From: Michelle Honcharik
To: Mike Lalor
Date: 11/22/2006 8:27:50 AM
Subject: GSTR-M Part 21 Request

Mike,
This e-mail documents the NRC staff's verbal request during the November 21, 2006, telephone call that General Electric Nuclear Energy (GENE) initiate a evaluation in accordance with Part 21 of *Title 10 of the Code of Federal Regulations* (10 CFR), to address the potential non-conservatism in GENE thermal-mechanical (T-M) methodology, GSTR-M.

Background

The potential non-conservatism was identified during the ESBWR design certification review. In the November 21, 2006, telephone call between GENE and NRC staff, GENE stated it will evaluate the impact that any non-conservatism in the GSTR-M T-M code may have on the safety analyses supporting BWRs. GENE noted that the observed difference between the NRC staff's confirmatory analyses and the GSTR-M fuel temperature could be due in part to over prediction of the NRC staff's confirmatory analyses. The NRC staff noted that GENE's new T-M code (PRIME) results were closer to the NRC staff's confirmatory analyses. Therefore, there is a potential that the observed differences are due to GSTR-M under predicting the fuel centerline temperature.

The NRC staff believes that if GSTR-M is qualified against fuel operating at higher burnups, the weakness in the T-M code will become apparent. This is the bases and the objective of the NRC staff request that GENE perform a 10 CFR Part 21 evaluation.

The NRC staff review of NEDC-33173P, "Applicability of GE Methods to Expanded Operating Domains," relies on the outcome of this 10 CFR Part 21 evaluation to establish further actions on the use of GSTR-M for operating reactors. The NRC staff review of GENE's T-M methods also includes extension of the T-M qualification data for higher exposures.

Request

Please evaluate the overall conservatism of the GSTR-M fuel T-M models, specifically the predicted fuel temperatures, against the most up-to-date expanded empirical database (e.g., database used to validate PRIME). As part of this evaluation, demonstrate the impact of the burnup degradation in UO2 thermal conductivity on both fuel T-M calculations, fuel design analyses, and downstream safety analyses.

Thank you,
Michelle

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