

NRR-PMDAPEm Resource

From: Thompson, Jon
Sent: Monday, March 26, 2012 11:59 AM
To: Hart, Randy; Ashe, Ken
Cc: Rudy, Lawrence J; Thomas, Jeff
Subject: Request for Additional Information - McGuire Nuclear Station, Catawba Nuclear Station - 10 CFR 50.46, 30-DAY RESPONSE REGARDING THERMAL CONDUCTIVITY DEGRADATION IN THE WESTINGHOUSE FURNISHED REALISTIC ECCS EVALUATION

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (CATAWBA 1 AND 2), MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 (MCGUIRE 1 AND 2), REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING 10 CFR 50.46, 30-DAY RESPONSE TO INFORMATION REQUEST PURSUANT TO 10 CFR 50.54(F) RELATED TO THE ESTIMATED EFFECT ON PEAK CLADDING TEMPERATURE RESULTING FROM THERMAL CONDUCTIVITY DEGRADATION IN THE WESTINGHOUSE FURNISHED REALISTIC EMERGENCY CORE COOLING SYSTEM EVALUATION (TAC NOS. ME8215-8)

By letter dated February 16, 2012, the US Nuclear Regulatory Commission (NRC) staff issued the subject information request to Duke Energy Carolinas, LLC (the licensee) regarding Catawba 1 and 2 and McGuire 1 and 2. The U.S. Nuclear Regulatory Commission staff has reviewed the licensee's response and determined that an RAI is needed in order to complete our review. The enclosed document describes this RAI. A prompt response to these RAI questions is requested by the NRC staff.

If you have any questions, please call me at 301-415-1119.

Sincerely,

Jon Thompson, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-413, 50-414, 50-369, 50-370

Enclosure:
As stated

OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
10 CFR 50.46, 30-DAY RESPONSE TO
INFORMATION REQUEST PURSUANT TO 10 CFR 50.54(F) RELATED TO THE ESTIMATED EFFECT ON
PEAK CLADDING TEMPERATURE
RESULTING FROM THERMAL CONDUCTIVITY DEGRADATION IN THE WESTINGHOUSE FURNISHED
REALISTIC EMERGENCY CORE COOLING SYSTEM EVALUATION
DUKE ENERGY CAROLINAS, LLC
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-369 AND 50-370
CATAWBA NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-413 AND 50-414

1. Please explain how the 10 CFR 50.46(a)(3) error report enclosed in your response to the NRC's Information Request pursuant to 10 CFR 50.54(f) remains adherent to the WCAP-12945-P-A methodology, which includes a supplement describing the method for fulfilling 10 CFR 50.46(a)(3) re-analysis requirements.
2. Compare the results of the thermal conductivity degradation (TCD) and offset sensitivity studies to the fuel rod parameter sensitivity studies discussed in the Code Qualification Document. Please explain any significant discrepancies in the results.
3. Your submittal referenced a March 7, 2012 letter sent by Westinghouse Electric Company (Westinghouse) to the NRC.
 - a. In the final paragraph on page 2 of 9, the document states, "Small differences between the void volumes may exist for rods with the same cladding diameter, however, these differences in void volumes have been compared, and the components of the void volume calculations are either conservative or the changes in void volume are negligible after considering other conservatisms. Core operating conditions and powers were also confirmed to either be bounding, the same, or offset by other margins. The representative fuel temperatures and rod internal pressures are either similar or bound those expected for plant specific calculations." Provide the results of this comparison for Catawba 1 and 2 and McGuire 1 and 2, including the relevant conclusions and the technical basis supporting those conclusions. For any conclusion that differences in void volume are offset by other conservatisms, list those conservatisms and provide a quantitative estimate of each conservatism, as well as a brief description of the rigor associated with that estimate.
 - b. Please provide the values for the coefficients A1 and A2 used in the PAD 4.0 + TCD UO₂ thermal conductivity equation.
 - c. Please explain any error corrections, code improvements, and miscellaneous code cleanup between the WCOBRA/TRAC and HOTSPOT code versions used in the TCD evaluations and those used in the plant's analysis of record (AOR).
 - d. What is the thermal conductivity model impact of code version changes in HOTSPOT?
4. Explain the differences between the TRANSURANUS and PAD computer codes and the impact of those differences. Provide graphs or other quantified descriptions that aid in explanation.
5. Please explain how the changed design values will be verified during operation of the plant, i.e. TS limits, Surveillances, etc. Also, explain what compensatory actions will be taken if a value is found to be outside of the limits assumed in the analysis.

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