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

SUBJECT: Public 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*, (68 Fed. Reg. 4524)
Response to Request for Comments

PROJECT NUMBER: 689

Enclosed are the Nuclear Energy Institute's (NEI)¹ comments on draft Regulatory Guide DG-1120 and draft SRP Section 15.0.2, issued for public comment on January 29, 2003.

Draft Regulatory Guide 1120 (DG-1120) and draft SRP Section 15.0.2 (SRP) identify a process for the development and review of evaluation models. Earlier drafts of these documents were released for public comments in December 2000 (65 Fed. Reg. 77934).

The prior drafts of these documents focused upon the set of events described in Chapter 15 of the Standard Review Plan (NUREG-0800). In its current form, the scope of application has been broadly expanded to include all models used to analyze transient and accident behavior that are within the design basis of a facility. 10 CFR 50.2 design bases include anticipated operational occurrences, design basis accidents, external events, natural phenomena, and other events specifically addressed in the regulations such as Station Blackout and Anticipated Transient Without Scram. Design bases also include a number of topical design

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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issues such as Fire Protection, Missiles, Flooding and Environmental Qualification. In the absence of clear guidance on the specific design basis analyses addressed by the guidance, all analyses performed in support of the design basis would fall within the scope of the proposed guidance. Guidance provided in DG-1120 and the SRP is inappropriate for many of these analyses. The regulatory guide and SRP section should provide clear and explicit guidance on the design basis events for which the guidance is applicable.

The model development and review details provided in the documents rely heavily on detailed and prescriptive methodologies developed to support best-estimate LOCA methodologies. The full scope of the Evaluation Model Development and Assessment Process (EMDAP) specified by the guidance is inappropriate for the vast majority of the models and changes that would fall within the scope of the document. While acknowledging that full application of the EMDAP is not needed in all applications, little guidance is provided to support the level of development and review that is appropriate. This places a heavy burden on applicants to justify, on a case-by-case basis, why the detailed processes and steps, originally developed for best-estimate LOCA models, are inappropriate, and why proposed alternatives are adequate.

In the absence of guidance that is specific to the large class of non-LOCA events covered by the guidance, its use will result in a significant increase in model development and review efforts and will likely act as a strong disincentive for future model improvements. We recommend that NRC modify the scope and purpose of the guidance documents based on the enclosed recommendations.

Please direct questions on the enclosed comments and recommendations to John Butler (202-739-8108, jcb@nei.org) or me (202-739-8080, am@nei.org).

Sincerely,



Alexander Marion

JCB/avw

Enclosure

c: Mr. Joseph L. Staudenmeier, U. S. Nuclear Regulatory Commission
Mr. Mark G. Kowal, U. S. Nuclear Regulatory Commission
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Enclosure

NEI comments on DG-1120, *Transient and Accident Analysis Methods*, and Draft SRP Section 15.0.2, *Review of Transient and Accident Analysis Methods*

Concerns have been identified with the scope and application of the proposed guidance documents based upon industry review of draft Regulatory Guide 1120 (DG-1120) and draft Standard Review Plan Section 15.0.2 (SRP). These concerns are summarized in the following pages along with general recommendations on how these concerns can be addressed.

1. **Scope of application is too broad**

This comment applicable to DG-1120 and draft SRP 15.0.2

The scopes of applicability for the proposed regulatory guide and draft standard review plan section have been expanded to broadly include any analysis model used to analyze transient and accident behavior within the design basis of the nuclear plant.

Prior drafts of these documents (DG-1096 and December 2000 draft revision to SRP 15.0.2) confined applicability to the set of evaluation models used to analyze the events described in Chapter 15 of the Standard Review Plan. The current broad-scope application would include models used to analyze a wide range of events beyond Chapter 15 for which application of the prescribed methods have not been reviewed and, in some cases, are inappropriate.

Design bases for nuclear plants include numerous supporting analyses that demonstrate that SSC design functions will be accomplished as credited in the accident analyses. Calculations as simple as those performed to conservatively support valve closure times would presumably fall within the scope defined by the guidance. The scope would also include a number of events beyond Chapter 15 that a nuclear facility is required to withstand such as turbine missiles, fires, floods, earthquakes, station blackout and ATWS. Without clear and explicit guidance on scope of application there is a strong potential for misdirected application of the proposed guidance.

The regulatory guide and SRP section should clearly and explicitly identify the design basis events and evaluation models for which the guidance applies.

2. **Threshold for Application**

This comment applicable to DG-1120 and draft SRP 15.0.2

The draft regulatory guidance identifies (page 2) that the guide "would be applicable to new evaluation models or changes to existing evaluation models proposed by operating reactor licensees that the NRC staff undertakes to review."

Current regulations allow changes that have minimal safety impact to be made without prior NRC approval. The guidance should clearly identify that existing thresholds used to define when changes require prior review and approval by the NRC (e.g., 10 CFR 50.59, NEI 96-07 Revision 1) are applicable for use in determining when the regulatory guidance is to be applied.

3. Additional Application Guidance is Needed

This comment applicable to DG-1120 and draft SRP 15.0.2

Public comments on earlier drafts of the regulatory guide and SRP section included concerns that application of the detailed and prescriptive methods and processes of the guidance are inappropriate for evaluation models that treat phenomena and processes in a highly conservative fashion, model relatively simple or benign events, or constitute a minor change to an existing model. In response to these comments, the draft regulatory guide and SRP section now include a “graded approach” for application, identifying four attributes that should be considered when determining the extent to which the full development and review process may be reduced for a specific application. The four attributes are:

- *Novelty of the revised evaluation model compared to the currently acceptable model*
- *The complexity of the event being analyzed*
- *The degree of conservatism in the evaluation model*
- *The extent of any plant design or operational changes that would require a reanalysis*

While consideration of these attributes in determining the degree to which the guidance is applied is appropriate, there remains a high degree of subjectivity in their application. Aside from a few descriptive examples, the guidance associated with each of the four attributes is not specific and provides little assistance to either model developer or NRC reviewer.

Examples of such non-specific guidance are provided below:

Attribute	Guidance
Novelty of revised evaluation model compared to the currently acceptable model.	The level of effort involved in applying the development and assessment process should be commensurate with the extent of the changes made to an evaluation model.
Complexity of the event	The level of effort involved in applying the development process should be commensurate with the complexity of the evaluation model.
Degree of conservatism	The amount of assessment required for a change to an evaluation model may be reduced significantly if the documented degree of conservatism is large or if the model can be shown to give more conservative results than the previous model.
Extent of plant or operational changes that require a reanalysis	The level of effort required to apply the process should be commensurate with the extent of changes made to the plant design or operation.

The absence of clear guidance will lead to confusion on the part of developers and reviewers and expenditure of time and resources on unnecessary or unwarranted development activities and additional review effort. There are indications that this is already occurring in the form of NRC requests that licensees and vendors provide additional information on plant-specific applications of approved evaluation models even though proposed applications are within the scope of approved use as stated in the generic NRC Safety Evaluation Report that approved the evaluation model.

Contrary to assumptions in the regulatory analysis performed in support of the regulatory guide (page 47), application of the proposed guidance in its current form would not result in less burdensome developmental and review interactions between staff and applicant and would not lead to a minimization of regulatory uncertainty.

Non-subjective guidance, appropriate to specific types and classes of events, should be developed and included in the guidance prior to its completion.

The regulatory guide (page 2) identifies that appendices will be developed for specific classes of events to address phenomena, assessment, uncertainty analyses, and other factors important or unique to a particular class of events. An appendix specific to ECCS analyses is included in current draft. These appendices should be further developed and included in the regulatory guide prior to its release for use by model developers.

4. Treatment of Mathematical Tools

This comment applicable to DG-1120

Mathematical analysis tools such as MathCAD, Mathematica, and spreadsheets are considered “calculational devices” per the guidance and subject to the same development and assessment steps as complex computer models (DG-1120, page 4). The guidance should clearly identify that the Evaluation Model development and assessment steps do not apply to mathematical analysis tools in cases where it can be demonstrated that use is limited to data manipulation.