

February 28, 2006

Mr. James H. Lash
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P. O. Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NO. 2 (BVPS-2) - REQUEST FOR
ADDITIONAL INFORMATION (RAI) - APPROVAL OF F* METHODOLOGY FOR
STEAM GENERATOR (SG) TUBE INSPECTIONS (TAC NO. MC6768)

Dear Mr. Lash:

By letter dated April 11, 2005, FirstEnergy Nuclear Operating Company (FENOC, the licensee), submitted a license amendment request for BVPS-2, to revise the scope of SG tube inspections. The amendment defines a distance called F* (F-star), which is measured downward into the tubesheet. The portion of tubing in the tubesheet below the F* distance would be excluded from inspection. In letters dated December 2, 2005, and January 27, 2006, FENOC responded to an October 28, 2005, RAI from the Nuclear Regulatory Commission (NRC) staff. The licensee also provided clarifying information in a telephone conference on February 7, 2006. In order to complete its review, the NRC staff needs the additional information requested in the enclosure.

As discussed with your staff, we request your response within 45 days of receipt of this letter in order to maintain our review schedule. If you have any questions, please contact me at 301-415-1402.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
RAI

cc w/encl: See next page

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ADAMS Accession No.: ML060540328

*Input received. No substantive changes made.

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DATE	2/27/06	2/27/06	2/21/06	2/28/06

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REQUEST FOR ADDITIONAL INFORMATION (RAI)

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

STEAM GENERATOR (SG) F* INSPECTION METHODOLOGY

DOCKET NO. 50-412

By letter dated April 11, 2005 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML051040080), FirstEnergy Nuclear Operating Company (FENOC, the licensee), submitted a license amendment request for BVPS-2, to revise the scope of SG tube inspections. The amendment defines a distance called F* (F-star), which is measured downward into the tubesheet. The portion of tubing in the tubesheet below the F* distance would be excluded from inspection. Technical justification for this change was provided in Westinghouse Topical Report WCAP-16385-P, Revision 1, "F* Tube Plugging Criterion for Tubes with Degradation in the Tubesheet Roll Expansion Region of the Beaver Valley Unit 2 Steam Generators," dated March 2005.

In letters dated December 2, 2005 (ADAMS Accession No. ML053420343), and January 27, 2006 (ADAMS Accession No. ML060330258), FENOC responded to an October 28, 2005, RAI from the Nuclear Regulatory Commission (NRC) staff. The licensee also provided clarifying information in a telephone conference on February 7, 2006. In order to complete its review, the NRC staff needs the additional information requested below.

1. It is the NRC staff's understanding from your proposed technical specification (TS) revisions that all unsleeved tubes in the hot-leg tubesheet will be inspected within the F* distance or to 3.0 inches below the top-of-the-tubesheet (TTS), whichever is greater (licensee's January 27, 2006, letter). It is also the NRC staff's understanding that all unsleeved tubes will be repaired or removed from service upon detection of service-induced degradation within the F* distance or 3.0 inches below the TTS, whichever is greater. Since no inspection will be required below the F* distance or 3.0 inches below the TTS, whichever is greater, and no service-induced degradation can be left in service in the region inspected, it is not clear how you will implement your plan to address leakage by applying the value of 1.1×10^{-4} gpm to primary water stress-corrosion cracking (PWSCC) eddy current indications (>3 V on the 300 KHz +Point channel) found below the F* distance (licensee's December 2, 2005, letter, response to RAI No. 6). Please clarify how leakage from tubes degraded within the tubesheet will be addressed, both within and below the F* distance (or 3.0 inches below the TTS, whichever is greater).
2. It is the NRC staff's understanding that the leakage rates presented in Table 2-2 of WCAP-14697 for 7/8-inch diameter SG tubes were calculated values based on test measurements for 3/4-inch diameter tubes. In Section 2.3.1 of WCAP-14697, which addresses the applicability of 3/4-inch diameter tube test results to 7/8-inch diameter tubes, the correction factor for contact pressure is based on a linear relationship between contact pressure and leakage flow. That is, the leakage flow for the 7/8-inch diameter tubing is considered 20 percent higher than that for the 3/4-inch diameter

Enclosure

tubing based on a 20 percent lower contact pressure. Please discuss the basis for using a linear relationship between contact pressure and leakage flow.

3. In your December 2, 2005, RAI response to RAI No. 7, it appears that you propose to implement the F^* criterion to the portion of the parent tube below a sleeve joint in the tubesheet. In the periphery of the tube bundle, hole dilation is greater near the bottom of the tubesheet than at the top of the tubesheet. Please discuss whether it has been confirmed that the hole dilation in the peripheral tubes at the locations where sleeve joints can be established are bounded by the dilations calculated near the top of the tubesheet in the center of the tube bundle.

cc:

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