

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 21 JAN 1944

Date of writing Report 23rd Nov., 1943 When handed in at Local Office 23rd Nov., 1943 Port of Vancouver, B. C.  
 No. in Survey held at Vancouver, B. C. Date, First Survey 22nd Sept., 1943 Last Survey 22nd Nov., 1943  
 Reg. Book. (Number of Visits 7)  
 on the Steel Single Screw Steamer S.S. "FORT ORLEANS" Tons { Gross 7165.78  
 Net 4249.51  
 Built at Vancouver, B. C. By whom built Burrard Dry Dock Co. (South Ltd.) Yard No. 191 When built 1943  
 Owners Minister of Munitions and Supply of Canada. Port belonging to  
 Electric Light Installation fitted by Burrard Dry Dock Co. Ltd. Contract No. When fitted 1943  
 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 Ship's Trial results attached. Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Under 100 K.W.

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. 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 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 Yes, 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 volt-

Selector switch on No.2 Generator Voltmeter.

meters -- 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



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** **Single and Twin on High Pressure multicore on telephones.** Cables: Single, twin, concentric, or multicore, insulated and protected as per Tables IV, V, X or XI of the Rules. **Approved Wartime Cables.** 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 **5.5** 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 **--** 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 and Conduit.** 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** are the cap screws of brass **Yes** 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 **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** state the material of which the bushes are made **Lead and hardwood collars.** Earthing Connections, state what earthing connections are fitted and their respective sectional areas **Lead covered cables, conduit and metal trays effectively earthed.** 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 **12 in number 4.5/1101st Emergency Hand Lamps fitted throughout the vessel.** 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 **Wheelhouse** 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 **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.** how are the cables led **Cables run in conduit.** where are the controlling switches situated **Outside 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 **None**, are air heaters constructed and fitted as per Rule **None** Searchlight Lamps, No. of **1-12" -1000 Watt Metal Filament Lamp.** whether fixed or portable, or either, 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 **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 **Drip Proof.** 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 **100 B.H.P.** 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 **Heavy derricks and telescopic mast bonded to deck.** 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 **Yes**

PARTICULARS OF GENERATING PLANT.										
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.			
		Kilowatts.	Volts.	Ampers.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN ... ..	1	15	110	136	575	Steam Reciprocating	--	--		
AUXILIARY ... ..										
EMERGENCY ... ..										
ROTARY TRANSFORMER										
GENERATOR, LIGHTING AND HEATING CONDUCTORS.										
DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED
		Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.				
MAIN GENERATOR ... ..	1	.166	19	.105	136	162	25	Rubber	In Conduit	
EQUALISER CONNECTIONS	1	.166	19	.105	-	162	25	"	"	
AUXILIARY GENERATOR ... ..										
Final Distribution	Circuits Mostly			.024	Insulated with either rubber or synthetic resin lead covered or in conduit.					
ROTARY MOTOR TRANSFORMER (GENERATOR) & BIF. RM. Ltg.	1	.052	7	.097	47.5	75	40	Rubber	In Conduit	
ENGINE ROOM ... ..	1	.052	7	.097	47.5	75	40	Rubber	In Conduit	
BOILER ROOM										
Low Power AUXILIARY SWITCHBOARDS	1	.008	7	.038	20	27	6	"	Switchboard Wiring.	
Refrigerator	1	.082	19	.074	75	166	200	Varnished Cambric	Lead Covered in Conduit.	
Degaussing Panel	1	.166	19	.105	65	162	30	Varnished Cambric	In Conduit.	
Power Panel P1	1	.032	7	.077	33	55	40	Rubber	In Conduit.	
Accommodation L9	1	.052	7	.097	37	122	450	Varnished Cambric	Lead Covered in Conduit.	
Deck House L10	1	.082	19	.074	35.5	166	500	"	"	
Engrs. House Star.	1	.052	7	.097	39	122	100	"	"	
Accommodation L2	1	.052	7	.097	39	122	100	"	"	
Port L3	1	.052	7	.097	34	122	200	"	"	
Starboard L4	1	.052	7	.097	42.5	122	300	"	"	
House L5	1	.032	7	.077	26.5	55	350	Synthetic Resin.	"	
Navigation L6	1	.032	7	.077	21	55	450	"	"	
WIRELESS ... ..	1	.052	7	.097	30	122	400	Varnished Cambric	Lead Covered in Conduit.	
SEARCHLIGHT ... ..	1	.008	7	.038	10	27	450	Synthetic Resin.	"	
MASTHEAD LIGHT ... ..	1	.003	7	.024	.5	10	358	"	"	
SIDE LIGHTS ... ..	1	.003	7	.024	.5	10	74	"	Lead Covered	
COMPASS LIGHTS ... ..	1	.003	7	.024	.3	10	22	"	"	
POOP LIGHTS ... ..										
CARGO LIGHTS Forward	1	.052	7	.097	24.8	122	450	Varnished Cambric	Lead Covered in Conduit.	
Aft	1	.032	7	.077	24.4	55	300	Synthetic Resin	"	
Gyro Compass	1	.032	7	.077	10	55	400	"	"	
MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		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 ... ..	1	1	.005	7	.030	6.5	16	12	Rubber	In Conduit
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... ..										
Eng. Room VENTILATING FAN / ... ..	1	1	.005	7	.030	6.5	16	100	Rubber	In Conduit



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.

Burrard Dry Dock Company, Limited

Electrical Engineers.

Date 23rd Nov., 1943

President

### 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 feet from standard compass 9 inches feet 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 course in the case of the standard compass, and Nil degrees on All course in the case of the steering compass.

Burrard Dry Dock Company, Limited

Builder's Signature.

Date 23rd Nov., 1943

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. 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 Merchant Shipping, Ltd., to ensure that the terms of the specification have been fully complied with and this work has been satisfactorily carried out.

Noted

L.F.

26/1/44

Total Capacity of Generators 45 Kilowatts.

The amount of Fee ... \$125.00

When applied for,

22 Nov. 43

When received,

19

Travelling Expenses (if any) \$ 10.00

Committee's Minute FRI. 28 JAN 1944

Assigned

See fe marks vll.

A. G. Donald

Surveyor to Lloyd's Register of Shipping.