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Fax: 419-321-7582March 14, 2013
L-13-102

10 CFR 54

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

SUBJECT:

Davis-Besse Nuclear Power Station, Unit No. 1
Docket No. 50-346, License Number NPF-3
Reply to Request for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application (TAC No. ME4640) and License Renewal Application Amendment No. 39

By letter dated August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102450565), FirstEnergy Nuclear Operating Company (FENOC) 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, Unit No. 1 (Davis-Besse). By letter dated February 14, 2013 (ML13038A118), the Nuclear Regulatory Commission (NRC) requested additional information to complete its review of the License Renewal Application (LRA).

The Attachment provides the FENOC reply to the NRC request for additional information. The NRC request is shown in bold text followed by the FENOC response. The Enclosure provides Amendment No. 39 to the Davis-Besse LRA.

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NRC

Davis-Besse Nuclear Power Station, Unit No. 1
L-13-102
Page 2

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Clifford I. Custer, Fleet License Renewal Project Manager, at 724-682-7139.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 14, 2013.

Sincerely,



Raymond A. Lieb

Attachment:

Reply to Requests for Additional Information for the Review of the Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse), License Renewal Application (LRA), Section B.2.4

Enclosure:

Amendment No. 39 to the Davis-Besse License Renewal Application

cc: NRC DLR Project Manager
NRC Region III Administrator

cc: w/o Attachment or Enclosure
NRC DLR Director
NRR DORL Project Manager
NRC Resident Inspector
Utility Radiological Safety Board

Attachment
L-13-102

Reply to Requests for Additional Information for the Review of the
Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse),
License Renewal Application (LRA),
Section B.2.4
Page 1 of 4

Question RAI B.2.4-1b

Background:

The response to RAI B.2.4-1a stated that visual inspections will detect the presence of a potential corrosive environment by observing for indications of standing water, residue of evaporated water, visible moisture from condensation or any other source, water trails or stains to or from the bolting location, residue on adjacent concrete surfaces suggesting that a water trail might have existed, evidence of corrosion on bolting or adjacent metal support components, corrosion stains on adjacent concrete surfaces, and any other evidence of current or past presence of a moist or wetted environment at or adjacent to a bolting location. The response to RAI B.2.4-1a also stated that if a potentially corrosive environment associated with high-strength structural bolting is detected during visual examinations, formal written engineering evaluation will be performed to determine whether the environment is corrosive. The response to RAI B.2.4-1a further stated that if volumetric examinations are conducted of high-strength structural bolting due to detecting a corrosive environment, the representative sample size will be equal to 20 percent of the population subjected to a corrosive environment, with a maximum of 25 bolts or studs. The response to RAI B.2.4-1a revised LRA Section A.1.39 to include, “[v]isual inspections are supplemented by volumetric examination or by feel (for elastomers), as needed.”

Issue:

Based on the staff's review of the list of conditions that would indicate a potentially corrosive environment, only three of the eight were associated with some measure of standing water. Only these three could provide any further evidence to engineering that there is or was a corrosive environment. In the case of standing water, the water could be chemically analyzed for contaminants. It is not clear to the staff what factors engineering will consider in determining whether a potentially corrosive environment is a corrosive environment, particularly when no moisture is present. It is also not clear to the staff how many bolts will be inspected if fewer than five are exposed to a corrosive environment. In regard to LRA Section A.1.39, while it could be inferred that high-strength structural bolts will be volumetrically examined, it is not clearly stated.

Request:

- (a) State the factors engineering will consider in determining whether a potentially corrosive environment is a corrosive environment, particularly when no moisture is present,**
- (b) State how many bolts will be volumetrically inspected when fewer than five bolts are found to be exposed to a corrosive environment,**
- (c) Clarify LRA Section A.1.39 regarding the volumetric examination of high-strength structural bolts.**

RESPONSE RAI B.2.4.1b

- (a) If moisture is present at or near a bolt or stud, factors considered by engineering include, but will not be limited to:
 - 1) the source of leakage or condensation that supplied the moisture,
 - 2) the proximity of the moisture to the bolt or stud,
 - 3) the probable or analyzed chemical characteristics of the moisture, including the presence of contaminants,
 - 4) the visible or likely pathway, if any, that the liquid traversed to arrive at or near the bolt or stud,
 - 5) the amount of any corrosion on or near the bolt or stud,
 - 6) the material condition of the coatings on the bolt or stud, and associated support,
 - 7) the characteristics of any corrosion on or near the bolt or stud,
 - 8) the proximity to the bolt or stud of any nearby evidence of corrosion,
 - 9) the material condition of accessible concrete or grout near the bolt or stud.

If there is evidence that moisture had been present at or near a bolt or stud, but no moisture is present at or near a bolt or stud, factors considered by engineering include, but will not be limited to:

- 1) the probable sources of past leakage or condensation that could have supplied the moisture,
- 2) the proximity to the bolt or stud of the evidence that moisture had been present,
- 3) the probable or analyzed chemical characteristics of any moisture residue, including the presence of contaminants,

- 4) the visible or likely pathway, if any, that the liquid may have traversed to arrive at or near the bolt or stud,
- 5) the amount of any corrosion on or near the bolt or stud,
- 6) the material condition of the coatings on the bolt or stud, and associated support,
- 7) the characteristics of any corrosion on or near the bolt or stud,
- 8) the proximity to the bolt or stud of any nearby evidence of corrosion,
- 9) the material condition of concrete or grout near the bolt or stud,
- 10) whether the evidence of the presence of past moisture is valid.

The extent to which each of the above factors will be considered and weighed in the engineering evaluation will be determined by the conditions that are observed during the initial visual inspections of the bolting locations and during any follow-up visual inspections that are needed. Some of the listed factors may not be present. Some of the factors that are observed may have minimal impact on the outcome of the evaluation. All factors that are present will be evaluated together to provide the most accurate characterization of the environment to which each evaluated bolt or stud has been exposed. If the engineering evaluation concludes that the bolting material had been subjected to a corrosive environment for SCC, then the affected bolts or studs will be included in the sample population subject to volumetric examinations.

- (b) One bolt or stud will be volumetrically inspected when at least one bolt or stud, but fewer than five bolts or studs are found to be exposed to a corrosive environment. The representative sample size will be equal to 20 percent of the bolts or studs determined to have been subjected to a corrosive environment for SCC (rounded up to the nearest whole number), with a maximum of 25 bolts or studs.
- (c) To provide clarification regarding the volumetric examination of high strength structural bolts or studs, LRA Section A.1.39, "Structures Monitoring Program," is revised to add a paragraph as follows:

High strength (i.e., ASTM A540 Grade B23) structural bolting greater than 1 inch in nominal diameter, with an actual measured yield strength greater than or equal to 150 kilo-pounds per square inch (ksi) or an undocumented yield strength, is monitored for stress corrosion cracking (SCC). Periodic visual inspections of susceptible ASTM A540 bolting are conducted at an interval not to exceed five

years to identify locations where the A540 bolting may be exposed to a potentially corrosive environment for SCC. If the visual inspections identify one or more bolts or studs in a potentially corrosive environment, then an engineering evaluation will be performed to determine whether the bolting material had been subjected to a corrosive environment for SCC. The bolts or studs determined to have been subjected to a corrosive environment for SCC comprise the population subject to sampling for volumetric examinations. The representative sample size is equal to 20 percent of the bolts or studs in the sample population (rounded up to the nearest whole number), with a maximum sample size of 25 bolts or studs.

See the Enclosure to this letter for the revision to the Davis-Besse LRA.

Enclosure

Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse)

Letter L-13-102

**Amendment No. 39 to the
Davis-Besse License Renewal Application**

Page 1 of 2

**License Renewal Application
Sections Affected**

Section A.1.39

The Enclosure identifies the change to the License Renewal Application (LRA) by Affected LRA Section, LRA Page No., and Affected Paragraph and Sentence. The count for the affected paragraph, sentence, bullet, etc. starts at the beginning of the affected Section or at the top of the affected page, as appropriate. Below each section the reason for the change is identified, and the sentence affected is printed in *italics* with deleted text ~~*lined-out*~~ and added text *underlined*.

<u>Affected LRA Section</u>	<u>LRA Page No.</u>	<u>Affected Paragraph and Sentence</u>
A.1.39	Page A-25	New Paragraph

In response to request for additional information (RAI) B.2.4-1b regarding aging management of high strength structural bolting and related Structures Monitoring Program enhancements, LRA Section A.1.39, "Structures Monitoring Program," is revised to include a new paragraph, to read as follows:

A.1.39 STRUCTURES MONITORING PROGRAM

The Structures Monitoring Program manages age-related degradation of plant structures and structural components within the scope of the program to ensure that each structure or structural component retains the ability to perform its intended function. Aging effects are detected by visual inspection of external surfaces prior to the loss of the structure's or component's intended function. Visual inspections are supplemented by volumetric examination or by feel (for elastomers), as needed.

High strength (i.e., ASTM A540 Grade B23) structural bolting greater than 1 inch in nominal diameter, with an actual measured yield strength greater than or equal to 150 kilo-pounds per square inch (ksi) or an undocumented yield strength, is monitored for stress corrosion cracking (SCC). Periodic visual inspections of susceptible ASTM A540 bolting are conducted at an interval not to exceed five years to identify locations where the A540 bolting may be exposed to a potentially corrosive environment for SCC. If the visual inspections identify one or more bolts or studs in a potentially corrosive environment, then an engineering evaluation will be performed to determine whether the bolting material had been subjected to a corrosive environment for SCC. The bolts or studs determined to have been subjected to a corrosive environment for SCC comprise the population subject to sampling for volumetric examinations. The representative sample size is equal to 20 percent of the bolts or studs in the sample population (rounded up to the nearest whole number), with a maximum sample size of 25 bolts or studs.

The Structures Monitoring Program encompasses and implements the Water Control Structures Inspection and the Masonry Wall Inspection. This program implements provisions of the Maintenance Rule, 10 CFR 50.65, that relate to structures, masonry walls, and water control structures. Concrete, masonry walls and other structural components that perform a fire barrier intended function are also managed by the Fire Protection Program.