ANS Answers Inquiries on ANSI/ANS-8.1-1998 (R2007).

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The ANS Standards Committee received several inquiries determined to be a request for clarification. The inquiries and responses are provided below.

■ ANSI/ANS-8.1-1998 (R2007), *Nuclear Criticality Safety in Operations with Fissionable Material Outside Reactors*

Inquiry # 1: What is the meaning for the omission in 4.1.2 but inclusion in 4.2.2 (e.g., intention to differentiate the requirement in 4.1.2 from the recommendation in 4.2.2, i.e., "… concurrent changes in process conditions…")?

Response: No difference was meant or implied in the choice of words used in Section 4.1.2 "... conditions..." and Section 4.2.2 "... process conditions..." It would have been acceptable to place the words "changes in process" before the word "conditions" in Section 4.1.2 to better convey the intent of the requirement but would have been a repetition of the word "process."

Inquiry #2: Why is reference to Section 4.1.2"…under normal and credible abnormal conditions…" (i.e., not process conditions) included in the appendix that seems to be focused on "…variations in process conditions…"?

Response: Appendix A was written to provide examples of contingencies that could affect the neutron multiplication of a system. As stated above, "Conditions" and "Process Conditions" both refer to these system parameters. The focus of Appendix A was meant to have been inclusive for both Sections 4.1.2 and 4.2.2.

Inquiry #3: Does the statement "…typical examples of variations in process conditions…" mean "…typical examples of changes in process conditions…"?

Response: Yes.

Inquiry #4: Do the "…examples of variations in process conditions that should be considered…" apply directly to 4.2.2 and 4.1.2 as examples?

Response: Yes. Appendix A is applicable to the Section 4.1.2, Process Analysis, requirement and to provide typical examples (not an all-inclusive list) of contingencies (i.e., changes in process conditions) that could affect the neutron multiplication of the system. Of course, these examples were also meant to apply to the Double Contingency recommendation. Not all "variations in process conditions" necessarily result in a contingency.

Inquiry #5: Does the Double Contingency Principle apply to "controls" and their failures or to "process conditions" changes (i.e., adequacy of a control and its failure versus physicochemical process conditions or parameters)?

Response: As written the double contingency principle (DCP) applies only to changes in process conditions, not to controls or failure of controls. An unlikely change in a process condition is the contingency and may be the result of a control failure. The control failure may or may not result in a contingency.

Inquiry #6: Does the 4.2.2 Double Contingency Principle endorse or permit the use of multiple controls on a single process condition, as exemplified in Appendix A, to assure nuclear criticality safety (i.e., no other process condition is controlled for safety)?

Response: Section 4.2.2, as written says nothing about controls – it neither endorses nor discourages the use of multiple controls on a single process condition to ensure subcriticality. The intent of Section 4.2.2 is simply to ensure that no single change in a process condition could result in a criticality accident (i.e., at least two or more changes in process conditions that are independent from each other must occur concurrently before a criticality accident is possible). If any single credible change in a process condition can result in a criticality accident, then adherence to the Double Contingency Principle as stated in Section 4.2.2 cannot be claimed.