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

June 2, 2011

Mr. David A. Swank, Vice President, Engineering
Columbia Generating Station
Energy Northwest
MD PE23
P.O. Box 968
Richland, WA 99352-0968

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE COLUMBIA GENERATING STATION LICENSE RENEWAL APPLICATION REGARDING CORE PLATE ASSEMBLY (TAC NO. ME3058)

Dear Mr. Swank:

By letter dated January 19, 2010, Energy Northwest submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54), to renew operating license NPF-21 for Columbia Generating Station, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Abbas Mostala 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 at 301-415-3897 or by e-mail at arthur.cunanan@nrc.gov.

Sincerely,

Arthur Cunanan

Arthur D. Cunanan, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure:
As stated

cc w/encl: Listserv

COLUMBIA GENERATING STATION
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION

RAI B.2.10-2

Background:

By letter dated December 27, 1996, as supplemented and modified by letters dated December 19, 1997, and October 15, 1999, the Boiling-Water Reactor Vessel and Internals Project (BWRVIP) submitted Electric Power Research Institute (EPRI) Proprietary Report TA-107284, "BWR Vessel and Internals Project, BWR Core Plate Inspection and Flaw Evaluation Guidelines (BWRVIP-25)," December 1996, for the U.S. Nuclear Regulatory Commission staff (NRC or the staff) review. The BWRVIP-25 report provides design information and inspection and evaluation (I&E) guidelines for BWR core plate components.

The staff issued a final safety evaluation report (SER) by letter dated December 19, 1999, which found the BWRVIP-25 report, as supplemented and modified, acceptable for the 40-year operating period of BWRs. By letter dated December 7, 2000, the staff issued its final license renewal SER for BWRVIP-25, which identified five specific license renewal applicant action items which must be addressed in the plant-specific license renewal applications (LRAs) incorporating the BWRVIP-25 report. These action items are as follows:

1. The license renewal applicant is to verify that its plant is bounded by the BWRVIP-25 report. Further, the renewal applicant is to commit to programs described as necessary in the BWRVIP-25 report to manage the effects of aging on the functionality of the core plate assembly during the period of extended operation. Applicants for license renewal will be responsible for describing any such commitments and identifying how such commitments will be controlled. Any deviations from the aging management programs (AMPs) within the BWRVIP-25 report described as necessary to manage the effects of aging during the period of extended operation and to maintain the functionality of the reactor vessel components or other information presented in the report, such as materials of construction, will have to be identified by the renewal applicant and evaluated on a plant-specific basis in accordance with 10 CFR 54.21(a)(3) and (c)(1).

2. 10 CFR 54.21(d) requires that a final safety analysis report (FSAR) supplement for the facility contain a summary description of the programs and activities for managing the effects of aging and the evaluation of time-limited aging analyses (TLAAs) for the period of extended operation. Those applicants for license renewal referencing the BWRVIP-25 report for the core plate will ensure that the programs and activities specified as necessary in the BWRVIP-25 report are summarily described in the FSAR supplement.

3. 10 CFR 54.22 requires that each application for license renewal include any technical specification changes (and the justification for the changes) or additions necessary to manage the effects of aging during the period of extended operation as part of the renewal application. In its Appendix B to the BWRVIP-25 report, the BWRVIP stated that there are no generic changes or additions to technical specifications associated with the core plate as a result of its aging management review and that the applicant will provide the justification for plant-specific changes or additions. Those applicants for

license renewal referencing the BWRVIP-25 report for the core plate will ensure that the inspection strategy described in the BWRVIP-25 report does not conflict with or result in any changes to their technical specifications (TS). If TS changes do result, then the applicant must ensure that those changes are included in its application for license renewal.

4. Due to susceptibility of the rim hold-down bolts to stress relaxation, applicants referencing the BWRVIP-25 report for license renewal should identify and evaluate the projected stress relaxation as a potential TLAA issue.

5. Until such time as an expanded technical basis for not inspecting the rim hold-down bolts is approved by the staff, applicants referencing the BWRVIP-25 report for license renewal should continue to perform inspections of the rim hold-down bolts

In Section 3.5 of the final license renewal SER for BWRVIP-25, the staff evaluated the susceptibility of the rim hold-down bolts to stress relaxation as a potential TLAA issue. The rim hold-down bolts connect the core plate to the core shroud. The BWRVIP evaluated this issue generically under 10 CFR 54.21(c)(1)(ii) by projecting the analysis to the end of the period of extended operation. The stress state analyses, calculated for a 60-year plant life, indicated that all but two BWR/3s would undergo a five to 19 percent reduction in stress (e.g., loss of preload). However, two BWR/3s with core plate bolts positioned closer to the active fuel would show a 54 to 74 percent stress reduction. In its final license renewal SER for BWRVIP-25, the staff agreed that stress relaxation in the rim hold-down bolts is a TLAA issue and must be identified and evaluated by individual applicants considering license renewal.

Issue:

The Columbia Generating Station (Columbia) LRA, Appendix C, Table C-2, "BWRVIP-25, BWR Core Plate Inspection and Flaw Evaluation Guidelines," addresses each of the applicant action items associated with BWRVIP-25. The applicant's responses to each of these action items from Table C-2 of the LRA are as follows:

1. The BWR Vessel Internals Program requires the inspection and evaluation guidelines of this BWRVIP report to be implemented at Columbia. Site procedures require a technical justification to be documented, and the NRC to be notified, for any deviation from the guidelines. Columbia has not identified any deviation from the BWRVIP-25 guidelines. Therefore, Columbia is bounded by the BWRVIP-25 report.

   Columbia commits to programs described as necessary in the BWRVIP report to manage the effects of aging during the period of extended operation. Commitments are administratively controlled in accordance with the requirements of 10 CFR 50 Appendix B.

2. BWRVIP-25 requires inspection of the core plate rim hold-down bolts for those plants that use these bolts to prevent lateral motion of the core plate. As described in response to AAI [applicant action item] #4, Columbia has wedges installed to perform this function. Thus Columbia complies with the second option of BWRVIP-25, to install wedges rather than inspect the core plate rim hold-down bolts.

Therefore, no programs or activities are required and no summary description is provided in the FSAR supplement, contained in Appendix A of the LRA.

3. No technical specification changes are required for the inspection strategy described in the BWRVIP-25 report.

4. Stress relaxation of the core plate rim hold-down bolts is not a TLAA for Columbia. During original fabrication of the Columbia reactor internals, wedges were installed to prevent lateral motion of the core plate, and Columbia does not require the core plate rim hold-down bolts for this function.

5. BWRVIP-25 requires inspection of the core plate rim hold-down bolts for those plants that use these bolts to prevent lateral motion of the core plate. As described in response to AAI [applicant action item] #4, Columbia has wedges installed to perform this function. Thus Columbia complies with the second option of BWRVIP-25, to install wedges rather than inspect the core plate rim hold-down bolts.

Request:

a. Describe the details of the field investigation, and any uncertainties, regarding the condition whether Columbia has wedges installed to prevent lateral motion of the core plate in the event of stress relaxation of the core plate rim hold-down bolts.

b. If wedges are not installed to prevent lateral motion of the core plate, revise, as necessary, the applicable sections of the Columbia LRA as follows:

   i. Table C-2 from Appendix C of the Columbia LRA to include appropriate responses to the five license renewal applicant action items associated with the implementation of BWRVIP-25.

   ii. the description of the BWRVIP AMP in LRA Section B.2.10 and the summary description of this AMP in the LRA FSAR Supplement (Appendix A, Section A.1.2.10 of the LRA)

   iii. LRA Section 4.0 and the LRA FSAR Supplement addressing TLAAs (Appendix A, Section A.1.3 of the LRA) to address the potential TLAA issue associated with stress relaxation of the core plate rim hold-down bolts

   Note: The responses to the LRA Appendix C, Table C-2 action items associated with BWRVIP-25 should address Columbia's intent to conduct inspections and evaluations of core plate components in accordance with BWRVIP-25 guidelines if wedges are not installed.

c. If a complete TLAA of the issue associated with stress relaxation of the core plate rim hold-down bolts, projected to the end of the period or extended operation, cannot be performed as part of the current LRA, please provide a specific license renewal commitment and FSAR supplement to either:

i. Install wedges to prevent lateral motion of the core plate in the event of stress relaxation of the core plate rim hold-down bolts at least two years prior to the beginning of the period of extended operation, or

ii. Submit a plant-specific TLAA addressing the stress relaxation of the core plate rim hold-down bolts to the NRC for review and approval at least two years prior to the beginning of the period of extended operation. This TLAA shall analyze stress relaxation of the core plate rim hold-down bolts due to exposure of the pre-loaded bolts to neutron radiation over the life of the plant, and the analysis methods shall be consistent with the generic BWR core plate analysis specified in Appendix B of BWRVIP-25.

June 2, 2011

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Sincerely,
/RA/
Arthur D. Cunanan, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure:
As stated

cc w/encl: Listserv
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NAME	IKing	ACunanan	BPham	ACunanan
DATE	05/26/2011	05/26/2011	05/27/2011	06/2/2011

OFFICIAL RECORD COPY

Letter to D. A. Swank from Arthur D. Cunanan dated June 02, 2011

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE COLUMBIA GENERATING STATION, LICENSE RENEWAL APPLICATION REGARDING CORE PLATE ASSEMBLY (TAC NUMBER ME3058)

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