

July 10, 2000

Mr. D. L. Howell  
B&W Owners Group Services  
3315 Old Forest Road  
P. O. Box 10935  
Lynchburg, Virginia 24506-0935

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - FRAMATOME TOPICAL  
REPORT BAW-10046, REVISION 4 (TAC NO. MA8237)

Dear Mr. Howell:

By letter dated January 3, 2000, Framatome Cogema Fuels requested a review of Topical Report BAW-10046, "Methods of Compliance with Fracture Toughness and Operational Requirements of 10 CFR Part 50, Appendix G," Revision 4. We have determined that we need additional information in order to complete our review.

These questions have been discussed with your staff. Please provide a response to these questions within 30 days. If you have any questions concerning our review, please contact me at (301) 415-1321.

Sincerely,

*/RA/*

Stewart Bailey, Project Manager, Section 2  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Project No. 693

Enclosure: Request for Additional Information

cc w/encl: See next page

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Mr. D. L. Howell

Project No. 693

cc:

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## **REQUEST FOR ADDITIONAL INFORMATION**

### **TOPICAL REPORT BAW-10046, REVISION 4**

#### **"METHODS OF COMPLIANCE WITH FRACTURE TOUGHNESS**

#### **AND OPERATIONAL REQUIREMENTS OF 10 CFR PART 50, APPENDIX G"**

1. Executive Summary and Page 1-1 of the Introduction - Item No. 6 from the list on both pages states that Code Case N-640 allows the use of the  $K_{1c}$  curve in place of the  $K_{1a}$  curve and a revised LTOP setpoint. The wording is ambiguous in that it implies Code Case N-640 will provide two relaxations: (1) to use the  $K_{1c}$  curve in place of the  $K_{1a}$  curve, and (2) to set the RCS safety relief valve lift setpoint at a pressure above 100 percent of the limits set by the P-T limit curves. What the Code Case does is allow licensees to use the  $K_{1c}$  curve in lieu of the  $K_{1a}$  curve; however, if the  $K_{1c}$  curve is used to establish the P-T limits, the Code Case restricts the LTOP system setpoint to 100 percent of the pressure limits established by the P-T curves. Thus, the relaxation in the 1995 Code allowing the LTOP system setpoint to be set at 110 percent of the established P-T limits may not be used if the Code Case methods are invoked. This is well explained in the body of the topical report. To avoid confusion, remove the reference to the LTOP setpoint in the sentences that read:

"Code Case N-640 that allows the use of the  $K_{1c}$  curve in place of the  $K_{1a}$  curve and a revised LTOP set point."
2. Page 2-4, Section 2.3.2 - Minimum temperature requirements for operating pressures above and below 20 percent of the preservice hydrostatic test pressure (PHTP) may or may not be conservative relative to the P-T limits generated in accordance with Appendix G to Section XI of the ASME Code. At this point, any NRC studies or research programs to decide whether or not to eliminate or reduce the minimum temperature requirements at operating pressures above 20 percent of the PHTP are preliminary. Thus, the sentence in Section 2.3.2 is not altogether accurate.
3. Page 4-1, End of Section 4.1 - The tables in RG 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," should be mentioned as the basis for establishing the chemistry factor for a reactor pressure vessel beltline material when the material is not represented by a corresponding material (i.e., a material fabricated from an identical material heat) in the utility's material surveillance program.
4. Pages 5-5 through 5-6, Sections 5.5.1 and 5.5.2 - Section 5.5.1 uses stress intensity methods established by Raju and Newman for evaluating longitudinal semielliptical surface flaws; Section 5.5.2 uses stress intensity methods established by Kumar for evaluating circumferential semielliptical flaws. Will the use of these methods result in conservative P-T limits relative to using the methods stated in the 1995 Edition of Appendix G to Section IX (or earlier endorsed versions)? This will determine whether an exemption is required in order to use these equations.

5. Page 5-7, Section 5.5.3 - Provide a reference for the equation:

$$F = 2.5 - 6.108(a/r_n) + 12(a/r_n)^2 - 9.1664(a/r_n)^3$$

6. In general, use of Code Case N-640 and Codes Case N-588 will yield P-T limit curves that are not as conservative as those that would be generated if Appendix G to Section XI of the ASME Code were used to generate the curves. The report needs to state that exemptions against the requirements of 10 CFR 50.60 and 10 CFR Part 50, Appendix G, need to be submitted if licensees wish to use either Code Case N-640 or Code Case N-588 (or both) as the bases for generating their P-T limit curves. Any exemption requests will be approved or denied by the staff on a case-by-case basis pursuant to the requirements and criteria stated in 10 CFR 50.12.