M.B. Rpt.

Rpt. 13.

No. 6709

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 29 NOV 1945

Date of writing Report Oct.12th, 45 When handed in at Local Office Oct. 10th, 45 Port of Montreal.

No. in Reg. Book. Survey held at Montreal Date, First Survey Apr. 25/45 Last Survey Sept. 29th 1945 (Number of Visits Daily Attendance

on the Twin Screw Transport Ferry CN 955 Tons { Gross 4290.74 Net 2430.45

Built at Montreal By whom built Canadian Vickers Yard No. 207 When built 1945

Owners British Admiralty Port belonging to

Electric Light Installation fitted by Canadian Vickers Limited Contract No. 207 When fitted 1945

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two Wire

Pressure *of supply for* **Lighting** 220 *volts,* **Heating** 220 *volts,* **Power** 220 *volts.*

Direct or Alternating Current. Lighting Direct Current **Power** Direct Current

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 *, i*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX*r*

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* Yes *Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing* 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 2 - 120 KW Turbo Genrs. in P & S Eng. Rooms Respectively 2-60KW Diesel Genrs. in Diesel Compts. *, 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* One in Port E.R. & One in Stbd. E.R.

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 Yes

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* -- *, is the non-hygroscopic insulating material of an approved type* --- *, 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* Circuit Breakers and Double Pole Knife Switches fitted with quick-break "Splash" switches. Equaliser Switches are not fitted

Are turbine driven generators fitted with emergency trip switch as per rule Yes *Are cupboards or compartments containing switchboards composed of fire-resisting material* XXXXXXXXXXXXXXXXXX Yes **Instruments** *on main switchboard* Two *ammeters* Three *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* Switch Fuse and lamp testing device **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 LC *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* ----- **Fall of Pressure,** *state maximum between bus bars and any point of the installation under maximum load* 4 - 5 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* Lead Covered

Support and Protection of Cables, *state how the cables are supported and protected* On perforated trays for cable main runs etc. Steel conduit through magazines, with metal cases fitted over same where necessary.

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 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* No joints in cables

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* Sheet lead

Earthing Connections, *state what earthing connections are fitted and their respective sectional areas* All cables are of the lead cased variety, and are clipped to the hull throughout

, *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~~ Comprehensive system of emergency bulkhead Terminals and cabling for all vital services throughout the vessel. Usual Admiralty Practise

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 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~~ No,

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected Installations wired and fitted in accordance with the Naval Manual of Explosive Regulations *how are the cables led* The lead-cased cables are all led in steel conduit

where are the controlling switches situated outside of these compartments and at least 2" clear of bulkheads of these actual compartments. *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

Signalling Projector
~~Searchlight~~ **Lamps, No. of** One 10" S/P, *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* Totally enclosed - Ventillated ----- *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* 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* Steel Masts **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* No *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.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
Main	2	120	225	534	1250	Steam Turbine		
Auxiliary ...	2	60	225	266	750	Diesel	Diesel	above 150°F
Emergency ...								
Rotary Transformer								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED
2 Main Generators	1	1.0	127	0.103	534	932	110 & 120	varnished	lead cased
Excitation Connections ...									
2 Auxiliary Generators. ...	1	0.4	61	0.093	266	464	100 & 180	Cambric	" "
Emergency Generator... ...									
Rotary Transformer { Motor ...									
Rotary Transformer { Generator...									
Engine Room Circuit B.. (S)	1	0.06	19	0.064	90	135	30	" "	" "
Boiler Room ... " ... ... B.. (P)	1	0.06	19	0.064	90	135	30	" "	" "
Auxiliary Switchboards ...									
Interconnecting Cables	1	0.5	61	0.103	300	540	60	" "	" "
" "	1	0.5	61	0.103	300	540	100	" "	" "
DeGaussing Equipment	1	0.15	37	0.072	121	246	80	" "	" "
Accommodation									
Lighting Circuit N (S)	1	0.15	37	0.072	180	246	20	" "	" "
" " N (P)	1	0.15	37	0.072	180	246	20	" "	" "
Power Circuit P(S)	1	0.15	37	0.072	155	246	50	" "	" "
" " P(P)	1	0.15	37	0.072	120	246	50	" "	" "
Wireless	1	0.0255	7	0.064	30	75	170	" "	" "
Searchlight									
Masthead Light	1	0.003	64	0.008	0.36	10	140	Tough Rubber Sheath, Phospor Bronze	
Side Lights	1	0.003	64	0.008	0.36	10	70	" "	" Braided
Compass Lights									
Poop Lights									
Cargo Lights									
Arc Lamps									
Heaters									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED
Ballast Pump										
Main Bilge Line Pumps ...										
General Service Pump ...										
Emergency Bilge Pump ...										
Sanitary Pump										
Circ. Sea Water Pumps ...										
Circ. Fresh Water Pumps...										
Compressor Refrig.	1	1	0.01	7	0.044	18.2	31	300	Rubber	Lead Cased
Cooling Water Pump Refrig.	1	1	0.003	3	0.036	3.0	10	50	"	" "
Engine Turning Gear										
Engine Reversing Gear ...										
Lubricating Oil Pumps ...										
Oil Fuel Transfer Pump ...										
Windlass										
Boat Winch Port...	1	1	0.06	19	0.064	113	135	200	Varnished lead	
Boat Winch Starboard	1	1	0.06	19	0.064	113	135	200	Cambric	Cased
Winches, Aft...										
Steering Gear—										
(a) Motor Generator ...										
(b) Main Motor										
Workshop Motor...										
Ventilating Fans Circuit C(S)	11	1	0.15	37	0.072	80	246	20	Varnished	
" " " C(P)	12	1	0.15	37	0.072	60	246	20	lead	
Deck Ventilation A (S)	3	1	0.15	37	0.072	120	246	50	Cambric	Cased
" " A (P)	2	1	0.15	37	0.072	80	246	50		
Bow Door Motors	2	1	0.01	7	0.045	25	31	140		
Ramp Motor	1	1	0.06	19	0.064	118	135	540		

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.

For CANADIAN VICKERS LIMITED

J. Kirkland

J. Kirkland, Shipyard Manager

Electrical Engineers. *Date* October 15th, 1945

COMPASSES.

Distance between electric ~~generator~~ motor and standard compass nearest 20 feet

Distance between electric ~~generator~~ motor and steering compass nearest 24 feet

The nearest cables to the compasses are as follows:— Compass Corrector Coils are fitted on compasses in connection with De Gaussing Equipment.

A cable carrying 20 *Ampères* 10 *feet from standard compass* 10 *feet from steering compass.*

A cable carrying 12 *Ampères* 20 *feet from standard compass* 14 *feet from steering compass.*

A cable carrying 41 *Ampères* 22 *feet from standard compass* 25 *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 ..... *degrees on* ..... *course in the case of the standard compass, and* ..... *degrees on* ..... *course in the case of the steering compass.*

For CANADIAN VICKERS LIMITED

J. Kirkland

Builder's Signature. *Date* October 15th, 1945

J. Kirkland, Shipyard Manager.

Is this installation a duplicate of a previous case Yes *If so, state name of vessel* CN 948

General Remarks (*State quality of workmanship, opinions as to class, &c.* This Electrical Installation has been fitted on board this vessel under Special Survey in accordance with the Approved Plans and Specifications forwarded by the British Admiralty.

The workmanship and materials are good

Megger tests carried out and in order

Copies of Generator Test Certificates attached hereto.

Noted

JRM 14.12.45

Total Capacity of Generators 360 *Kilowatts.*

The amount of Fee ... ... £ 140.00 : When applied for, 5th Nov 1945

Travelling Expenses (if any) £ Included in Hull Rpt. When received. ____ 19__

V B Glover

Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 21 DEC 1945

Assigned Ser F.E. machy. rpt.

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1m-4-42.—Transfer. Printed in U.S.A.

(*The Surveyors are requested not to write on or below the space for Committee's Minute*)

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