Rpt. 13.

No. 35229

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report ..... 19 .... When handed in at Local Office 15th Nov. 1949 Received at London Office 17 NOV 1949

Port of Sunderland.

No. in Reg. Book. 35288 Survey held at Sunderland. Date, First Survey 11.8.49. Last Survey 2.11. 1949 (No. of Visits 14.)

on the M.V. "LEXA MÆRSK" Tons Gross 5120 Net 3270

Built at Sunderland. By whom built Barkams & Sons Ltd. Yard No. 327. When built 1949.

Owners A/S. D/S. Svendborg & D/S af 1912 A/S. Port belonging to Copenhagen.

Installation fitted by Barkam & Sons Ltd. & Sunderland Forge & Engineering Co. When fitted 1949.

Is vessel equipped for carrying Petroleum in bulk No. Is vessel equipped with D.F. Yes. E.S.D. Yes. Gy.C. Yes. Sub.Sig. – Radar Yes.

Plans, have they been submitted and approved Yes. System of Distribution Two wire. Voltage of Lighting 220 Heating 220 Power 220 D.C. or A.C., Lighting D.C. Power D.C. If A.C. state frequency –

Prime Movers, has the governing been found as per Rule when full load is thrown on and off Yes. Are turbine emergency governors fitted with a trip switch – Generators, are they compound wound Yes, and level compounded under working conditions Yes, if not compound wound state distance between generators – and from switchboard –. Are the generators arranged to run in parallel Yes, are shunt field regulators provided Yes. Is the compound winding connected to the negative or positive pole Negative. Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes. Have certificates of test for machines under 100 kw. been supplied Yes. and the results found as per Rule Yes.

Position of Generators Inboard & Outboard, fore and aft, E.R. starting platform, starboard side forward, is the ventilation in way of generators satisfactory Yes. are they clear of inflammable material and protected from mechanical injury and damage from water, steam and oil Yes. Switchboards, where are main switchboards placed Thwartships, starboard side adjacent to forward bulkhead, facing aft and near generators. are they in accessible positions, free from inflammable gases and acid fumes and protected from mechanical injury and damage from water, steam and oil Yes., what insulation is used for the panels Sindanyo Ebony finish, if of synthetic insulating material is it an Approved Type Yes., if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule –. Is the construction as per Rule, including locking of screws and nuts Yes. Description of Main Switchgear for each generator and arrangement of equaliser switches Triple Pole Mag. Blowout Circuit Breaker with Overloads and Time lags on two poles, Reverse Current Trip and third pole for equaliser.

and the switch and fuse gear (or circuit breakers) for each outgoing circuit Double Pole Mag. Blowout Circuit Breaker with Overloads and Time lags; shunt trip for Preference Tripping; Double Pole Single Throw Quick Break Knife Switch and Double Pole Fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes. Instruments on main switchboard 11 ammeters 3 voltmeters – synchronising devices. For compound machines in parallel are the ammeters and reversed current protection devices connected on the pole opposite to the equaliser connection Yes. Earth Testing, state means provided Earth lamps coupled to Earth through switches and fuses.

Switches, Circuit Breakers and Fuses, are they as per Rule Yes., are the fuses an Approved Type Yes., make of fuses G.E.C., are all fuses labelled Yes. If circuit breakers are provided for the generators, at what overload do they operate 25%, and at what current do the reversed current protective devices operate 15%

Joint Boxes, Section Boards and Distribution Boards, is the construction as per Rule Yes.

Cables, are they insulated and protected as per Rule Yes., if otherwise than as per Rule are they of an Approved Type Yes., state maximum fall of pressure between bus bars and any point under maximum load 13.2 v., are the ends of all cables having a sectional area of 0·01 square inch and above provided with soldering sockets Yes. Are all paper insulated and varnished cambric insulated cables sealed at the ends Yes. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage Yes., are any cables laid under machines or floorplates Yes., if so, are they adequately protected Yes. Are cables in machinery spaces, galleys, laundries, etc., lead covered Yes. or run in conduit Yes. or of the "HR" type –. State how the cables are supported or protected Engine Room cables clipped to perforated metal tray plates. Tween decks fore and aft mains cleated to solid steel tray plates with steel cover plates. Winch wiring mains in "Pyrotenax" cleated to solid steel plates with protective cover plates. Lead covered cables in accommodation cleated to wood grounds.

Are all lead sheaths, armouring and conduits effectually bonded and earthed Yes. Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands Yes., where unarmoured cables pass through beams, etc., are the holes effectively bushed Yes - Lead. Refrigerated chambers, are the cables and fittings as per Rule Yes.

No:- 35288. M. V. "LEXA MÆRSK."

Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule Yes. **Emergency Supply**, state position —

Navigation Lamps, are they separately wired Yes. controlled by separate double pole switches and fuses Yes. Are the switches and fuses in a position accessible only to the officers on watch Yes., is an automatic indicator fitted Yes. Is an alternative supply provided Yes.

Secondary Batteries, are they constructed and fitted as per Rule —, are they adequately ventilated — state battery capacity in ampère hours —

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof Yes. Are any fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present no, if so, how are they protected — and where are the controlling switches fitted — Are all fittings suitably ventilated Yes.

Searchlight Lamps, No. of —, whether fixed or portable —, are they of the carbon arc or of the filament type —

Heating and Cooking, is the general construction as per Rule Yes., are the frames effectually earthed Yes., are heaters in the accommodation of the convection type Yes. **Motors**, are all motors constructed and installed as per Rule and placed in well-ventilated compartments in which inflammable gases cannot accumulate and protected from damage from water, steam and oil Yes. Are motors coupled to oil fuel transfer and pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment Yes. Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing — Have certificates of test for motors under 100 BHP intended for essential sea services been supplied and the results found as per Rule Yes.

Control Gear and Resistances, are they constructed and fitted as per Rule Yes. **Lightning Conductors**, where required are they fitted as per Rule — **Ships carrying Oil having a Flash Point less than 150° F.** Have all the special requirements of the Rules for such ships been complied with —, are all fuses of an Approved Cartridge Type —, make of fuse — Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships — Are the cables lead covered as per Rule —

E.S.D., if fitted state maker Submarine Signals location of transmitter Frames 101-2 and receiver Frames 102-1

Spare Gear, if the vessel is for open sea service have spares been provided as per Rule and suitably stored in dry situations Yes.

Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory Yes.

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	MAKER.	RATED AT				PRIME MOVER.	
			Kilowatts per Generator.	Volts.	Ampères.	Revs. per Min.	TYPE.	MAKER.
MAIN	3	W.H. Allen, Sons & Co. Ltd.	150	220	682	500	Diesel	Hvirvles, Bickerton & Day.
	1	Kjobenhavns Electriske	10	220	45	1200	Diesel	Motorfabriken Burkh A/S.
EMERGENCY ...								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS. No. in Parallel per Pole.	CONDUCTORS. Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	MAXIMUM CURRENT IN AMPERES. In the Circuit.	MAXIMUM CURRENT IN AMPERES. Rule.	APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
MAIN GENERATOR	150	2	37/103	682 ✓	816	88	V.I.R.	L.C.A. & B.
" " EQUALISER		1	37/103	341 ✓	408	44	V.I.R.	L.C.A. & B.
	150	2	37/103	682 ✓	816	116	V.I.R.	L.C.A. & B.
		1	37/103	341 ✓	408	58	V.I.R.	L.C.A. & B.
	150	2	37/103	682 ✓	816	84	V.I.R.	L.C.A. & B.
		1	37/103	341 ✓	408	42	V.I.R.	L.C.A. & B.
EMERGENCY GENERATOR	10	1	19/064	45 ✓	83	30	V.I.R.	L.C.A. & B.
ROTARY TRANSFORMER: MOTOR ...								
" " GENERATOR...								

MAIN DISTRIBUTION CABLES (to Section Boards, Distribution Fuse Boards, etc.).

DESCRIPTION.							
Main switchboard to Aux. Switchbd E.R.	1	37/072	109·5 ✓	260	90	V.I.R.	L.C.A. & B.
Aux. switchbd. E.R. to Upper Deck. S.B. 'A'	1	19/064	42 ✓	83	75	V.I.R.	L.C.A. & B.
Aux. switchbd E.R. to "Ellehammer" Switch Aft.	1	19/064	45 ✓	83	360	V.I.R.	L.C.A. & B.
Main switchboard to Aux. Winch Panel 2	2	0·2	259 ✓	314	270	Pyrotenax.	
Aux. Winch Panel 2 to Aux. Winch Panel 1	2	0·2	145 ✓	314	186	Pyrotenax.	
Main switchboard to Aux. Winch Panel 3	2	0·15	160 ✓	260	330	Pyrotenax.	
Main switchboard to Suez Canal Projector	1	19/064	40 ✓	83	585	V.I.R.	L.C.A. & B.
Main switchboard to Upper Dk Stbd. D.B. 'E'	1	19/052	62·5 ✓	64	105	V.I.R.	L.C.A. & B.
Main switchboard to Rfrig. Mchy. D.B. 'H'	1	19/044	49 ✓	53	150	V.I.R.	L.C.A. & B.
Main switchboard to Eng. Rm. S.B. 1.	1	7/064	49 ✓	80	270	V.I.R.	L.C.A. & B.
Main switchboard to Eng. Rm. S.B. 2	1	7/064	56 ✓	80	258	V.I.R.	L.C.A. & B.
Main switchboard to Eng. Rm. S.B. 3	1	7/064	60 ✓	80	152	V.I.R.	L.C.A. & B.

LIGHTING, HEATING, WIRELESS, NAVIGATION LIGHTS, ETC., CABLES.

DESCRIPTION.	CONDUCTORS. No. in Parallel per Pole.	CONDUCTORS. Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	MAXIMUM CURRENT IN AMPERES. In the Circuit.	MAXIMUM CURRENT IN AMPERES. Rule.	APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Winch Motors No: 1 Hatch	2	30	1	0·1	114 ✓	202	54/48	Pyrotenax.
Winch Motors No: 2 Hatch	2	42	1	0·1	160 ✓	202	75/69	Pyrotenax.
Winch Motors No: 2 Hatch	2	30	1	0·04	114 ✓	110	48/48	Pyrotenax.
Winch Motors No: 3 Hatch	2	30	1	0·04	114 ✓	110	45/45	Pyrotenax.
Winch Motors No: 3 Hatch	2	30	1	0·04	114 ✓	110	144/144	Pyrotenax
Winch Motors No: 4 Hatch	2	30	1	0·04	114 ✓	110	171/171	Pyrotenax
Winch Motors No: 4 Hatch	2	30	1	0·04	114 ✓	110	66/66	Pyrotenax.
Winch Motors No: 5 Hatch	2	30	1	0·04	114 ✓	110	66/60	Pyrotenax.
Winch Motor No: 5 Hatch	1	30	1	0·04	114 ✓	110	180	Pyrotenax.
Warping Motor	1	42	1	0·1	160 ✓	202	186	Pyrotenax.
Lathe	1	2	1	7/036	9 ✓	24	78	V.I.R. L.C.A. & B.
Boiler Circulating Pump.	1	3	1	7/029	13 ✓	15	72	V.I.R. L.C.A. & B.

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.

.....*Electrical Contractors.* *Date*.....

COMPASSES.

Have the compasses been adjusted under working conditions.....

.....*Builder's Signature.* *Date*.....

Have the foregoing descriptions and schedules been verified and found correct.....

Is this installation a duplicate of a previous case.....*If so, state name of vessel*.....

Plans. *Are approved plans forwarded herewith*.....*If not, state date of approval*.....

Certificates. *Are certificates of test for motors engaged on essential sea services and generators forwarded herewith*.....

General Remarks. *(State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)*.....

Total Capacity of Generators.....*Kilowatts.*

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

Travelling Expenses (if any) £ : :

.....*Surveyor to Lloyd's Register of Shipping.*

Committee's Minute..... FRI. 9 DEC 1949

Assigned In minute see D.C. Rpt.

2m.9/46.—**Transfer.** (MADE AND PRINTED IN ENGLAND.)

(The Surveyors are requested not to write on or below the space for Committee's Minute.)

LIGHTING, HEATING, WIRELESS, NAVIGATION LIGHTS, ETC., CABLES.

DESCRIPTION.	CONDUCTORS. No. in Parallel per Pole.	CONDUCTORS. Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	MAXIMUM CURRENT IN AMPERES. In the Circuit.	MAXIMUM CURRENT IN AMPERES. Rule.	APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
Navigation Supply. D.B. 'B'	1	7/064	10 ✓	46	180	V.I.R.	L.b.
Alternative Navigation Supply from 'A1' Wireless	1	3/029	1 ✓	5	75	V.I.R.	L.b.
S.B. 'A' to Officers House. D.B. 'A1'	1	7/064	15 ✓	46	180	V.I.R.	L.b.
S.B. 'A' to Passenger House. D.B. 'A2'	1	7/036	10 ✓	24	111	V.I.R.	L.b.
S.B. 'A' to Upper Deck Starboard. D.B. 'A3'	1	7/036	7·5 ✓	24	90	V.I.R.	L.b.
S.B. 'A' to Upper Deck Port. D.B. 'A4'	1	7/036	13·5 ✓	24	24	V.I.R.	L.b.
Main switchboard to Upper Dk Starboard Midships 'C'	1	7/036	10 ✓	24	96	V.I.R.	L.b.
D.B. 'C' to Upper Deck Forward. D.B. 'C1'	1	19/044	48 ✓	53	120	V.I.R.	L.b.a.+B.
D.B. 'C' to Upper Deck Starboard midships D.B. 'C2'	1	7/044	18·7 ✓	31	360	V.I.R.	L.b.a.+B.
D.B. 'C' to Upper Deck Aft. D.B. 'C3'	1	7/029	9·3 ✓	15	15	V.I.R.	L.b.
Aux. Switchbd E.R. to Engine Acc. Stbd Aft D.B. 'D1'	1	19/044	20 ✓	31	270	V.I.R.	L.b.a.+B.
D.B. 'D1' to Engine Acc. Port Aft. D.B. 'D2'	1	19/044	18 ✓	53	450	V.I.R.	L.b.a.+B.
Aux. Switchbd. to Engine Room Port. D.B. 'G1'	1	7/064	10·5 ✓	53	105	V.I.R.	L.b.a.+B.
D.B. 'G1' to Engine Room Starboard D.B. 'G2'	1	7/064	22 ✓	46	180	V.I.R.	L.b.a.+B.
Main switchboard to Saloon Pantry D.B. 'F'	1	7/064	22 ✓	46	60	V.I.R.	L.b.a.+B.
Engine Room S.B.1 to 3 KW Oil Burner Heater	1	7/064	22 ✓	46	135	V.I.R.	L.b.a.+B.
Saloon Pantry D.B. 'F' to 1·5 KW Hot Puss.	1	7/029	14 ✓	15	60	V.I.R.	L.b.a.+B.
Saloon Pantry D.B. 'F' to 2 KW Hot Puss.	1	7/029	7 ✓	15	12	V.I.R.	L.b.
	1	7/029	9 ✓	15	15	V.I.R.	L.b.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
Air Compressor Nos. 1 and 2	2	59	1	37/072	221 ✓	260	144/144	V.b.	L.b.a.+B.
Aux. F.W. Pump.	1	6	1	7/044	25 ✓	31	120	V.I.R.	L.b.a.+B.
Aux. S.W. Pump	1	6	1	7/044	25 ✓	31	136	V.I.R.	L.b.a.+B.
Turning Gear.	1	18	1	7/064	71 ✓	80	330	V.b.	L.b.a.+B.
Oil Transfer Pump.	1	11	1	7/064	44 ✓	80	294	V.b.	L.b.a.+B.
F.+P. Cooling Pumps.	2	46	1	19/083	174 ✓	202	192	V.b.	L.b.a.+B.
Ballast Pump.	1	46	1	19/083	174 ✓	202	240	V.b.	L.b.a.+B.
Forced Lub. Pumps.	2	15	1	7/064	59 ✓	80	270	V.b.	L.b.a.+B.
Deep Tank Pump.	1	60	1	37/072	225 ✓	260	180	V.b.	L.b.a.+B.
Bilge Pump.	1	15	1	7/064	59 ✓	80	174	V.b.	L.b.a.+B.
General Service Pump.	1	15	1	7/064	59 ✓	80	192	V.b.	L.b.a.+B.
Salt Water Pump.	1	46	1	19/083	174 ✓	202	228	V.b.	L.b.a.+B.
Fuel Valve Cooling Pumps.	2	2·5	1	7/029	11 ✓	15	40	V.I.R.	L.b.a.+B.
Fuel Oil Priming Pump.	1	1·5	1	7/029	7 ✓	15	60	V.I.R.	Conduit.
Boiler Blower.	1	4	1	7/044	17 ✓	31	40	V.I.R.	L.b.a.+B.
Crane	1	3	1	7/029	13 ✓	15	120	V.I.R.	L.b.a.+B.
Oil Purifiers.	2	3	1	7/029	13 ✓	15	52/20	V.I.R.	L.b.a.+B.
Workshop Motor	1	7	1	7/044	29 ✓	31	80	V.I.R.	L.b.a.+B.
Fire Foam Pump.	1	1·5	1	7/029	7 ✓	15	195	V.I.R.	L.b.a.+B.
Steering Gear Motors	2	12	1	19/064	47 ✓	83	510	V.I.R.	L.b.a.+B.
Domestic Refrig.	1	-	1	7/029	2 ✓	15	15	V.I.R.	L.b.
Galley Blower Motor	1	-	1	7/029	4 ✓	15	156	V.I.R.	L.b.
Refrig. Compressors.	2	21	1	19/083	80 ✓	118	150	V.I.R.	L.b.a.+B.
Refrig. Motor	1	4	1	7/036	17 ✓	24	15	V.I.R.	L.b.a.+B.
S.W. Pump.	1	1	1	7/029	5 ✓	15	15	V.I.R.	L.b.a.+B.
S.W. Pump.	1	2	1	7/029	9 ✓	15	54	V.I.R.	L.b.a.+B.
Fan Motors	2	1·8	1	7/029	9 ✓	15	210/225	V.I.R.	L.b.a.+B.
Engine Room Vent Fans.	2	7·5	1	7/052	30 ✓	37	28/48	V.I.R.	L.b.a.+B.
Supply Fan (Boat Dk Midships).	1	2·45	1	7/036	12 ✓	24	240	V.I.R.	L.b.a.+B.
Exhaust Fans (Boat Dk Midships)	2	0·45	1	3/036	2·5 ✓	10	240	V.I.R.	L.b.a.+B.
Supply Fan (Wheelhouse Top.)	1	2·45	1	7/036	12 ✓	24	260	V.I.R.	L.b.a.+B.
Supply Fan (Boat Dk Aft).	1	1·6	1	7/029	8 ✓	15	105	V.I.R.	L.b.
Exhaust Fan (Wheelhouse Top)	1	0·6	1	3/036	3·5 ✓	10	260	V.I.R.	L.b.a.+B.
Exhaust Fan (Boat Dk Aft).	1	0·45	1	3/029	2·5 ✓	5	105	V.I.R.	L.b.
Windlass Motor.	1	47	1	0·1	180 ✓	202	225	Pyrotenax.	

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description. FOR AND ON BEHALF OF BARTRAM and SONS LTD

Sunderland Forge & Engine Co Ltd
Potter Sunderland (Engineers) Ltd
J. S. Gurney.

Electrical Contractors. *Date* 15. 11. 1949

(CECIL McPETRICK) DIRECTOR.

COMPASSES.

Have the compasses been adjusted under working conditions

FOR AND ON BEHALF OF BARTRAM and SONS LTD

Builder's Signature. *Date*

(CECIL McPETRICK) DIRECTOR

Have the foregoing descriptions and schedules been verified and found correct Yes.

Is this installation a duplicate of a previous case No. *If so, state name of vessel* —

Plans. *Are approved plans forwarded herewith* No. *If not, state date of approval*

Certificates. *Are certificates of test for motors engaged on essential sea services and generators forwarded herewith* Yes.

General Remarks. *(State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)* The electrical equipment of this vessel has been installed under special survey and the arrangements are in accordance with or equivalent to those shown on the approved plans and the Rules for Electrical Equipment.

The materials used are of good quality and the workmanship is good.

On completion the equipment was operated under working conditions, the various protective devices were adjusted and operated and the insulation resistances of all circuits was measured and found good.

This installation in my opinion is suitable for a classed vessel.

Special Notation :- D.F., E.S.D., Gyro Compass and Radar.

Noted Ent 7/12/49

Total Capacity of Generators 460 ✓ *Kilowatts.*

The amount of Fee ... ... £ 101 : 10 :

Travelling Expenses (if any) £ 1. : 11 :

When applied for, NOV 16 1949 19

When received, ... 19

Surveyor to Lloyd's Register of Shipping.

FRI, 9 DEC 1949

Committee's Minute

Assigned To committee on D.E. Rules

2m.9.46.—**Transfer.** (MADE AND PRINTED IN ENGLAND.)

(The Surveyors are requested not to write on or below the space for Committee's Minute.)