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L-12-055

10 CFR 50.46(a)(3)(ii)

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:

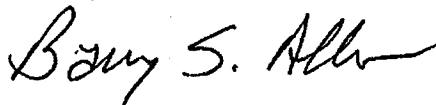
Davis-Besse Nuclear Power Station
Docket No. 50-346, License No. NPF-3
Response to Request for Additional Information on 10 CFR 50.46 Report of Changes or
Errors in ECCS Evaluation Models (TAC No. ME7415)

By letter dated May 27, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111510642), FirstEnergy Nuclear Operating Company (FENOC) submitted the annual report for changes and errors in an emergency core cooling system (ECCS) evaluation model (EM), or in the application of such a model, for the Davis-Besse Nuclear Power Station. The report covered the period from January 1, 2010 to December 31, 2010.

On January 18, 2012, the Nuclear Regulatory Commission (NRC) requested additional information regarding this report. FENOC's response to the request, as discussed with NRC staff on December 19, 2011, is attached.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Supervisor – Fleet Licensing, at (330) 315-6808.

Sincerely,



Barry S. Allen

Attachment:

Response to Request for Additional Information on the 10 CFR 50.46 Report of Changes or Errors in the Emergency Core Cooling System Evaluation Model for the Davis-Besse Nuclear Power Station

cc: NRC Region III Administrator
NRC Resident Inspector
Nuclear Reactor Regulation Project Manager
Utility Radiological Safety Board

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Changes or Errors in the Emergency Core Cooling System Evaluation Model for the
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Page 1 of 2

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In Table 1, "10 CFR 50.46 Summary for 2010," it is noted that peak cladding temperatures for Mk-B-HTP fuel in the mixed-core and full-core large-break loss-of-coolant accident (LBLOCA) evaluation models are "estimated" per Evaluation Model Revision 0.9. Please clarify why these specific peak cladding temperatures are "estimated" and not "analyzed" similar to the other values in the table.

FENOC began inserting the new Mk-B-HTP fuel assembly design into the DBNPS reactor in Cycle 15, which began in April 2006. The original LBLOCA analyses for peak cladding temperature (PCT) for the transition cores and the Mk-B-HTP full-core were performed prior to Cycle 15. At that time, analyzed LBLOCA PCT values of 2095.3°F (Mk-B-HTP mixed-core) and 2117.2°F (Mk-B-HTP full-core) were reported to FENOC by the fuel vendor.

By letter dated May 25, 2007 (ADAMS Accession No. ML071500391), FENOC submitted the 2006 annual report of changes to the 10 CFR 50.46 ECCS EM, which included the analyzed LBLOCA PCT value of 2095°F (rounded down from 2095.3°F) for the Mk-B-HTP mixed-core. Since a full core of the Mk-B-HTP fuel would not be achieved until Cycle 17 in 2010, a full-core LBLOCA PCT value was not included in the 2006 through 2009 reports.

By letter dated May 28, 2008 (ADAMS Accession No. ML081540470), FENOC submitted the 2007 annual report of changes to the 10 CFR 50.46 ECCS EM, including the effect of an EM application error for the Mk-B-HTP mixed-core results. The error, as explained in the 2007 report, was an incorrect interpretation of gamma energy fractions reported from the ORIGEN2 computer code. This was evaluated by the FENOC fuel vendor and was found to cause an increase in the Mk-B-HTP mixed-core PCT value of +2.7°F, leading to the final 2007 reported value of 2098°F (mixed-core) shown in Table 1 of that letter. However, the value was reported as "analyzed" when, in fact, it was "estimated" by the FENOC fuel vendor, as required by 10 CFR 50.46(a)(3)(i). In the 2009 report, submitted by letter dated May 27, 2010 (ADAMS Accession No. ML101530497), the values were reported correctly as "estimated."

In 2010, when the full core of Mk-B-HTP assemblies was achieved, a PCT value for the Mk-B-HPT full-core LBLOCA was included in the annual report, submitted by the May 27, 2011 letter. The gamma energy fraction error noted in the 2007 report also affected the Mk-B-HTP full-core LBLOCA PCT value. The magnitude of the error was estimated as +1.8°F for the Mk-B-HTP full-core that yielded an estimated PCT of 2119°F when added to the 2117.2°F full-core analyzed value. Subsequently, in the May 27, 2011 letter, FENOC reported the 2119°F estimated value being utilized at that time rather than the original analyzed value of 2117.2°F.