<sup>3</sup>- K 388 Cert. X

How are receivers first charged? 26m<sup>3</sup>/hr Diesel Driven Comp't Maximum working pressure of starting air system 30 Kgs/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 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  
1- Diesel Oil - Blr. Room

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) None

| INDEPENDENT PUMPS<br>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 | Emg Oil Bilge | Boiler Feed | Salt Water Cooling | Fresh Water Cooling | Oil Fuel Tanks | Fire Main | Lub. Oil |
| Bilge/ Ballast  | X  | X            | X            |          |                     | X   |            |               |             |                    |                     |                |           |          |
| M.E. Lub Oil SF. SA   |  |              |              |          |                     |     |            |               |             |                    |                     |                |           | X        |
| M.E.-S.W.Cooling SI & SO  |  |              |              |          |                     | X   |            | X             |             |                    |                     |                | X         | X        |
| M.E.-F.W.Cooling SI & SO  |  |              |              |          | X                   |     |            |               |             | X                  |                     |                |           | X        |
| OF-Transfer F & A Centre  |  |              |              | X        |                     |     |            |               |             |                    | X                   |                |           |          |
| Boiler Feed F & A   |  |              |              |          |                     |     | X          |               |             |                    |                     | X              |           |          |
| Fire F & A  |  |              |              |          |                     | X   |            |               | X           |                    |                     |                | X         |          |

All Electric drive except steam driven Boiler Feed Pumps and one Bilge-Ballast Pump

BILGE SUCTIONS. No. and size in each hold, deck, pump room. For 'd Hold 2-65mm; Fire Pump Compt 1-65mm; For 'd Pump Rm. 3-65mm  
Cofferdam P & S 2-65mm; Main Pump Room 4-65mm.

No. and size connected to main bilge line in main engine room 1-150mm; 2-100mm; 1-65mm; Coff.Fr.22-23; 1-50mm  
Echo Sdg Compt Fr.43-43.  
Port For'd; 1-150mm Stbd For'd

Size and position of direct bilge suction in machinery spaces 1-150mm  
Size and position of emergency bilge suction in machinery spaces 1-300mm Ford Centre

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? yes  
special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (strike out words not applicable). yes

| Position of each | Type   | Made by     | Port and No. of Rpt. or Cert. | Driven Machinery (For electric generators, state output) |
|------------------|--------|-------------|-------------------------------|--|
| Port For'd       | Diesel | Jugoturbina | RKA CERT 8519                 | 320KVA, 3Ph, 50Cy, Generator                             |
| Port Aft         | Diesel | "           | RKA CERT 8265                 | 320KVA, 3Ph, 50Cy, "                                     |
| Starboard        | Diesel | "           | RKA CERT 8202                 | 320KVA, 3Ph, 50Cy, "                                     |
| Port For'd       | Diesel | Bukh        | CPN CERT (No Number)          | 26m <sup>3</sup> /hr Air Compressor                      |
|                  |        |             | (Dated 20.3.61)               |  |
|                  |        | DIETZ       | HAN. 6/163                    | 4 yel. Comb. & Liep. 50 KVA.                             |
|                  |        |             | KAT. 528                      | 4 yel.   |

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

STEAM INSTALLATION. No. of Aux. boilers burning oil fuel 2 W.P. 12,5Kgs/cm<sup>2</sup>  
Is an electric generator driven by Main Engine? no  
Position closed flat above shafting end Eng. Room Type Scotch Multitubular

Is a superheater fitted? no Are these boilers also heated by exhaust gas? no No. of donkey boilers heated by exhaust gas only? One LA Mt Economiser  
Type La Mont Economiser Position in 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? Only as Economisers  
boilers Gdańsk 060 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? S.D.Steel

For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? yes No. of oil burning pressure units 2 No. of steam condensers one No. of Evaporators One Atlas Freshwater Generator

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Four Ram Hydraulic, 2 El.Motors  
2 Variable Stroke Pumps/see GDK Cert 272/Emerg Hand Pump & Hand Gear

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements CO<sub>2</sub> Smothering with Alarms sufficient  
Hoses & Nozzles; sufficient Sand & Scoops

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 16,17,18Dec.61 24 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).

DYREKTOR TECHNICZNY

mgr inż. W. Galić

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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 Main and Auxiliary Machinery of this vessel has been constructed and installed under Special Survey in accordance with the Rules, approved plans and Secretary's Letters.

The torsional vibrations characteristics of the shafting installation of the main machinery have been examined in conjunction with the Engine builders calculations and approved for a service speed of 119 R.P.M., the engine not being operated continuously between 75 and 86 R.P.M.

The materials used and the workmanship are of good quality. The whole machinery installation has been examined under full working conditions during a sea trial with satisfactory results.

This installation is eligible in our opinion to be classed with the Society and to have the record:- + LMC 1-62 and the notations

2 SA oil engine, TS(CL) and 2-Aux. Boilers 12,5kgs/cm<sup>2</sup>

Notes for SRL appendix:- " M.E. not to be operated continuously between 75 and 86 R.P.M." " T.S. liners on working and spare screwshaft have one circumferential E.W." "Economiser W.P. 14 kgs/cm<sup>2</sup>"

G. Manson

B. Langlois

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.)

CONRODS :- LR KAT L.W. Nos. 893/382BL 22.6.60; LR POZ 010/011 BL 22.6.60; LR KAT.LW.1322/89 BL 2. LR.POZ.011/010 BL.1.7.60; LR KAT LW. 925/426 BL 1.7.60; LR KAT LW 635/335 BL.22.6.60 LR.KAT ADC 528/286 BL 1.7.60; LR KAT LW.631/322 BL 1.7.60; LR KAT LW.625/282 BL 1.7.60

Piston Rods:-LR.KAT.LW.752/374 BL 1.7.60; LR KAT ADC 527/285 BL 1.7.60; LR kat lw 546/283 BL 1.7.60 CRANKSHAFT OR ROTORSHAFT LLOYD'S VNA 12803 RC 22.12.59 Control No. 003

FLYWHEEL SHAFT

THRUSTSHAFT

LLOYD'S VNA 12804 RC 22.12.59 Control No. 003

GEARING

INTERMEDIATE SHAFTS :-Lloyds K 1105 4-11-60 LW; FIN M/C 14-12-60 ND

SCREW AND ROTOR SHAFTS Working:- K126; 18-12-58 ADC; Spare K 1116- 25-11-60 LW.

PROPELLERS Working: CTG 597; 1-361 ND; Spare CTG 617; 2-5-61 ND

OTHER IMPORTANT ITEMS Bilge & Ballast, Oil fuel transfer & booster, lub oil, fuel main

Aux SW and EW pumps, oil fuel unit, FD Fan, Boiler feed & circulating pumps, Air compressors & receivers- Cargo pumps etc.

Certificates all attached.

Is the installation a duplicate of a previous case? yes If so, state name of vessel M.T. " BAUSKA "

Date of approval of plans for crankshaft 20.5.59 Straight shafting 20.5.59 Gearing - Clutch -

Separate oil fuel tanks 28.3.61 Pumping arrangements 7.10.57 & 18.1.61 Oil fuel arrangements 7.10.57 & 18.1.61

Cargo oil pumping arrangements 7.10.57 & 10.8.61 Air receivers 11.3.58 Donkey boilers 10.12.59

Dates of examination of principal parts:-

Fitting of stern tube 10.3.61 Fitting of propeller 20.03.61 Completion of sea connections 21.03.61 Alignment of crankshaft in main bearings 8.10.61

Engine checks & bolts 7.10.61 Alignment of gearing - Alignment of straight shafting 7.10.61 Testing of pumping arrangements 9.12.61

Oil fuel lines 6th & 14th 11.61 Donkey boiler supports 22.03.61 Steering machinery 17.12.61 Windlass 14.12.61

Date of Committee FRIDAY 27 APR 1962

Decision + LMC ES } ABS } 2.62 } TS(08) } SPS }

Construction of M.E. at H.Cegielski, Poznan zX 27,850.-& £ 5

Examined of Welded Fabrications = 10% zX 25,065.-& £ 4

- 10% = zX 1,650.-& £ 2

Install'n of M'chy on bd - 10% = zX 1,485.-& £ 2

Travelling exp. zX 15,540.-& £ 2

zX 13,985.-& £ 2

zX 9,249.30

Date when A/c rendered 31-1-1962



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