

Low-Power Shutdown

- There were four presentations total (NextERA Energy, ABS Consulting, NRC, and Scientech). The group addressed the uncertainties associated with the various technical elements of constructing LP/SD PRA (plant operating states, initiating events, accident sequence, success criteria, systems analysis, human reliability, data, quantification, and LERF analysis).
- For the general presentation, the LP/SD group summarized their discussion in terms of four different overarching categories of issues:
 - Model uncertainty issues were those lacking a consensus approach and could lead to analyst to analyst variability in assumptions and modeling approaches. Examples include:
 - Uncertainty regarding the various plant SD scenarios (confidence of the appropriate accident sequence of success criteria)
 - Human Reliability Analysis (all agreed this was a source of high uncertainty and several HRA issues were identified)
 - Completeness issues identified areas that were not currently modeled but could affect the PRA results. Examples include:
 - Plant operating States: there was much discussion regarding the optimal level of discretization.
 - Missing initiating events (omission of heavy load drop scenarios, forced SD evolutions involving low frequency safe stable states from end of at-power model)
 - LERF analysis
 - Refinement issues were those uncertainty associated with the coarseness of a model, not due to a fundamental lack of knowledge of how to complete the model (often times a resource allocation question). Examples include
 - Use of limiting time for operator response for each POS
 - Modeling of forced outages by a few representative scenarios with different end states
 - Parameter uncertainty issues were associated with the data and input to the PRA. Sources of such uncertainty include:
 - Availability and use of accident precursor data from other plants
 - Duration of POSs
 - Unavailability due to maintenance
- Overall conclusions include
 - There were many concerns about the level of detail to which the model should be developed.
 - The group identified model uncertainty issues that were different than in the sense of NUREG-1855, but nonetheless lead to uncertainties in the results.
 - Many issues were not based in a fundamental lack of knowledge, but rather, associated with questions of resource allocation.