

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 12-8-38 When handed in at Local Office 20-8-38 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 1-6-38 Last Survey 15-8-38
 Reg. Book. 89953 on the S.S. "SCIENTIST" (Number of Visits 9)
 Built at Port Glasgow By whom built Lithgows Ltd. Yard No. 911 When built 1938
 Owners T. J. Harrison Port belonging to Liverpool
 Electric Light Installation fitted by Campbell & Isherwood Contract No. 911 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution single wire hull return
 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 no
 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 generator
 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 mica-ite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework SINOANYO is the non-hygroscopic insulating material of an approved type yes

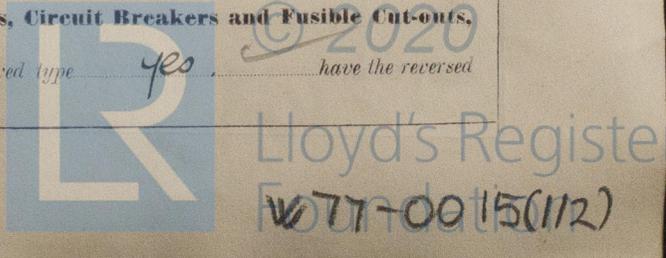
and is the frame effectively earthed yes Are the fittings as per Rule regarding:— spacing or shielding of live parts yes
 accessibility of all parts yes, absence of fuses on back of board yes, temperature rise of omnibus bars yes

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
Generator and each outgoing circuit controlled by S.P. switch and fuse.

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 no ammeters no 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 —
 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 —



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, 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 yes

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 5.0 Volts

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, laundries, bathrooms and lavatories lead covered or run in conduit yes

Support and Protection of Cables, state how the cables are supported and protected main L.C.B. in steel tube wiring in machinery spaces L.C.A.B. wiring in Crew accommodation L.C.B. wiring in Officers accommodation

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 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 earthing of the hull return conductors in accordance with the rules. Lead and armoring efficiently earthed 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 special compartment of engine room, always controlled by own switchboard and driven by I.C. engine.

Navigation Lamps, are these separately wired yes, controlled by separate switch and separate fuses yes, are the fuses double pole no

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 wiring only, 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 when 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

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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	1	15	110	136	450	steam engine		
AUXILIARY								
EMERGENCY	1	5	110	45.5	1450	int. comb. engine	gasoline below 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	15	37	.072	136	152	10	Rubber	L.C.B.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR	1	.03	19	.044	45.5	53	10	"	"
ROTARY TRANSFORMER									
ENGINE ROOM	1	.007	7	.036	22.3	24	5	"	"
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
POOP D.B.	1	.0045	7	.029	12	18.2	220	"	"
AFT. CARGO D.B.	1	.007	7	.036	15.4	24	50	"	"
FOR'D CARGO D.B.	1	.007	7	.036	15.4	24	150	"	"
SALOON D.B.	1	.007	7	.036	22.2	24	170	"	"
MIDSHIP D.B.	1	.007	7	.036	22	24	60	"	"
ACCOMMODATION									
WIRELESS	1	.007	7	.036	18	24	75	"	"
SEARCHLIGHT	1	.0225	7	.064	45	46	450	"	"
MASTHEAD LIGHT	1	.022	3	.029	36	7.8	400	"	L.C.B. or Conduit.
SIDE LIGHTS	1	.022	3	.029	36	7.8	40	"	L.C.B.
COMPASS LIGHTS	1	.022	3	.029	36	7.8	15	"	"
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS									

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 FANS										
ASH HOIST	2	1	.01	7	.044	18.8	31	110	Rubber	L.C.A.B.
REFRIG.	1	1	.007	7	.036	21	24	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.

CAMPBELL & ISHERWOOD LTD.

[Signature]

Electrical Engineers.

Date 16-8-1938.

COMPASSES.

Distance between electric generators or motors and standard compass 200 feet

Distance between electric generators or motors and steering compass 200 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 36 Ampères led into feet from standard compass led into feet from steering compass.

A cable carrying 8 Ampères 6 feet from standard compass 5 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.

[Signature]

Secretary Builder's Signature.

Date 18/8/38.

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, etc.)

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.

*Noted
11/9/38.*

Total Capacity of Generators 20 Kilowatts.

The amount of Fee ... £ 17 : 10 : { When applied for, at 4/6

Travelling Expenses (if any) £ — : — : { When received, 26/8 1938

Committee's Minute GLASGOW 30 AUG 1938

Assigned See other F.C. report

R.I. Murchison

Surveyor to Lloyd's Register of Shipping.

880
20-8-38

750,036.— Transfer.
The Surveyors are requested not to write on or below the space for Committee's Minute.



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