UNITED STATES
**NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

September 20, 2011

Mr. Michael J. Pacilio
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – REVIEW OF 30-DAY NOTIFICATION REPORT REGARDING CHANGES TO AN EMERGENCY CORE COOLING SYSTEM EVALUATION RESULTING IN A PEAK CLADDING TEMPERATURE DIFFERENCE IN EXCESS OF 50 DEGREES FAHRENHEIT (TAC NO. ME4666)

Dear Mr. Pacilio:

By letter dated September 7, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102500300), as supplemented by letter dated November 29, 2010 (ADAMS Accession No. ML103420099), Exelon Generation Company, LLC (Exelon, the licensee) reported an error correction discovered in the Emergency Core Cooling System (ECCS) evaluation model, or in the application of such a model, that affects the peak cladding temperature (PCT) calculation at Three Mile Island Nuclear Station, Unit 1 (TMI-1). The letter dated September 7, 2010, was submitted to satisfy the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 50.46(a)(3)(ii), which requires reporting of a calculated PCT change in excess of 50 degrees Fahrenheit (°F). The reported error was an estimated 225 °F increase in PCT for a postulated small break loss-of-coolant-accident.

The intent of the 10 CFR 50.46(a)(3)(ii) reporting requirement is to enable the U.S. Nuclear Regulatory Commission (NRC) to determine the safety significance of errors and changes identified in ECCS evaluation models, and to take action if the staff determines that the ECCS evaluation models do not meet applicable regulatory requirements.

Based on the letter dated September 7, 2010, the NRC staff was made aware of a significant error (i.e. greater than 50 °F) in the AREVA ECCS evaluation model that is applied to Babcock and Wilcox (B&W) nuclear steam supply systems (NSSSs), and is applicable to TMI-1. After accounting for the error, the corrected PCT for TMI-1 was calculated to be 1669 °F. This temperature is compared against the acceptance criterion specified at 10 CFR 50.46 (b)(1), which requires the predicted PCT to remain below 2200 °F.

The letter dated September 7, 2010, did not contain sufficient information to enable a determination of the safety significance of the error, as described above. Based on the NRC staff's concerns regarding the safety significance of the error and the adequacy of the overall evaluation model, a request for additional information was sent to the licensee.

The response, dated November 29, 2010, provided additional detail regarding the axial power shapes assumed in the acceptable evaluation model, and how the error impact was estimated using analyses that assumed a more limiting power shape. The error impact was estimated using a conservative, first-principles based spreadsheet calculation, confirmed by explicit ECCS performance evaluation cases for a B&W-designed NSSS. The NRC's Office of Nuclear Regulatory Research performed confirmatory calculations, and the results were found to be consistent with the licensee's estimate of the error impact.

In summary, the NRC review of the September 7, 2010, and November 29, 2010, letters established the following:

1. The error-adjusted PCTs at both plants remain considerably below the 10 CFR 50.46(b) acceptance criterion.

2. The licensee provided additional information regarding the nature of the error impact evaluation, which indicated that the estimate of the error's magnitude was supported by explicit analyses.

3. The licensee's evaluation is consistent with NRC staff confirmatory calculations.

Based on these considerations, the NRC staff has concluded that the error report is not indicative of an immediate, or significant, safety concern, and the overall evaluation model, when corrected for this error, appears to remain adequate. The NRC staff review also concludes that the licensee has appropriately submitted a 30-day report pursuant to 10 CFR 50.46(a)(3)(ii), and the analysis results are acceptable. Therefore, the NRC review of the 30-day report is complete, and TAC No. ME4666 will be closed.

Please contact me at 301-415-2833, if you have any questions.

Sincerely,

Peter Bamford

Peter Bamford, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-289

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