

Rpt. 4b.

See also Manchester F.E. Report 4b No. 18617 (attached hereto)

Date of writing report 25th November, 1959 Received London 31 NOV 1959 Port Gdańsk No. F.E.M. 008
Survey held at Gdańsk No. of visits In shops 3 On vessel 15 First date 6.4.59 Last date 4.9.59

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.V. "ORLA" Gross tons 473.04
Owners Polish Government Managers Polish Steamship Company Port of Registry Szczecin
Hull built at Gdańsk By Stocznia Gdańska Yard No. B51/011 When 1959-3
Main Engines made at Openshaw By Crossley Bros.Ltd. Eng. No. 148441 When 1958
Gearing made at - By -
Donkey boilers made at - By - Blr. Nos. - When -
Machinery installed at Gdańsk By Stocznia Gdańska When 1959
Particulars of restricted service of ship, if limited for classification No restriction
Particulars of vegetable or similar cargo oil notation, if required none required
Is ship to be classed for navigation in ice? Yes. 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 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 2SC SA, 8 Cy. Heavy oil engine, direct drive to propeller

MAIN RECIPROCATING ENGINES. Licence Name and Type No. HQ N8/34

No. of cylinders per engine Dia. of cylinders stroke(s) 2 or 4 stroke cycle Single or double acting
Maximum approved BHP per engine 680 at RPM of engine and RPM of propeller.

Corresponding MIP (For DA engines give MIP top & bottom) Maximum cylinder pressure Machinery numeral 136
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

No. of exhaust gas driven scavenge blowers per engine 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 Are scavenge manifold explosion relief valves fitted?

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 Inlet Exhaust Starting Safety

Material of cylinder covers Material of piston crowns Is the engine equipped to operate on heavy fuel oil?
Cooling medium for: Cylinders SW. Pistons h.o. 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 sw 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? 5/11/58 + 25/11/58 428C

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 20-10-58 State barred speed range(s), if imposed for working propeller 120-145 R.P.M. propeller 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 Tensile strength Webs

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 \_\_\_\_\_ Material \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_

Shaft separate or integral with crank or wheel shaft? \_\_\_\_\_ Diameter of intermediate shaft \_\_\_\_\_ None \_\_\_\_\_ Material \_\_\_\_\_

Minimum approved tensile strength \_\_\_\_\_ Diameter of screwshaft cone at large end \_\_\_\_\_ 164mm \_\_\_\_\_ Is screwshaft fitted with a continuous liner? \_\_\_\_\_ No.

Diameter of tube shaft. (If these are separate shafts) \_\_\_\_\_ Not app'le \_\_\_\_\_ Is tube shaft fitted with a continuous liner in way of stern tube. \_\_\_\_\_ Thickness of screw/tube shaft liner at bearings \_\_\_\_\_

Thickness between bearings \_\_\_\_\_ Material of screw/tube shaft \_\_\_\_\_ O.H. Furnace S.M. Steel \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_ 44kgs/cm

Is an approved oil gland fitted? \_\_\_\_\_ yes \_\_\_\_\_ If so, state type \_\_\_\_\_ Cedervall Type \_\_\_\_\_ Length of bearing next to and supporting propeller \_\_\_\_\_ 703mm

Material of bearing \_\_\_\_\_ white metal \_\_\_\_\_ 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 \_\_\_\_\_ 5' 10 1/2" \_\_\_\_\_ Pitch \_\_\_\_\_ 4' 3" \_\_\_\_\_ Built up or solid \_\_\_\_\_ solid \_\_\_\_\_ Total developed surface \_\_\_\_\_ 16 sq. feet

No. of blades \_\_\_\_\_ four \_\_\_\_\_ Blade thickness at top of root fillet \_\_\_\_\_ - \_\_\_\_\_ Blade material \_\_\_\_\_ Mang. bronze \_\_\_\_\_ Moment of inertia of dry propeller \_\_\_\_\_ -

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 \_\_\_\_\_ -

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

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) \_\_\_\_\_ One, 12cu.ft/min at 350 p.s., and 720 electric motor driven, engine room lower platform, s.s. Ipswich, No. 154334 ✓

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) \_\_\_\_\_ Two main, two aux., main -4251, s.s. upp & lower Nottingham (26823, 26829), aux'y -60 1, (Hanover C.58) 585 and 58327 s.s.f. & aft

How are receivers first charged? \_\_\_\_\_ by hand compressor \_\_\_\_\_ 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 \_\_\_\_\_ None \_\_\_\_\_ No. of main engine lubricating oil coolers \_\_\_\_\_ One \_\_\_\_\_

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure \_\_\_\_\_ Two daily service tanks at middle platform level, aft.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) \_\_\_\_\_ see Manchester F.E. report for Main Motor

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	O.F. overflow Tank	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	Over Board
Bilge, p.s. 35t/h	x	x	x			x											x
Ballast, p.s., 50 t/h	x		x			x					x			x			x
Fire, p.s. 50 t/h						x					x			x			
O.F. Transfer, p.s.a.				x					x				x				x
" " Hand Pump p.s.a.				x					x				x				x

N.B. All Pumps electric motor driven

BILGE SUCTIONS. No. and size in each hold, ~~deck~~ No. 1 - 2x 70mm; No. 2 - 2x70 mm.

No. and size connected to main bilge line in main engine room \_\_\_\_\_ 3 x 70mm

In aux. engine room \_\_\_\_\_ Not applicable

In tunnel \_\_\_\_\_ Not applicable

Size and position of direct bilge suction in machinery spaces \_\_\_\_\_ One-82.5mm s.s.f.

Size and position of emergency bilge suction in machinery spaces \_\_\_\_\_ One-82.5mm p.s. Suction from Ballast pump

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? \_\_\_\_\_ No.

Do the piping arrangements comply with the Rules including special requirements for ships ~~classified for navigation in ice?~~ \_\_\_\_\_ 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)
s.s.f.	4 SC S.A.	Klöckner-Humboldt Deutz	Hamburg No. 58/242 8642/45	Electric Generator 32K.W.
p.s.f. outboard	4 SC S.A.	do	Hamburg No. 58/242 8650/53	" " "
p.s.f. inboard	4 SC S.A.	do	Hamburg No. 58/242 8638/40	" " "

Is electric current used for essential services at sea? \_\_\_\_\_ Yes.

at sea \_\_\_\_\_ One, 32 kW

If so, state the minimum No. and capacity of generators required in order that the ship may operate \_\_\_\_\_

Is an electric generator driven by Main Engine? \_\_\_\_\_ No.

STEAM INSTALLATION. No. of donkey boilers burning oil fuel \_\_\_\_\_ W.P. \_\_\_\_\_ Type \_\_\_\_\_

Position \_\_\_\_\_

Is a superheater fitted? \_\_\_\_\_ Are these boilers also heated by exhaust gas? \_\_\_\_\_ No. of donkey boilers heated by exhaust gas only? \_\_\_\_\_ W.P. \_\_\_\_\_

Type \_\_\_\_\_ Position \_\_\_\_\_ 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? \_\_\_\_\_

Port and No. of report on donkey boilers \_\_\_\_\_

Is steam essential for operation of the ship at sea? \_\_\_\_\_ 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? \_\_\_\_\_ No. of oil burning pressure \_\_\_\_\_

No. of steam condensers \_\_\_\_\_ No. of Evaporators \_\_\_\_\_

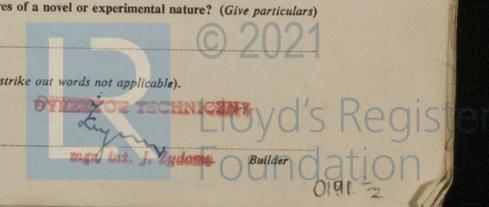
STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) \_\_\_\_\_ One, all electric type, powered by a 2HP motor type Kl-8 electrically controlled, capable of being hand operated from poop deck in emergency

Have the Rule Requirements for fire extinguishing arrangements been complied with? \_\_\_\_\_ Yes \_\_\_\_\_ Brief description of arrangements \_\_\_\_\_ fire hoses with spray nozzles

\_\_\_\_\_

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 August 1959-6 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).



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 and Electrical Installation, as fitted aboard this vessel has been, with the exception of a few minor and nonessential auxiliaries, constructed and installed under Special Survey in accordance with the Rules, approved plans and Secretary's letters.

The quality of materials used and workmanship generally are sound and good and in our opinion the installation is such as can be classed with this Society, with the following Survey Records and Notations:-

"**+** L.M.C. (N.E.) 9,59" and "T.S. (O.G.) N. 9,59"

Re Barred Speed Range:-

In accordance with instructions given in Secretary's letter a notice board has been permanently fixed at the starting platform stating that the Main Motor should not be run continuously at speeds ranging between 120 and 145 R.P.M. The engine tachometer is marked accordingly.

*J. Manson & B. Langham*  
 Engineer Surveyor to Lloyd's Register of Shipping.  
 J. Manson and B. Langham

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

RODS See Manchester Surveyor's F.E. Report No. 18617

CRANKSHAFT ~~OR ROTOR SHAFT~~

FLYWHEEL SHAFT

THRUST SHAFT

GEARING

INTERMEDIATE SHAFTS

SCREW ~~AND TUBE~~ SHAFTS K-179-389 Elblag J.M. 18.4.59

PROPELLERS Working:- No. 54923 Glasgow 3.3.59 (Bronze); Spare:- (C. Steel) No. 1078 P.R.S. 23. Elblag

OTHER IMPORTANT ITEMS Copies of outport Certificates for Auxiliary Motors, Air Receivers, Pumps etc attached hereto. Identification Marks on same verified.

Is the installation a duplicate of a previous case? Yes. If so, state name of vessel M.V. "KRUTYNIA"

Date of approval of plans for crankshaft 16.9.58 Straight shafting 16.9.58 Gearing Not applicable Clutch Not applicable

Separate oil fuel tanks 19-6-58 Pumping arrangements 19-6-58 Oil fuel arrangements 19-6-58

Cargo oil pumping arrangements Not applicable Air receivers Not applicable Donkey boilers Not applicable

Dates of examination of principal parts:-

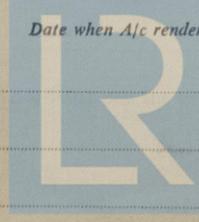
Fitting of stern tube 7.4.59 Fitting of propeller 2.8.59 Completion of sea connections 2.8.59 Alignment of crankshaft in main bearings -

Engine chocks & bolts 11.8.59 Alignment of gearing not applicable Alignment of straight shafting 11.8.59 Testing of pumping arrangements 27.8.59

Oil fuel lines 27.8.59 Donkey boiler supports Not applicable Steering machinery 27.8.59 Windlass 27.8.59

Date of Committee FRIDAY 15 JAN 1960 Special Survey Fee £ 100.0.0. ZY 6,000.-

Decision See Rpt. 1.

Date when A/c rendered 30/1/59  
 Lloyd's Register Foundation