**AC VLF Testing of MV Power Cables**

**Standards Referenced:**

* IEEE 400.2 “IEEE Guide for Field Testing of Shielded Power Cable Systems Using Very Low Frequency (VLF) (less than 1 Hz)” [Edition: 2013]
* IEC 60885-3 “Electrical Test Methods for Electric Cables – Part 3: Test methods for partial discharge measurements on lengths of extruded power cables” [Edition: 2.0 – 2015-04]
* PCIC-2011-51 “Advanced Cable Diagnostics – Evaluation, Selection, Application and Experience on Medium Voltage Shielded Power Cables at a Petroleum Facility” [Pub 2011]

**Installation Tests Procedure:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Test Voltage (Sinusoidal waveform)** | | **Test Duration after initial voltage ramp-up period (min)\*** |
| **kV rms**  **(phase to ground)** | **kV peak**  **(phase to ground)** |
| **35kV cable**  **(after each splice)** | 33 | 47 | 15 |
| **35kV cable**  **(final installation)** | 44 | 62 | 30 |
| **10kV cable**  **(after each splice)** | 13 | 18 | 15 |
| **10kV cable**  **(final installation)** | 16 | 22 | 30 |
| **6kV cable**  **(after each splice)** | 8 | 12 | 15 |
| **6kV cable**  **(final installation)** | 12 | 17 | 30 |

\*Monitored characteristic should be stable for the majority of the test duration.

If unstable, continue testing up to 60 minutes, or a stable characteristic is achieved for 15 minutes.

Note: Test frequency for all tests shall be **0.1 Hz**, unless installed length of cable forces use of a lower frequency.

**Equipment:**

Cable test vendor should verify all data and settings prior to test.

VLF Hi-pot machine should be able to supply rated capacitance and test voltage.

For the 35kV Utility Corridor Power Cables;

* Cable capacitance of 35kV cable: 0.125 uF/km
  + @ 11km, Capacitance = 1.375 uF