VAN WYK'S ELECTRICAL

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# Conformance to SANS 61439:2009 Parts 1 and 2

This serves to confirm that Van Wyk's Electrical (Pty) Ltd conducted low voltage switchgear and controlgear ASSEMBLY Type Testing at SABS NETFA during August and September 2010 in accordance with SANS 61439-1:2009 parts 1 and 2 annex D items 1-5 and 9-11 for compliance with designated verification tests.

By way of verification, we attach a schedule of the tests that were conducted together with the results that were obtained.

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## Assembly Testing Sequence for Compliance with SANS 61439:2009 Parts 1 & 2

| Test no | Test Description | Date | Test data | Result | Comment |
|---|---|---|---|---|---|
| 1 | Impulse voltage withstand | 4.08.2010 | As per SANS 61439-1 for 8kV sea level applications | Complied | |
| 2 | ASSEMBLY Temperature-rise IP3X | 10.08.2010 | Initial testing failed due to various circumstance beyond our control | Fail | SANS interconnections were damaged and the replacement prevented current balance being achieved. |
| 3 | ASSEMBLY Temperature-rise IP3X re-test | 25.08.2010 | Test current set at 2750 amps | Complied | MG top centre pole temperature-rise of 79.83K (80K limit) limited the test current |
| 4 | ASSEMBLY Temperature-rise IP4X re-test | 25.08.2010 | Test current set at 2400amps | Complied | MG top centre pole temperature-rise of 76.93K (80K limit) limited the test current. Current could have been set marginally higher at 2500 amps |
| 5 | Short-circuit withstand | 31.08.2010 | Main busbar structure 50kA 1 second | Complied | Temperature-rise star point removed ACB rear bridges installed Dropper busbar bridge installed All other outgoing circuit bridges installed |
| 6 | Short-circuit withstand | 31.08.2010 | Neutral busbar structure 30kA 1 second | Complied | REMOVE dropper busbar star-point bridge ASSEMBLY repositioned to enable neutral to be connected to a phase |
| 7 | Short-circuit withstand | 31.08.2010 | PE busbar structure 30kA 1 second | Complied | PE conductor connected to TWO phased by means of cables |
| 8 | Conditional short-circuit withstand 400V+10% 50kA | 1.09.2010 | 1600A feeder in section D2 | 80kA Peak<br>77.9 kA peak<br>44.85kA peak<br>13.8ms | ASSEMBLY repositioned to enable three phases to be connected to test rig CLOSE 1600A circuit breaker for test |
| 9 | Conditional short-circuit withstand 400V+10% 50kA | 1.09.2010 | 630A feeder in section B8 | 29.04kA peak<br>38.14 kA peak<br>20.97kA peak<br>7.2ms | CLOSE 630A circuit breaker for test |
| 10 | Conditional short-circuit withstand525+10% 50kA | 1.09.2010 | 110kW motor starter combination in section B5 | 17.17kA peak<br>25.08kA peak<br>14.58kA peak<br>6.36ms | CLOSE circuit breaker and activate contactor for test |
| 11 | Conditional short-circuit withstand525+10% 50kA | 1.09.2010 | 75kW motor starter combination in section B7 | 14.67kA peak<br>23.12kA peak<br>14.14kA peak<br>6.42ms | CLOSE circuit breaker and activate contactor for test |
| 12 | Conditional short-circuit withstand525+10% 50kA | 1.09.2010 | 45kW motor starter combination in section B4 | 12.6kA peak<br>19kA peak<br>11.48kA peak<br>6.66ms | CLOSE circuit breaker and activate contactor for test |
| 13 | Conditional short-circuit withstand525+10% 50kA | 1.09.2010 | 15kW motor starter combination in section B3 | 9.91kApeak<br>14.7kA peak<br>9.25kA peak<br>6.48ms | CLOSE circuit breaker and activate contactor for test |
| 14 | Conditional short-circuit withstand 525+10% 50kA | 2.09.2010 | Incoming Merlin Gerin ACB in section A2 | 98.77kA peak<br>74.12kA peak<br>22.85kA peak<br>56.94ms | Remove Incoming MG circuit breaker bridges and re-torque connections & check. Re-install dropper busbar bridges Close ACB switch |
| 15 | Repeat short-circuit withstand test on main busbar structure with intermediate busbar supports removed | 2.09.2010 | Main busbar structure 50kA 1 second | Complied | Temperature-rise star point removed ACB rear bridges installed Dropper busbar bridge installed All other outgoing circuit bridges installed |
| 16 | Repeat short-circuit withstand test on neutral busbar structure with intermediate busbar supports removed | 2.09.2010 | Neutral busbar structure 30kA 1 second | Complied | REMOVE dropper busbar star-point bridge ASSEMBLY repositioned to enable neutral to be connected to a phase |
| 17 | Dielectric test to verify functional unit compliance with on completion of testing | 2.09.2010 | All outgoing functional unit SCPD□fs | Complied | |
| 18 | IP3X / I4X verification | | 2.5mm & 1mm probes | Complied | |
| 19 | Internal degree of separation IP2X | | 12mm finger probe | Complied | |
| 20 | Verification of the effective connection between conductive parts of the ASSEMBLY and the protective circuit | | ≤ 0.1Ω with a 10A resistance measuring instrument | Complied | |
| 21 | Glow-wire test on busbar support material | | IEC60695-2-10/11 960°C | Complied | |