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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Rules and Directives Branch
Office of Administration

Subj: Westinghouse 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."

The NRC issued Draft Regulatory Guide DG-1096 and draft SRP Section 15.0.2 for review and comment. These documents identify a framework for the development and review of evaluation models that may be used to analyze reactor transient and accident behavior. Westinghouse has reviewed the draft guidance and is providing the enclosed comments. The enclosed comments identify issues and concerns that Westinghouse has with respect to the implementation of the draft guidance. These comments are being provided in an attempt to ensure that the final Reg. Guide and SRP are documents that the industry can effectively implement, without incurring costs that are not commensurate with the safety significance. These comments are consistent with Westinghouse's understanding of the NRC's current position that the regulatory process should not be so prescriptive and burdensome that it becomes a needless impediment to improving plant safety.

Westinghouse supports the NRC plans to hold a public workshop on these proposed guidance documents; tentatively scheduled for April 9 of this year. Westinghouse believes that this workshop will serve as a valuable forum for discussion of issues and comments on the draft guidance documents. If you have any questions regarding these comments, please contact David S. Huegel, Westinghouse, at (412) 374-5424 or email at huegelds@westinghouse.com.

Very truly yours,

H. A. Sepp, Manager
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Enclosure

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The NRC staff has developed draft guidance to support the development and assessment of evaluation models that may be used to analyze transient and accident behavior (i.e., "Chapter 15" analyses).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 February 15, 2001. In response to this request, Westinghouse participated in the nuclear industry review of these documents, as coordinated by NEI. The NEI comments on the NRC's draft Regulatory Guide DG-1096 "Transient and Accident Analysis Methods" (DG) and the draft Standard Review Plan Section 15.0.2 "Review of Analytical Computer Codes" were transmitted to the NRC via Reference 1. Westinghouse endorses the recommendations provided by NEI to the NRC.

In addition to the industry comments on DG-1096 and SRP 15.0.2 issued by NEI, Westinghouse is providing the enclosed comments which address specific concerns with respect to the potential impact of these documents on Westinghouse advanced plant designs/submittals and on risk-informed regulation implementation. The enclosed comments are provided to the NRC in an attempt to ensure that when issued, the Reg Guide and SRP are documents that both the NRC and the industry can effectively implement, for future advanced plant designs, at costs that are commensurate with the safety significance.

The Cost Associated with the Implementation of DG Principles is not Commensurate with Increase in Plant Safety

An underlining realization that comes across from the DG is that the implementation of the principles of the DG will require significant funding. On a forward fit basis, the principles outlined in the DG may be appropriate for "best estimate"/realistic methods for the analysis of complex transients such as loss of coolant accidents (LOCAs). However, the standard methods employed in the analysis for non-LOCA events (e.g., Loss of Flow, Loss of Normal Feedwater, etc.), are well understood and the phenomenon is less complex. For these types of events, the implementation of all the principles of the DG would not be cost effective and would provide little or no increase in plant safety. This would also apply to traditional "conservative" safety analyses, which have served the industry well for hundreds of years safe reactor operation.

To require that the principles of the DG be implemented "..even if the new evaluation model is the result of relatively simple modifications to an existing evaluation model" creates risks of significant financial and schedular impacts for ulilities and vendors, alike. As a result, methodology development and advances will be thwarted. The DG states that the guidelines contained in the DG would actually save effort and cost in the licensing phase. However, for relatively simple modifications to an existing model, the additional potential costs of the efforts to implement the DG requirements, the NRC review effort, and NRC audit calculations would clearly be out of proportion with the corresponding benefit of the modification. Consistent with Westinghouse's understanding of the NRC's current position regarding the regulatory process, it is incumbent that the regulatory process should not be so prescriptive and burdensome that it becomes a needless impediment to improving plant safety.

Implications for Future Advanced Light Water Reactor Designs

The following discusses Westinghouse's efforts in the area of advanced plant designs and the potential implications of applying the DG to the safety analyses for future advanced light water reactor designs. To date, Westinghouse has applied and may continue to apply the "conservative" approved safety analysis methods in the licensing of its Advanced Light Water Reactor (ALWR) designs. Several of these ALWR designs have received Design Certification and are ready for implementation. These ALWR designs have achieved improvements in plant safety by incorporating additional design features, increasing the capacities of well-proven components, and by the use of passive safety systems that do not rely on safety-related pumps or safety-related AC electrical power. These plants were designed to meet the ALWR Utility Requirements Documents (URD) which are a collection of requirements and guidelines for new plants based on the important lessons-learned from the nuclear industry. The URD was thoroughly reviewed by a cross-section of utilities, vendors, and consultants, and received a Final Safety Evaluation Report from the NRC. It has clearly been recognized by the industry that the ALWR designs represent an improvement in nuclear plant safety. This is in addition to the application of "conservative" approved safety analysis methods, which contain significant safety margin.

Three ALWR designs were certified based on the use of "conservative" approved safety analysis codes and methods, consistent with the historical approach used for existing operating plants and embodied in the current regulatory requirements. One of the key features employed in the ALWR designs was the incorporation of a margin of safety to ensure that the applicable acceptance criteria are satisfied and to reduce the necessity to adopt realistic analysis codes and methods for the majority of the design basis events. Requirements that demonstrate the large margins in these designs include:

- reduced dependency on operator actions,
- no core uncovery for small break LOCA events up to a certain size, and
- larger DNB margin requirements for transient events.

By meeting these requirements, the ALWR designs have demonstrated large safety margins and have thereby minimized/negated the need for a "best estimate"/realistic safety analysis basis.

Looking forward, the ALWR vendors may propose modifications to the ALWR designs to improve the economics of the designs. As changes to the ALWR designs are considered, an important decision facing the vendors will be whether to use a "best estimate" approach with regards to design basis accident analysis. The DG implies that a "best estimate"/realistic approach to performing design basis accidents will be the preferred way to evaluate new plant changes or designs. This will create a large disincentive for changes to the plants, and thereby provide barriers to plant improvements. Vendors should be allowed to continue using "conservative" licensing methods for certifying an ALWR design change or an improved ALWR derivative design. It would not be efficient, nor warranted, from both the vendors and the NRC's standpoint to abandon a-priori the "conservative" licensing approach for an improved ALWR design. Application of all the principles of the DG to existing "conservative" approved safety analysis codes and methods is not justified or warranted.

While it is understood that the long term goal should be to adopt the principles provided in the DG for new "best estimate" methodology submittals, the application of the traditional "conservative" safety analysis methods should remain an acceptable approach for both existing operating plants and for new ALWR plant designs.

The Link between Risk Informed Regulation and DG-1096

The DG refers to "risk-informed regulation." This has certain implications which need to be clarified to ensure that the DG, which is geared towards thermal-hydraulic safety analysis codes and methods, is consistent with the existing NRC guidance on "risk-informed regulation." "Risk Informed Regulation" has become the catch-phrase for the process of using risk insights, which are based on analyses performed using primarily realistic rather than "conservative" or "best-estimate" assumptions and models, to modify or demonstrate compliance with existing regulatory requirements. Clarification/guidance is needed in the area of the implementation of the DG in light of existing "risk-informed" regulation. Currently, policies already exist on the use of realistic analyses for licensing basis purposes. The following presents a brief summary of "risk-informed" regulatory guidance issued by the NRC.

In August 1995, the NRC adopted a policy statement regarding the expanded use of PRA that included several key points, including the following.

- PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state of the art, ***to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices.***
- PRA evaluations in support of regulatory decisions should be as ***realistic*** as practicable and appropriate supporting data should be publicly available for review.

Furthermore, in July of 1998, the NRC issued Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis". That document describes the current process for applying risk-informed arguments for licensing basis changes by applying a set of key principles that include traditional engineering decisions, such as "defense-in-depth" and ensuring that sufficient safety margins exist. The Regulatory Guide also presents a process for performing realistic PRA analyses and includes a discussion of the recommended treatment of sensitivities and uncertainties in the models used in the PRA assessments. The question is how do these realistic analyses, treatment of sensitivities and uncertainties relate to the guidance provided in the DG.

As noted previously, the DG-1096 "Transient and Accident Analysis Methods" was developed to describe an acceptable process for the development and assessment of evaluation models that may be used to perform "best estimate"/realistic transient and accident analysis behavior in support of the licensing basis. The introduction to the draft regulatory guide states that:"This regulatory guide is intended to provide guidance on realistic accident analyses, which will provide a more reliable framework for risk-informed regulation and a basis for estimating the uncertainty in understanding transient and accident behavior." The DG describes a process for modeling transient and accident analyses, including the treatment of sensitivities and uncertainties.

It is agreed that the use of "best estimate" methods for performing design basis accident analyses could provide a more reliable framework for risk informed regulation by removing some of the undue conservatisms in the design basis analyses. This would make the design basis analyses more reconcilable with the "realistic" analyses typically used in the Probabilistic Risk Assessments. However, it is recommended that the NRC make a clear statement in the DG concerning the relationship between the acceptable processes in this regulatory guide and those described in Regulatory Guide 1.174. It is believed that this is necessary to avoid future confusion regarding which processes can be applied to the "design basis" analyses addressed in this DG vs. the transient and accident analyses to support the PRA. For example, Regulatory Guide 1.174 describes the relationship of that regulatory guide to the NRC's policy statement on the use of PRA in affecting licensing basis requirements and the current licensing basis analyses. Also under the topic of interactions with other regulatory activities, the relationship of the DG with the Risk-Informed Regulation Option 3 effort on 10CFR Part 50.46 should be discussed.