Draft NEI 00-01, Rev 2(b) - Pilot Plant Review - Initial Report

At the request of the NEI Circuit Failure Issue Task Force (CFITF), a Pilot Project was initiated to test the methodology for fire-induced circuit failure reviews. The Pilot Plant selected was the Limerick Generating Station. The Pilot commenced last week. This is the first report of the progress made so far.

In an effort to prepare for the expert panel and subsequent analysis steps, a focused team convened to perform a preliminary assessment of the generic BWR MSO list. The team consisted of personnel with experience in one or more of the following areas: fire safe shutdown, plant systems, operations, and fire PRA. The objectives were to review the BWR MSO generic list to assess the applicability of each entry to the pilot plant, identify site-specific MSOs, and verify the treatment of each item in the plant's Fire Safe Shutdown analysis. The team completed these objectives over the course of four days, with some items remaining for review prior to the Expert Panel.

The initial review of the list was completed in two days. During this process, minor changes to the MSO list were noted and were forwarded to the NEI Circuit Failure Task Force (CFTF) for incorporation in the upcoming revision of NEI-00-01. Of the 72 generic items, approximately one third were not applicable to Limerick, one third were found to be addressed in the existing Fire Safe Shutdown (FSSD) analysis and one third were not addressed (as MSO's) in the existing FSSD analysis.

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For the first group, the initial determination of applicability was based on the specific systems and configuration of the site. These determinations will be confirmed by the Expert Panel. The scenarios in the second group are addressed in the existing FSSD program either by explicit treatment within the electronic FSSD model, by analysis based on engineering calculations or T-H analysis, or by qualitative assessment. In some cases the T-H analysis is pending. The specific treatments for each scenario will be identified for the Expert Panel.

The scenarios in the third group were not explicitly treated as MSOs in the FSSD analysis although some or all of the individual components in a scenario may already be included in the electronic model. These scenarios will be the focus of the Expert Panel and many will likely require treatment in accordance with NEI 00-01. The vast majority of these scenarios are flow diversions for systems not required for hot shutdown, but important to safe shutdown. As such they are expected to fall into what was until recently referred to as "orange box", and may be addressed by feasible operator actions, fire modeling or protection in accordance with III.G.2 of 10CFR50 Appendix R. There are some specific examples that will be referred back to the CFTF for review and final disposition.
As expected, several generic items triggered discussions that resulted in the addition of plant-specific MSO's for consideration by the Expert Panel. Subsequent to this initial review, the Fire PRA was exercised to identify other spurious combinations that materially contribute to the plant's fire CDF using the methods described in NEI 00-01, Appendix F. The result was ten plant-specific items for consideration by the Expert Panel (4 from the generic review and 6 from the fire PRA). If these are found credible by the panel, they will be included in the plant-specific MSO list, and are expected to be "orange box" type scenarios.

In terms of electrical design work, it was encouraging to discover that one third of the components involved in the MSO scenarios are currently included in the FSSD electronic model. For explicit treatment, circuit analysis and cable tracing will need to be performed for approximately a dozen components per unit.

Going forward, there are several open items that will require some research prior to the Expert Panel. In addition, the generic MSO list will be updated to include the plant specific items, and to provide a more specific description of the generic items in terms of the pilot plant. The optimal timeframe to convene the Expert Panel is for a two-day period in late January.