

Rpt. 13.

No. 59070

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

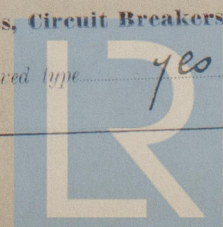
DEC -1 1937

Received at London Office

Date of writing Report 15. 11. 1937 When handed in at Local Office 29. 11. 1937 Port of Glasgow.  
 No. in Survey held at Glasgow Date, First Survey 30. 9. 37 Last Survey 20th Nov. 1937  
 Reg. Book. 38014 on the T.S.S. "EL MADINA" (Number of Visits 14)  
 Tons { Gross 3962  
 Net 1628  
 Built at Glasgow By whom built Barclay Curle & Co. Yard No. 666. When built 1937  
 Owners Scindia Steam Nav. Co. Ltd Port belonging to Bombay  
 Electric Light Installation fitted by Campbell & Iskenwood Contract No. 666 When fitted 1937  
 Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution Two wire ✓  
 Pressure of supply for Lighting 110 ✓ volts, Heating — volts, Power 110 ✓ 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 no ✓, 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 yes ✓ Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing —  
 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 engine room ✓, 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 near to generators ✓  
 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 SINDANYO ✓, 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. Switch and fuses for each generator, S.P. switch and 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 — Instruments on main switchboard two ✓ ammeters me ✓  
 voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection —  
 Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system earth lamps. ✓  
 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. **Joint Boxes, Section and Distribution Boards,** is the construction, protection, insulation, material, and position of these as per Rule yes.

**Cables:** Single, twin, concentric, or multicore Single 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 5 Volts.

**Fall of Pressure,** state maximum between bus bars and **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, or waterproof insulating tape 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 yes.

**Support and Protection of Cables,** state how the cables are supported and protected Cables lead covered or lead covered and armored. Clipped to steelwork or wood grounds.

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 armored and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII yes.

**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 sheathing and armoring efficiently bonded to steelwork by means of clips.

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 in compartment at top of engine room with switchboard. driven by internal combustion engine.

**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 storerooms 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 yes.

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** yes, whether fixed or portable yes, are their fittings as per Rule yes.

**Are Lamps,** other than searchlight lamps, No. of yes, 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	2	25	110	227		steam engine			
AUXILIARY									
EMERGENCY	1	25	110	227		internal combustion eng.	oil.	above 150° F	
ROTARY TRANSFORMER									

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR	1	.3	37	.103	227	240	15	Rubber.	L.C.A.B.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR	1	.3	37	.103	227	240	15	"	"
ROTARY TRANSFORMER									
ENGINE ROOM. } D.B.	1	.01	7	.044	25	31	15	"	"
BOILER ROOM. }									
AUXILIARY SWITCHBOARDS									
hang. D.B.	1	.007	7	.036	8	24	500	"	"
Deck Lt. S.B.	1	.0225	7	.064	41	46	15	"	"
Tan. Set. Board.	1	.01	7	.044	22	31	40	"	"
Mid. Accou.	1	.0225	7	.064	41	46	240	"	"
Cargo Lt. S.B.	1	.0045	7	.029	18	182	30	"	"
ACCOMMODATION									
Eng. Accou. D.B.	1	.003	3	.036	8	12	80	"	"
Port. Crew Lt. D.B.	1	.0045	7	.029	15	182	140	"	"
Emergency Lt. D.B.	1	.007	7	.036	22	24	240	"	"
WIRELESS	1	.007	7	.036	16	24	120	"	"
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	36	78	550	"	L.C.A.B. or Conduit.
SIDE LIGHTS	1	.002	3	.029	36	78	30	"	L.C.
COMPASS LIGHTS	1	.002	3	.029	36	78	15	"	L.C.
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS									

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 ... ..										
MAIN BILGE LINE PUMPS ... ..										
GENERAL SERVICE PUMP ... ..										
EMERGENCY BILGE PUMP ... ..	1	1	.075	19	.072	95	97	150	Rubber.	L.C.A.B.
SANITARY PUMP ... ..										
CIRC. SEA WATER PUMPS ... ..										
CIRC. FRESH WATER PUMPS... ..										
AIR COMPRESSOR ... ..										
FRESH WATER PUMP ... ..										
ENGINE TURNING GEAR... ..										
ENGINE REVERSING GEAR ... ..										
LUBRICATING OIL PUMPS ... ..										
OIL FUEL TRANSFER PUMP... ..										
WINDLASS ... ..										
WINCHES, FORWARD ... ..										
WINCHES, AFT ... ..										
STEERING GEAR—										
(a) MOTOR GENERATOR... ..										
(b) MAIN MOTOR ... ..										
WORKSHOP MOTOR ... ..	1	1	.0045	7	.029	14	182	✓ 180	"	"
VENTILATING FANS ... ..										
winch motor.	1	1	.003	3	.036	5	12	✓ 140	"	"
refrig. motor.	1	1	.003	3	.036	8	12.	✓ 20	"	L.C.B.

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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.

CAMPBELL & SHERWOOD LTD.  
per *R. Enslin*

Electrical Engineers.

Date 18-11-37

COMPASSES.

Distance between electric generators or motors and standard compass 125 feet.  
Distance between electric generators or motors and steering compass 125 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 36 Amperes led into feet from standard compass led into feet from steering compass.  
A cable carrying 18 Amperes 12 feet from standard compass 10 feet from steering compass.  
A cable carrying Amperes feet from standard compass 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 nil. ✓ degrees on any course in the case of the standard compass, and nil. ✓ degrees on any course in the case of the steering compass.

FOR BARCLAY, CURLE & CO., LTD.

*H. J. Curley*

Builder's Signature.

Date 26<sup>th</sup> Nov 37

SECRETARY

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 working conditions and found satisfactory. The material and workmanship are good.

*29/11/37*

*Noted H.R. 3/12/37*

Total Capacity of Generators 75 Kilowatts.

The amount of Fee ... £ 30 : — When applied for, 29 NOV 1937

Travelling Expenses (if any) £ : — When received, 20/12 1937

*MR 21/12*

*R. I. Murchison* *H. Haffner*  
Surveyors to Lloyd's Register of Shipping

Committee's Minute GLASGOW 30 NOV 1937

Assigned SEE ACCOMPANYING MACHINERY REPORT.

750,336. Transfer.  
The Surveyors are requested not to write on or below the space for Committee's Minute.



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