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

September 16, 2009

Mr. Peter P. Sena III
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 NOS. 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION RE: INSERVICE INSPECTION PROGRAMS FOR REQUEST NUMBERS 1-TYP-4-B3.120-1 AND 2-TYP-3-C6.10-1 (TAC NOS. ME1108 AND ME1109)

Dear Mr. Sena:

By letter dated April 14, 2009, FirstEnergy Nuclear Operating Company submitted relief requests for authorization of a proposed alternative to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI, Table IWB-2500-1 volumetric examination requirement for Beaver Valley Power Station, Unit No. 1 (BVPS-1) fourth inservice inspection (ISI) program interval and to the ASME Code, Section XI, Table IWC-2500-1 surface examination requirement for BVPS-2 ISI program interval.

The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The NRC staff is requesting a response to the RAI within 30 days of receipt.

If you have any questions regarding this issue, please contact me at (301) 415-1016.

Sincerely,

Nadiyah S. Morgan, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
RAI

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

RELIEF REQUEST REGARDING PROPOSED ALTERNATIVES FOR THE

INSERVICE INSPECTION PROGRAM

FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

By letter dated April 14, 2009, FirstEnergy Nuclear Operating Company (licensee), submitted relief requests for Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and 2). The licensee requested authorization to allow the performance of a visual examination of BVPS-1 pressurizer surge nozzle in lieu of the performance of a volumetric examination as required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, 2001 Edition, through 2003 Addenda, Table IWB-2500-1, for the fourth inservice inspection (ISI) program interval. The licensee also requested authorization to allow a reduction in the percentage of weld length examined of the BVPS-2 recirculation spray pump casing welds in lieu of the requirements of the ASME Code, Section XI, 2001 Edition, through 2003 Addenda, Table IWC-2500-1, for the third ISI program interval. To complete its review, the Nuclear Regulatory Commission (NRC) staff requests the following additional information:

Request Number 1-TYP-4-B3.120-1

1. Relief is being requested from the requirements of Table IWB-2500-1, Examination Category B-D, Item No. B3.120. However, the applicable ASME Code, as stated by the licensee, ASME Code, Section XI, 2001 Edition, through 2003 Addenda, Table IWB-2500-1 does not have this item number. Please explain this discrepancy and identify the intended item number.

2. Discuss the results of previous nondestructive examination (NDE) completed on the BVPS-1 and 2 pressurizer surge line inner radius.

3. It is stated in Section 4.0 that the unusual difficulty without a compensating increase in the level of quality or safety is associated with access to either the exterior surface for volumetric examination or interior surface for an enhanced visual examination. To further clarify how access to the exterior surface and interior surface is obtained:

    a. Describe what type of insulation is installed on the pressurizer surge line and the effort needed to remove it.

    b. Discuss specifically the design features of the insulation that requires that all heater cables, shown in Figure 1 of the submittal, must be removed first in order to successfully remove the insulation from the pressurizer surge line.

    c. Discuss what special considerations, if any, were required in the past when heater cables were removed.

d. The licensee stated that the adjacent nozzle to safe end weld, within 18 inches of the pressurizer surge line inner radius, had been examined. Discuss whether there were any special considerations such as heater cable removal, insulation removal, etc. needed during the adjacent nozzle to safe end weld examination, and if so, why was the surge line not examined during this time?

e. The licensee stated that there is a thermal sleeve in BVPS-1 pressurizer surge line. Please describe the configuration of the thermal sleeve in greater detail to demonstrate how access is limited and precludes an enhanced visual examination.

f. The licensee stated that with a manway 40 feet away from the area of interest, positioning a remote camera will be difficult. Please describe in greater detail the type of remote camera to be used and its limitations that would create an unusual difficulty without a compensating increase in the level of quality or safety.

4. As previously stated, the licensee stated in Section 4.0 that the unusual difficulty without a compensating increase in the level of quality or safety is associated with access to the exterior surface for volumetric examination. High dose rates in this area and the time spent in high dose areas are the primary concerns hindering access to the area of interest. To further clarify aspects associated with the dose estimate, please describe the following:

a. It is stated in Section 4.0 that heater cables were repaired to assess potential short circuits in refueling outage 1R08. Discuss how much dose was received during this activity and do current dose estimates agree with this data point.

b. Discuss whether the historical dose rates in this area are comparable to what they are now and whether the dose rate in the area of interest is constant or does it vary.

c. The dose estimate demonstrates a variance in the dose rates seen by boilermakers, examiners, and electricians. Please explain the reason for this variance.

d. It is stated in Section 4.0 that the BVPS-2 pressurizer surge line was inspected ultrasonically during the last outage. Discuss how dose rates vary from BVPS-1 to BVPS-2 and what are the variances between the two units that allowed BVPS-2 to be examined, but not BVPS-1.

e. It is stated in Section 5.0 that as an alternative to the required code examination, a visual examination (VT-2) of the pressurizer surge nozzle area, with the insulation installed, will be completed in conjunction with the boric acid walkdown, during every shutdown. Discuss the estimated dose received from performing VT-2 examinations every shutdown and how this compares to the performance of the required volumetric examination over the same ISI interval.

5. It is stated in Section 4.0 that special equipment was designed to perform this specific volumetric examination. Please describe this equipment, rational for its use, and reasons why it is not viable to use.

6. It is stated in Section 4.0 that fatigue is the only credible failure mechanism applicable for the pressurizer surge line nozzle. To further clarify aspects of this degradation mechanism, please describe the following:

   a. It is stated in Section 4.0 that the inner radius of the pressurizer surge line is less susceptible to fatigue problems than a nozzle to vessel weld. Please provide a more thorough explanation as to why the cast SA-216 Grade WWC steel pressurizer surge line inner radius is less susceptible to fatigue than a nozzle to vessel weld.

   b. It is stated in Section 4.0 that the chances of having a pre-existing flaw are less likely in the inner radius casting than a nozzle to vessel weld due to the manufacturing processes. Please provide a more thorough explanation as to why it is less probable that a pre-existing flaw exist in the inner radius of the pressurizer surge line as opposed to a nozzle to vessel weld. Discuss whether there is a difference in acceptance criteria for pre-service examination.

   c. Discuss how in-service flaws are identified and characterized on the BVPS-1 pressurizer surge line inner radius without the use of a volumetric examination technique to ensure the integrity of the reactor coolant pressure boundary.

   d. With a lack of a means to characterize potential in-service flaws, discuss what measures will be taken by the licensee to prevent a postulated in-service flaw from challenging the integrity of the reactor coolant pressure boundary.

7. Discuss whether any thermal transients that have occurred could have affected the structural integrity of the BVPS-1 pressurizer surge line inner radius.

8. Discuss whether water chemistry transients that have occurred could have affected the pressurizer surge line inner radius.

9. Discuss whether the leak before break analysis for this pipe is impacted by the inability to examine this pipe per ASME requirements.

10. The proposed alternative for a VT-2 visual examination with insulation on the pipe, will only identify a through wall leak. Considering the safety significance of this component, please describe how there is not a compensating increase in the level of quality or safety by performing the required volumetric examination or enhanced visual examination as permitted by Section 50.55a(b)(2)(xxi) of Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR).

Request Number 2-TYP-3-C6.10-1

1. State how many welds on BVPS-2 recirculation spray pump 2RSS-P21A are subject to examination per ASME Code, Section XI requirements; the identification numbers of those welds, and what percentage of welds will receive reduced examination coverage.

2. It is stated in Section 4.0 that Weld Numbers 2RSS*P21A-C-9, 2RSS*P21A-10, 2RSS*P21A-C-17 and 2RSS*P21A-C-18 will only receive 70 percent coverage and Weld Numbers 2RSS*P21A-L-21, 2RSS*P21A-C-23, 2RSS*P21A-L-24, and 2RSS*P21A-C-25 will receive zero percent coverage. How does the intended examination coverage meet the requirements of ASME Code, Section XI Code Case N-460 and how does zero percent coverage ensure the structural integrity of the subject welds?

3. It is stated in Section 5.0 that periodic pump testing and periodic VT-2 examinations will provide an adequate measure of assurance of the integrity of the pump casing. Please describe how this alternative will identify degraded weldments located in the sump of the pump.

4. Please provide drawings and pictures to demonstrate the hindrance created by the configuration of the welds required for surface examination.

5. Discuss how the welds, listed in this relief request, were accessed for previous surface examinations and if all welds were accessed then what precludes their accessibility now.

6. Discuss the previous NDE results from the examination of these welds addressed in this relief request.

7. Discuss the plant-specific operating experience associated with these pumps. For example, discuss any instances of degradation of these welds and challenges to pump performance as a result of materials degradation issues.

8. Describe any active degradation mechanisms affecting these welds covered in this relief request.

9. Discuss how often maintenance is scheduled for BVPS-2 recirculation spray pump 2RSS-P21A. Where the welds could be accessed, discuss whether the scheduled maintenance activities can coincide with the time frame for the required surface examinations.

10. Discuss the level of effort required to access these welds covered in this relief request and discuss whether physical alterations (i.e. cutting away hindrances) would be necessary to gain adequate examination coverage as required by ASME Code, Section XI, 2001 Edition, through 2003 Addenda, Table IWC-2500-1.

11. It is stated in Section 4.0 that these examination evolutions risk damage to pump components. Discuss what specific risk of damage comes from the disassembly of the pump, whether these risks can be easily mitigated, and demonstrate that these risks

outweigh the level of safety assurance gained by acquiring the required examination coverage of these welds.

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ADAMS ACCESSION NUMBER: ML092370037 *Input received. No substantial changes made.

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