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April 30, 2010  
L-10-111

ATTN: Document Control Desk  
US Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**Subject:**

Davis-Besse Nuclear Power Station, Unit No. 1  
Docket No. 50-346, License No. NPF-3  
Supplemental Response to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors" (TAC No. MC4681)

This letter provides information that supplements the FirstEnergy Nuclear Operating Company (FENOC) response to Generic Letter 2004-02 for the Davis-Besse Nuclear Power Station (DBNPS), previously provided in correspondence submitted on March 4, 2005; July 26, 2005; September 1, 2005; and February 28, 2008.

Westinghouse Electric Company (WEC) submitted a letter to the Nuclear Regulatory Commission (NRC) entitled "Interim Report of the Evaluation of a Deviation Pursuant to 10CFR21.21(a)(2)," dated February 12, 2010 to report inconsistencies between test assumptions and test equipment configuration used for zone of influence (ZOI) tests. The inconsistency applies to testing done for coatings and insulation. The WEC letter lists the various test reports potentially affected. WCAP-16568-P, "Jet Impingement Testing to Determine the Zone of Influence (ZOI) for DBA-Qualified/Acceptable Coatings," Revision 1, June 2008 is among the affected documents. During a teleconference held between the NRC and FENOC on March 9, 2010 that discussed WCAP-16568-P, the NRC indicated that the ZOI for qualified epoxy coatings reported in WCAP-16568-P, Revision 1 is not currently being questioned by the staff. However, the reported ZOI for qualified inorganic zinc coatings is being disputed.

The information submitted in FENOC's February 28, 2008 letter utilized Revision 0 of WCAP-16568. The reported ZOI for inorganic zinc coating was unchanged between Revision 0 and Revision 1 of that report. FENOC has assessed the impact of an increased inorganic zinc coating ZOI on the information included in its

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February 28, 2008 submittal. It was determined that while a greater debris source term would be created, there is no effect on the overall conclusions of the FENOC submittal. As noted within the FENOC submittal (for example Attachment 1 pages 35, 103, and 104), the head loss across the strainer is only a function of the strainer structure and the reflective metal insulation debris that reaches it. This occurs because DBNPS is maintained as a low fiber plant. The total amount of fiber available to reach the strainer, including both installed fiber insulation and latent debris fiber, is so limited that the strainer will have clean surface area in the post-loss of coolant accident (LOCA) environment. This precludes the build-up of chemical precipitates or particulate debris at the strainer surface. Both pass through the strainer. Therefore, the amount of particulate matter arriving at the strainer has no effect on the debris bed head loss.

This evaluation focuses on particulate matter because that is the typical configuration of failed inorganic zinc coatings. The analyses supporting the FENOC February 28, 2008 submittal also consider the potential for coatings to fail as chips. Due to the low turbulent kinetic energy within the containment pool, it was determined that coatings failing as chips will not stay in suspension and transport to the strainer.

FENOC utilized WCAP-16793-NP, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous, and Chemical Debris in the Recirculating Fluid," Revision 0, May 2007 to evaluate the in-core downstream effects of the recirculation fluid. The information provided by WCAP-16793-NP, Revision 0 is still under review by the NRC staff, so the following FENOC assessment is preliminary, pending final approval of the topical report by the NRC. WCAP-16793-NP, Revision 0 states:

zinc-rich primers are evaluated to have negligible affect on post-LOCA precipitant production. If zinc powder were carried into the core and deposited directly onto fuel cladding surfaces or collected within fuel grids, the powder would behave materially and thermally as zinc. The thermal conductivity for zinc is relatively high (approximately 65 BTU/hr-ft-°F). Thus, zinc powder, if it were to be deposited directly onto the fuel cladding surfaces or collected behind fuel grids, would not act to insulate the clad surface. Therefore, zinc from zinc-rich primers is not a concern with respect to long-term core cooling.

From this, the zinc debris generated by a LOCA is not considered consequential to the capability to remove heat from the fuel. Therefore, the size of the

inorganic zinc coating zone of influence does not impact the in-vessel downstream effects analysis described in the February 28, 2008 submittal.

None of the other documents listed in the WEC February 12, 2010 letter were utilized in the analyses that support the FENOC February 28, 2008 submittal.

In conclusion, the information provided in the February 12, 2010 WEC letter ultimately has no effect on the conclusions of the FENOC February 28, 2008 submittal regarding the capability of the DBNPS emergency sump strainer to fulfill its design functions.

There are no regulatory commitments included in this letter. If there are any questions, or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 761-6071.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 30, 2010.

Sincerely



Barry S. Allen

References:

1. NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," dated September 13, 2004.
2. FENOC Letter, "Davis-Besse Nuclear Power Station Response to NRC Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors,'" dated March 4, 2005.
3. FENOC letter, "Response to Request for Additional Information on Generic Letter 2004-02," dated July 26, 2005.
4. FENOC letter, "Davis-Besse Nuclear Power Station Response to NRC Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors,'" dated September 1, 2005.
5. FENOC letter, "Davis-Besse Nuclear Power Station Response to NRC Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors,'" dated February 28, 2008.

6. Westinghouse Electric Company letter to NRC (LTR-NRC-10-10), "Interim Report of the Evaluation of a Deviation Pursuant to 10CFR21.21(a)(2)," dated February 12, 2010.
7. WCAP-16568-P, "Jet Impingement Testing to Determine the Zone of Influence (ZOI) for DBA-Qualified/Acceptable Coatings," Revision 1, June 2008.
8. WCAP-16793-NP, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous, and Chemical Debris in the Recirculating Fluid," Revision 0, May 2007.

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