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Handbook
Procedure

Primary and Secondary Injection of Mesh Corner Protection

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2	K Harker	H Habibollahi	Modifications to Diagrams	June 2001
3	L Trojan	N Tart	Addition of section 3.4 Mesh Corner Protection Tests for CB with integral CT's. Modifications to Figures 2 and 3 to include CB with integral CT's and addition of Figure 6 for Operation shot of CB with integral CT's	October 2009

1 PURPOSE

The purpose of this procedure is to specify the tests required for the primary and secondary injection of current transformers which are connected to provide Mesh Corner Protection, including Feeder End Protection.

NB. CT secondary tests as described in Commissioning Handbook Procedure CH6 **must** be complete before this procedure can start.

2 PROCEDURE (Secondary Injection)

Figure 5 shows the test format for the complete Mesh Corner Protection. Identical tests should be carried out for Feeder End Protection in isolation.

3 PROCEDURE (Primary Injection)

The test format comprises of proving the CT ratio and polarity, and Relay operation of (a) the Feeder End Protection in isolation, followed by (b) the Mesh Corner Protection excluding Feeder End Protection, respectively. This is followed by CT Matching and Relay Stability tests, and subsequently Relay Operation (two CT infeed) tests, for the whole scheme. Since the relays are of high impedance, ammeters should be connected in parallel to record the current.

The following tests should be read in conjunction with Table 1.

3.1 Feeder End Protection Tests

The tests to be carried out are required to prove:

- (a) *CT ratios (for group A CT's)*
- (b) *CT polarity as a group (for group A CT's)*
- (c) *Relay operation (when fed from group A CT's)*

See Figure 1

3.2 Mesh Corner Protection (excluding Feeder End Protection) Tests

The tests to be carried out are required to prove:

- (a) *CT ratios (for groups B and C CT's respectively)*
- (b) *CT group polarity (for groups B, and C CT's respectively)*
- (c) *Relay operation (when fed from B and C CT's respectively)*

See Figure 2

3.3 Mesh Corner Protection Total Scheme Tests

- (a) *CT matching and relay stability*
 - (i) for groups A and B CT's
 - (ii) for groups A and C CT'sSee Figure 3
- (b) *Relay operation (two CT infeed)*
 - (i) for groups A and B CT's
 - (ii) for groups A and C CT'sSee Figure 4

3.4 Mesh Corner Protection Test (Circuit Breaker with integral CT's)

Primary Injections can only be performed with the CB closed and both sets of CTs will be injected. Shorting/disconnecting links (standard BB Protection format) are fitted in the MCP CT circuits so that the in-service CT's can be safely disconnected and shorted during the tests.

Tests are performed as in 3.2 (See Figure 2) and 3.3 (See Figure 3 and 6).

4 REFERENCES

Commissioning Handbook Procedure CH6 – Current Transformers.