

Rpt. 13.

No. 109742

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report

19

When handed in at Local Office

19

Port of

Received at London Office  
LIVERPOOL

OCT 27 1937

No. in Survey held at

BIRKENHEAD

Date, First Survey

30/6/37

Last Survey

15/10/1937

Reg. Book.

(Number of Visits.....43.....)

37613

on the

S.S. CITY OF CAPE TOWN

Tons

Gross

7900 804.6

Net

3935

Built at

BIRKENHEAD

By whom built

CAMMELL LAIRD &amp; CO. L.

Yard No. 1023.

When built 1937

Owners

ELLERMAN LINE LTD (HALL LINE LTD MGRS.)

Port belonging to

LIVERPOOL

Electric Light Installation fitted by

SUNDERLAND FORGE &amp; ENG CO. LD.

Contract No. 1023.

When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk

No.

System of Distribution

Double wire

Pressure of supply for Lighting

220

volts, Heating

✓

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

✓

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

Have certificates for generators under 100 kw. been supplied and approved

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

On platform at aft end of 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

On platform over 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

is it of an approved type

✓

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

Yes

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

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

T.P. Circuit Breakers with 0.2 sec. reverse current trips for main generators. D.P. C/O Switch &amp; D.P. fuses for Aux generators. D.P. Switch &amp; D.P. fuses for each outgoing circuit. D.P. Circuit breakers for starting gear.

Are turbine driven generators fitted with emergency trip switch as per rule

Yes

Are cupboards or compartments containing switchboards composed of

fire-resisting material or lined with approved material

Yes

Instruments on main switchboard

5

ammeters

4

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.

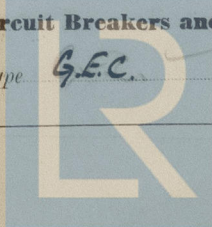
do these comply with the requirements of the Rules

Yes

are the fusible cutouts of an approved type

G.E.C.

have the reversed



© 2020  
Lloyd's Register  
Foundation



current protection devices been tested under working conditions *Yes* are all fuses labelled as per rule *Yes*

**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 & twin* are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII 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 *7.0 Mts.* **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 laid under machines or floorplates *Yes* if so, are they adequately protected *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 *mainly by clips - L.C. A.B. clipped to steel work or tray. Also by L.C.B. clipped to bulk heads or wood grinders.*

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

**Joints in Cables,** state if any, and how made, insulated, and protected *Yes, made in suitable junction boxes.*

**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 or fibre*

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas *Yes* 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* are they ventilated 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 holds & tween decks*

*Wigan type fittings* 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 & W.T.* 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*

**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 & Vertical* 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* have certificates for ~~the~~ motors for essential services been supplied and approved *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 filled 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 flameproof type approved for use in dangerous spaces *Yes*

**Spare Gear,** if the vessel is for open sea service, have spares been supplied as per Rule *Yes* are they suitably stored in dry situations *Yes*

PARTICULARS OF GENERATING PLANT.									
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.		
		Kilowatts.	Volts.	Ampères.	R.P.M.		Fuel Used.	Flash Point of Fuel.	
MAIN	3	150	220	681	650/600	Indo. generators.			
AUXILIARY	1	15	220	68	400	Refrigerating steam engine.			
EMERGENCY									
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	2	2.3	37	.103	681	692	66	V.C.	L.C.A.B.
EQUALISER CONNECTIONS	1	.3	37	.103	-	346	33	do	do
AUXILIARY GENERATOR	1	.06	19	.064	68	122	96	do	do
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM									
BOILER ROOM	1	.0215	7	.064	20	46	42	V.I.R.	L.C.A.B.
AUXILIARY SWITCHBOARDS									
Navigation	1	.007	7	.036	12.7	24	430	V.I.R.	L.C.A.B.
Accommodation Saloon	1	.0215	7	.064	10.21	46	380	do	do
do Engine	1	.0225	7	.064	20.1	46	110	do	do
do Poop	1	.0225	7	.064	9.42	46	434	do	do
Tween Deck Lights	1	.007	7	.036	6.0	24	110	do	do
WIRELESS	1	.007	7	.036	10	24	390	V.I.R.	L.C.A.B.
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	.18	7.8	1140	V.I.R.	L.C.A.B.
SIDE LIGHTS	1	.002	3	.029	.18	7.8	152	do	L.C.A.B.
COMPASS LIGHTS	1	.002	3	.029	.07	7.8	32	do	L.C.A.B.
STEER LIGHT	1	.002	3	.029	.18	7.8	1240	do	L.C.A.B.
CARGO LIGHTS	1	.007	7	.036	14.5	24	110	do	do
Heads, Mast Lights	1	.0025	7	.064	36.3	46	110	do	L.C.A.B.

MOTOR CONDUCTORS.									
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length (Lead and Return.) Feet.	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									
SANITARY PUMP									
CIRC. SEA WATER PUMPS	2	1	.25	37	.093	291	309	76	V.C.
CIRC. FRESH WATER PUMPS									
AIR COMPRESSOR									
FRESH WATER PUMP									
ENGINE TURNING GEAR									
ENGINE REVERSING GEAR									
LUBRICATING OIL PUMPS	3	1	.04	19	.052	57	64	48	V.I.R.
OIL FUEL TRANSFER PUMP									
WINDLASS									
WINCHES, FORWARD									
WINCHES, AFT									
STEERING GEAR—									
(a) MOTOR GENERATOR									
(b) MAIN MOTOR	1	1	.075	19	.072	154	162 (282)	440	V.C.
WORKSHOP MOTOR									
VENTILATING FANS	2	1	.007	7	.036	20	24	150	V.I.R.
Asst. Mast	1	1	.0045	7	.029	14	18.2	187	do
Induced Draft Fans	2	1	.075	19	.072	86	141	158	V.C.
Forced Draft Fans	2	1	.075	19	.072	125	141	164	do
Oil Fuel Pumps	2	1	.007	7	.036	18	24	104	V.I.R.
Oil Purifiers	2	1	.0045	7	.029	14	18.2	50	do
Refrigerator	1	1	.007	7	.036	21	24	281	do



The Electrical Equipment is installed in accordance with the approved plans.

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

The foregoing is a correct description.

*J. Williamson*  
P. PRO THE SUNDERLAND FORGE & ENGINEERING CO. LTD.

Electrical Engineers.

Date *Sept 28/37.*

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass *112 ft approx.*

Minimum distance between electric generators or motors and steering compass *108 ft approx.*

The nearest cables to the compasses are as follows:—

A cable carrying *12.7* Ampères *15* feet from standard compass *9* feet from steering compass.

A cable carrying *.07* Ampères *in* feet from standard compass *8* feet from steering compass.

A cable carrying *.07* Ampères *8* feet from standard compass *in* 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 *2.6* degrees on *all* course in the case of the standard compass, and *2.0 E* degrees on *J.W.* course in the case of the steering compass.  
*2.0 W*

FOR AND ON BEHALF OF  
J. E. LAIRD & Co. LIMITED.

*Woodward* Builder's Signature.

Date *24 OCT 1937*

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. *This installation has been fitted on*)

*board under special survey and in accordance with the approved plans and has been tested under full working conditions and found in order.*

*The materials and workmanship have been found to be good and sound.*

*Noted*

*28/10/37.*

Total Capacity of Generators *465* Kilowatts.

The amount of Fee *£ 55 : 15 : -* When applied for, *21 OCT 1937 - 1/2 Liv*  
*Liv. £ 44.18-0*  
*Lon £ 11-0-0* *5/8/37 - 1/2 Lon*

Travelling Expenses (if any) *£ 4 : 16 : 9* When received, *11/10/37 - 1/2 Lon*  
*1/2 Lon* *£ 44.18 and 4.11.32 1/2 Liv*

Committee's Minute *LIVERPOOL 26 OCT 1937*

Assigned *Electric Light.*

*R. C. Clayton.*  
Surveyor to Lloyd's Register of Shipping.



© 2020  
Lloyd's Register  
Foundation