

BWR OWNERS' GROUP

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Subject: BWR Owners' Group Comments on NRC DG-1096, "Transient and Accident Analysis Methods," December 2000

Reference: Letter from Alex Marion (NEI) to NRC Rules and Directives Branch, "Public Comments on Draft Regulatory Guide DG-1096, *Transient and Accident Analysis Methods*, and Draft Standard Review Plan Section 15.0.2, *Review of Analytical Computer Codes*, (65 Fed. Reg. 77934) Response to Request for Comments" February 15, 2001

Attached please find BWROG comments on the subject Draft Regulatory Guide. Comments have been provided on several specific sections of the Draft Regulatory Guide as well as a number of general comments. These comments are provided in addition to the NEI comments contained in the Reference letter, which the BWROG endorses.

Overall, the proposed Regulatory Guide will bring uniformity to the process of approving methodologies. However, it may discourage the development of new methods by introducing complications and potentially driving up development costs. Such complications include increased requirements for addressing scalability issues. There also appears to be an apparent shift from a data driven approach to a more academic approach to methods development.

If you have any questions or require additional information, please contact the undersigned.

Regards,



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BWROG REVIEW COMMENTS

DRAFT REG GUIDE DG-1096

Section 1.1.1

The statement on scenario definition being “plant specific” should be clarified to say “plant class specific”.

Section 1.2.3

It should be stated that the population of data that will be used to develop a correlation and the population of data that will be used to assess the correlation should be identified prior to the development of the correlation. This would help in ensuring that the correlation is not tuned to a particular data set. It would also help to ensure that the data being used to assess the correlation is not being deliberately selected so as to make the correlation appear more accurate than it otherwise would be. Both the data used for development and the data used for assessment should cover a broad range of conditions.

Section 1.4.8

The situation is clear for LOCA where the revised Section 50.46 provides two clear options: best-estimate (+ uncertainties) or Appendix K (conservative inputs and models). However, for other transients and accidents the Draft Regulatory Guide does not provide additional guidance to that included in the SRP. Step 20 should be elaborated upon to open the two options for non LOCA events, instead of maintaining the loose definition of "suitable conservative input".

The reference made to step 16 in the text of Step 20 is not understood.

In summary, step 20 is where the all the information from previous steps is compiled and there is a good opportunity to include additional guidance on how the main inputs to the calculations are set, depending on the kind of calculation selected :conservative evaluation model or best estimate. Also, a mix of both approaches should be considered, to focus on a minimum amount of parameters with major impact on the final uncertainty of the results. Some discussion on the relationship with setpoint methodologies and Technical Specifications may be useful.

Section 3.6

In the portion of this section dealing with input model and sensitivity studies (items 10 through 14), a new item should be added stating that assessment reports should document solution convergence studies, including the basis for the time steps used and the chosen convergence criteria.

BWROG REVIEW COMMENTS

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Section 4

Section 4 of DG-1096 states,

“Very often a general purpose transient analysis computer program, such as RELAP5, TRAC, or RETRAN, is developed to analyze a number of different events for a wide variety of plants. These codes can constitute the major portion of an evaluation model for a particular plant and event. Generic reviews are often performed for these codes to minimize the amount of work required for plant- and event-specific reviews. A certain amount of generic assessment may be performed for such a code as part of the generic code development. The EMDAP, on the other hand, starts with identification of plant, event, and directly related phenomena. This process, as previously described, may indicate that a generic assessment does not include all the appropriate geometry, phenomena, or the necessary range of variables to demonstrate code adequacy for some of the proposed plant-specific event analyses. Evidence of this is the fact that safety evaluations for generic code reviews often contain a large number of qualifications on the use of the code. **To avoid such problems, it is important to qualify the applicability of the generic code, including its models and correlations, and the applicability of any “generic” assessment that accompanies the code.**”

The last sentence clearly states the applicant is expected to rejustify the methodology (models, correlations, field equations, closure relations, processes, scalability, and applicability) of transient analysis computer programs such as RETRAN-3D which have been submitted to the NRC for generic code review. This conflicts with the NRC desire to have the industry submit codes for generic reviews and provides no benefit for future generic code submittals, thereby, potentially increasing the NRC workload. Furthermore, it eliminates the benefit to the industry in supporting joint methods development projects since the costs associated with preparing the generic submittal will be on top of similar costs associated with preparing the DG-1096 required qualification of the code models and correlations in the applicants plant specific submittal.

General Comments

Detailed Description of Expectations

DG-1096 provides a detailed description of the expectations for operating license applicants who wish to submit transient and accident analysis methods to the NRC for review and licensing approval (Note: reviewer noted this as a positive attribute).

BWROG REVIEW COMMENTS

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References and Examples

DG-1096 provides numerous references directing the applicant to papers describing the requested practices and principles, as well as examples of what is expected in the transient and accident analysis methods submittals to the NRC (Note: reviewer noted this as a positive attribute).

Low Emphasis on Measured Data

DG-1096 emphasizes quantitative evaluation with respect to scalability, component assessment, and closure relations, but discounts the importance of calculation comparisons to measured plant transients. This is evident in the following discussion in the draft SRP Section 15.0.2.II.4:

“A scaling analysis must be performed that identifies important non-dimensional parameters related to geometry and key phenomena. Scaling distortions and their impact on the code assessment must be identified and evaluated in the assessment. Calculations of actual plant transients or accidents can be considered, but only as confirmatory supporting assessments. This is because the data available from plant instrumentation is generally not detailed enough to support code assessment.”

(Note: the reviewer noted this as a negative comment)

The BWROG believes greater weight should be given to comparisons to measured plant data than implied by the wording in DG-1096 and the SRP.

Increased Reliance on Fuel Vendors

DG-1096 recognizes the new requirements will increase the cost to the applicant for methods development and documentation. However, the NRC appears to underestimate the magnitude and significance of these additional requirements/costs on methods development. By significantly increasing the development and documentation costs associated with a license submittal, only organizations which can realize the benefits of the new methods over numerous reload licensing cycles will pursue methods development in the transient analysis area (nuclear fuel vendors). While this will help reduce the NRC workload, it will make the nuclear utility industry more reliant on the fuel vendor General Process

The process described in the 20 steps tries to be very detailed for development, assessment and application of methods to analyze transients and accidents. However, a more detailed description of what is the expected output of each step will be useful, it may be a conclusion (yes or no) about the validity of a model or values for the bias, error or uncertainty associated to a model, to an experimental comparison, scaling, etc.

Comprehensiveness

The report is incomplete in that it does not address implementation methods/uncertainties.