

REPORT ON ELECTRICAL EQUIPMENT.

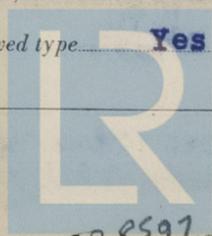
(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

10 JUL 1944

Date of writing Report **3rd May, 1944** When handed in at Local Office **3rd May, 1944** Port of **Vancouver, B. C.**
 No. in Survey held at **Vancouver, B. C.** Date, First Survey **15th Mar., 1944** Last Survey **3rd May, 1944**
 Reg. Book. (Number of Visits **8**)
 --- on the **Steel Single Screw Steamer "CRYSTAL PARK"** Tons {Gross **7161.44**
 Net **4221.34**
 Built at **North Vancouver, B.C.** By whom built **North Van Ship Repairs Ltd.** Yard No. **140** When built **1944**
 Owners **Minister of Munitions & Supply of Canada,** belonging to **Montreal, P.Q.**
 (Mgrs. - **Park Steamship Co. Ltd.**)
 Electric Light Installation fitted by **Hume and Rumble, Ltd.** Contract No. **--** When fitted **1944**
 Is the Vessel fitted for carrying Petroleum in bulk **No**

System of Distribution **Constant Pressure Two-Wire Direct Current**
 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. **No**, 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 **Attached. Also** Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing **Under 100 K.W.**
Ship's Trial Results attached.
 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 **Engine Room Generator Platform on First Grating Level Starboard Aft.** 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 **Aft end of Generator Platform Athwartships**
 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 **Same Compartment**
 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 **Ebony Asbestos**, 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 **150 Ampere D.P. linked Circuit Breakers on separate panels with overload and reverse current trips, and a three pole isolating switch for each generator. D.P. switches and fuses for each outgoing circuit.**
 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 **Yes** Instruments on main switchboard **3** ammeters **3** voltmeters
Selector Switch on No.2 Generator Voltmeter.
 meters **1** synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection **Yes**
 Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system **No.2 Generator Voltmeter Selector Switch wired to give ground readings in addition to Generator and Bus Bar readings. Also Earth Lamps and Switch.** 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



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current protection devices been tested under working conditions. **Yes**

construction, protection, insulation, material, and position of these as per Rule **Yes**

Cables: Single, twin, concentric, or multi-core on High Pressure. **Yes**

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

any point of the installation under maximum load **5.5**

area of 0.04 square inch and above provided with soldering sockets. **Yes**

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 **Yes**

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 **Clipped to woodwork in accommodation by brass or galvanized steel clips spaced as per Rule and run in wood casings, elsewhere run in conduit, all cables protected by metal guards where liable to damage.**

If cables are run in wood casings, are the casings and caps secured by screws **Yes**

separate grooves **--**

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 except at 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**

Earthing Connections, state what earthing connections are fitted and their respective sectional areas **Lead covered cables, conduit and metal trays effectively earthed.**

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

position and method of control of the emergency supply and how the generator is driven **12 in number 4.5 Volt Hulst Emergency**

Navigation Lamps, are these separately wired **Yes**

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

has each navigation lamp an automatic indicator 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 **Cast 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 **Yes in**

magazines. **Russell Stoll No.4521 Explosion Proof Fittings.**

Cables run in conduit. **Outside Compartments.**

are all fittings suitably ventilated **Yes**

Heating and Cooking Appliances, are they constructed and fitted as per Rule **None**

Searchlight Lamps, No. of **1-12" -1000 Watt Metal** whether fixed or portable **Spigot on either side of Flying Bridge**

Arc Lamps, other than searchlight lamps, No. of **--**

Motors, are their working parts readily accessible **Yes**

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

inflammable gases cannot accumulate and clear of all inflammable material **Yes**

water, steam or oil **Yes**

material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type **Drip Proof**

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

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

field and motor speed regulators, starters and controllers constructed and fitted as per Rule **100 B.H.P.**

are required, are these fitted as per Rule **Yes**

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 **Ships carrying Oil having a Flash Point less than 150°F. Have the special requirements of**

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 **Yes**

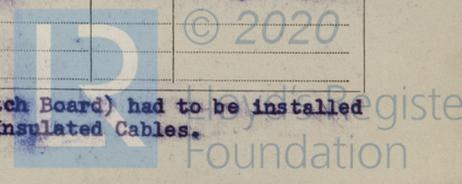
PARTICULARS OF GENERATING PLANT.										
DESCRIPTION OF GENERATOR	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.		Insulated with	HOW PROTECTED
		Kilowatts.	Volts.	Amperes.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN	3	15	110	136	575	Steam Reciprocating	--	--		
AUXILIARY										
EMERGENCY										
ROTARY TRANSFORMER										

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT, AMPERES.		Approximate Length (Lead and Return.) Feet.	Insulated with	HOW PROTECTED
			No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	1	.166	19	.105	136	162	50	Rubber	In Conduit
EQUALISER CONNECTIONS	1	.0828	19	.074	102	102	25	"	"
AUXILIARY GENERATOR									
Final Distribution Circuits	7	.024							
Emergency Generator	1	.024							
ROTARY MOTOR									
TRANSFORMER									
& Boiler Rm. Ltg.	1	.052	7	.097	33.14	83	40	Varnished Cambric	Lead Covered
ENGINE ROOM	1	.052	7	.097	33.14	83	40	Varnished Cambric	Lead Covered
BOILER ROOM	1	.052	7	.097	33.14	83	40	Varnished Cambric	Lead Covered
AUXILIARY SWITCHBOARDS	1	.008	7	.038	20	27	6	Rubber	Switchboard Wiring
Refrigerator	1	.082	19	.074	75	113	200	Varnished Cambric	Lead Covered in Conduit.
Degaussing Panel	1	.131	19	.094	65	155	50	"	Lead Covered
Power Panel	1	.032	7	.077	23	55	40	Rubber	In Conduit
Accommodation	19	.052	7	.097	11.85	83	350	Varnished Cambric	Lead Covered in Conduit
Crew Accom.	1	.082	19	.074	14.18	113	420	"	"
Deck House	1	.052	7	.097	20.97	83	100	"	"
Eng. House Starboard Accommodation	1	.052	7	.097	20.97	83	100	"	"
" " Port	1	.052	7	.097	16.34	83	180	"	"
" Saloon Hse.	1	.052	7	.097	22.31	83	300	"	"
" Capt. Hse.	1	.032	7	.077	21.19	56	350	Synthetic Resin	"
Navigation	1	.032	7	.077	11.89	56	420	"	"
WIRELESS	1	.052	7	.097	30	83	400	Varnished Cambric	"
SEARCHLIGHT	1	.008	7	.038	10	23	450	Synthetic Resin	"
MASTHEAD LIGHT	1	.003	7	.024	.45	11.5	350	"	"
SIDE LIGHTS	1	.003	7	.024	.45	11.5	80	"	Lead Covered
COMPASS LIGHTS	1	.003	7	.024	.3	11.5	22	"	"
POOP LIGHTS	1	.003	7	.024	.3	11.5	22	"	"
CARGO LIGHT	1	.052	7	.097	19.53	83	460	Varnished Cambric	Lead Covered in Conduit
" " Aft	1	.032	7	.077	14.17	56	240	Synthetic Resin	"
Gyro Compass	1	.032	7	.077	10	56	400	"	"

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT, AMPERES.		Approximate Length (Lead and Return.) Feet.	Insulated with	HOW PROTECTED
				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 PUMP	1	1	.005	7	.030	6.5	16	12	Rubber	In Conduit
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	1	1	.005	7	.030	6.5	16	100	Rubber	In Conduit

* American Institute of Electrical Engineers Current Carrying Capacity for Twin Core Cables Table No.10, Single Core Cables by interpolation from Tables Nos. 1 & 2 of Society's Rules.

* These synthetic Resin Insulated Cables (Feeders from Main Switch Board) had to be installed in the machinery space due to the non-availability of Rubber Insulated Cables.



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.

Glenn A. Rumble Ltd
per G. Norton

Electrical Engineers.

Date 3rd May, 1944.

COMPASSES.

Distance between electric generators or motors and standard compass **19 feet (Wireless Alternator)**

Distance between electric generators or motors and steering compass **16 "**

The nearest cables to the compasses are as follows:—

A cable carrying **.3** Ampères **9 inches** from standard compass **9 inches** from steering compass. **(Compass Lights)**

A cable carrying **.3** Ampères **1'-4"** feet from standard compass **1'-4"** feet from steering compass. **(Compass Correction Coils)**

A cable carrying **.3** Ampères **5** feet from standard compass **3** feet from steering compass. **(Wheelhouse Light)**

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 **All** courses in the case of the standard

compass, and **Nil** degrees on **All** courses in the case of the steering compass.

NORTH VAN SHIP REPAIRS LIMITED

[Signature]

Builder's Signature.

Date 3rd May, 1944

Vice President

Is this installation a duplicate of a previous case **Yes** If so, state name of vessel **S.S. "FORT COLUMBIA"**
(Vancouver Report No. 5942)

General Remarks (State quality of workmanship, opinions as to class, &c. **The electrical equipment of this ship has been installed under Special Survey in accordance with the approved plans, New York Letters and Society's Rules. The material and workmanship are good, and special attention has been given to the installation of synthetic Resin Insulated Cables, and in the machinery spaces they are kept at least 1" clear of all steelwork to allow for air circulation. The installation has been examined under full working conditions, tested as per Rule and found satisfactory, and in our opinion is eligible to have the Society's Classification without Special Notation. Copies of particulars of ship's trials on Generators attached. Maker's Certificates covering steam auxiliary engines (Driving Generators) and Generators attached. As fitted plan of Electrical wiring attached. The electrical equipment has also been surveyed during construction and installation on behalf of Wartime Shipbuilding, Ltd., to ensure that the terms of the specification have been fully complied with and this work has been satisfactorily carried out.**

Noted
Shin
13.7.44

Total Capacity of Generators **45** Kilowatts.

The amount of Fee ... **\$125.00** : **3rd May, 1944**

Travelling Expenses (if any) **\$ 10.00** : **When received.**

[Signature]
Surveyor to Lloyd's Register of Shipping.

Committee's Minute **TUES. 18 JUL 1944**

Assigned **see minute on 18th July**



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