

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

20 FEB 1935

Date of writing Report 5th Feb. 1935 When handed in at Local Office 9. 2. 1935 Port of Glasgow.  
 No. in Survey held at Glasgow. Date, First Survey 31. 8. 34 Last Survey 7-2-1935  
 Reg. Book, 90278 on the T.S.M.V. "MANOORA" (Number of Visits 1st)  
 Tons { Gross 10856  
 Net 6261  
 Built at Glasgow By whom built A. Stephen & Sons Ltd Yard No. 540 When built 1935  
 Owners Adelaide Steamship Co. Ltd Port belonging to   
 Electric Light Installation fitted by A. Stephen & Sons Ltd Contract No. 540 When fitted 1935  
 Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution Two wirePressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.Direct or Alternating Current, Lighting Direct Power DirectIf 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 YesGenerators, do they comply with the requirements regarding rating Yes, are they compound wound Yesare 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 inseries with each shunt field 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 YesPosition of Generators In main engine room, bottom platform (2. port side 2 starboard side)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 Yesare their axes of rotation fore and aft YesEarthing, are the bedplates and frames of the generating plant efficiently earthed Yes are the prime movers andtheir respective generators in metallic contact YesMain 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 Yesare they protected from mechanical injury and damage from water, steam or oil Yes, if situated near unprotectedwoodwork 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 ofpermanently high insulation resistance Yes, if semi-insulating material is used, are all conducting parts insulated from the slabwith mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yesand is the frame effectively earthed Yes Are the fittings as per Rule regarding:— spacing or shielding of live partsYes, accessibility of all parts Yes, absence of fuses on back of board Yes, proportion of omnibusbars Yes, individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches YesMain Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches Triple pole circuitbreakers (D.P. & Equations) for each generator, fitted with 1/2" Reverse Current Trips, D.P. circuit breakersor D.P. switch fuses for each outgoing circuit.Instruments on main switchboard ammeters 5 voltmeters - synchronising device for paralleling purposes.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 YesJoint 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 *All types.* are the cables insulated and protected as per Tables IV or V of the Rules *Yes*  
**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *5.8 Volts (Power) 4.3 Volts (Lighting)*  
**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets  
*Yes*

**Paper Insulated Cables.** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *None*

**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*

**Support and Protection of Cables,** state how the cables are supported and protected *Main cables L.C. clipped on Gals. Tray; Mainly Spaces (Power) L.C. (Lighting) L.C.A.B. clipped on gals. tray. Gallies etc. L.C. Accom L.C. Public Rooms. V.I.R. in Lubung*

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 *Yes*

**Refrigerated Chambers,** if lights are fitted, 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 sheathing of cables, in turn & apparatus effectively earthed.*

are their connections made as per Rule *—*

**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, *Emergency generator driven by Oil Engine Emergency switchboard "E" controls emergency circuits. D.P. Circuit breakers for generator.*

*Outgoing circuits controlled by D.P. switch fuses. Emergency board interconnected with Main Switch board. Emergency supply in Emergency Generator Room at Bridge Deck.*

**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 *—*

**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 *Yes - protected by strong 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 *None*

how are the cables led

where are the controlling switches situated *—*

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

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

**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*

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 *—* and *—*

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule *—*

**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

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *—*



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## PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	4	335	220	1520	350	Oil Engine	Diesel Oil	Above 150°F
AUXILIARY ...								
EMERGENCY ...	1	39	220	177	900	Oil Engine	Diesel 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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rate.			
MAIN GENERATOR ...	3	1.81860	91	.093	1520	1683	120	V. Combic	Lead Covered.
EQUALISER CONNECTIONS ...	2	.9970	61	.103	-	972	120	"	"
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...	1	.11680	37	.064	177	189	50	"	"
ROTARY TRANSFORMER MOTOR GENERATOR ...									
ENGINE ROOM ... Port	1	.02214	7	.064	25	68	40	"	"
BEILER ROOM ... Star	1	.02214	7	.064	30	68	40	"	"
AUXILIARY SWITCHBOARDS 'A'	2	1.21240	91	.093	1000	1122	450	"	"
" 'B'	2	1.21240	91	.093	1010	1122	290	"	"
" 'C'	2	.9970	61	.103	897	972	250	"	"
" 'D'	1	.66620	91	.093	350	561	440	"	"
" 'E'	1	.11680	37	.064	177	189	500	"	"
" 'F'	2	1.21240	91	.093	1350	1122	120	"	"
Accommodation ... 'G'	1	.74350	91	.103	550	664	198	"	"
" 'H'	1	.49850	61	.103	392	486	220	"	"
Lubricating Oil Heaters Eng Room	1	.11680	37	.064	1644	189	145	"	"
Hot Water Boilers Eng Rm	1	.49850	61	.103	227	486	240	"	"
WIRELESS ...	1	.01462	7	.052	15	51	800	"	"
SEARCHLIGHT ...	1	.03960	19	.052	60	94	300	"	"
MASTHEAD LIGHT ...	1	.00194	3	.029	88	7.8	350	V.I.R.	L.C.
SIDE LIGHTS ...	1	.00194	3	.029	18	7.8	80	"	"
COMPASS LIGHTS ...	1	.00194	3	.029	36	7.8	30	"	"
STEER LIGHTS ...	1	.00194	3	.029	18	7.8	900	"	"
CARGO LIGHTS ...									
ARC LAMPS ...									
HEATERS ...									

170 at 260 volts  
104 - 450  
15 - 600  
81 - 1000

Throughout Vessel fed from various A.C. switchboards V.I.R. L.C. & Conduct.

as per approved plan.

## MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rate.			
BALLAST PUMP ...	1	1	.0600	19	.064	104	122	126	V.C.	Lead Covered
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...	1	1	.03960	19	.052	67.5	94	150	"	"
EMERGENCY BILGE PUMP ...	1	1	.0600	19	.064	67	122	600	"	"
SANITARY PUMP ...	1	1	.03960	19	.052	67.5	94	114	"	"
CIRC. SEA WATER PUMPS ...	2	1	.10090	19	.053	140	172	120	"	"
AUX " " ...	1	1	.01462	7	.052	39	51	96	"	"
CIRC. FRESH WATER PUMPS ...	2	1	.30240	37	.103	332	346	120	"	"
AIR COMPRESSOR ...	2	1	.74350	91	.103	541	664	165	"	"
EMERGENCY FRESH WATER PUMP ...	2	1	.03960	19	.052	47.5	94	600	"	"
FRESH WATER PUMP ...	2	1	.01462	7	.052	31	51	80	"	"
ENGINE TURNING GEAR ...	2	1	.03960	19	.052	58	94	90	"	"
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...	2	1	.14780	37	.072	193	222	200	"	"
OIL FUEL TRANSFER PUMP ...	2	1	.01462	7	.052	27	51	70	"	"
WINDLASS ...	1	1	.30240	37	.103	258	346	225	"	"
WINCHES, FORWARD 5 TON ...	2	1	.07592	19	.072	132	141	200	"	"
" " 3 TON ...	12	1	.07592	19	.072	120	141	105	"	"
WINCHES, AFT BOAT ...	6	1	.02214	7	.064	39	68	210	"	"
STEERING GEAR - PORT										
(a) MOTOR GENERATOR ...	1	1	.02214	37	.072	174	222	300	"	"
(b) MOTOR STAR ...	1	1	.14780	37	.072	174	222	300	"	"
WORKSHOP MOTOR S. (24 Bar)	4	1	.02214	7	.064	173	68	210	"	"
VENTILATING FANS ...	4	1	.01462	7	.052	34.8	51	100	"	"
" " " " ...	2	1	.00455	7	.029	13.6	18.2	90	V.I.R.	"
AUX. SALT WATER CIRC. PUMP ...	1	1	.01462	7	.052	39	51	96	V.C.	"
OIL PURIFIERS ETC. (OIL FUEL)	4	1	.00299	3	.036	8.4	12	60	V.I.R.	"
" " (LUB OIL)	3	1	.00455	7	.029	8	12	85	V.I.R.	"
HOT. SALT WATER PUMPS	2	1	.01462	7	.052	31	51	75	V.C.	"
HOT FRESH " " "	2	1	.01462	7	.052	31	51	60	V.C.	"
REFRIGERATOR COMPRESSOR	2	1	.0600	19	.064	87	122	60	V.C.	"
" BRINE PUMP	2	1	.00455	7	.029	13.4	18.2	50	V.I.R.	"
" CIRCULATING PUMP	1	1	.00455	7	.029	13.4	18.2	50	V.I.R.	"



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All Conductors are of annealed copper conforming to British Standard Specification No. 7.

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

The foregoing is a correct description.

ALEXANDER STEPHEN & SONS, LIMITED.

Electrical Engineers.

Date 7 FEB 1935

A. M. Stephen. Director

#### COMPASSES.

Distance between electric generators or motors and standard compass

80 ft.

Distance between electric generators or motors and steering compass

76 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 18 Ampères LED INTO feet from standard compass LED INTO feet from steering compass.

A cable carrying 15 Ampères 12 feet from standard compass 10 feet from steering compass.

A cable carrying 5 Ampères 14 feet from standard compass 12 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 ALEXANDER STEPHEN & SONS, LIMITED.

A. M. Stephen. Director

Builder's Signature.

Date 7 FEB 1935

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 under survey, tested under full working conditions and found satisfactory. The materials and workmanship were found to be good & sound.

9/2/35.

Noted  
21/2/35.

Total Capacity of Generators 1379 Kilowatts.

The amount of Fee ... £ 65:19:6 19 FEB 1935

Travelling Expenses (if any) £ :

When received, 28.3.35 29/3

Surveyor Lloyd's Register of Shipping.

Committee's Minute GLASGOW 19 FEB 1935

Assigned No record



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