August 3, 2004

Mr. L. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2) - REQUEST FOR ADDITIONAL INFORMATION (RAI) - 2003 REFUELING OUTAGE (RFO) STEAM GENERATOR (SG) INSPECTION REPORTS (TAC NOS. MC2875 AND MC2876)

Dear Mr. Pearce:

The Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in your April 4, April 15, and July 24, 2003, and February 12 and March 4, 2004, reports summarizing the BVPS-1 March 2003 RFO SG tube inspections, and the information provided in your October 9, 2003, and March 4, 2004, reports summarizing the BVPS-2 RFO SG tube inspections. The NRC staff has determined that the additional information contained in the enclosure to this letter is needed to complete its review. As discussed with your staff, we request your response within 30 days from receipt of this letter in order for the NRC staff to complete its scheduled review of your reports.

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

Enclosure: RAI

cc w/encl: See next page

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ACCESSION NO. ML042050355 *Input received. No substantive changes made

OFFICE	PDI-1/PM	PDI-2/LA	EMCB/SC	PDI-1/SC
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DATE	7/29/04	7/30/04	07/15/2004	8/2/04

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REQUEST FOR ADDITIONAL INFORMATION

RELATED TO FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2)

DOCKET NOS. 50-334 AND 50-412

By letters dated April 4, 2003, Agencywide Documents Access and Management System (ADAMS) accession number ML030980009, April 15, 2003 (ADAMS accession number ML031080137), July 24, 2003 (ADAMS accession number ML032100660), February 12, 2004 (ADAMS accession number ML040490547), and March 4, 2004 (ADAMS accession number ML040700173) FirstEnergy Nuclear Operating Company (licensee), submitted reports for BVPS-1 and 2 summarizing the steam generator (SG) tube inspections performed at BVPS-1 during its March 2003 refueling outage (1R15). Additional information concerning these inspections was summarized by the Nuclear Regulatory Commission (NRC) in a letter dated June 20, 2003 (ADAMS accession number ML031710065). Information provided in the July 24, 2003, and February 12, 2004, letters pertaining to implementation of the voltage-based tube repair criteria for degradation at the tube support plate elevations was reviewed separately.

By letters dated October 9, 2003 (ADAMS accession number ML032880405), and March 4, 2004 (ADAMS accession number ML040700173), the licensee submitted reports summarizing the SG tube inspections performed at BVPS-2 during its September 2003 refueling outage (2R10).

In order for the NRC staff to complete its review, we request you respond to the following questions:

BVPS-1

1. Several tubes were plugged for “axial indications above the hot leg top of tubesheet” region. Most (if not all) of the axial indications are located within the region of the tube from the top of the tubesheet to 4 inches above the top of the tubesheet. Please discuss the nature and cause of these indications (e.g., outside diameter stress corrosion cracking (ODSCC) associated with the sludge pile) and how these indications were detected (e.g., bobbin and/or rotating probe). If these indications were not reliably detected with a bobbin probe, please discuss the basis for limiting the upper extent of your rotating probe examinations to 6 inches above the top of the tubesheet.

2. Please clarify the nature and cause of the non-quantifiable indications located above the top of the tubesheet.

3. Please discuss the results of your rotating probe inspections at the top of the cold leg tubesheet. Also, please clarify the nature and cause of the non-quantifiable indication identified slightly above the top of the cold leg tubesheet region in tube R13C55 in SG B.

ENCLOSURE

4. In your reports, you indicated that axial or volumetric indications were detected in the U-bend region of several tubes. Please clarify how these indications were detected (e.g., rotating probe) and the nature and location of these indications (e.g., primary water stress corrosion cracking (PWSCC) at the tangent point or at the flank of tube at the apex, etc.). Please discuss whether the location and nature of these indications are consistent with industry expectations for degradation in the U-bend region.

5. One tube was plugged for an axial indication at an anti-vibration bar dent. Please discuss the size of the ding/dent, the size of the indication, and whether the indication was detected/reported during the standard analysis of the bobbin probe data. Also discuss whether the axial indication was associated with the dent (the dent was reported at AV3+0.15 inches and the axial indication was reported at AV3-0.13 inches).

6. One tube was plugged as a result of an obstruction (i.e., other than the one tube plugged for a restriction in a tubesheet sleeve). Discuss the largest size probe that passed through this tube during 1R15, the largest size probe that ever passed through this tube, and the source of this obstruction. Please discuss whether this tube had adequate integrity. Please discuss whether the obstruction was service-induced. If service-induced, please discuss the root cause for the obstruction and how this service-induced condition was factored into your operational assessment.

7. Please clarify the term “secondary side anomaly”.

8. A gap was observed along the entire length of the blowdown pipe support-to-tubesheet weld in SG A. Please discuss whether the blowdown pipe support-to-tubesheet weld was inspected in the other SGs in BVPS-1 and 2. If so, please discuss the results. If no inspections were performed, please discuss the technical basis.

9. It was indicated that 100% of the inservice sleeves installed at 1R13 were examined during 1R15. Please clarify the types of sleeves installed during 1R13 (e.g., Combustion Engineering tungsten inert gas (TIG) welded sleeves) and the probes used to inspect these sleeves in 1R15. Also, if any sleeves were installed prior to 1R13 or during 1R14, clarify the type of sleeve, the outage in which they were installed, the scope of inspection during 1R15, and the basis for this inspection scope. Please also clarify whether any sleeves have been installed at the tube support plates.

10. In 1R14 and 1R15, sleeves were identified that would not permit the passage of the typical size eddy-current probe. Please discuss the types of sleeves involved in these occurrences, the length of time the sleeves were in service, whether the parent tube was cleaned and inspected at the joints during the installation process, the extent of the obstruction (e.g., tube diameter reduced by approximately 25%), and the location of the “collapse” relative to the tube and the sleeve. Please discuss whether an inspection of the area in which the sleeve joint was established was performed during the outage (with a probe capable of finding axial and circumferential cracks) in which the sleeve was installed. Please discuss your future plans for performing rotating probe examinations of projected tube-to-sleeve joint areas prior to sleeve installation.

11. In 1R15, twenty-eight tubes were identified with axial indications in the parent tube located behind the lower hard roll region of a sleeved tube. Each of these 28 tubes were sleeved

in 1R13 and all of these tubes were previously plugged (i.e., they were deplugged and returned to service in 1R13). The plugs were removed by a TIG relaxation process in 1R13 and all indications are coincident with the area where a tube plug was previously installed. Please discuss whether a rotating probe inspection was performed in 1R13 (or 1R14) at the area in which the flaws were eventually found (either prior to or after sleeve installation). Also, please discuss the type of plug that was installed in each of these tubes (e.g., rolled plug, ribbed plug, welded plug, etc.) and whether the indication was coincident with the area in the tube where residual stresses would be expected as a result of the plug installation.

BVPS-2

1. Several non-quantifiable indications were reported in the BVPS-2 SGs. Please discuss whether all of these signals were inspected with a rotating probe. If all were not inspected with a rotating probe, please discuss the technical basis for leaving these indications in service. For those non-quantifiable indications further classified as single volumetric indications, please discuss the cause for these indications.

2. Several tubes had confirmed tube support plate indications while at least one tube had a possible tube support plate indication. Please discuss whether these signals have changed with time.

3. Several single axial indications at the tube support plate elevations were reported in SG C. Please discuss the cause of these indications (e.g., ODSCC). In addition, please discuss whether these indications are at dented tube support plate elevations, and if so, provide the dent voltage.

4. During your 2002 SG tube inspections, PWSCC was detected in two tubes at dented hot leg support plate intersections and ODSCC occurred in one tube at a hot leg free span ding. In each case, the crack orientation was in the axial direction. Please discuss the scope and results of any rotating probe inspections performed at dents or dings during your 2003 outage.

5. One tube in SG C (R45C57) was administratively plugged due to a potential loose part. Please provide the results of any visual examinations performed in this area, if any. Please discuss whether the foreign object, if any, was removed. If a loose part was present and not removed, discuss the results of your assessment, if any, with respect to the effect of this part on the integrity of the neighboring tubes.

6. Please discuss the axial extent of the rotating probe inspections performed near the top of the tubesheet (e.g., from “x” inches above to “y” inches below the top of the tubesheet). In your October 9, 2003, letter, you indicated that 3 tubes had circumferential indications located above the hot leg tubesheet. Please clarify whether these indications were associated with the expansion transition or were in the unexpanded portion of the tube. Regarding the one circumferential indication identified above the top of the tubesheet in SG C, please clarify the tube in which this indication was located. The NRC staff notes that only one circumferential indication was reported on the “Tubes Removed from Service” list for SG C and this indication appears to be below the top of the tubesheet. If any of the indications were not associated with the expansion transition, please provide

the technical basis for the scope of the rotating probe inspections above the top of the tubesheet (i.e., the basis for “x inches” above the top of the tubesheet). Also, please clarify the nature of the indications (e.g., PWSCC, ODSCC).

7. One tube was identified as being plugged for an obstruction. Discuss the largest size probe that passed through this tube during the 2003 outage, the largest size probe that ever passed through this tube, and the source and location (e.g., tube R1C1 at third hot leg tube support) of this obstruction. If the obstruction is service-induced, discuss the cause and any corrective actions taken or planned.

Beaver Valley Power Station, Unit Nos. 1 and 2

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