

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

AUG 10 1938

Date of writing Report 28. 7. 1938 When handed in at Local Office 5. 8. 1938 Port of Glasgow

No. in Survey held at Glasgow. Date, First Survey 14. 2. 38 Last Survey 27. 7. 1938

Reg. Book. 78519 on the T.S.M.V. "LOCHAVON" (Number of Visits 18)

Tons { Gross 9205 Net 5703

Built at Glasgow. By whom built Harland & Wolff Ltd Yard No. 9999 When built 1935

Owners Royal Mail Line Ltd Port belonging to London.

Electric Light Installation fitted by Harland & Wolff Ltd Contract No. 9999 When fitted 1935

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two wire ✓

Pressure of supply for Lighting 220 ✓ volts, Heating 220 ✓ volts, Power 220 ✓ volts.

Direct or Alternating Current, Lighting Direct ✓ Power Direct ✓

If alternating current system, state frequency of periods per second —

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off Yes ✓

Generators, do they comply with the requirements regarding temperature rise Yes ✓, are they compound wound Yes ✓

are they over compounded 5 per cent. Yes ✓, if not compound wound state distance between each generator —

Where more than one generator is fitted are they arranged to run in parallel Yes ✓, is an adjustable regulating resistance fitted in series with each shunt field Yes ✓

Have certificates of test results for machines under 100 kw. been submitted and approved — Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes ✓

Are all terminals accessible, clearly marked, and furnished with sockets Yes ✓, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched Yes ✓

Are the lubricating arrangements of the generators as per Rule Yes ✓

Position of Generators In main engine room, two at port side & two starboard side - bottom platform, is the ventilation in way of the generators satisfactory Yes ✓ are they clear of all inflammable material Yes ✓ if situated near unprotected

woodwork or other combustible material, state distance of same horizontally from or vertically above the generators — and —

are the generators protected from mechanical injury and damage from water, steam or oil Yes ✓, are their axes of rotation fore and aft Yes ✓

Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes ✓ are the prime movers and their respective generators in metallic contact Yes ✓

Main Switch Boards, where placed In main engine room on special platform. ✓

If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard —

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes ✓, are they protected from mechanical injury and damage from water, steam or oil Yes ✓, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards — and —, are they constructed wholly of durable, non-ignitable non-absorbent materials Yes ✓, is all insulation of high dielectric strength and of permanently high insulation resistance Yes ✓

is it of an approved type Yes ✓, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Sindango. ✓ is the non-hygroscopic insulating material of an approved type Yes ✓, and is the frame effectively earthed Yes ✓. Are the fittings as per Rule regarding: — spacing or shielding of live parts Yes ✓, accessibility of all parts Yes ✓, absence of fuses on back of board Yes ✓, temperature rise of omnibus bars Yes ✓, individual fuses to voltmeter, pilot or earth lamp Yes ✓, are moving parts of switches alive in the "off" position No ✓ are all screws and nuts securing connections effectively locked Yes ✓ are any fuses fitted on the live side of switches No ✓

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

D.P. Circuit breakers with interlocked equalizer switch. ✓ 1/2 1/2 trips for each generator, D.P. Circuit breakers on D.P. switch ✓ fuses for each outgoing circuit.

Are turbine driven generators fitted with emergency trip switch as per rule — Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material Yes ✓ Instruments on main switchboard 17 ✓ ammeters 2 ✓

voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

Yes ✓ Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

Earth lamps with switches & fuses ✓ Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes ✓ are the fusible cutouts of an approved type Yes ✓ have the reversed

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current protection devices been tested under working conditions **Yes** **Joint Boxes, Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule **Yes**

**Cables:** Single, twin, or multicore **All types** are the cables insulated and protected as per Tables IV, V, X or XI of the Rules **Yes**

If the cables are insulated otherwise than as per Rule, are they of an approved type **Yes** **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load **8.1 Volts**

area of 0.04 square inch and above provided with soldering sockets **Yes** **Cable Sockets**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets **Yes** **Paper Insulated and Varnished Cambric Insulated Cables.**

If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound **Yes** **Cable Runs**, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage **Yes** Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit **All cables b.l. braided, clipped to steel bays**

**Support and Protection of Cables**, state how the cables are supported and protected **All cables b.l. braided, clipped to steel bays or fixed to steel & woodwork, run in conduit or supported on special wooden cleats, - protected when necessary.**

If cables are run in wood casings, are the casings and caps secured by screws **Yes** are the cap screws of brass **Yes** are the cables run in separate grooves **Yes** If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII **All clipped as per rule.**

**Refrigerated Chambers**, are the cables and fittings in accordance with the special requirements **Yes**

**Joints in Cables**, state if any, and how made, insulated, and protected **None**

**Watertight Glands and Deck Tubes**, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands **Yes** **Bushes in Beams and Non-watertight Partitions**, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed **Yes** state the material of which the bushes are made **Lead.**

**Earthing Connections**, state what earthing connections are fitted and their respective sectional areas **All electrical apparatus efficiently earthed.** are their connections made as per Rule **Yes**

**Alternative Lighting**, are the groups of lights in the propelling machinery space arranged as per Rule **Yes** **Emergency Supply**, state position and method of control of the emergency supply and how the generator is driven **Yes**

**Navigation Lamps**, are these separately wired **Yes** controlled by separate switch and separate fuses **Yes** are the fuses double pole **Yes** are the switches and fuses grouped in a position accessible only to the officers on watch **Yes** has each navigation lamp an automatic indicator as per Rule **Yes** **Secondary Batteries**, are they constructed and fitted as per Rule **Yes**

**Fittings**, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight **Yes** are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected **In h.c. 2.3 holds - special w.r. fittings of heavy construction protected by frames & metal guards.** are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected **Yes** how are the cables led **Yes**

where are the controlling switches situated **Yes** are all fittings suitably ventilated **Yes** are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials **Yes**

**Heating and Cooking Appliances**, are they constructed and fitted as per Rule **Yes** are air heaters constructed and fitted as per Rule **Yes**

**Searchlight Lamps**, No. of **1** whether fixed or portable **Yes** are their fittings as per Rule **Yes**

**Arc Lamps**, other than searchlight lamps, No. of **1** are their live parts insulated from the frame or case **Yes** are their fittings as per Rule **Yes**

**Motors**, are their working parts readily accessible **Yes** are the coils self-contained and readily removable for replacement **Yes** are the brushes, brush holders, terminals and lubricating arrangements as per Rule **Yes** are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material **Yes** are they protected from mechanical injury and damage from water, steam or oil **Yes** are their axes of rotation fore and aft **Yes where possible** if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type **Yes** if not of this type, state distance of the combustible material horizontally or vertically above the motors **Yes** and **Yes**

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing **Yes** **Control Gear and Resistances**, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule **Yes** **Lightning Conductors**, where lightning conductors are required, are these fitted as per Rule **Yes** **Ships carrying Oil having a Flash Point less than 150 F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings **Yes** are all fuses of the fitted cartridge type **Yes** are they of an approved type **Yes**

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office **Yes**

**Spare Gear**, if the vessel is for open sea service have spares been supplied as per Rule **Yes**

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	4	250	222	1125	360	Oil Engine	Diesel Oil	Above 150°F
AUXILIARY								
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	2	2.0	127	.103	1125	190	184	Rubber.	b.l. Braided
EQUALISER CONNECTIONS	1	1.0	127	.103	575	92	92	"	"
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM	1	.0145	7	.052	36	37	90	"	"
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Navigation DB h.c.	1	.015	7	.044	22	31	550	"	"
Office Passage Acc. DBs 2+3	1	.0145	7	.052	17	24	450	"	"
Engine Acc. DBs h.c. 45	1	.007	7	.036	17	24	200	"	"
Forward Lighty DB h.c. 7	1	.0225	7	.064	17	46	400	"	"
ACCOMMODATION									
Forecastle DB h.c. 6	1	.0045	7	.029	6	18.2	230	"	"
Galley Lighty DB h.c. 10	1	.007	7	.036	15	24	370	"	"
Saloon Acc. DBs h.c. 12+13	1	.0045	7	.029	12	18.2	240	"	"
Aft Lighty DB h.c. 16	1	.0045	7	.029	7	18.2	230	"	"
WIRELESS	1	.0225	7	.044	20	46	700	"	"
SEARCHLIGHT	1	.002	3	.029	18	7.8	600	"	"
MASTHEAD LIGHT	1	.002	3	.029	18	7.8	90	"	"
SIDE LIGHTS	1	.002	3	.029	10	7.8	60	"	"
COMPASS LIGHTS									
POOP LIGHTS									
FOOD CARGO LIGHTS	1	.06	19	.064	59	83	240	"	"
AFT	1	.0225	7	.044	34	46	250	"	"
HEATERS - FANS MASTERBOARD (SALUBER DL)	1	.40	61	.093	334	288	140	"	"

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	.15	37	.072	125	152	130	Rubber	b.l. braided
MAIN BILGE LINE PUMPS	1	1	.011	19	.052	62.5	64	100	"	"
GENERAL SERVICE PUMP	1	1	.10	19	.083	93	118	90	"	"
WASHWATER BLOWER	1	1	.003	3	.036	4.9	12.0	200	"	"
THRESHOLDING FAN	1	1	.003	3	.036	7.3	12	70	"	"
CIRC. SEA WATER PUMPS	3	1	.10	19	.083	100	118	114	"	"
CIRC. FRESH WATER PUMPS	2	1	.10	19	.083	85	118	100	"	"
AIR COMPRESSOR	2	1	.110	61	.093	360	357	290	"	"
FUEL OIL SERVICE PUMP	2	1	.003	3	.036	11	12	112	"	"
WATER PUMP	2	1	.003	3	.036	11	12	132	"	"
WATER PUMP	2	1	.0225	7	.064	40	46	94	"	"
ENGINE TURNING GEAR	1	1	.06	19	.064	50	83	96	"	"
ENGINE REVERSE GEAR	1	1	.06	19	.064	50	83	96	"	"
LUBRICATING OIL PUMPS	3	1	.140	61	.093	285	288	160	"	"
OIL FUEL TRANSFER PUMP	1	1	.01	7	.044	24	31	100	"	"
WINDLASS	1	1	.30	37	.103	265	351	290	"	"
WINCHES, FORWARD	4	1	.20	37	.083	200	247	74	"	"
WINCHES, MIDSHIP	2	1	.10	19	.083	100	142	92	"	"
WINCHES, AFT	2	1	.20	37	.083	206	247	72	"	"
WINCHES, AFT	2	1	.20	37	.083	206	247	78	"	"
WINCHES, AFT	2	1	.20	37	.083	206	247	200	"	"
WINCHES, AFT	2	1	.10	19	.083	100	142	190	"	"
STEERING GEAR										
(a) MOTOR GENERATOR	2	1	.20	37	.083	190	184	500	"	"
(b) MAIN MOTOR	2	1	.01	7	.044	25.5	31	160	"	"
WORKSHOP MOTORS	1	1	.01	7	.044	25.5	31	160	"	"
VENTILATING FANS	1	1	.04	19	.052	52	64	116	"	"
OIL PURIFIERS ETC.	1	1	.04	19	.052	52	64	116	"	"
LUB. OIL PURIFIERS	2	1	.003	3	.036	8.5	12	80	"	"
O.F. PURIFIERS	2	1	.0045	7	.029	13.0	18.2	80	"	"
E.R. VENTILATING FANS	5	1	.003	3	.036	8.5	12	200	"	"
LATHE	1	1	.003	3	.036	8.7	12	60	"	"
DRILLING MACHINE	1	1	.003	3	.036	8.5	12	60	"	"
GRINDER	1	1	.003	3	.036	8.7	12	60	"	"

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

For HARLAND AND WOLFF, LIMITED,

*Louis V. Stumpf*

Manager.

Electrical Engineers.

Date *2<sup>nd</sup> Aug '38*

COMPASSES.

Distance between electric generators or motors and standard compass *38 feet*

Distance between electric generators or motors and steering compass *32 feet*

The nearest cables to the compasses are as follows:—

A cable carrying *10* Amperes *led into* feet from standard compass *led into* feet from steering compass.

A cable carrying *58* Amperes *8* feet from standard compass *6* feet from steering compass.

A cable carrying *22* Amperes *8* feet from standard compass *6* feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power *Yes*

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted *Yes*

The maximum deviation due to electric currents was found to be *1/2* degrees on *all the* courses in the case of the standard compass, and *1/2* degrees on *all the* courses in the case of the steering compass.

For HARLAND AND WOLFF, LIMITED.

*Louis V. Stumpf*

Manager.

Builder's Signature.

Date *2<sup>nd</sup> Aug '38*

Is this installation a 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 equipment of this*)

*vessel has been fitted on board under special survey, tested under full working conditions & found satisfactory. The materials & workmanship are good.*

Total Capacity of Generators *1000* Kilowatts.

The amount of £ *70 : 0 : 0* When applied for, *9 - AUG 1938*

Traveling Expenses (if any) £ *1 : 0 : 2* When received, *16/8/38*

Committee's Minute *GLASGOW 9 - AUG 1938*

Assigned SEE ACCOMPANYING MACHINERY REPORT.

*A. Haffner. R. I. Huvelin.*  
Surveyors to Lloyd's Register of Shipping.

750433K—Transfer.  
The Surveyors are requested not to write on or below the space for Committee's Minute.



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