

February 9, 2001

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SUBJECT: DRAFT ANS EXTERNAL EVENTS PRA METHODOLOGY STANDARD

During the 479th meeting of the Advisory Committee on Reactor Safeguards, February 1-3, 2001, we met with representatives of the American Nuclear Society (ANS) External Events Working Group to discuss draft BSR/ANS-58.21, "External Events PRA Methodology Standard." We also had the benefit of the documents referenced.

The traditionally called "external" events, e.g., earthquakes, high winds, and external floods, have been found to be among the major contributors to risk for many plants due to the potential for dependent failures of plant safety systems. The assessment of these risk contributors requires the integration of a number of diverse technical disciplines and provision for the utilization of expert opinion. Because the occurrence of external events of sufficient magnitude to cause plant damage is rare and statistical evidence is sparse, expert judgment is required to develop the necessary probability distributions for risk assessments. The resulting assessments thus involve large uncertainties.

The ANS Standard does a good job in defining the requirements for a state-of-the-art assessment of the risk (including uncertainties) from external events. The commentary, including notes and references, that accompanies each requirement provides valuable information and guidance for meeting individual elements of the Standard. Thus, the ANS Standard resembles a traditional "design-to" standard.

An important feature of the proposed ANS Standard is that it was designed to be consistent with the standard for internal events under development by the American Society of Mechanical Engineers (ASME) so that users can apply both standards "in concert." We agree with the ANS External Events Working Group that, to achieve this consistency, the two standards must use identical definitions of terms.

The proposed ANS Standard avoids some of the weaknesses that we identified in our letters dated March 25, 1999 and July 20, 2000, concerning the ASME Standard. The ANS Standard provides an approach similar to that of Category II of the ASME Standard. It also provides guidance for seismic margin analyses that corresponds roughly to Category I of the ASME Standard. The ANS Standard, however, provides a good discussion of the limitations of these bounding analyses.

During the meeting, we offered a number of detailed comments on the Standard that the ANS representatives agreed to consider. We look forward to reviewing the proposed final ANS Standard following the reconciliation of public comments.

We commend the ANS External Events Working Group for the quality of this initial effort.

Sincerely,

/RA/

George E. Apostolakis
Chairman

References:

1. Letter dated January 24, 2001, from Shawn M. Coyne-Nalbach, American Nuclear Society, to Michael T. Markley, Advisory Committee on Reactor Safeguards, transmitting Draft BSR/ANS-58.21, "External Events PRA Methodology Standard" (December 25, 2000).
2. Letter dated July 20, 2000, from Dana A. Powers, Chairman, Advisory Committee on Reactor Safeguards, to William D. Travers, Executive Director for Operations, NRC, Subject: Proposed Final ASME Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications.
3. Letter dated March 25, 1999, from Dana A. Powers, Chairman, Advisory Committee on Reactor Safeguards, to William D. Travers, Executive Director for Operations, NRC, Subject: Proposed ASME Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications (Phase 1).