



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

May 19, 2011

Barry S. Allen  
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 – BATCH 4(TAC NO. ME4640)

Dear Mr. Allen:

By letter dated August 27, 2010, FirstEnergy Nuclear Operating Company, submitted an application pursuant to Title 10 of the *Code of Federal Regulation* Part 54 (10 CFR 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 within 30 days from the date of this letter. If you have any questions, please contact me by telephone at 301-415-2277 or by e-mail at [brian.harris2@nrc.gov](mailto:brian.harris2@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "BKH", written over a horizontal line.

Brian K. Harris, 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

**DAVIS-BESSE NUCLEAR POWER STATION  
LICENSE RENEWAL APPLICATION  
REQUEST FOR ADDITIONAL INFORMATION**

**RAI B.1.4-1**

Background:

Pursuant to Title 10 of the *Code of Federal Regulation* (CFR) 54.21(a)(3), a license renewal applicant is required to demonstrate that the effects of aging on structures and components subject to an aging management review (AMR) are adequately managed so that their intended functions will be maintained consistent with the current licensing basis for the period of extended operation. Section 3.0.1 of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2 (SRP-LR), defines an AMR as the identification of the materials, environments, aging effects, and aging management programs (AMPs) credited for managing the aging effects. In turn, SRP-LR Section A.1.2.3 defines an acceptable AMP as consisting of ten elements. Element 10, "operating experience," in part, is described in SRP-LR Section A.1.2.3.10, paragraph 1, as follows:

Consideration of future plant-specific and industry operating experience relating to aging management programs should be discussed. Reviews of operating experience by the applicant in the future may identify areas where aging management programs should be enhanced or new programs developed. An applicant should commit to a *future review of plant-specific and industry operating experience to confirm the effectiveness of its aging management programs or indicate a need to develop new aging management programs* (emphasis added). This information should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.

In addition, 10 CFR 54.21(d) requires the application to contain a final safety analysis report (FSAR) supplement. This supplement must contain a summary description of the programs and activities for managing the effects of aging and the evaluation of time-limited aging analyses for the period of extended operation.

Based on its review of the Davis-Besse Nuclear Power Station, Unit 1, license renewal application (LRA), the staff determined that Section B.1.4 provides a general description of how the applicant gathered and considered operating experience in preparing its LRA, and Sections B.2.1 through B.2.40 summarize the specific operating experience considered for each AMP.

Issue:

Although LRA Sections B.1.4 and B.2.1 through B.2.40 describe how the applicant incorporated operating experience into its AMPs, they do not fully describe how the applicant will use future operating experience to ensure that the AMPs will remain effective for managing the aging effects during the period of extended operation. The main focus of these LRA sections is on

ENCLOSURE

how the applicant evaluated operating experience available at the time the application was prepared to justify the adequacy of its proposed AMPs. Some of the program descriptions, particularly those for new programs, contain statements indicating that future plant-specific and industry operating experience will be used to adjust the programs as appropriate. However, for the majority of AMPs, it is not clear whether the applicant currently has or intends to implement actions to monitor operating experience on an ongoing basis and use it to ensure the continued effectiveness of the AMPs. The LRA also does not state whether new AMPs will be developed, as necessary. Further, the majority of the AMP descriptions do not provide the staff reasonable assurance that ongoing operating experience reviews will continue to inform AMP updates for license renewal.

Request:

Describe the programmatic activities that will be used to continually identify aging issues, evaluate them, and, as necessary, enhance the AMPs or develop new AMPs for license renewal. In this description, address the following:

- Describe the sources of plant-specific and industry operating experience that are monitored on an ongoing basis to identify potential aging issues. Indicate whether these plant-specific sources require monitoring: corrective action program, system health reports, licensee event reports (LERs), and the results of inspections performed under the AMPs. Similarly, indicate whether these industry sources require monitoring: vendor recommendations, revisions to industry standards on which the AMPs are based, LERs from other plants, NRC Bulletins, Generic Letters, Regulatory Issue Summaries, Information Notices, Regulatory Guides, License Renewal Interim Staff Guidance, and revisions to NUREG-1801, "Generic Aging Lessons Learned (GALL) Report." Describe the criteria used to classify a particular piece of information as aging related and outline the training provided to plant personnel so that they can adequately make such classifications.
- Describe how the identified aging issues are further evaluated to determine their potential impact on the plant aging management activities. Indicate whether the affected structures and components and their materials, environments, aging effects, aging mechanisms, and AMPs are identified and documented consistent with the methods used to prepare the LRA. Describe how the results of AMP inspections are considered to adjust the frequency of future inspections, establish new inspections, and ensure an adequate depth and breadth of component, material, environment, and aging effect combinations. Describe the records of these evaluations and indicate whether they are maintained in an auditable and retrievable form.
- Describe the process and criteria used to ensure that the identified enhancements are implemented in a timely manner.
- Describe the administrative controls over these programmatic activities.

Provide a summary description of these activities for the FSAR supplement required by 10 CFR 54.21(d). If enhancements for license renewal are necessary, also provide the updates for the FSAR supplement.

If such an operating experience program is determined to be unnecessary, provide a detailed explanation of the bases for this determination.

#### **RAI B.2.4-4**

##### Background:

GALL AMP XI.M18, "Bolting Integrity," recommends preventive actions and inspections for managing the loss of preload aging effect for bolting within the scope of license renewal.

The applicant stated in LRA Tables 3.2.2-1, 3.2.2-3, 3.2.2-4, 3.3.2-5, 3.3.2-7, 3.3.2-8, 3.3.2-11, 3.3.2-14, 3.3.2-16, 3.3.2-18, 3.3.2-23, 3.3.2-24, 3.3.2-25, 3.3.2-26, 3.3.2-31, 3.4.2-1 that stainless steel bolts exposed to air with steam or water leakage (external) are being managed for loss of material and cracking by the Bolting Integrity Program, but did not identify loss of preload as an applicable aging effect.

LRA AMP B.2.4, "Bolting Integrity Program," is stated to be an existing Davis-Besse program that is consistent with the GALL AMP XI.M18, "Bolting Integrity," with exceptions related to referenced guidelines and leakage detection, but no exceptions related to loss of preload are included.

##### Issue:

The LRA appears to provide contradictory information in regard to its consideration of loss of preload as an applicable aging effect for stainless steel bolts exposed to air with steam or water leakage (external). In addition, the LRA does not provide sufficient information to justify why loss of preload is not an applicable aging effect for stainless steel bolts exposed to air with steam or water leakage (external).

##### Request:

Clarify whether the stainless steel bolts exposed to air with steam or water leakage (external) are being managed for loss of preload. If this aging effect is being managed, provide additional information on how it will be managed during the period of extended operation. If loss of preload is not being managed for these components, provide justification for not managing this aging effect. In addition, if loss of preload is not being managed for these components, the staff would consider this to be an Exception to the recommendations of GALL AMP XI.M18 requiring an appropriate justification as to why loss of preload would not be of concern.

#### **RAI 3.2.2.2.6-2**

##### Background:

SRP-LR, Rev. 2, Table 3.2-1, ID 4 and 7 state that stainless steel is susceptible to loss of material due to pitting and crevice corrosion, and cracking due to stress-corrosion cracking (SCC). In addition, SRP-LR, Rev. 2, Sections 3.2.2.2.3.2 and 3.2.2.2.6 state that stainless steel materials that are exposed to outdoor environments may be subjected to an environment containing sufficient halides (primarily chlorides) that would induce these aging effects such as, but not limited to, those within approximately 5 miles of a saltwater coastline, those within

½ mile of a highway which is treated with salt in the wintertime, those areas in which the soil contains more than trace chlorides, those plants having cooling towers where the water is treated with chlorine or chlorine compounds, and those areas subject to chloride contamination from other agricultural or industrial sources.

The LRA states in Tables 3.2.2-4 and 3.2.2-5 that stainless steel bolting exposed to air-outdoor (external) will be susceptible to loss of preload, but does not identify loss of material due to pitting and crevice corrosion, or cracking due to SCC as applicable aging effects.

Issue:

The staff notes that one or more of the environmental conditions could exist which would lead to stainless steel bolting being susceptible to loss of material due to pitting and crevice corrosion, and cracking due to SCC. However, the LRA does not identify loss of material due to pitting and crevice corrosion, or cracking due to SCC as applicable aging effects.

Request:

Provide additional information on why atmospheric chloride induced loss of material due to pitting and crevice corrosion, and cracking due to SCC are not considered to be applicable aging effects for stainless steel components exposed to outdoor-air. If it is determined that they are applicable aging affects, then provide additional information on how they will be managed.

May 19, 2011

Barry S. Allen  
Vice President, Davis-Besse Nuclear Power Station  
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Sincerely,  
*/RA/*  
Brian K. Harris, 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  
ADAMS Accession No. ML11132A203

OFFICE:	LA:DLR	PM:RPB1:DLR	BC:RPB1:DLR
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DATE:	5/16/11	5/19/11	5/19/11

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Letter to B. Allen from B. Harris Dated May 19, 2011

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DAVIS-BESSE NUCLEAR POWER STATION – BATCH 4(TAC NO. ME4640)

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B. Harris

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