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# MAINTENANCE VERIFICATION REPORT

## **LIMITATION OF LIABILITY AND DISCLAIMER**

This document is not a replacement for electrical codes or other applicable standards.

This document is not intended or provided as a design specification or as an instruction manual.

The DER owner, employees or agents recognize that they are, at all times, solely responsible for the generator plant design, construction, operation and maintenance.

FortisAlberta Inc. (FAI), and any person employed on its behalf, makes no warranties or representations of any kind with respect to the DER requirements contained in this document, including, without limitation, its quality, accuracy, completeness or fitness for any particular purpose, and FAI will not be liable for any loss or damage arising from the use of this document, any conclusions a user derives from the information in this document or any reliance by the user on the information it contains. FAI reserves the right to amend any of the requirements at any time. Any person wishing to make a decision based on the content of this document should consult with FAI prior to making any such decision.

## MAINTENANCE VERIFICATION REQUIREMENT

The DER owner shall maintain its interconnection sub-systems that have a direct impact to FortisAlberta's Distribution System. Equipment shall be maintained on a periodic basis as indicated in *Section 10 of FortisAlberta's Technical Interconnection Requirements* standard. FortisAlberta requires an Annual Maintenance Verification Report to be completed and submitted for proof of adherence to the DER owners preventative maintenance plan. For clarification on the table below refer to the *Reference Material* section of this document. FortisAlberta reserves the right to witness any electrical testing and must be notified 14 days in advance. All inspections and test shall be conducted by a qualified worker. All inspection and test reports must be stored up to 8 years and made available upon the request of FortisAlberta.

The DER owner shall fill out the table below indicating the inspections and tests that were performed during the year. Check the boxes that apply.

## ANNUAL INSPECTION AND TESTING REPORT

EQUIPMENT	INSPECTIONS AND TESTS		
	VISUAL	VISUAL / MECHANICAL	VISUAL / MECHANICAL / ELECTRICAL
<b>Protection, Controls &amp; Metering</b>			
Interconnection Relay (Microprocessor Based)			
Power Meter			
Transfer Trip Circuit			
Control Inter-locks and Lockout Circuits			
<b>Transformers</b>			
Power Transformer(s) (if owned by customer)			
Current Transformer(s)			
Potential Transformer(s)			

EQUIPMENT	VISUAL	VISUAL / MECHANICAL	VISUAL / MECHANICAL / ELECTRICAL
<b>Isolating Devices</b>			
Breaker			
Disconnect Switch			
<b>Additional Testing / Comments</b>			

**PROVIDED BY:**

**ACCEPTED BY:**

Power Producer (name / company)

FortisAlberta

Title

Title

Date

Date

## REFERENCE MATERIAL

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### Inspections and Tests

The following are the minimum expectations for each type of inspection and test. Refer to the equipment manufacturer for recommended routine maintenance tests, if not available use the latest NETA Maintenance Testing Standard as a reference for applicable inspections and testing procedures.

#### Visual

Definition: Qualitative observation of physical characteristics, including cleanliness, physical integrity, evidence of overheating, lubrication etc.

- Inspect equipment for moisture, dust/dirt buildup, signs of arcing, noise, loose connections, anchorage and physical damage. Clean all dirt and dust build up on all equipment.
- When applicable inspect all pressure and oil level gauges.
- Compare physical nameplate data to ratings on drawings.
- Verify loading on meters and protective relays to ensure they represent current operating parameters.
- As-Left settings: Download all protection settings, download any SER and Trip logs when available. Settings must reflect latest coordination study.
- If-applicable perform thermographic survey on bolted connections for breakers, disconnect switches and transformers.

#### Mechanical

Definition: Observation of the mechanical operation of equipment not requiring electrical stimulation, such as manual operation of circuit breaker trip and close functions. It may also include tightening/torquing of hardware.

- Manual operation of all electrical isolating devices (i.e Breakers, Disconnect Switches, Fuse Disconnects, etc. ). Verify any operational counters.
- Verify tightness of accessible bolted connections by use of a calibrated torque wrench. Use manufacturer specifications for required torque levels.
- Inspect, tug test and tighten all loose control circuit wiring connections.
- Confirm correct operation of all mechanical interlocks. Attempt to close any locked-open devices and vice-versa.

#### Electrical

Definition: Electrical tests involve application of electrical signals and observation of the response. This may include the application of voltages and currents to test ratings of equipment and to test proper functioning of protection and control systems.

- Protection Relay Testing: verification of all enabled protection elements, control logic schemes and external trips.
- Electrical Isolating Device Testing: breaker timing tests, functional test trip with protection relay, verify electrical lock-outs, resistance and insulation tests.
- Instrument Transformer: insulation, ratio/polarity, excitation and resistance tests.
- Power Transformer: insulation power factor, ratio/polarity, excitation, resistance, transformer alarms / trips