

February 14, 2001

MEMORANDUM TO: Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

William F. Kane, Director  
Office of Nuclear Materials Safety and Safeguards

FROM: Ashok Thadani, Director  
Office of Nuclear Regulatory Research /RA/

SUBJECT: COMMENTS REQUESTED ON EXTERNAL EVENTS PRA  
METHODOLOGY STANDARD

Attached is a draft PRA standard developed by the American Nuclear Society (ANS) External Hazards Working Group entitled "External Events PRA Methodology Standard" for your review and comment. We request your organization's comments by March 9, 2001, in time for RES to assemble and provide NRC's response to ANS before their comment period ends. We also request that NRR request, compile, and organize comments from regional staff in addition to their own.

The PRA scope covered by this standard is limited to analyzing accident sequences initiated by external events that might occur while a nuclear power plant is at nominal full power. These events include both natural external events (e.g., earthquakes, high winds, and external flooding) and human-made external events (e.g., airplane crashes, explosions at nearby industrial facilities, and impacts from nearby transportation activities). Like the American Society of Mechanical Engineers (ASME) draft standard, it is further limited to requirements for a full Level 1 analysis of the core damage frequency and a limited Level 2 analysis sufficient to evaluate the large early release frequency. In addition to the traditional external events PRA, the scope of this standard also includes the widely-used Seismic Margin Assessment (SMA) methodology. Incorporation of SMA allows this method to be used for some risk-informed applications.

It is ANS' intent that this standard will be used together with a collection of other PRA standards. Specifically, this standard is intended to be used directly with the ASME draft PRA standard (that covers internal events at full power). The latter includes three different capability levels, which manifest themselves in the standard in three different sets of supporting requirements. The ANS standard is intended to adhere closely to the ASME Standard Category II.

In addition, ANS also intends the external hazard standard to be used with another ANS PRA standard, currently under development, which will address low-power/shutdown operations PRA. This standard is also intended to be used together with ANS 2.27 ("Standard Covering Guidelines for Investigations of Nuclear Materials Facilities for Seismic Hazard Assessments") and ANS 2.29 ("Standard for Probabilistic Analysis of Natural Phenomenon Hazards for Nuclear

Facilities”) which will provide more detail and will be referenced in the external hazards standard.

When reviewing this document, we request that you focus on two issues:

- ▶ From an NRC perspective, we are looking for a standard that provides the level of confidence in the technical quality of the PRA sufficient to support identified applications, but recognizing that the needed quality can vary with applications. In this context, the staff has developed two levels of guidance. The first was developed by the staff as it worked with ASME to resolve the August 2000 set of NRC comments on their June draft PRA standard. A set of principles for the ASME standard was developed, and is provided as Attachment 2. A second level of guidance is provided in SECY-00-0162 (“Addressing PRA Quality in Risk-Informed Activities”). In Attachment 1 of that paper, the staff defined a set of desired attributes of PRA standards. For convenience, that attachment is provided as Attachment 3 of this memorandum.

We request that your review focus on the sufficiency of the draft ANS standard in meeting the Attachment 2 principles and the Attachment 3 set of desired attributes, in light of how you now perform risk analyses and reviews of risk analyses and how this may change with the availability and use of the standard.

- ▶ As noted above, this standard is intended to be used with the ASME PRA standard. We request that you review the ANS draft for its sufficiency in defining and providing guidance with respect to needed inter-standard links. That is, since the ASME standard and the ANS standard need to be used together, please comment on the adequacy of the defined interfaces between the two standards. Again, this should be in light of how you perform and review risk analyses.

If you have any questions, please contact Nilesh C. Chokshi, 415-0190. Please provide your comments on this standard to him at Mail Stop: T-10-E-10 or e-mail: [ncc1@nrc.gov](mailto:ncc1@nrc.gov) by March 9, 2001. An internal NRC meeting has been scheduled on March 19, 2001, from 1-3pm in T10A1 to resolve any differences.

Attachments: As stated

cc: w/o enclosure: John Larkins

w/enclosure: W. Travers

Distribution (Other PRA Steering Committee members):

Luis A Reyes, Regional Administrator - Region II

R. William Borchardt, Director - Office of Enforcement

Joseph R. Gray, Associate General Counsel for Licensing - Office of the General Counsel

Margaret V. Federline, Deputy Director - Office of Nuclear Regulatory Research

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\* Previously concurred.

OFFICE	DRAA/PRAB	RES/DET	DRAA/PRAB	RES/DET	DRAA	RES
NAME	*Drouin	*Chokshi	Cunningham	*Mayfield	King	Thadani
DATE	01/30/01	02/01/01	02/2/01	02/2/01	02/14/01	02/14/01