April 6, 2004

Mr. Bryce L. Shriver
Senior Vice President
and Chief Nuclear Officer
PPL Susquehanna, LLC
769 Salem Boulevard NUCSB3
Berwick, PA 18603-0467

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION (RAI) - SECOND TEN-YEAR INSERVICE INSPECTION PROGRAM (TAC NOS. MC2450 and MC2451)

Dear Mr. Shriver:

In reviewing your submittals of March 26, 2004, relating to Relief Request Nos. RR-29 and RR-30, the Nuclear Regulatory Commission staff has determined that additional information contained in the enclosure to this letter is needed to complete its review. We discussed this issue with your staff during a conference call on April 5, 2004. As we indicated during our conversation, we are enclosing a formal RAI. The enclosed questions have been revised from the draft RAI to exclude the questions that were answered during the conference call. As agreed to by your staff, we request you respond within 7 days of the date of this letter.

If you have any questions, please contact me at 301-415-1030.

Sincerely,

/RA/

Richard V. Guzman, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-387

Enclosure: RAI

cc w/encl: See next page

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cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

RELATING TO PROPOSED RELIEF REQUESTS RR-29 AND RR-30 TO THE

SECOND TEN-YEAR INSERVICE INSPECTION PROGRAM

REACTOR RECIRCULATION NOZZLE N1B WELD OVERLAY FOR

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1,

PPL SUSQUEHANNA, LLC

DOCKET NOS. 50-387

1. American Society of Mechanical Engineers (ASME) Code Case N-638 limits the size of the weld overlay repair to 100 sq. in. maximum and a depth not greater than ½ the ferritic base metal thickness. Some of the reasons for these limits are:

   a. Distortion of weld and base metal

   b. Cracking in weld and base metal

   c. Large residual stresses

   A final weld surface area of 300 sq. in. is significantly larger than that allowed by ASME. Justify the basis for exceeding these limits and address each point above, by analysis, testing and specific experience with these types of weld areas.

2. What are the thicknesses of the nozzle, pipe, original 182 butter, and final weld overlay?

3. Provide a sketch of the original weld and base metal configuration and final weld and base metal configuration with the overlay.

4. How many layers of weld metal will be applied for the overlay?

5. What is the code of record and interval?

6. What is the original code of construction?

7. Provide additional information regarding your ultrasonic examinations of N1B nozzle to safe end weld:

   a. You have determined that the detected flaw is due to intragranular stress corrosion cracking (IGSCC). Provide the bases for your determination. Also, describe in detail the ultrasonic testing (UT) characteristics that are used to support the IGSCC determination. What are the UT characteristics or other considerations that are used to exclude the possibility of thermal fatigue cracks?

b. Describe in detail the inspection results reported in Table 1 of the Electric Power Research Institute (EPRI) summary report dated March 26, 2004.

   i. Explain and describe the reported features of inside surface geometry, interface, acoustic interface, non-relevant indications, acoustic interface, clad roll, non-geometric and slag inclusion. Also, explain why different features were reported at different time of examination.

   ii. Provide a sketch to show the locations of the slag inclusion or weld repair, if any, and the circumferential flaw.

   iii Provide the reason that slag inclusion was not reported in the 2004 examination.

c. In EPRI summary report dated March 26, 2004, the reason that the flaw indication was not detected using a reflective longitudinal (RL) 45-degree probe in earlier examinations was attributed to lack of contact. However, the indication was identified in Figure 7 based on 2004 data using the 45-degree RL probe. Please explain.

d. Provide details regarding how the Performance Demonstration Initiative qualified techniques were optimized in the 2004 examination and compare them with the techniques used in earlier examinations.

e. Discuss in detail how the mechanical stress improvement process (MSIP) will impact the transparency of the flaw during ultrasonic examination. Can this be demonstrated by comparing the results between pre-MSIP and post-MSIP examinations?

8. In RR-30, provide the bases for changes to the following paragraphs in Appendix VIII, supplement 11 examination: Paragraphs 1.1(b), 1.1(e)(2), 1.1(e)(2)(a)(2), 1.1(e)(2)(b)(3), 1.1(f)(1), 1.1(f)(3), 1.1(f)(4), 2.1, 2.2(d), 2.3 and 3.1.

9. In the latest version of Regulatory Guide 1.147, Revision 13, dated June 2003, Code Case (CC) N-416-2 is accepted with a condition that the provisions of IWA-5213, “Test Condition Holding Times,” 1989 Edition, are to be used. Therefore, CC N-416-2 with the imposed condition should be used instead of CC N-416-1.

10. In CC N-416-1 and CC N-416-2, nondestructive evaluation is required to be performed on welded repairs in accordance with the methods and acceptance criteria of the applicable subsection of the 1992 Edition of Section III. Section III generally requires 100% radiography testing (RT) of all Class 1 butt welds. However, only UT and surface examinations are specified in CC N-504-2 and CC N-638. Provide discussion to demonstrate that UT specified for weld overlay inspection is an acceptable alternative to RT, particularly regarding the detection capability of welding defects such as slag, inclusion, porosity and lack of fusion.

Susquehanna Steam Electric Station, Unit Nos. 1 and 2

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