

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report *19<sup>th</sup> Jan.* 1940, When handed in at Local Office *22.1.40* Port of *Glasgow* Received at London Office *JAN 24 1940*  
 No. in Survey held at *Port Glasgow* Date, First Survey *1939 Nov. 13* Last Survey *18<sup>th</sup> Jan.* 1940  
 Reg. Book. *41225* on the *S.S. "TEMPLE ARCH."* (Number of Visits *11*)  
 Built at *Port Glasgow* By whom built *Lithgown L<sup>rs</sup>* Yard No. *929* When built *1940*  
 Owners *Temple S.S. Co. L<sup>td</sup>* Port belonging to *London*  
 Electric Light Installation fitted by *H. T. Robertson & Co.* Contract No. *929* When fitted *1940*  
 Is the Vessel fitted for carrying Petroleum in bulk *No.*

## System of Distribution

Pressure of supply for Lighting *110.* volts, Heating *110* 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*

Position of Generators *15 kw. generator in engine room. 5 kw. Aux<sup>y</sup> generator special platform, fore engine room bulkhead.* Are the lubricating arrangements of the generators as per Rule *Yes* 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 *15 kw. fore & aft. 5 kw. thwart: slip.*

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 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 *Indanite*, 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 switchgear *No.*

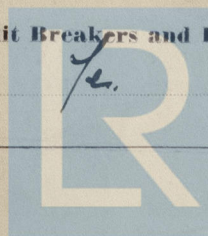
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches *Each generator controlled by D.P. Switch & fuses, each outgoing circuit controlled by S.P. Switch & D.P. fuses*

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 */* ammeters */* 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.*

do these comply with the requirements of the Rules *Yes* are the fusible cutouts of an approved type *Yes* have the reversed *Yes*



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current protection devices been tested under working conditions

construction, protection, insulation, material, and position of these as per rule

Cables: Single, twin, concentric, or multicore *Single & twin* the cables insulated and protected as per Tables IV, V, X or XI of the Rules

If the cables are insulated otherwise than as per Rule, are they of an approved type

any point of the installation under maximum load

area of 0.04 square inch and above provided with soldering sockets

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

or waterproof insulating tape

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

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit

Support and Protection of Cables, state how the cables are supported and protected *Main r/r in conduit Machinery space L.C.B. clipped Accommodation L.C. clipped to steel or woodwork.*

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

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

Joints in Cables, state if any, and how made, insulated, and protected

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed state the material of which the bushes are made

Earthing Connections, state what earthing connections are fitted and their respective sectional areas *Lead lead sheathing of cables efficiently earthed by means of clips*

are their connections made as per Rule

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule

position and method of control of the emergency supply and how the generator is driven

Navigation Lamps, are these separately wired controlled by separate switch and separate fuses are the fuses double pole

are the switches and fuses grouped in a position accessible only to the officers on watch

has each navigation lamp an automatic indicator as per Rule

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

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

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected

how are the cables led

where are the controlling switches situated

are all fittings suitably ventilated are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials

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

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

Are 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 are the coils self-contained and readily removable for replacement

are the brushes, brush holders, terminals and lubricating arrangements as per Rule

inflammable gases cannot accumulate and clear of all inflammable material are they protected from mechanical injury and damage from

water, steam or oil are their axes of rotation fore and aft *Excluded from fire* 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

if not of this type, state distance of the combustible material horizontally or vertically above the motors and

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing

field and motor speed regulators, starters and controllers constructed and fitted as per Rule

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

are all fuses of the filled cartridge type are they of an approved type

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

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

Joint Boxes, Section and Distribution Boards, is the

Fall of Pressure, state maximum between bus bars and

Cable Sockets, are the ends of all cables having a sectional

Paper Insulated and Varnished Cambric Insulated Cables,

Cable Runs, are the cables fixed as far as possible in accessible positions

are the cables run in

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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	1	15	110	136	860	Steam engine		
AUXILIARY	1	5	110	45	1200	IC. engine.	abn 160°F.	
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	1	.15	37	.072	136	15.2	45	Rubber.	L.C.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR	1	.0225	7	.064	45	46.0	24	Rubber.	Conduit
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM	1	.007	7	.036	13	24	20	Rubber.	L.C.B.
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Aux. generator. Sr. St.	1	.0225	7	.064	37	46	130	Rubber.	Conduit
Navigation	1	.007	7	.036	10	24	240	Rubber.	Conduit
ACCOMMODATION									
Engineers.	1	.01	7	.044	21	31.0	300	Rubber.	Conduit
	1	.007	7	.036	14	24.0	80	Rubber.	Conduit
WIRELESS	1	.0045	7	.029	5	18.2	220	Rubber.	Conduit
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	.36	7.8	385	Rubber.	Conduit
SIDE LIGHTS	1	.002	3	.029	.36	7.8	80	Rubber.	L.C.
COMPASS LIGHTS	1	.002	3	.029	.2	7.8	20	Rubber.	L.C.
POOP LIGHTS	1	.0045	7	.029	9	18.2	300	Rubber.	Conduit
CARGO LIGHTS	1	.007	7	.036	16	24.0	80	Rubber.	Conduit
ARC LAMPS									
HEATERS	1	.0225	7	.064	87	46	300	Rubber.	Conduit.

## 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 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										
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										
VENTILATING FAN										
Domestic Refrig.	2	1	.01	7	.044	22	31.0	200	Rubber.	Conduit.
COMPASS LIGHT										
SEARCHLIGHT										
MASTHEAD LIGHT										
SIDE LIGHTS										
COMPASS LIGHTS										
POOP LIGHTS										
CARGO LIGHTS										
ARC LAMPS										
HEATERS										



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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.

*H. T. Robertson & Co.*

Electrical Engineers.

Date *22/1/40*

COMPASSES.

Distance between electric generators or motors and standard compass

*30 feet*

Distance between electric generators or motors and steering compass

*30 feet*

The nearest cables to the compasses are as follows:—

A cable carrying *2* Ampères *led into* feet from standard compass *led into* feet from steering compass.

A cable carrying *10* Ampères *10* feet from standard compass *8* feet from steering compass.

A cable carrying Ampères 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.

LITHGOWS LIMITED.

*John Fullerton*

Secretary

Builder's Signature.

Date *22/1/40*

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 and found satisfactory. The materials and workmanship are good.*

*RB*  
*22/1/40*

*W. L. J.*  
*26/1/40*

Total Capacity of Generators *20* Kilowatts.

The amount of Fee ... £ *17 : 10 :* When applied for, ...

Travelling Expenses (if any) £ *1 : 1/6 :* When received, *4/2/1940*

Committee's Minute **GLASGOW 23 JAN 1940**

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**

*N. G. Findlay*

Surveyor to Lloyd's Register of Shipping.



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