



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

June 14, 2016

Mr. Marty L. Richey, Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

**SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 - REQUEST FOR ADDITIONAL
INFORMATION REGARDING FALL 2015 REFUELING OUTAGE STEAM
GENERATOR TUBE INSPECTIONS (CAC NO. MF7472)**

Dear Mr. Richey:

By letters dated January 22, 2016, and April 6, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML16025A168 and ML16097A452, respectively), FirstEnergy Nuclear Operating Company submitted information summarizing the results of the fall 2015 steam generator tube inspections at the Beaver Valley Power Station, Unit 2. These inspections were performed during the eighteenth refueling outage. In addition, the U.S. Nuclear Regulatory Commission (NRC) staff summarized information related to the 2015 inspections in a letter dated November 24, 2015 (ADAMS Accession No. ML15320A391). To complete its review, the NRC staff requests a response to the enclosed Request for Additional Information questions.

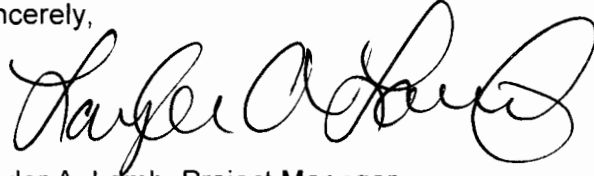
The draft questions were sent to Mr. Phil Lashley, of your staff, to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. Please respond to the enclosed questions within 30 days from the date of this letter.

M. Richey

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If you have any questions regarding this matter, please contact me at (301) 415-7128 or Taylor.Lamb@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Taylor A. Lamb". The signature is fluid and cursive, with the first name "Taylor" being more prominent.

Taylor A. Lamb, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
FALL 2016 STEAM GENERATOR TUBE INSPECTIONS
FIRSTENERGY NUCLEAR OPERATING COMPANY
BEAVER VALLEY POWER STATION, UNIT 2
DOCKET NO. 50-412

By letters dated January 22, 2016, and April 6, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML16025A168 and ML16097A452, respectively), FirstEnergy Nuclear Operating Company (the licensee) submitted information summarizing the results of the fall 2015 steam generator tube inspections at the Beaver Valley Power Station, Unit 2. These inspections were performed during the eighteenth refueling outage. In addition, the U.S. Nuclear Regulatory Commission (NRC) staff summarized information related to the 2015 inspections in a letter dated November 24, 2015 (ADAMS Accession No. ML15320A391).

In order to complete its review of the documents listed above, the NRC staff requests the following additional information:

Regarding the January 22, 2016, letter:

1. On page 3-2, the criteria for identifying dents with indication is described. This process is used for the detection of signals, which could be confirmed as primary water stress corrosion cracking (PWSCC) at tube support plate (TSP) intersections. Please confirm that the voltage screening criteria (greater than or equal to 1.25 volts) were used for the identification of dents and that the detection of PWSCC at both dented and non-dented TSP intersections did not implement a voltage screening criteria (i.e., all PWSCC indications were identified/reported regardless of the signal amplitude).
2. The last sentence on page 3-3 states, "The growth during Cycle 18 for all indications was under 0.4 volts." Table 3-4 lists a column titled "Largest Growth, Volts." Please verify that this column lists the size of the indication that experienced the largest voltage growth (and not the largest growth rate experienced at the tube support elevation, since some of the values are greater than 0.4 volts). If not, please clarify.
3. Table 3-1 indicates the number of indications not tested with a +Point probe. It does not appear that the larger indications were inspected with a +Point probe. Please discuss how you decided which indications to inspect with a +Point probe (e.g., were indications more likely to exhibit extreme voltage growth selected? If extreme voltage growth is observed, it could result in a flaw exceeding the tube integrity performance criteria).
4. In Table 6-1, the "Input" column for Steam Generator (SG) C appears to be missing a value for the 1.3 volt bin. Please clarify. Were 4 indications detected in the 1.3 volt bin? If so, did your leakage and burst calculations assume there were 6.7 indications in this bin?

Enclosure

Regarding the April 6, 2016, letter:

5. Please confirm that no degradation was associated with any of the plugs.
6. Please identify all tubes with axial or circumferential cracking at freespan dings. What were the sizes of the dings? Were the flaws detected by bobbin and/or rotating probe? If the flaws were initially only detected with the rotating probe, and the dent/ding signal was close to the inspection threshold (e.g., 1 volt for freespan dings), please discuss why no additional rotating probe inspections below the original inspection threshold were necessary.
7. Please identify the tubes with axial outside diameter stress corrosion cracking associated with freespan scratches or gouges at U-bend tangents. How were these indications originally detected (e.g., bobbin and/or rotating probe)? If the flaws were initially only detected with a rotating probe, please discuss whether any sample expansions were performed or why none were necessary.
8. Please discuss whether any ligament breach indications were detected and discuss the size/extent of these indications.
9. Please confirm that none of the sleeved tubes were plugged.

M. Richey

- 2 -

If you have any questions regarding this matter, please contact me at (301) 415-7128 or Taylor.Lamb@nrc.gov.

Sincerely,

/RA/

Taylor A. Lamb, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
Request for Additional Information

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RidsNrrDeEpn Resource

RidsNrrDraApla Resource

JCollins, NRR

ADAMS Accession No.: ML16147A284

*via memo

**via email

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|--------|----------------|----------------|------------|----------------|-----------------------|
| NAME | TLamb | LRonewicz | GKulesa* | DBroaddus** | TLamb (REnnis for) |
| DATE | 6/01/2016 | 5/31/2016 | 5/16/2016 | 6/14/2016 | 6/14/2016 |

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