From: "Ben Lanz" <ben.lanz@imcorptech.com>
To: <nrcrep@nrc.gov>
Date: Tue, Aug 16, 2005 8:51 AM
Subject: Comments on NRC Generic Letter "Inaccessible or Underground Cable Failures That Disable Accident Mitigation Systems"

8/01/05
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(1)

To whom it may concern,

The attached document contains comments are regarding the NRC Generic Letter found in the Federal Register / Vol. 70, No. 146 / Monday, August 1, 2005 / Notices pages 44127 - 44130

NRC Generic Letter is titled:

Proposed Generic Communication

Inaccessible or Underground Cable

Failures That Disable Accident

Mitigation Systems

If you have any questions about my comments I invite you to contact me directly.

Kindest regards,

-Ben

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Creation Date:	Tue, Aug 16, 2005 8:50 AM
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NRC Generic Letter about Cable Monitoring

NRC must be congratulated for recognizing the importance of periodic monitoring of the condition of certain nuclear plant cables.

As a provider of testing services for such cable systems (Re: The Oconee Nuclear Plant), we wish to provide the following guidelines, which may help nuclear plant owners/operators in facilitating the performance of meaningful monitoring tests:

1. Withstand voltage tests at any frequency (dc, 0.1Hz or 60Hz), which do not require that continuous cable response be monitored during the test, should not be allowed, as the test could introduce defects that may not grow fast enough to produce failure during the test. Failure may occur later on during normal service. We have performed controlled tests on cables subjected to withstand tests and determined, by measuring partial discharge prior to and following the test, that new defects had been created by the withstand test.
2. Global condition assessment tests, such as dissipation factor tests, polarization/relaxation tests, or dielectric spectroscopy may be useful in assessing the overall dielectric properties of the cable. However, these tests alone will miss discrete defects, such as electrical trees, responsible for most ultimate cable failures. Results obtained with these global condition assessment tests could sometimes vary widely during successive tests, with the duration of test voltage application, or with the condition of the cable terminations. They are ineffective in assessing the condition of cable system accessories, such as joints and terminations.
3. Partial discharge tests have been shown to be very effective in revealing the sites of potential future failures. In order to conduct a meaningful and predictive test, the following conditions must be fulfilled:
    a. The test sensitivity must be very high (5-20 picocoulomb, pC, detection range is highly desirable). One of the most important factors affecting this sensitivity is the type and condition of the outer metal shield of the cable. Experience indicates that lapped copper tape shielding is prone to get corroded or develop high electrical resistance between overlapping layers. This, in turn, significantly attenuates the partial discharge signal propagating from the discharge site to the measuring instrument, thus yielding an insensitive test. We recommend that nuclear plant medium voltage cables be constructed with concentric neutral shielding wires or, preferably, flat straps. Sensitivity assessment prior to test voltage application is a MUST.
    b. The test must be conducted at an elevated voltage, preferably in the 2.0-2.5 times operating voltage level. However, the dwell time at voltages above operating level should be limited to just 5-10 seconds to prevent any undue further deterioration. This recommended voltage range is necessary to (i) simulate overvoltage transients that may occur on the system and (ii) provide the voltage level necessary to initiate partial discharge at defect sites.
    c. The test system must be robust against any noise that tends to mask partial discharge signals. Effective noise mitigation systems are required to ensure effective test sensitivity.
    d. Data interpretation must be based on standards (e.g. IEEE, ICEA), proven experience and a data base covering significant cable lengths.