**From:** Mahesh Chawla
**To:** llahti@entergy.com
**Date:** 10/22/2007 2:57:48 PM
**Subject:** Palisades - LAR on LBLOCA - MD3492

For the above LAR, please arrange a teleconference to discuss the following information with the NRC staff:

**BACKGROUND**

On August 10, 2007, Nuclear Management Company (NMC or licensee) submitted a license amendment request (LAR) to apply the NRC-approved AREVA best estimate (BE) large break loss-of-coolant accident (LBLOCA) methodology described in EMF-2103-P-A, "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," to its Palisades Nuclear Plant (Palisades). This submittal replaced an earlier submittal referring to EMF-2103 Revision 1, which had been withdrawn by AREVA. The licensee's August 10, 2007 submittal contained the technical report BAW-2501 (P) Revision 0 describing the Palisades LBLOCA analyses performed using the EMF-2103 BE LBLOCA, Revision 0, methodology. The licensee also requested a license amendment to include the AREVA BE LBLOCA methodology in the core operating limits report (COLR) for Palisades.

The Palisades LBLOCA analyses as presented in BAW-2501(P) Revision 2 require clarification. Please address the following issues.

Questions

Reference: BAW-2501(P) Revision 2, Page 3-12 Table 3.3

1. Core Power Operation (%) - Table 3.3. indicates that core power is ranged between 99.5 % and 100.5%. The use of reactor power assumption other than 102%, regardless of BE or Appendix K methodology, is permitted by 10 CFR50, Appendix K.I.A, Required and Acceptable Features of The Evaluation Models, "Sources of Heat During a LOCA."

However, the paragraph also states: "...An assumed power level lower than the level specified in this paragraph [1.02 times the licensed power level], (but not less that the licensed power level) may be used provided . . . "

What is the basis for deviating from 10 CFR 50, Appendix K.I.A?

What is the basis for power ranging? (That causes a conflict between two independent uncertainty profiles.)

2. The BAW-2501 treatment ranges the availability of offsite power.

10 CFR50, Appendix A, GDC 35 states that, "Suitable redundancy in components and features and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite electric power is not available) and for offsite electric power operation (assuming onsite power is not available) the system function can be accomplished, assuming a single failure."

The Staff interpretation is that two cases (loss of offsite power with onsite power available, and loss of onsite power with offsite power available) must be run independently to satisfy GDC 35.

Each of these cases is separate from the other in that each case is represented by a different statistical response spectrum. To accomplish the task of identifying the worst case would require more runs. However, for LBLOCA analyses (only), the high likelihood of loss of onsite power being the most limiting is so small that only loss of offsite power cases need be run. (This is unless a particular plant design, e.g., CE plant design, is also vulnerable to a loss of onsite power, in which situation the NRC may require that both cases be analyzed separately. This would require more case runs to satisfy the statistical requirement than for just loss of offsite power.)

What is your basis for assuming a 50% probability of loss of offsite power? Your statistical runs need to assume that offsite power is lost (in an independent set of runs). If, as stated above, it has been determined that Palisades, being of CE design, is also vulnerable to a loss of onsite power, this also should be addressed (with an independent set of runs).

3. Does the version of SRELAP used to perform the computer runs assure that the void fraction is less than 95% and the fuel cladding temperature is less than 900 oF before it allows rod quench?

4. The licensee must provide justification that the SRELAP rod-to-rod thermal radiation model applies to the Palisades core.

5. Is the Forslund-Rohsenow model contribution to the heat transfer coefficient limited to less than or equal to 15% when the void fraction is greater than or equal to 0.9?

6. Was the downcomer model for the Palisades design rebenchmarked, performing sensitivity studies, assuming adequate downcomer noding in the water volume, vessel wall and other heat structure noding, with all heat structures initial temperature at or greater than 1800 oF, or containment pressure less than 30 psia?

7. Were all the break sizes assumed be greater than or equal to 1.0 ft2?

8. EMF-2103, Revision1 was withdrawn. Please identify the containment methodology that was used, and show that it is acceptable for use with EMF-2103, Revision 0.

**CC:** Frank Orr; Gregory Cranston

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