

ANS Issues Clarification on ANSI/ANS-3.5-1985, “Nuclear Power Plant Simulators for Use in Operator Training.”

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Inquiry: 1)

Section 3.1.1 of ANSI/ANS-3.5-1985 covers Normal Plant Evolutions. I would like to know if there is a periodicity to test these normal evolutions. What is the periodicity (if any)?

Response:

As you may know, the 1985 standard was withdrawn in 1993 when it was superseded by ANSI/ANS-3.5-1993. Subsequently, another revision received approval by the American National Standards Institute in 1998. The current working group reviewed your inquiries and responded. The response is provided from the perspective of ANSI/ANS-3.5-1998.

The preamble of Section 4 states the intent and defines the requirements for the evaluation of each of the major elements of the simulator set forth in Sections 4.1 through 4.4. The ANSI/ANS-3.5-1998 standard does not specify a time requirement associated with normal evolutions testing. Section 4.1.3.2 defines the criteria by which normal evolution testing shall be evaluated.

Inquiry: 2)

Section 5.4.2 of ANSI/ANS-3.5-1985 covers Simulator Operability Testing. Does normal evolution from Section 3.1.1 fall under this heading? What comprises Simulator Operability Testing under Section 5.4.2?

Response:

Section 4.4.3.1, Simulator Operability Testing, defines the intent of operability testing. Footnote 5 within the first sentence of Section 4.4.3.1 directs the reader to Appendix B which provides examples of simulator operability testing. Appendix B, Sub-part B1, Categories of Operability Tests, list steady state testing and transient testing. Acceptance criteria should be established for operability validation, commensurate with the requirements of 4.4 of the standard.

Looking at the submitted questions for clarification from the perspective of the historical standard ANSI/ANS-3.5-1985, it is the working group's opinion that the ANSI/ANS-3.5-1985 standard does not specify the periodicity of normal evolution testing. The basis for this opinion is that Section 5.4.1, Simulator Performance Testing, states

“Simulator performance shall be established by preparing a simulator performance test, conducting the tests, and comparing the simulator's performance with the simulator design data within the requirements of Section 4 (Performance Criteria). Testing shall be conducted and a report prepared for each of the following occasions:

- (1) Completion of initial construction;
- (2) If simulator design changes result in significant simulator configuration or performance variations.

When a limited change is made, a specific performance test on the affected systems and components shall be performed.”

Furthermore Section 5.4.2 defines the intent and acceptance criteria of operability testing. Footnote 3 immediately following the Section 5.4.2 title directs the reader to Appendix B, which provides examples of operability tests. Operability testing is required to be performed annually in accordance with Section 5.4.2. Normal evolution testing is not included, as part of operability testing and therefore the annual testing requirement specified in 5.4.2 does not apply. The categories of operability tests in Appendix B of the ANSI/ANS-3.5-1985 and ANSI/ANS-3.5-1998 standards are the same.