

# REPORT ON ELECTRIC PROPELLING MACHINERY

Received at London Office

Date of writing Report 26.10.1961 When handed in at Local Office 19 Port of Helsingfors  
No. in Survey held at Helsingfors Date, First Survey 15.11.1960 Last Survey 28.10.1961  
No. of Visits 44

598 on <sup>Single</sup> ~~Twin~~ ~~Triple~~ ~~Quadruple~~ Screw vessel "LENINGRAD" Gross 9425.02 Tons  
Built at Helsingfors By whom built Wärtsilä-koncernen Ab, Sandvikens Skeppsdocka Yard No. 366 When built 1961  
Electrical Machines made at Berlin By whom made Siemens-Schuckert Generator Nos. 1103215-22 When made 1958  
Motor Nos. 1103230-33  
Shaft Horse Power at Full Power 22,000 Total Capacity of Generators 17,280 kilowatts  
Machinery Numeral as per Rule Owners U.S.S.R. Port belonging to Murmansk  
Made for which Vessel is intended Icebreaker

PLANS.— Have plans of the Machines, Control Gear, Cables and Circuits been submitted and approved Yes

PRIME ENGINES.— Type of Engine No. of Engines R.P.M. Is a Governor fitted Is the speed variation as per Rule when load is thrown off Is an Emergency Governor fitted Is it arranged for hand tripping Does it trip the throttle valve If exhaust steam is admitted, is an automatic shut-off fitted Is provision made for bled steam and is a non-return or positive shut-off valve fitted Lubricating Oil.— State means provided for emergency supply the emergency supply sufficient to maintain lubrication as per Rule Mechanical Balance.— Are the Engines and Generators balanced so as not to cause appreciable vibration

ENGINES.— Type of Engines 8 Oil Engines 2 SA each R.P.M. 330 Is a Governor fitted Yes Is the speed variation as per Rule when load is thrown off Yes Is an Emergency Governor fitted Yes Does it operate as per Rule Yes

GENERATORS.— Direct or Alternating Current Direct No. of Generators 8 If A.C. state frequency at full load -  
Volts per Generator 2160 Volts per Generator 600 Amps. per Generator 3600 Have certificates of works tests been applied Yes and the results found as per Rule Yes Ventilation.— State how arranged (open or closed system) Supply trunked to Gen. space Are ventilating arrangements satisfactory Yes Heating when Idle.— What provision is made electric heating Facilities for Inspection and Repair.— Are these as per Rule Yes Wear-down gauges supplied Yes Bilges.— Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory Yes

MOTORS.— S.H.P. per Motor at full power 5500 No. of Motors 4 Single or double unit 1 double 2 single Volts per Motor 1200 Amps. per Motor 3,600 Have certificates of works tests been supplied Yes and the results found as per Rule Yes A.C. Motors.— Is provision made for changing the slip rings Do the Motors remain in synchronism under all normal conditions of running D.C. Motors.— If the system permits overspeeding at light loads are overspeed protection devices fitted Yes

EXCITATION.— Is power for excitation taken from the ship's Auxiliary Generators Yes If so, state voltage 380 Volts for Converter set motor and excitation amperes at full load 355 kilowatts for excitation 188 State excitation arrangements for Propulsion Generators 5-Motor/Generator sets. One for each propulsion circuit (3) and one stand-by for port and starboard circuits and one standby for idle propulsion circuit. Propelling Motors See Generators. Is an alternative means of excitation provided Yes (see above) Have certificates of works tests been supplied Yes and found as per Rule Yes

CONTROL.— Position of Main Control Panel In compartment main deck level above p&s Prop. Motor Room. Does it comply with the requirements regarding position Yes, grouping of controls Yes, instruments Yes, insulating materials (state type and dead front construction), spacing and shielding of live parts Yes, accessibility Yes, position of fuses Yes, labelling Yes, fuses for voltmeters, pilot lamps, etc. Yes, provision for manual operation of contactors, etc. (state method employed) Air operated circuit-breakers, which can also be operated by hand wheels. Selection of propulsion machines through hand operated knife type change-over switches.

THING OF INSTRUMENT CASES Bakelite cases, provision of renewable tips on switches subject to arcing Yes, capability of withstanding shock and inclination Yes, operation with high and low voltage Yes, rustproofing of parts. Overload and Short Circuit Protection.— State means provided. On each prop. circ.: Alarm set to operate at 120% F.L.-Amps. -Over Current protection set at 100% F.L.-current with 9 minute time delay. - Instantaneous short circuit protection at 3 times over-current setting. The tripping circuits operate on generator excit. Supply C/B. What load is it set to operate Alarm 120% S.C. 450% Has it been tripped by hand when running at full power and found satisfactory Yes

THE FUSES OF AN APPROVED TYPE. Earth Detection.— Is the main circuit provided with means for detecting earths Yes Are aural and visual alarms fitted Yes Is main power interrupted on an earth fault no If a limiting resistance is in the earth detecting circuit what is the ohmic value 300 Ohms What earth leakage current is necessary to operate the device If a switch is used to disconnect the aural signal does it automatically give visual indication Yes Are the excitation circuits provided with means for earth detection Yes Mechanical Protection.— Are circuits above 250 volts D.C. or 150 volts A.C. to earth protected as per Rule Yes

BRIDGE OR DECK CONTROL.— Is bridge control provided Yes If so, from how many stations 6 can it be operated freely without producing overcurrents or loads in excess of the working capacity of the plant Yes and without reference to electrical instruments Yes Is an emergency control provided in the engine room Yes and can the transfer to this control be made quickly in the engine room Yes Can the emergency control be rendered mechanically independent of the deck control Yes Instruments and Gauges.— State Instruments provided for each Generator Voltmeter, Ammeter, Tachometer. - Electric Thermometers for bearings, cooling air and stators.

INSTRUMENTATION FOR EACH MOTOR Same kind of instrumentation as for generators. Is an Insulation Tester provided Yes

REVERSE CURRENT PROTECTION.— Are all shunt field circuits protected as per Rule Yes D.C. Systems.— If the Generators are connected in series state means provided to prevent reversal of direction of rotation of the Prime Movers Field Circuits disconnected through relays operated by Generator Tachometer Contacts. Two settings provided (1) 240 RPM/120 seconds Timelag (2) 200 RPM Instantaneously the Propulsion Generators also used alternatively for other purposes no If so, is provision made for overload protection, voltage adjustment, etc.

Reversing Switches.—If any are provided are they interlocked as per Rule. yes Resistances.—Are resistances for synchronous motor fields insulated as per Rule. yes Temperature Alarm.—Are machines with enclosed ventilating system, etc., fitted with temperature alarm. yes

CONDUCTORS & CABLES.—Are all essential Conductors stranded as per Rule. yes Are the ends of Paper and Varnished Cambric Insulated Cables sealed. yes Are all Cables carrying A.C. constructed and installed as per Rule. yes Have all Main Cables been tested by the Surveyors at the moorings. yes

SECONDARY BATTERIES.—Are Batteries used for starting Main Propulsion Engines. no If so, have full particulars of rating been submitted and approved. — Have they been tested under working conditions and do they give the required number of starts. — Are they installed as per Rule. — Are the charging arrangements satisfactory. —

SPARE GEAR.—If engaged on open sea service has a list of spare gear been submitted and approved. yes Is a list of the articles supplied attached to this report. no Are they stored as per Rule. yes

**ELECTRIC PROPULSION EQUIPMENT CONDUCTORS.**

DESCRIPTION	CONDUCTORS		MAXIMUM CURRENT—AMPERES *			MAXIMUM VOLTAGE	INSULATED WITH	PROTECTIVE COVERING
	No. in parallel per Pole	Sectional Area sq. mm.	In Circuit		Rule			
			When Running	When Manoeuvring				
MAIN GENERATORS	6	400	3600	7200	4062	600	VC	LC AB
GENERATOR FIELDS	1	2x10	36		63	220	VC	LC AB
MAIN MOTORS	6	400	3600	7200	4062	1200	VC	LC AB
MOTOR FIELDS Basic	1	2x10	55		63	220	VC	LC AB
MOTOR FIELDS Second	1	2x10	39		63	220	VC	LC AB
CONTROL CIRCUITS								
OTHER CIRCUITS:—								

\* For field circuits the "Hot" and "Cold" value should be given.

The foregoing is a correct description,

**SIEMENS SAHKKO OY**

*[Signature]*

Electrical Engineers.

Date 22<sup>nd</sup> December

COMPASSES.—Are Single-Conductor circuits carrying direct current arranged with lead and return Conductors fitted as close to one another as possible. yes

Have the Compasses been adjusted under working conditions. yes

**Wärtsilä-koncernen A/B**

*[Signature]*

Builders' Signature.

Date 23 Jan 1962

Is this machinery duplicate of a previous case. yes If so, state name of vessel. Icebreaker "Moskva"

General Remarks (State quality of workmanship, opinions as to class, &c.) The electric propelling machinery of this ship has been fitted on board under special survey, tried under full working conditions and found fit for class, material and workmanship found good.

Total capacity of generators for propulsion purposes. 17280 kilowatts.

INSTALLATION. F.H.K. 123,330.

The amount of Fee ... £ : : } When applied for, 19

Travelling Expenses (if any) £ : : } When received, 19

*[Signature]*

Surveyor to Lloyd's Register of Shipping

Date 29.12.61

Committee's Minute

FRIDAY 16 FEB 1962

Assigned

*[Signature]*



Lloyd's Register Foundation

#.V. 5.2.62

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