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Ms. Cindy Bladey, Chief
Rules, Announcements, and Directives Branch (RADB)
Office of Administration
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Comments Concerning Draft NUREG-2128, "Electrical Cable Test Results and Analysis during Fire Exposure (ELECTRA-FIRE), A Consolidation of the Three Major Fire-Induced Circuit and Cable Failure Experiments Performed between 2001 and 2011," (77FR37717, dated June 22, 2012, Docket ID NRC-2012-0146)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission (NRC) request for comments concerning draft NUREG-2128, "Electrical Cable Test Results and Analysis during Fire Exposure (ELECTRA-FIRE), A Consolidation of the Three Major Fire-Induced Circuit and Cable Failure Experiments Performed between 2001 and 2011," published in the *Federal Register* on June 22, 2012 (i.e., 77FR37717).

NUREG-2128 was developed to document the results of a series of three test programs which were conducted to realistically explore the electrical functionality of electrical cables under severe fire conditions. These test programs were conducted by the Electric Power Research Institute (EPRI) and the NRC Office of Nuclear Regulatory Research. The test programs provided a substantial amount of information concerning the cable electrical response characteristics for common nuclear power plant electrical cable types exposed to severe fire conditions. However, the results from these test programs were not collected and analyzed as a whole to obtain insights to specific parameters that may influence the failure modes of electrical cables exposed to fire conditions. This draft NUREG is intended to consolidate the results of the test programs by identifying circuit parameters that may influence the failure mode of fire damaged electrical cables and then evaluating the test data by circuit parameter. This NUREG also provides an analysis of the direct current test data specifically looking at the phenomena associated with multiple cable shorts to ground resulting in equipment spurious operation when a common ungrounded power supply is present.

Exelon appreciates the opportunity to comment on draft NUREG-2128 and offers the following comments for consideration by the NRC.

SUNSI Review Complete
Template = ADM-013

FRIDS = ADM-03
Add = G. Taylor (gjt)

Comments

General

There appears to be the same outlier data points represented in a number of the graphs presented in the draft NUREG. For example, 1345s values in the AC tests and 8545s values in the DC tests appear to be exaggerating and skewing the data and results provided in the graphs. In one case (i.e., DESIREE Test #43), the NUREG implies that this was not a representative test due to how the heat source was adjusted to try to hold the cable at the precise temperature of failure for an extended period of time (i.e., three hours). This seems to be a departure from the test protocol, which normally set the "Penlight" intensity so as to reach the cable damage threshold within 10 to 20 minutes. As discussed in NUREG/CR-7100, "*Direct Current Electrical Shorting in Response to Exposure Fire (DESIREE-FIRE): Test Result*" (page 51), this is not representative of fire behavior, and was performed to glean other insights from cable failure behavior for analysis later. Exelon believes that it might be beneficial to see the effect that these non-representative tests have on possibly skewing the data in draft NUREG-2128. It would also be beneficial for the NRC to consider adding information to provide a simple way to track the outlier data points back to the actual test program results. Ideally, tests like DESIREE Test #43 would be excluded from the draft NUREG-2128 results.

Section 2.11, Circuit Grounding

This section of the draft NUREG pertains to circuit grounding, but it seems unclear whether this section is discussing ungrounded AC circuits, or ungrounded DC circuits. A casual read of this section may lead the reader to believe that "ungrounded" cases refer to DC circuits, particularly since the section also includes some discussion of DC circuits. Therefore, Exelon suggests that the NRC consider adding further clarification concerning whether this section is discussing ungrounded Control Power Transformer (CPT) AC circuits.

Section 4.14, Cable Shielding

This section of the draft NUREG discusses cable shielding, but it is unclear what is being described when referring to a "cable shield." Therefore, Exelon recommends that the NRC consider including more descriptive language or a figure to illustrate what is being described.

Section 5.3.17, Intermediate Scale – Inter-cable shorting conclusions

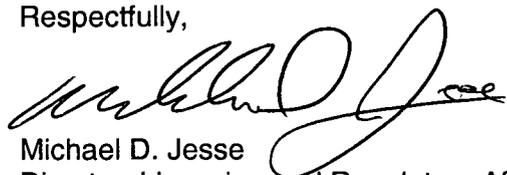
The text of this section refers to "*Intra-cable shorts.*" However, Table 5-18, "*Summary of initial failure mode for inter-cable test circuits,*" refers to "*Intra-cable SA,*" which is referring to spurious actuations. Exelon believes that this might be confusing as to whether the summary is providing the number of spurious actuations, or just hot shorts that may or may not have resulted in spurious actuations. Therefore, Exelon suggests that the NRC consider adding further clarification to this discussion.

Section 6.3, *Ground Equivalent Hot Shorts* and Section 7.0, *Conclusions and Future Research Recommendations*

Both of these sections refer to the potential to perform new tests on ungrounded AC circuits. Since ungrounded circuits can be configured in a number of ways, Exelon recommends that the NRC consider including additional information to better clarify what types of ungrounded AC circuit configurations are specifically being referred to.

If you have any questions or require additional information, please do not hesitate to contact Richard Gropp at (610) 765-5557.

Respectfully,

A handwritten signature in black ink, appearing to read "Michael D. Jesse". The signature is fluid and cursive, with a large loop at the end.

Michael D. Jesse
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC