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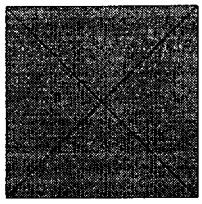

NUCLEAR ENERGY INSTITUTE

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DOCKET NUMBER
PETITION RULE PRM 50-69
(65FR6044)

April 24, 2000

Ms. Annette Vietti-Cook
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: Petition for Rulemaking by Westinghouse Electric Company LLC, on *10 CFR 50, Appendix G, Fracture Toughness Requirements* (*Fed. Reg.* 6044)
Request for Comments

PROJECT NUMBER: 689

Dear Ms. Vietti-Cook:

The Nuclear Energy Institute,[1] on behalf of the commercial nuclear energy industry, provides the following comments on the subject petition for rulemaking. The petition seeks to remove footnotes 2 and 6 from Table 1 in 10 CFR Part 50, Appendix G. The result would be the elimination of requirements related to the metal temperature of the closure head flange and vessel flange regions of the reactor pressure vessel.

We support the actions requested in the petition based on the following:

- *Improved operational flexibility and safety.* The industry and NRC staff have recognized for years the severe operational limitations imposed by the minimum system pressure requirements for seal cooling and maximum system pressure requirements to assure operation within fracture toughness limits. On occasion,

[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, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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operation of Low Temperature Overpressure Protection (LTOP) relief valves or low-pressure residual heat removal (RHR) system relief valves has resulted in losses of primary system inventory.
Adoption by licensees of recent advances in fracture mechanics methods, as described in ASME Code Case N-640 (permitting use of K_{IC} reference fracture toughness curve rather than K_{IR}) were expected to result in a higher maximum allowable pressure corresponding to a given primary system temperature. But the current pressure vessel flange material temperature limit (i.e., the margin of 120 degrees Fahrenheit added to the flange material reference temperature when the pressure exceeds 20 percent of hydrotest pressure) offsets the potential gain in the maximum vessel pressure-temperature limit curve. Because of this, the flange remains the controlling location.

The petition provides the technical basis to demonstrate that the flange temperature requirements are overly conservative and can be eliminated. If eliminated, then a truly wider pressure-temperature operating window is possible. The result should be less frequent challenges to the maximum pressure setpoints of the LTOP system and RHR relief valves, while providing greater operating flexibility during reactor heatup and cooldown.

- *Adequacy of the technical bases.* The petitioner provides documentation of the technical basis that has been embraced in an ASME Code Case, N-640, and by the NRC staff in other areas. For instance, the basis given in WCAP-15315 demonstrates that the integrity of the closure head/flange region is not a concern for operating plants. There are no known degradation mechanisms in this region and the fatigue design usage factor is sufficiently low that flaws are unlikely to initiate.

- *Elimination of unnecessary regulatory burden.* We agree with the petitioner that the technical basis provided in the petition is generic. Given the generic nature of that information, a rule change is preferable to individual licensees pursuing exemptions to the requirements of 10 CFR 50 Appendix G. The proposed rule change should result in licensees avoiding the preparation of plant-specific exemption requests. Likewise, NRC staff reviews would be minimal or eliminated.

- *Improved efficiency and clarity in regulatory processes.* Another goal of the petition is to remove technical detail from the rule that merely duplicates that contained in the ASME Code. The detailed requirements for pressure-temperature operating and hydrostatic test limits are already contained in ASME Code Section XI Appendix G. 10 CFR 50 Appendix G references this ASME Code appendix, which is the appropriate technical document for specifying these requirements.

While not altering the recommendations in the petition, we offer the following comments

to enhance the completeness of the technical bases and cleanup editorial mistakes:

- WCAP-15315, Section 6.0, Safety Implications of the Flange Requirements. This section includes a sound technical rationale for eliminating the BWR vessel flange temperature requirement during normal operation and anticipated operational occurrences (Items 2.a through 2.e). That is, the saturation temperature corresponding to 300 psig (20 % of the preservice hydrostatic test pressure for a typical BWR) is 420 degrees F, which is well in excess of the RT_{ndt} + 120 degree F or RT_{ndt} + 160 degree F requirements. However, that rationale is not applicable to BWR hydrostatic pressure and leak test conditions (Item 1.b of Table 1 of Appendix G to 10 CFR Part 50) because saturated conditions would not exist.

  Although not included in the petition or WCAP-15315, a generic approach can be used to confirm that the deletion of the RT_{ndt} + 90 degree F requirement for pressure tests is acceptable. Using the average RT_{ndt} value of 10 degrees F suggested in WCAP-15315, the hydrostatic pressure test temperature required under Item 1.b of Table 1, Appendix G of 10 CFR Part 50 is 100 degrees F (i.e. RT_{ndt} + 90 degree F). The actual pressure test temperature in most BWRs is more than 100 degrees F. Thus, the elimination of the RT_{ndt} + 90 degree F requirement for pressure tests has no impact on the fracture margins foe BWRs.

- WCAP 15315, Table 2-1, Geometry Comparison. The values indicated in the *Vessel Diameter* column for the GE plant designs are radii, not diameters. The closure head radii are shown correctly in Figure 2-4. The technical conclusions of the report is unchanged, because the stress analyses described in Section 4 of the WCAP use the correct diameter values.

- Westinghouse Letter (Re: Petition for Rulemaking), dated November 4, 1999, incorrectly reflects one item in Table 1 of the existing Appendix G. That is, the *Minimum temperature requirement* for the *Operating Condition* corresponding to "2.d Core Critical with Vessel pressure > 20 % of the preservice system hydrostatic test pressure." The petition contains "Larger of [(^{4})] or [(^{2}) + 40 degree F] 160F]." It should read "Larger of [(^{4})] or [(^{2}) + 160 degree F]."

- Westinghouse Letter (Re: Petition for Rulemaking), dated November 4, 1999, provides an incorrect footnote value in the proposed revision to Table 1. The footnote at the end of Item "2.e Core critical for BWR" in the column labeled *Operating condition* should be (^{4}) rather than (^{5}).

- The existing Part 50, Appendix G, §§ IV.2.a, VI.2.b, and IV.2.c refer to Table 3. The correct reference should be to Table 1. When the petition is promulgated, these references should be corrected.

In summary, the industry supports the technical bases and conclusions drawn in the petition. NEI members licensed to operate pressurized and boiling water reactors have indicated to us their agreement with the petitioner that elimination of the flange temperature requirement will improve operational flexibility and safety without a negative impact on flange integrity. We recommend that the NRC revise Table 1 of 10 CFR 50, Appendix G, as described in the petition, subject to the comments provided above.

Due to the immediate operational benefit to licensees afforded by the proposed rule change, we urge the NRC to expedite its efforts by promulgating the change as a direct final rule. We believe it meets the criteria for publication as a direct final rule. It is based on recent work reviewed and endorsed by the ASME Code. We do not expect the changes to be controversial, nor do we anticipate that the NRC would receive technically based adverse comments from members of the public.

Sincerely,

David J. Modeen

DJM/

c: Mr. David L. Meyer, U.S. Nuclear Regulatory Commission