

Mr. Britt T. McKinney  
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Berwick, PA 18603-0467

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2, LICENSE  
RENEWAL APPLICATION

Dear Mr. McKinney:

By letter dated September 13, 2006, PPL Susquehanna, LLC (PPL or the applicant) submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for Susquehanna Steam Electric Station (SSES), Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application (LRA) and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Michael Detamore, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1594 or e-mail [YKS@nrc.gov](mailto:YKS@nrc.gov).

Sincerely,

**/RA/**

Yaira K. Diaz Sanabria, Project Manager  
License Renewal Branch A  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure:  
Request for Additional Information

cc w/encls: See next page

March 20, 2007

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SUSQUEHANNA STEAM ELECTRIC STATION (SSES), UNITS 1 AND 2  
LICENSE RENEWAL APPLICATION (LRA)  
REQUEST FOR ADDITIONAL INFORMATION (RAI)

**RAI 2.1-1**

Part 54.4(a)(1) of Title 10 of the *Codes of Federal Regulations* (10 CFR Part 54.4(a)(1)) requires that plant system, structures and components (SSCs) within the scope of license renewal include safety-related SSCs which are those relied upon to remain functional during and following design basis events, as defined in 10 CFR 50.49(b)(1), to ensure the following functions:

- (i) The integrity of the reactor coolant pressure boundary,
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition, or
- (iii) The capability to prevent or mitigate the consequences of accidents, which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable.

The LRA states that safety-related, as defined in the Final Safety Analysis Report (FSAR) Section 17.2.2, are those SSCs that meet one or more of the following requirements:

- Maintain the integrity of the reactor coolant system pressure boundary.
- Assure the capability to prevent or mitigate the consequences of accidents that could cause the release of radioactivity in excess of 10 CFR 100 limits.
- Preclude failures that could cause or increase the severity of postulated accidents or could cause undue risk to the health and safety of the public due to the release of radioactive material.
- Provide for safe reactor shutdown and immediate or long-term post-accident control.

During the audit, the staff noted that source documents used to identify the SSCs which met the scoping criteria of 10 CFR 54.4(a)(1), including the SSES FSAR; General Design Standard (GDS)-06, "Design Standard for Quality and Procurement Classification of New and Replacement Equipment Items," Revision 4; NDAP-QA-0413, "Maintenance Rule Program," Revision 7; and, License Renewal Project Guideline (LRPG)-01, "SSES License Renewal Project Plan – AREVA Scope," Revision 1, have differing definitions of safety-related, and also currently cite superseded regulatory text in establishing the scoping criteria to be used in identifying SSES SSCs in accordance with §54.4(a)(1) requirements. Therefore, the staff requests the applicant to provide a written evaluation that addresses the impact, if any, of the use of differing definitions of safety-related in the scoping methodology for SSES. In addition, to address any effect of not having explicitly considered those structures, systems, or components that are relied upon to ensure "the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines in §50.34(a)(1), §50.67(b)(2), or § 100.11 of this chapter, as applicable," consistent with the facilities' current licensing basis (CLB), in the scoping methodology for SSES.

## **RAI 2.1-2**

Part 54.4(a)(1) of Title 10 of the *Codes of Federal Regulations* (10 CFR Part 54.4(a)(1)) requires that plant, SSCs within the scope of license renewal include safety-related SSCs which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions:

- (i) The integrity of the reactor coolant pressure boundary,
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition, or
- (iii) The capability to prevent or mitigate the consequences of accidents, which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable.

Section 3.1.2 of Nuclear Energy Institute (NEI) 95-10, Revision 6 states that because of plant unique considerations and preferences, applicants may have previously elected to designate some SSCs as safety-related that do not perform any of the requirements of §54.4(a)(1). Therefore, a system structures or components may not meet the requirements of §54.4(a)(1) although it is designated as safety-related for plant-specific reasons. However, the SSCs would still need to be evaluated for inclusion into the scope of the rule using the criteria in §54.4(a)(2) and §54.4(a)(3). For example, an applicant may have designated refueling equipment as safety-related even though it does not meet the criteria delineated above. In such cases, the applicant shall include a discussion of the process in accordance with §54.21(a)(2) for making these determinations.

During the audit, the applicant stated that certain components located in the turbine building are nonsafety-related but were included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1). However, this process is not articulated in the LRA nor is it documented in the license renewal procedures or guidelines. Therefore, the staff requests that the applicant provide a discussion of the process and rationale by which certain nonsafety-related components were determined to be within the scope of license renewal in accordance with 10 CFR 54.4(a)(1). In addition, provide a discussion on how other nonsafety-related SSCs were reviewed for potential interaction (10 CFR 54.4 (a)(2)) with the nonsafety-related components located within the turbine building which have been included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1).

## **RAI 2.1-3**

Part 54.4(a)(2) of Title 10 of the *Codes of Federal Regulations* (10 CFR 54.4(a)(2)) requires that all nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1) be included within the scope of license renewal.

NRC Regulatory Guide (RG) 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, dated September 2005, (RG 1.188) provided NRC endorsement on the use of NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 6, dated June 2005, (NEI95-10).

RG 1.188 indicates that NEI 95 -10, Revision 6, provides methods that the NRC staff considers acceptable for complying with the requirements of 10 CFR Part 54 for preparing an LRA.

NEI 95-10, Appendix F, "Industry Guidance on Revised 54.4(a)(2) Scoping Criterion (Nonsafety Affecting Safety)," (NEI 95-10, Appendix F) discusses nonsafety-related SSCs directly connected to safety-related SSCs. NEI 95-10, Appendix F states, in part, that for nonsafety-related SSCs directly connected to safety-related SSCs, the nonsafety piping and supports, up to and including the first equivalent anchor beyond the safety/nonsafety interface, are within the scope of license renewal per 54.4(a)(2). For this purpose the applicant must define the "first seismic or equivalent anchor" such that the failure in the non-safety related pipe run beyond the first seismic or equivalent anchor will not render the safety-related portion of the piping unable to perform its intended function under CLB design conditions. An equivalent anchor may be defined in the CLB, or may consist of a large piece of plant equipment or series of supports that have been evaluated as a part of a plant-specific piping design analysis. Additionally, the guidance states that an applicant may use a combination of restraints or supports, such that the non-safety piping and associated structures and components (SCs) attached to safety-related piping, is included in the scope up to a boundary point that encompasses at least two supports in each of three orthogonal directions. The guidance in NEI 95-10, Appendix F also describes as an alternative to identifying a seismic anchor or series of equivalent anchors, the use of bounding criteria which includes using a base-mounted component, a flexible connection, or the free end of the piping run as the end point for the portion of the non-safety piping attached to the safety-related piping to be included in the scope of license renewal. An alternative to specifically identifying a seismic anchor or series of equivalent anchors that support the safety-related/nonsafety-related piping interface is to include enough-of the nonsafety-related piping run to ensure these anchors are included and thereby ensure the piping and anchor intended functions are maintained.

Based on a review of the LRA, the applicant's scoping and screening implementation procedures, and discussions with the applicant, the NRC staff determined that additional information is required with respect to certain aspects of the applicant's evaluation of the 10 CFR 54.4(a)(2) criteria. The staff requests the applicant to provide the following information:

- a. LRA Section 2.1.1.2.2 states the following: With respect to nonsafety-related piping that is directly connected to safety-related piping, the seismic Category I design requirements are extended "to the first seismic restraint beyond the defined boundaries." The seismic design is extended to the first point in the system which can be treated as an anchor to the plant structure. An anchor support is defined in SSES piping design specifications as a rigid support that restrains all six degrees of motion of the piping system. Anchors can include large fixed equipment such as pumps, tanks, heat exchangers, and in some cases, larger piping. The nonsafety-related structural components in the scope of license renewal include those that comprise seismic anchors. As such, and since the "spaces" approach is conservative (focusing on the structure rather than on specific areas within the structure), all seismic anchors and the associated piping and components for nonsafety-related to safety-related interfaces are in the scope of license renewal under 10 CFR 54.4(a)(2) using the base-mounted equipment and flexible connection options from NEI 95-10, Appendix F, as well as including the entire length of piping that is connected on both ends to safety-related piping.

During the audit, the staff determined that certain nonsafety-related piping, attached to safety-related piping at containment penetrations and extending

outside of containment, was not included within the scope of license renewal. Therefore, the staff requests that the applicant provide justification for not including the nonsafety-related piping that is attached to safety-related piping at containment penetrations within the scope of license renewal.

- b. LRA Section 2.1.1.2.2, "Spatial Failures of Nonsafety-Related SSCs," states the following: The Primary Containment is also seismic Category I and contains safety-related components. Nonsafety-related systems, and nonsafety-related portions of safety-related systems, located in Primary Containment are not in scope for license renewal because safety-related systems in the structure are specifically designed for spatial interactions. This includes qualification for service in harsh environments that bound any potential spray, leakage or flooding and protection from pipe whip or jet impingement by separation, barriers and pipe whip restraints.

However, the staff determined that certain nonsafety-related piping inside containment is attached to safety-related SCs, and requests that the applicant provide the rationale and basis for the exclusion of such piping from the scope of license renewal.

- c. LRA Sections 2.3.3.2, 2.3.3.5, 2.3.3.9, 2.3.3.23, 2.3.3.31, state that certain components (e.g., accumulator, tank, heating and ventilation units) perform an anchor function but are not subject to an aging management review (AMR) based on evaluation of their construction, mounting and support function. The applicant did not apply its screening process to determine whether the SCs were subject to an AMR but instead, did so by analysis based on the bounding conditions of NEI 95-10, Appendix F.

Therefore, the staff requests that the applicant provide the rationale for the use of the analysis, the details and results of the analysis, and indicate how the analysis meets the criteria of the screening process used for other nonsafety-related SCs and requirements of 10 CFR 54.21.

In addressing each of the above issues, if the review indicates that use of the scoping methodology precluded the identification of any non-safety SSCs that could interact with safety-related SSCs, describe any additional scoping evaluations to be performed to address the 10 CFR 54.4(a)(2) criteria. As part of your response, list any additional SSCs included within the scope as a result of your efforts, and list those SCs for which AMRs were conducted. For each SC, describe the aging management programs, as applicable, to be credited for managing the identified aging effects.

Memo to B. McKinney from Y. Diaz Sanabria dated March 20, 2007

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