RECLOSER CONTROLLER SIMULATED SURGE ARRESTER OPERATION TEST REPORT

<table>
<thead>
<tr>
<th>Client:</th>
<th>Schweitzer Engineering Laboratories, Inc., 2350 NE Hopkins Court, Pullman, WA – 99163, USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Date:</td>
<td>16 November and 17 November, 2010</td>
</tr>
<tr>
<td>Project:</td>
<td>20380-27</td>
</tr>
</tbody>
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**Nameplate Data:**

**Three-Phase Recloser Controller:**
- Manufacturer: Schweitzer Engineering Laboratories, Inc., Pullman, WA, USA
- Model: SEL-651R
- Part No.: 0651R11VAA8211X3XX
- Serial No.: 2010286530

**Three-Pole Recloser:**
- Manufacturer: Cooper Power Systems, South Milwaukee, WI, USA
- Model: Kyle Recloser Type "Nova27"
- Impulse Level (BIL): 150 kV<sub>peak</sub>
- Rated Voltage: 27 kV<sub>rms</sub>
- Rated Current: 630 A<sub>rms</sub> / 12.5 kA<sub>rms</sub> interrupting
- Serial No.: CP571178011-DH

**Test Witnesses:** Mark Feltis, Schweitzer Engineering Laboratories, Inc., Pullman, WA, USA

**Test Standard:** IEEE Std C37.60-2003, Clause 6.13.2: “Simulated Surge Arrester Operation Test”

<table>
<thead>
<tr>
<th>Atmospheric Conditions:</th>
<th>16 November 2010</th>
<th>17 November 2010</th>
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</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>16.4 °C</td>
<td>16.5 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>47.3 %</td>
<td>38 %</td>
</tr>
<tr>
<td>Barometric pressure</td>
<td>751.5 mmHg</td>
<td>745.3 mmHg</td>
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</table>

**Nominal Test Voltage and Current:** 120 kV (150 kV x 0.8), 7 kA<sub>peak</sub>

**Test Configurations Tested** (in accordance with the above standard):

A – Five surges of positive polarity and five surges of negative polarity were applied to each of the three source bushing with the recloser open (total ten surges per bushing).
B – Five surges of positive polarity and five surges of negative polarity were applied to each of the three source bushing with the recloser closed (total ten surges per bushing).
C – Five surges of positive polarity and five surges of negative polarity were applied to each of the three load bushing with the recloser closed (total ten surges per bushing).
D – 15 surges of positive polarity and 15 surges of negative polarity were applied to a properly rated transformer with the recloser closed.
E – 15 surges of positive polarity and 15 surges of negative polarity were applied to a properly rated transformer with the recloser open.

**Test Results:** The controller and switch complied with the requirements of IEEE Std C37.60-2003, Clause 6.13.2, configurations A to E.

**Remarks:** None

Tested by: 
R.G. Pollock, 
Senior Projects Specialist

Reviewed by: 
A.J. Vandermaar, P.Eng. 
Manager, High Voltage Laboratory

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Project No.: 20380-27(D)