

Cable Lore

ANACONDA 

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HIGH VOLTAGE FIELD TESTING, DONE PROPERLY, IS A VALUABLE MAINTENANCE TOOL. INDISCRIMINATE TESTING AT UNREALISTIC VALUES WILL RESULT IN SHORTENED CABLE LIFE.

Field testing of cables after installation before energizing is practiced by some users of cable. Such practice is satisfactory provided certain precautions are taken. Indiscriminate testing at unrealistic values can result in big trouble!

Probably the most dangerous decision that can be made is to test old cable that has no history of field testing. What generally happens if this is done is, that cables which have been operating satisfactorily at the service voltage will fault at the test voltage - making it necessary to make immediate replacement. Oftentimes if the cable had not been disturbed no trouble would be experienced. If such a test program is planned it is wise to have a replacement cable available, and also a DC test voltage only slightly above the equivalent AC peak service voltage is suggested.

Field high potential testing is generally not recommended for nonshielded cable. If a high-voltage test is made on a nonshielded cable, only sections of cable in contact with ground are actually being tested. The test, therefore, is not meaningful. A field high potential test conducted on a nonshielded cable will at best only indicate a gross fault.

When field high potential tests are conducted it is important to be sure that an excessive test voltage is not being used. If any connected equipment is included in the test circuit it is necessary to limit the test voltage to a value below that of the lowest rated piece of equipment. It is highly recommended that all electrical equipment be disconnected from the cable and the test be conducted on the cable only. It is also important to ground all cable and equipment not under test.

Properly applied, DC high potential testing can be valuable. Following are some guidelines on DC high potential testing of shielded cables:

1. New cable after installation and before energizing should be tested at or below 80% of the final factory test voltage.
2. After energizing and during the first year, the test value should not be above 60% of the final factory test voltage.
3. Between one year and five years, the test voltage should not be more than 1.5 times the rated phase-to-ground voltage times 3 (the AC/DC test ratio).
4. After five years service, the test voltage should be not more than 1.1 times the rated phase-to-ground voltage times 3.
5. When any of the above indicates a DC test value over 60Kv, consideration must be given to the difficulties encountered when conducting field tests above 60Kv. Corona discharge, end leakage, and clearance distances become serious problems at voltages above 60Kv.

Cecil J. Oatess