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

September 29, 2014

Mr. Raymond A. Lieb
Vice President
Davis-Besse Nuclear Power Station
FirstEnergy Nuclear Operating Company
5501 North State Route 2
Oak Harbor, OH 43449

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE DAVIS-BESSE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION (TAC NO. ME4640)

Dear Mr. Lieb:

By letter dated August 27, 2010, FirstEnergy Nuclear Operating Company submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54 for renewal of Operating License NPF-3 for the Davis-Besse Nuclear Power Station. The staff of the U.S. Nuclear Regulatory Commission (NRC or the staff) is reviewing this application in accordance with the guidance in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants." During its review, the staff has identified areas where additional information is needed to complete the review. The staff's requests for additional information are included in the enclosure. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Cliff Custer, of your staff, and a mutually agreeable date for the response is 30 days from the date of this letter. If you have any questions, please contact me by telephone at 301-415-4084 or by e-mail at Emmanuel.Sayoc@nrc.gov

Sincerely,

/RA/

Emmanuel Sayoc, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
As stated
cc w/encl: Listserv

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ADAMS Accession No.: ML14258A285 *concurred via email

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DAVIS-BESSE NUCLEAR POWER STATION
LICENSE RENEWAL APPLICATION
SUPPLEMENTAL REQUESTS FOR ADDITIONAL INFORMATION
SHIELD BUILDING MONITORING PROGRAM RAI FOLLOW-UP
RELATED TO 2013 PLANT-SPECIFIC OPERATING EXPERIENCE

RAI B.2.43-5 (follow-up)

Background:

FENOC's response to RAI B.2.43-4 by letter dated July 3, 2014 (ADAMS Accession No. ML14184B184), states in part:

> Due to the plant-specific operating experience described in the request, above, the minimum number of Shield Building monitoring bores currently managed under the FENOC Corrective Action Program is being changed to 23. Three monitoring bores will be used to aid in identifying changes in the limits of cracking in areas with previously identified crack propagation. New core bores will be installed as required during each inspection cycle to bound crack limits.

The "Operating Experience" program element of LRA Section B.2.43, "Shield Building Monitoring Program," revised by letter dated July 3, 2014 in response to RAI B.2.43-4, states in part, "This re-inspection also identified 8 conditions where the laminar cracking conditions were determined to have undergone a discernable change."

Issue:

In response to RAI B.2.43-4, the basis or criteria for selecting three (3) of the eight (8) core bore holes, with discernable change in laminar cracking conditions, in the sample for subsequent consecutive inspections was not fully or clearly described.

Request:

1) Provide additional discussion and detail on the technical rationale or criteria used to justify the selection of additional core bore holes for future examination.

2) Provide, with the basis, the minimum number and/or time period of subsequent consecutive inspections for which core bore holes with identified crack propagation will be inspected following discovery before they may be removed from the representative sample. The response should include a discussion of the consideration, if any, given the core bore hole inspection intervals and the schedule proposed in the Shield Building Monitoring Program.

RAI B.2.43-6 (follow up)

Background:

LRA Section B.2.43, updated by letters dated November 20, 2012 and July 3, 2014, describes the plant-specific Shield Building Monitoring Program. This aging management program (AMP) includes under its scope the steel reinforcement bar (rebar) and concrete of the shield building wall and the exterior concrete coatings on the shield building. The "Program Description" and program element "Parameters Monitored or Inspected" state that the program will monitor rebar for loss of material due to corrosion by visual inspection of the surface condition of rebar, when exposed.

The "Operating Experience" program element of LRA Section B.2.43, revised by RAI B.2.43-4 response letter dated July 3, 2014 (ADAMS Accession No. ML14184B184), identified conditions involving propagation of the shield building laminar cracks during a 2013 baseline inspection, and states in part that:

> This re-inspection also identified 8 conditions where the laminar cracking conditions were determined to have undergone a discernable change.
>
> The cracking propagation was determined to be a result of ice-wedging (freezing water at a pre-existing crack leading edge). This condition requires water, freezing temperatures and pre-existing cracks. Because the Shield Building has been coated it contains a finite amount of water. It is not practical to remove the water in an accelerated manner given the cumulative magnitude of leading crack edges and transportability of water. It is also not practical to remove the existing cracks or prevent freezing temperatures.

The response to RAI B.2.43-4 did not identify any changes to the Shield Building Monitoring Program with regard to monitoring of the rebar for corrosion but documented operating experience of the presence of water within the pre-existing cracks which under freezing temperatures may cause the cracks to propagate.

Issue:

The Shield Building Monitoring Program monitors rebar for corrosion by visual inspection, on an opportunistic basis, only when exposed for some undefined reason. The presence of water and air trapped within the existing potentially propagating laminar cracks of the coated shield building wall increases the potential for corrosion of the adjacent rebar layers. The staff also noted in LRA Section 3.5.2.2.1.1 that the groundwater chemistry at the Davis-Besse site is considered to be aggressive (i.e., chlorides = 2,870 ppm (max) and sulfates = 1,700 ppm (max)) which may also be indicative that the shield building is or has been exposed to potentially aggressive (high chloride content) air-outdoor environment that favors potential for rebar corrosion. Given the above plant-specific conditions and operating experience, the staff needs additional technical justification and basis regarding the AMP's implementation of opportunistic inspections to monitor aging effects in the rebar located near the laminar cracking.

Request:

Considering the plant-specific conditions of the shield building wall associated with existing laminar cracking that may propagate; presence of trapped water and air in the laminar cracks;

and potentially aggressive environmental conditions; explain, with sufficient technical detail and basis, the following:

1) How opportunistic inspection of rebar when exposed will adequately manage potential aging effects of rebar corrosion for rebar layers located near laminar cracking, or

2) Any modifications or enhancements that will be made to the Shield Building Monitoring Program or any other applicable AMP to address the staff's concern regarding the implementation of opportunistic inspection of rebar when exposed to manage potential aging effects of rebar corrosion for rebar layers located near laminar cracking.