NEI/ILOTF National Workshop
2/19 – 2/20/2003
Don CeSar Resort, St. Petersburg FL
Simulator Rule Change Portion

General Simulator Rule Presentation - NRC

This workshop fulfilled a NRC commitment to provide a conference on the new rule change on 55.46.

While the new rule allows use of the simulator for control manipulations, the NRC prefers that as many manipulations as possible be performed on the actual plant.

The results from the latest 71111.11 inspections have been generally good, with only some minor exceptions. Each utility should be following one of the three versions of ANSI 3.5 and that the latest rule was not designed necessarily to go to the '98 standard.

The rule requires the simulator to emulate the manipulations listed in 55.45 and 55.59 and any simulator that cannot perform any of these manipulations should have identified discrepancies on file. Those discrepancies are saved and then reviewed during requal program inspections conducted per IP 71111.11.

Part 55.46 requires the simulator core model replicate the most recent core load of the reference plant. It was noted there would be a lot of questions on this subject and asked that they be deferred until the afternoon.

With regard to scenario-based testing, it was noted that differing views exist, however the 98 standard states that scenarios developed for the simulator, including the appropriate instructor interfaces and cueing, shall be tested before use for operator training on examination. If the tests are not superceded by a later revision, or the test results would not be different due to a simulator modification, then the tests need not be conducted before every use.

FENOC/Beaver Valley Presentation

FENOC/Beaver Valley discussed lessons learned on simulator fidelity and control manipulation use. A history was provided of the two full-scope simulators at Beaver Valley, how they were upgraded and the challenges of back-to-back hardware upgrades.

The presentation (see slides) concluded with "three simple rules" as a result of lessons learned: 1) establish procedures, 2) follow your procedures and 3) actively manage your discrepancies. Questions from the audience included, what performance criteria was used for core testing – a percentage, a value, what? Beaver Valley stated that for many data points, percentages were not used. Anywhere plant criteria were available, that requirement was what was used. BOL data was utilized since it was appropriate for the

time in core life for the actual plant. With regard to the comments made by the BVPS resident inspector, Anthony Gody of NRC R-IV noted that resident inspectors are not trained on simulator standards and that these types of observations are not required to be entered into the site corrective actions program, until of course they may rise to the level of a violation. Another question asked was whether he was able to provide the resident inspector a "simulator differences list" similar to that developed per the 1985 standard for initial certification and recertification as well.

NRC-Collected Industry Questions Reviewed During Conference

Refer to the NRC slide presentation.

Audience Questions Regarding Simulators

Note: comments and/or clarifying information related to each question are [bracketed].

- Record retention: "…retained for four years after the completion of each performance test or until superseded by updated test results." How long can the "or" in this statement be – the life of the plant, for example?
- Scenario Validation: is there a shift in mindset on scenario validation? In other words, the '98 standard reads as if no student should be exposed to an un-validated scenario. Are you saying this is not the case?
- Core Performance: what standards are being used to ensure the simulator performance replicates reference plant nuclear and thermal hydraulic operating characteristics, since there is a broad range of core models out there?
- Malfunction Tests: when on the '98 standard and asked for a malfunction test (which is no longer required), what are we supposed to give the inspector?   For example the individual was asked to produce a malfunction test showing a single reactor feed pump trip and he did not have such a test nor could he find the requirement to do one. [Jim Florence of USUG/ANSI 3.5 workgroup provided some clarifying words from the '98 standard and emphasized that some sort of documentation (not necessarily strip chart print-outs, etc.) needs to be provided.]
- 71111.11 Appendix C: are resident inspectors trained on the contents of this new appendix, and more importantly if regional examiners are going to extract data from the resident's reports, are the residents trained on the proper use of terminology with regard to simulator performance?
- Scenario Based Testing Results: there does not seem to be a requirement to have firm documentation for documenting scenario based testing results. Is this correct? [Jim Florence noted that the '98 standard sect. 4.4.3.2 does require some sort of documentation, typically in the form of a checklist, to be used].
- 55.31 vs. 55.46: If a candidate got some of his reactivity manipulations on a core in the plant that was then refueled and he then got additional manipulations, the earlier manipulations would still count and yet this is not the case with the simulator core load. Why?
- "Replicate": please define the term "replicate" as found in 10CFR55.31 and 46. [NRC would go back and look at public comment on this term.]

- Core performance testing (ANSI 3.5-1998 sect. 3.1.3 item 9): what is core performance testing? I understand it to be the same thing an operator would do in the core of his job, and this differs greatly between PWRs and BWRs. [Jim Florence commented that the industry through the ANSI working group could do a good service to define this.]
- 1985 standard vs. new 55.46 rule: if I'm on the 1985 standard, how do I meet 55.46 requirements to use the simulator for reactivity manipulations when the 1985 standard does not have detail for core model testing?
- Core vs. Thermal-hydraulics replication: we've talked a lot about core performance testing; how does the NRC propose how to test thermal-hydraulic performance? [NRC offered that it would refer to how the thermal-hydraulic response compares to the new core response.]
- Core performance testing: is it acceptable to do "off-line" testing of core performance (i.e. not use the actual simulator but instead a stand-alone system)? [NRC noted that in earlier IP 71111.11 inspections that there have been some questions in this area.]
- Updating models: is it encouraged to update our reactor vessel/core models to comply to 55.46? [NRC noted that while not required as a result of the new rule, it would be beneficial to update models accordingly].
- Inspector's Simulator Inspection Training Document: would you make this available to the USUG? [NRC has provided everything on the one page training sheet within the slides (see morning slides).]
- Transition from 1985 to 1998 Standard: if initial license candidate training scenarios worked fine under the 1985 standard, would they have to be tested again prior to adopting the 1998 standard? [Refer to the simulator question brought forward by the NRC and supporting comments.]
- Certification Requirements: it's been hinted that the NRC may have to revisit the removal of the old simulator certification requirement. Is this the case? [NRC does not expect that simulator certification would be such an issue].
- Four Year Record Retention: do records older than four years have to be retained, such as acceptance tests from original certification, etc.? [NRC agreed to look at this issue.]
- IP 71111.11 Appendix C: it doesn't appear that there's anything I can do to prepare for this inspection. Would you agree? [NRC noted that this is a new inspection process and there will be a "feeling-out" process.]
- Core Performance Testing (statement, not a question): MANTG is working on a core performance testing position paper. This will be shared with USUG when completed.
- Scenario-based Testing: what additional documentation beyond a checklist would be required to validate the testing? [NRC noted that the ANSI working committee will be taking this on through a new appendix in an upcoming new revision of the standard.]