

## REPORT ON ELECTRIC PROPELLING MACHINERY

5 MAY 1954

Date of writing Report 30.4.1954 When handed in at Local Office 19 Port of Rotterdam  
 No. in Survey held at 35505 on Twin Triple Screw vessel M.V. "LENA" (LEHA) Date, First Survey 20-3-1957 Last Survey 25-2-1957 No. of Visits 2  
 Built at Flushing By whom built Messrs. De Schelde Yard No. 274 When built 1954  
 Electrical Machines made at Rugby By whom made Messrs. De Schelde Generator Nos. 66482/3/4/5 When made 1953  
 Shaft Horse Power at Full Power 7000 Total Capacity of Generators 5560 kilowatts  
 Machinery Numeral as per Rule 1004 Owners Trans. mach. Import Port belonging to Moermansk  
 Trade for which Vessel is intended Ocean going

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

TEAM ENGINES.— Type of Engine Heavy oil engines No. of Engines 4 R.P.M. 360 Is a Governor fitted yes Is the speed variation as per Rule when load is thrown off yes Is an Emergency Governor fitted yes Is it arranged for hand tripping yes Does it trip the throttle valve yes If exhaust steam is admitted, is an automatic shut-off fitted yes Is provision made for bled steam yes and is a non-return or positive shut-off valve fitted yes Lubricating Oil.— State means provided for emergency supply yes Is the emergency supply sufficient to maintain lubrication as per Rule yes Mechanical Balance.— Are the Engines and Generators balanced so as not to cause appreciable vibration yes

PROPULSION ENGINES.— Type of Engines Heavy oil engines R.P.M. 360 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 4 If A.C. state frequency at full load yes K.W. per Generator 1393 Volts per Generator 400 Amps. per Generator 3480 Have certificates of works tests been supplied yes and the results found as per Rule yes Ventilation.— State how arranged (open or closed system) open self Are ventilating arrangements satisfactory yes Heating when Idle.— What provision is made torrbar elements Facilities for Inspection and Repair.— Are these as per Rule yes

MOTORS.— S.H.P. per Motor at full power 2x 3500 No. of Motors one Single or double unit double armature motor Amps. per Motor unit Have certificates of works tests been supplied yes and the results found as per Rule yes A.C. Motors.— Is provision made for machining the slip rings yes Do the Motors remain in synchronism under all normal conditions of running yes 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 via amplidyne exciters If so, state voltage 220 and excitation amperes at full power 160 kilowatts for excitation State excitation arrangements for Propulsion Generators for each pair of generators: Amplidyne type exciter 12kW, 220V, 1500rpm & ref generator driven by 42 HP motor supplied from aux. plant and Propelling Motors for one half of pr. motor: ampl. type exciter 12kW, 220V, 1500rpm driven by same motor Have certificates of works tests been supplied yes and found as per Rule yes

CONTROL.— Position of Main Control Panel ER 1st platform against aft bulkhead Does it comply with the requirements regarding position yes, grouping of controls centralised instruments centralised insulating materials (state type) adequate spacing and shielding of live parts sufficient accessibility sufficient position of fuses yes Labelling of screws and nuts yes, labelling yes, fuses for voltmeters, pilot lamps, etc. yes provision for manual operation of contactors, etc. (state method employed) electrically operated contactors are not used during manouvring

PROTECTION.— Arrangement of instrument cases yes, mounted on steel panels 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 yes Overload and Short Circuit Protection.— State means provided inherent circuit protection backed up by positive tripping of excitation

What load is it set to operate 5000 amps Has it been tripped by hand when running at full power and found satisfactory yes Are fuses of an approved type yes (2 type Siemens Brass)

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 earth fault yes If a limiting resistance is in the earth detecting circuit what is the ohmic value 13 ohms What earth leakage current is necessary to operate the device 5-6 amperes 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

Emergency or Deck Control.— Is bridge control provided yes If so, from how many stations 4 can it be operated freely without producing excessive 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 Main volt & amp meters, 1 amp. meters, RPM meter and excitation ref volt meter for each Motor instr. for field current, voltage & speed & bearing temp. & cooling air outlet temp

Overload 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 Excitation of any generator is tripped out by means of operating from tachometer generator if engine speed falls below 80% of normal Are the Propulsion Generators also used alternatively for other purposes no If so, is provision made for overload protection, voltage adjustment, etc. yes



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

CONDUCTORS & CABLES.—Are all essential conductors stranded as per Rule ✓ Are the ends of Paper and Varnished Cambric Insulated Cables sealed ✓ Are all Cables carrying A.C. constructed and installed as per Rule ✓ Have all Main Cables been tested by the Surveyors at the makers' works no (see sec. letter)

SECONDARY BATTERIES.—Are Batteries used for starting Main Propulsion Engines ✓ If so, have full particulars of rating been submitted ✓ Are they installed and approved ✓ Have they been tested under working conditions and do they give the required number of starts ✓ Are the charging arrangements satisfactory ✓ as per Rule ✓

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

### ELECTRIC PROPULSION EQUIPMENT CONDUCTORS.

DESCRIPTION	CONDUCTORS		MAXIMUM CURRENT— AMPERES *		Rule	MAXIMUM VOLTAGE	INSULATED WITH	PROTECTIVE COVERING
	No. in parallel per Pole	Sectional Area sq. in. or sq. mm.	In Circuit					
			When Running	When Manoeuvring				
MAIN GENERATORS	2	60x10mm <sup>2</sup>	3500	3500	✓	400/450	bar connections	sheet iron plate
GENERATOR FIELDS	1	10	33 (Max)	33	30 ✓	300	VIR	LC8 MW/B
MAIN MOTORS	8	240	3500	3500	3600 ✓	1000/900	VC	LC & Cotton Bn
MOTOR FIELDS	1	25	54 (Hot) 50 (Cold)	54	63 ✓	300	VIR	LC2 MW/B
CONTROL CIRCUITS								
OTHER CIRCUITS:—								

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

The foregoing is a correct description,  
N.V. Kon. Mij. "De Schelde"

Electrical Engineers.

Date

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

Have 1 compasses been adjusted under working conditions yes

N.V. Kon. Mij. "De Schelde"

Builders' Signature.

Date

Is this machinery duplicate of a previous case no If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.) The electrical propulsion equipment of this vessel has been constructed and installed under special survey in uniform with the Society's Rules and Regulations and Secretary's letters and the approved plans or equivalent thereto.

The materials used are of a good quality and design and workmanship are good. Insulation and other shore tests have been carried out with satisfactory results. On completion the equipment was tried under full working conditions and found satisfactory.

This propelling equipment is in my opinion suitable for a classed vessel.

noted JS  
8/10/54

Total capacity of generators for propulsion purposes 5560 kilowatts.

The amount of Fee ...

£ 2266

When applied for,

4-5-1954

Travelling Expenses (if any) ...

£ 354.50

When received,

10

Surveyor to Lloyd's Register of Shipping

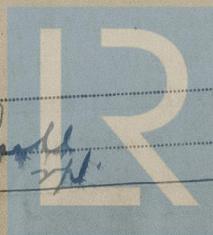
Date 10/4-1954

Committee's Minute

Assigned

TUESDAY 26 OCT 1954

See minute on the hull



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