

# GENERATION CURRENT TRANSFORMER INSTALLATION PROCEDURE

## GPCP-CT-INST

*Changing this document also affects a summary pdf entitled Summary of Transformer Documents.*

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## CURRENT TRANSFORMER INSTALLATION PROCEDURE

### 1 Scope

The following is required to test and verify a current transformer (CT).

### 2 References

2.1 Utilize manufactures manuals and reference material.

### 3 Required documentation

3.1 Follow PacifiCorp's safe work practices.

3.2 Contact the appropriate PacifiCorp Company representative if any equipment fails to perform as designed or test results deviate from manufacturers published acceptable specifications.

3.3 Perform all AC powered tests before DC powered tests.

### 4 Equipment Used

4.1 Current transformer excitation, ratio and polarity test set or equivalent.

4.2 500 VDC insulation tester.

### 5 Required Documentation

This form and any test set generated reports shall be forwarded to the plant representative and to [genrelsppt@pacificorp.com](mailto:genrelsppt@pacificorp.com).

5.1 GPCF-CT-INST Current Transformer Installation Form

### 6 Testing

#### 6.1 Equipment Sketch

Sketch the equipment and CT location(s). Include phase, CT number, bushing designation, and polarity marking. This should include a depiction of the physical location of the CTs on the transformer, breaker, or other device. Alternatively, a combination of current schematics and onelines that depict this same information may be submitted with this form in lieu of a hand sketch. Indicate the attached drawing numbers in the space provided.

#### 6.2 Visual Inspection

Visually inspect the CT wiring, lugs, and shorting-type terminal blocks for tight connections, and any damage that may have occurred during shipping. The physical installation should be consistent with the equipment wiring diagrams and schematics.

### 6.3 Ratio Test

Verify the ratio between the secondary and the primary windings. For multi-ratio CT's, verify the ratio for each winding section. Measured ratio values should be consistent with the manufactures CT test data, and the equipment wiring diagrams and schematics.

#### Saturation Test

Perform a saturation test on the full winding (maximum ratio) of the CT. Graph the Secondary Exciting Volts verses Secondary Exciting Amps for the winding. In addition, determine the saturation value for the full winding. Saturation is defined as the point where the curve is tangent (at 45 degrees) to the secondary exciting amperes. Measured saturation curve characteristics and saturation value should be consistent with the CT excitation curves and data provide by the manufacture.

Note that ratio and saturation data may be manually entered into the CT Installation Form or a printout from an approved CT tester may be included instead of manually entering the data.

### 6.4 Polarity Test

Verify the polarity of the CT primary to the secondary windings. Correct polarity is when the current entering the positive primary terminal is in phase with the current leaving the positive secondary terminal. Verify that measured polarity is consistent with the equipment, wiring diagrams, and schematics.

### 6.5 Insulation Resistance Test

Measure the CT insulation resistance to ground on each output terminal using a 500 VDC insulation tester. Values greater than 1 megohm are acceptable.

### 6.6 Power Factor Freestanding CTs.

Perform power factor test on all 115kV and above free standing CT's. Power-factor testing shall be done in accordance with test equipment manufacturer's published data.

## 7 Commissioning Records Retention

Submit all required test reports and installation forms by email to the "Commissioning" mailbox. If this commissioning work has an associated project notebook, determine the proper file and email subject naming convention, either from 1) the Project Notebook spreadsheet associated with the project, or 2) the "Commissioning Documents Naming Convention" document found in the Project Notebook Sharepoint site by clicking the "Home Page" tab at the top of the Project Notebook screen, or by following this [link](#). This includes all ProTest records and forms referred to in this procedure.