From: Mary Adams
To: ParrNB@Westinghouse.com
Date: 6/6/05 11:44AM
Subject: C. Tripp questions on Criticality Validation Reports
Docket 70-1151 (TAC L31869)

Nancy,

Here are Chris Tripp's review questions on the Validation Reports concerning margin of safety.

We have agreed that the validation reports themselves are Westinghouse proprietary information under 10 CFR 2.390; however, the attached review comments do not contain proprietary information and will be placed on the public docket.

Chris and I are available for a conference call later this week to discuss the comments and future actions.

Mary

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Creation Date:	6/6/05 11:44AM
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Request for Additional Information
Westinghouse Electric Corporation
SCALE-4.4 Validation Report for Homogeneous Systems

1. Describe in detail how the criticality safety methodology employed at Westinghouse justifies the 0.02 margin of subcriticality (MoS). Include examples of how analysis of the sensitivity of k_{eff} to changes in process parameters is used to assess the acceptability of the MoS, as well as any other information that justifies the 0.02 MoS (e.g., amount of conservatism in modeling). In addition, provide examples of how the need for increased margin is determined when extrapolating outside the validated area of applicability.

   10 CFR 70.61(d) requires that nuclear processes be ensured to be subcritical under normal and credible abnormal conditions, including use of an approved margin of subcriticality for safety. Section 3.2 of the validation report contains justification for the 0.02 MoS which is based on an analysis of the k_{eff} sensitivity of the system, but it is not clear how this information is used to ensure there is an appropriate MoS. In addition, reference is made to evaluating adequacy of the MoS when extrapolating beyond the validated area of applicability, but not details are provided on how this is done. This information is needed to provide assurance that plant operations will be subcritical.

2. Describe how the 107 experiments selected from the International Handbook of Evaluated Criticality Safety Benchmark Experiments (IHECSBE) were chosen. In particular, address why: (1) only 18 of the 52 cases in the LEU-COMP-THERM-003 benchmark set were used; and (2) the 25 benchmarks in the LEU-SOL-THERM-003, -004, and -023 benchmark sets were not used.

   10 CFR 70.61(d) requires that nuclear processes be ensured to be subcritical under normal and credible abnormal conditions, including use of an approved margin of subcriticality for safety. This requires that calculational methods be validated using known critical configurations with similar materials, geometries, and spectra to actual calculations to be performed. Inclusion of other experiments from the Handbook could result in a somewhat different Upper Subcritical Limit (USL). This information is needed to provide assurance that selection of a different subset of available experiments would not result in a different USL.

3. In Section 6.0 of the validation report, clarify that the "suggestions" on the use of the code are mandatory.

   10 CFR 70.61(d) requires that nuclear processes be ensured to be subcritical under normal and credible abnormal conditions, including use of an approved margin of subcriticality for safety. This requires that calculational methods be appropriately validated. Describing the calculational method requires specifying and options or limitations of the method that have been used in calculations of critical benchmarks. This information is needed to provide assurance that the calculational method to be used has been appropriately validated.