ANS Answers Inquiry on ANSI/ANS-8.3-1997 (R2012), "Criticality Accident Alarm System (revision of ANSI/ANS-8.3-1986)"
(Nuclear News, July 2014)

Inquiry:

Section 5.5, "Response Time," discusses the response time that "the system shall be designed to produce the criticality alarm signal" after the detection of a criticality accident. Section 6.4, "Periodic Tests," states that "the entire alarm system shall be tested periodically," but it specifically discusses signal generators and alarm signals. Is it the intent of Sec. 6.4 to include the response time test as well for periodic testing requirements, or is the response time performed only during initial tests (Sec. 6.1, "Initial Tests") or when modifications are made that can affect the response time (Sec. 6.2, "Special Tests")?

Response:

Section 5, "Criteria for System Design," does not provide requirements subject to initial, special, radiation response, or periodic testing. Criteria for system design requirements may or may not translate into design plans and specifications subject to the requirements of Sec. 6, "Testing." Satisfaction of the criteria for system design requirements may be demonstrated by manufacturer specifications or some other means, e.g., engineering computations and estimates. The Sec. 5.5 response time requirement is no different in this regard. Section 4.3, "Criticality Alarm," Subsection 4.3.2, provides the only time-based performance requirement for the criticality alarm; i.e., "the signal generators shall be automatically and promptly actuated upon detection of a criticality accident."