

May 24, 2005

Mr. L. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
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SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2) -
EVALUATION OF THE RESPONSE TO GENERIC LETTER (GL) 2004-01,
"REQUIREMENTS FOR STEAM GENERATOR [SG] TUBE INSPECTIONS,"
(TAC NOS. MC4800 AND MC4801)

Dear Mr. Pearce:

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued GL 2004-01 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML042370766). By letter dated October 28, 2004 (ADAMS Accession No. ML043080402), FirstEnergy Nuclear Operating Company (the licensee) responded to GL 2004-01 for BVPS-1 and 2. The NRC staff has completed its evaluation of your response. The NRC staff concluded that the SG tube inspection practices for BVPS-1 are in compliance with the existing tube inspection requirements. The NRC staff further concluded that the licensee's overall response to the GL was acceptable for BVPS-2. This completes our review under TAC Nos. MC4800 and MC4801.

Details of the NRC staff's review of BVPS-1 and 2 are contained in Enclosures 1 and 2. If you have any questions please contact me at 301-415-1402.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosures: 1. Evaluation of the BVPS-1 GL 2004-01 Response
2. Evaluation of the BVPS-2 GL 2004-01 Response

cc w/encls: See next page

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ACCESSION NO. ML051310018 *Evaluation inputs provided. No substantive changes made.

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EVALUATION OF THE RESPONSE TO GENERIC LETTER (GL) 2004-01
REQUIREMENTS FOR STEAM GENERATOR (SG) TUBE INSPECTIONS

BEAVER VALLEY POWER STATION, UNIT NO. 1 (BVPS-1)

FIRSTENERGY NUCLEAR OPERATING COMPANY (FENOC)

DOCKET NO. 50-334

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued GL 2004-01, "Requirements For Steam Generator Tube Inspections." The purpose of GL 2004-01 was to obtain information that would enable the NRC staff to determine whether a licensee's SG tube inspection programs comply with the existing tube inspection requirements (the BVPS-1 Technical Specifications) in conjunction with Appendix B to Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B.

By letter dated October 28, 2004, FENOC responded to GL 2004-01 for BVPS-1. The NRC staff's review of your response to the GL did not identify any concerns with the inspection practices employed at BVPS-1. The NRC staff, therefore, concludes that your SG tube inspection practices are in compliance with the existing tube inspection requirements.

Principal Contributor: J. Terrell

Date: May 24, 2005

ENCLOSURE 1

EVALUATION OF THE RESPONSE TO GENERIC LETTER (GL) 2004-01

REQUIREMENTS FOR STEAM GENERATOR (SG) TUBE INSPECTIONS

BEAVER VALLEY POWER STATION, UNIT NO. 2 (BVPS-2)

FIRSTENERGY NUCLEAR OPERATING COMPANY (FENOC)

DOCKET NO. 50-412

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued GL 2004-01, "Requirements For Steam Generator Tube Inspections." The purpose of GL 2004-01 was to obtain information that would enable the NRC staff to determine whether a licensee's SG tube inspection programs comply with the existing tube inspection requirements (the BVPS-2 Technical Specifications) in conjunction with Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B.

Licenses who concluded that their SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the Technical Specifications in conjunction with Appendix B, were requested to submit a safety assessment. As part of this safety assessment, licenses were to address whether their safety basis for limiting inspections within the tubesheet constitutes a change to the "method of evaluation" for establishing the structural and leakage integrity of the tube-to-tubesheet joint. The NRC staff requested this information since it was expected that licenses' safety basis relied on a mechanical expansion joint rather than the tube-to-tubesheet weld. Since the original tube-to-tubesheet joint was most probably designed by demonstrating that the stresses in the tube, weld, and tubesheet satisfy the allowable stress values in Section III of the American Society for Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code) (or other similar standard), the NRC staff questioned whether the safety basis for limiting inspections relied on demonstrating that the expansion joint satisfied some criteria (e.g., minimum tube pullout load criteria, allowable leakage) beyond those specified in Section III of the ASME Code.

By letter dated October 28, 2004, FENOC responded to GL 2004-01 for BVPS-2. In your response, you conclude that the safety basis used to support your tube inspection practices does not constitute a change to the method of evaluation. This conclusion appears to be based, in part, on an assumption that the GL was implying that the selection of non-destructive evaluation techniques defines the limits of the reactor coolant pressure boundary. The GL's discussion of the original design basis, however, was related to the "safety analysis" performed by certain licenses to support a conclusion that flaws located a certain distance below the top of the tubesheet do not have any safety implications. This safety basis relies on a mechanical interference fit between the tube and the tubesheet for establishing the tube-to-tubesheet joint (i.e., forming the reactor coolant pressure boundary). However, for many plants (if not all), the original design of the SG gave no credit for this interference fit since the weld between the tube and the tubesheet ensured the integrity of the tube-to-tubesheet joint. In fact, the design rules

ENCLOSURE 2

(ASME Code, Section III) do not address the use of an interference fit for maintaining pressure boundary integrity. As a result, the NRC staff questioned whether licensees were using a different method of evaluation for assessing the adequacy of the tube-to-tubesheet joint. Although your response to the "method of evaluation" item did not focus on the NRC staff's area of concern, we conclude that your overall response to the GL is acceptable, since you indicated that your tube inspection practices at BVPS-2 are not consistent with the NRC staff position, and that this has been entered into your corrective action program. You further indicated that you plan on submitting a license amendment to clarify your SG tube inspection practices in the tubesheet region. In the event that a different method of evaluation for the tube-to-tubesheet joint is in use at BVPS-2, it will be reviewed as part of the license amendment process.

Principal Contributors: J. Terrell
P. Klein

Date: May 24, 2005