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Project Number 694

Rules and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Chief, Rules and Directives Branch,
Office of Administration

Subject: Westinghouse Owners Group
WOG Comments on Draft Regulatory Guide DG-1120 and Draft Standard Review Plan Section 15.0.2

References:
1. USNRC, "Transient and Accident Analysis Methods," Draft Regulatory Guide DG-1120, December 2002.

2. USNRC, "Review of Transient and Accident Analysis Methods," Draft Standard Review Plan, NUREG-0800, Section 15.0.2, January 2003.

The NRC staff has developed draft guidance (References 1 and 2) to support the development and assessment of evaluation models that may be used to analyze transient and accident behavior (i.e., "Chapter 15" analyses). Public comments on the draft regulatory guide and draft standard review plan (SRP) section were requested by March 24, 2003. The Westinghouse Owners Group (WOG) through its Analysis Subcommittee, has developed comments on the contents and potential impact of the draft regulatory guide and SRP section. The WOG is pleased to submit these comments in the attachment to this letter.

The WOG recognizes value in the EMDAP (Evaluation Model Development and Assessment Process) for review and approval of new, complex, best-estimate methodologies. The WOG is willing to work with the NRC and industry groups

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to develop a guide that incorporates the value of DG-1120, but avoids the problems associated with the current guidance. In particular, the WOG is prepared to participate in a Pilot Program to develop additional guidance for application of the graded approach described in Reference 1.

If you require further information, feel free to contact Ian Rickard, Westinghouse Owners Group Project Office at 860-731-6289.

Very truly yours,

Robert H. Bryan, Chairman
Westinghouse Owners Group

cc: Management Committee
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Attachment1

Westinghouse Owners Group Comments on Draft Regulatory Guide DG-1120 (Transient and Accident Analysis Methods) and Draft Standard Review Plan Section 15.0.2 (Review of Transient and Accident Analysis Methods)

March 24, 2003

Introduction

The NRC staff has developed draft guidance to support the development and assessment of evaluation models that may be used to analyze transient and accident behavior (i.e., "Chapter 15" analyses). Public comments on the draft regulatory guide and draft standard review plan (SRP) section were requested by March 24, 2003. The Westinghouse Owners Group (WOG) through its Analysis Subcommittee, has developed comments on the contents and potential impact of the draft regulatory guide and SRP section.

The Draft Regulatory Guide (DRG) and SRP section was originally issued for comments as DG-1096 in December 2000. The WOG, CEOG and Westinghouse all provided comments to the NRC in March 2001. Many of these comments have been implemented in the new drafts and, in general, we believe that the current Draft Regulatory Guide and SRP section are a significant improvement over the original documents. However, the WOG believes that additional changes must be made to ensure a workable document. As currently written, the DRG would increase the costs of developing new methodology, deter utilities or vendors from updating or improving current methodologies and increase the level of regulatory uncertainty associated with the implementation of new and improved transient analysis methodology. The WOG acknowledges value in the EMDAP (Evaluation Model Development and Assessment Process) for review and approval of new, complex, best-estimate methodologies. The WOG is willing to work with the NRC and industry groups to develop a guide that incorporates the value of DG-1120, but avoids the problems associated with the current guidance.

The following comments are based on feedback from WOG utilities that were collated by Westinghouse on behalf of the WOG.

General Comments

1. The guide is "applicable to new evaluation models or changes to existing evaluation models proposed by operating reactor licensees that the NRC staff undertakes to review." Only those changes that fail to meet the criteria of 10 CFR 50.59 would be submitted for NRC review and approval. In addition, GL 83-11, Supplement 1 provides "Guidelines for Qualifying Licensees to Use Generically Approved Analysis Methods." The Regulatory Guide and SRP should include a clarification of the relationship between generic approval (for example, generic approval of a topical report on a core thermal hydraulic analysis) and the plant-specific application by a utility using the guidelines specified in GL 83-11.

2. The consequence of the higher expectations embodied in DG-1120 and the draft SRP is significantly more regulatory review cost that will stifle code and methodology advancement. Organizations are likely to avoid code development, and the area of Transient Analysis will

stagnate and de-staff technically. Many utilities will find the new requirements daunting and will not invoke this process voluntarily. Utilities will stick to previously approved methodologies to avoid this new process, unless no other options are available. Improvements in codes and methodologies will be halted.

3. The DRG provides a discussion (Section 5, page 30) of a graded approach to applying the EMDAP process. As described, this process is vague and dependent on the experience level of the NRC reviewer. As such, this process adds a degree of uncertainty to the overall licensing process. This uncertainty will add to a utility's reluctance to develop new or improved codes under this process. DG-1120 is not specific on the applicability of code revisions and could create a significant burden to code vendors. There are two levels of revisions involved. A discussion of code revisions and their relationship to DG-1120 would be helpful.

4. To avoid the problems outlined in paragraphs 2 and 3, the WOG suggests that the NRC restrict applicability of the Regulatory Guide to methodologies such as general purpose computer programs and best-estimate evaluation models, where it would be appropriate to use the full EMDAP Process as described in DG-1120. Alternatively, the NRC should provide detailed examples, in the form of Appendices, of the application of the graded approach to non-LOCA safety analyses. It would be appropriate to complete a number of pilot submittals using the graded approach to review of non-LOCA analyses before the requirements of the Regulatory Guide are finalized.

5. A "clear, concise, crisp and specific" statement should be included in DG-1120 stating that source code does not need to be included in the documentation package to the NRC. Transmitting source code to the NRC could result in a significant burden to code vendors, additional cost to the utility and misunderstanding on the part of the NRC due to improper or inadequate training in the use and application of the code. NRC can request source code information should it turn out to be beneficial to the review process. However, it should not be a requirement for each and every methodology submittal.

<u>Specific Comments (DG-1120)</u>

- Page 1, Introduction: this section should include a discussion of the graded approach that is discussed in Section 5 of the DRG and how it relates to the complexity, novelty and degree of conservatism inherent in the analysis. In addition, the Introduction should address in more detail the applicability of the DRG. In general, Chapter 15 non-LOCA safety analysis is performed in a highly conservative manner such that the data, assumptions and choice of accident sequence will mask any shortcomings or simplifications in the evaluation models. The overall level of conservatism has been established in many ways including multiple layers of regulatory review. For this type of safety analysis, it is not appropriate or necessary to perform the type of in-depth assessment described in the draft Regulatory Guide. The Guide needs to distinguish between the Chapter 15 transient analysis methodology and best-estimate accident analysis models.

- Page 3, line 9: page 27 should read page 34.

- Page 3, Evaluation Model Concept, Item 1: the **basis** for selecting a design input may be considered as part of the evaluation model. However, changes to the numerical values that constitute plant configuration values should be treated as design inputs. A change to the design input value should not require a reevaluation of the model itself. For example, replacing a plant instrument with a corresponding change in uncertainties may change the analytical value for modeling that instrument, but should not constitute a change to the evaluation model itself. This type of change can be made under the 50.59 evaluation process without requiring a re-submittal. DG-1120 needs to clarify this.

- Page 5, Item 4 "Assess the adequacy of the evaluation model": this section discusses the ability of the evaluation model to predict appropriate experimental behavior. WOG suggests the need to have some leeway with bench marking the evaluation model with approved analytical models. WOG suggests that this should be mentioned in an appropriate location in the Regulatory Guide.

- Page 8, top of page: there should be a fifth aspect to be addressed, namely, Graded Approach to Applying the EMDAP Process.

- Page 11: The Phenomena Identification and Ranking Table (PIRT) process (see Section 1.1.4 in DG-1120) is unnecessarily cumbersome and lacks applicability criteria. Any or all models submitted in the past have significant discussion on the major aspects of the program and less discussion on the less significant items. Generating a PIRT table listing the phenomena by their level of importance creates significant discussion on the table itself and relative importance of the various items and detracts from the review of the evaluation model itself. The only value of a PIRT process is if there are classes of sub-models, those that significantly impact the code results and those that do not (i.e. a straightforward yes/no test).

- Page 12, Item 3.e, Uncertainty Analysis: differentiation should be made between the application of uncertainties related to previously licensed codes and plant input uncertainties. Most of the codes used by utilities have been licensed "generically." The codes are applicable to many plants, and have, or will be, implemented in accordance with GL 83-11, Supplement 1. If code uncertainties have been addressed generically under the generic code licensing process, they should not have to be re-licensed. Code modifications are addressed via 10CFR50.59 evaluation. Each plant, however, would be expected to have different uncertainties, and uncertainty methodologies, for modeling plant inputs.

- Page 23, Step 20, Determine Evaluation Model Biases and Uncertainties: the hybrid methodology presented here is very shallow, while other parts of the process are described in depth and are relatively prescriptive. Also, it would help if some references were cited for examples of bounding and probabilistic treatments of parameters.

- Page 25, Section 3 Documentation: there has not been any discussion of the User Manuals and User Guidelines thus far. With utilities performing the reloads, this becomes an integral part of code development and its use. More guidance should be provided on this topic. In fact, this should be one of the key principles that the code developers/maintainers should be asked to uphold.

- Page 25, Section 3 Documentation: errors in the code/ Users Manual etc. are not addressed. While there may be mechanisms such as Part 21 etc. that may capture errors originating at the vendor, DG-1120 should address this in a global sense.

- Page 30, Graded Approach to Applying the EMDAP Process: WOG suggests that detailed examples of the application of the graded approach should be developed and included as appendices.

- Page 41, References, Item 20: not a valid web address, the document appears to have been moved.

- Page 43, Section A.3: this is a good discussion on the use of the PIRT process in which relative importance is given to the process uncertainty in safety analysis. Though this discussion applies only to the ECCS Analysis, PIRT may be a useful tool in other analyses too. Therefore, NRC should consider putting the PIRT option in SRP 15.0.2 p.5 Sec.5.

Specific Comments (Draft Standard Review Plan)

- Page 1, Areas of Review: this section should include a discussion of the graded approach that is discussed in Section III.6 (page 13 of the draft SRP) and how it relates to the complexity, novelty and degree of conservatism inherent in the analysis. In addition, the Areas of Review should address in more detail the applicability of the draft SRP. In general, Chapter 15 non-LOCA safety analysis is performed in a highly conservative manner such that the data, assumptions and choice of accident sequence will mask any shortcomings or simplifications in the evaluation models. The overall level of conservatism has been established in many ways including multiple layers of regulatory review. For this type of safety analysis, it is not appropriate or necessary to perform the type of in-depth assessment described in the draft Regulatory Guide or in the draft SRP. The guidance and level of scrutiny needs to distinguish between the Chapter 15 transient analysis methodology and best-estimate accident analysis models.

- Page 1: the Regulatory Guide and changes to the Standard Review Plan focus on transient and accident methods described in Chapter 15 of a plant FSAR. What is the expectation for accident methods described in other parts of the FSAR? For example, post-LOCA and MSLB containment response methods are often described in FSAR Chapter 6 and can include detailed modeling of thermal-hydraulic phenomena. The Regulatory Guide and SRP should be specific on all of the FSAR evaluation models that are within the scope of the Regulatory Guide.

- Page 5, paragraph 4: states that "...assessments MUST also compare code predictions to analytical solutions, where possible," The WOG suggests that SHOULD is more appropriate.