

**Britt T. McKinney**  
Sr. Vice President & Chief Nuclear Officer

**PPL Susquehanna, LLC**  
769 Salem Boulevard  
Berwick, PA 18603  
Tel. 570.542.3149 Fax 570.542.1504  
btmckinney@pplweb.com



**SEP 20 2007**

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Mail Stop OP1-17  
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION  
FOLLOW-UP TO REQUEST FOR ADDITIONAL  
INFORMATION (RAI) FOR THE REVIEW OF THE  
SUSQUEHANNA STEAM ELECTRIC STATION  
UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (LRA)  
SECTION 4.1.3  
PLA-6277**

---

**Docket Nos. 50-387  
and 50-388**

- References:
- 1) PLA-6110, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Application for Renewed Operating Licenses Numbers NPF-14 and NPF-22," dated September 13, 2006.
  - 2) PLA-6222, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Application for Renewed Operating Licenses Numbers NPF-14 and NPF-22, Requests for Additional Information (RAI 4.1.3)," dated June 12, 2007.
  - 3) PLA-5341, Mr. R. G. Byram (PPL) to Document Control Desk (USNRC), "Proposed Amendment No. 240 to License NFP-14 and Proposed Amendment No. 205 to License NFP-22: Changes to Reactor Pressure Vessel Pressure – Temperature Limits and Request for Exemption from the Requirements of 10 CFR 50 Section 50.60(a)," dated July 17, 2001.
  - 4) Letter from D. S. Collins (USNRC) to R. G. Byram (PPL), "Susquehanna Steam Electric Station, Units 1 and 2, Exemption from the Requirements of 10 CFR Part 50, Section 50.50(a) and Appendix G (TAC Nos. MB2515 and MB2517)," dated February 7, 2002.
  - 5) PLA-5933, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Proposed Amendment No. 280 to Unit 1 Facility Operating License NPF-14 and Proposed Amendment No. 249 to Facility Operating License NPF-22: Revise Technical Specification 3.4.10 RCS Pressure and Temperature (P/T) Limits," dated October 5, 2005.
  - 6) Letter from R. V. Guzman (USNRC) to B. T. McKinney (PPL), "Susquehanna Steam Electric Station, Units 1 and 2 – Issuance of Amendment Re: Revision to Technical Specification 3.4.10, Reactor Coolant System Pressure and Temperature Limits (TAC Nos. MC8646 and MC8647)," dated March 30, 2006.

A120  
NRB

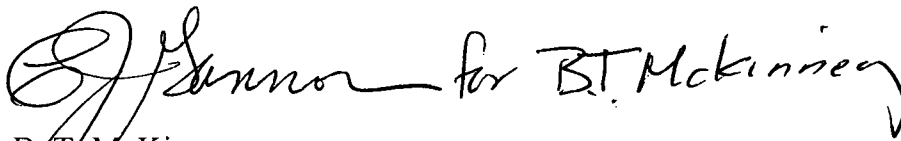
In accordance with the requirements of 10 CFR 50, 51, and 54, PPL requested the renewal of the operating licenses for the Susquehanna Steam Electric Station (SSES) Units 1 and 2 in Reference 1.

Reference 2 provided PPL's response to a request for additional information (RAI) related to LRA Section 4.1.3. The enclosure to this letter is a follow-up to Reference 2. Included is a revised response to each of the original RAI Parts A, B, and C, and a revision to LRA Section 4.1.3. These revisions were previously discussed during teleconferences between NRC and PPL on August 16, 2007 and September 7, 2007.

There are no new regulatory commitments contained herein as a result of these responses. If you have any questions, please contact Mr. Duane L Filchner at (610) 774-7819.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on: 9/20/2007

  
B. T. McKinney

Enclosure: PPL Revised Response to Request for Additional Information (Section 4.1.3)

Copy: NRC Region I  
Ms. E. H. Gettys, NRC Project Manager, License Renewal, Safety  
Mr. R. V. Guzman, NRC Sr. Project Manager  
Mr. R. Janati, DEP/BRP  
Mr. F. W. Jaxheimer, NRC Sr. Resident Inspector  
Mr. A. L. Stuyvenberg, NRC Project Manager, License Renewal, Environmental

---

**Enclosure to PLA-6277  
PPL Revised Response to  
Request for Additional Information  
(Section 4.1.3)**

---

**NRC RAI 4.1.3 Identification of Exemptions:**

Paragraph §54.21(c)(2) of Title 10, *Code of Federal Regulations*, Part 54 (10 CFR 54.21(c)(2)) requires an applicant for license renewal of its facilities to identify all exemptions in effect that have been granted in accordance with Paragraph §50.12 of Title 10, *Code of Federal Regulations*, Part 50 (10 CFR 50.12) and are based on time-limited aging assumptions. PPL has identified in license renewal application (LRA) Section 4.2 that the pressure-temperature (P-T) limits and the upper-shelf energy (USE) assessments for Susquehanna Steam Electric Station (SSES), Units 1 and 2 are TLAAs for the LRA. The TLAAs are required pursuant to the requirements of Appendix G to Part 50 of Title 10, *Code of Federal Regulations* (10 CFR Part 50, Appendix G).

The staff has reviewed the current licensing basis (CLB) for SSES Units 1 and 2 and has determined that the CLB includes the following exemptions that were granted to PPL in lieu of meeting the requirements of 10 CFR Part 50, Appendix G:

- (1) Paragraph 2E of Operating License NPF-14 for SSES Unit 1.
- (2) The NRC letter of February 7, 2002, from D. S. Collins (NRC) to R. G. Byram (PPL), granting PPL an exemption to use methods of ASME Code Case N-640 in the generation of the P-T limits for SSES Units 1 and 2.

The staff has also determined that these exemptions were granted in accordance with 10 CFR 50.12 and are associated with analyses that involve time-limited aging assumptions.

**NRC RAI 4.1.3 Part A:**

Clarify whether the exemptions listed above have been withdrawn from the applicable dockets for SSES, such that the exemptions would no longer be in effect for the CLB. If not, pursuant to 10 CFR 54.21(c)(2), PPL is required to amend the LRA to identify the exemptions listed in items (1) and (2) above as exemptions in effect that were granted in accordance with 10 CFR 50.12 and are based on time-limited aging assumptions.

**PPL Revised Response:**

The exemptions related to 10 CFR 50, Appendix G, as documented in Paragraph 2E of Operating License NPF-14 for SSES Unit 1, have not been withdrawn. These exemptions are required to remain in effect for the operating life of SSES Unit 1. Refer to the response for Part C for additional discussion on these exemptions.

The exemption to allow the use of ASME Code Case N-640 is currently in effect. This exemption permitted a change in the methodology for determining the P-T limits for SSES Units 1 and 2. The analysis related to this exemption meets the criteria for a TLAA and is included in LRA Table 4.1-1.

In July 2001, PPL requested an exemption to the requirements of 10 CFR 50.60(a) and 10 CFR 50, Appendix G, to allow the use of ASME Code Case N-640 in the generation of the P-T limits for SSES Units 1 and 2 (Reference 3). The exemption was granted in NRC letter from D. S. Collins to R. G. Byram, "Susquehanna Steam Electric Station, Units 1 and 2, Exemption from the Requirements of 10 CFR Part 50, Section 50.60(a) and Appendix G (TAC Nos. MB2515 and MB2517)," February 7, 2002 (Reference 4). The methodology of ASME Code Case N-640 was used to generate the P-T limits for SSES Units 1 and 2, as approved in Amendment Nos. 200 and 174 to Operating License Nos. NPF-14 and NPF-22, respectively.

In October 2005, PPL submitted a request for amendments to again revise the P-T limits in the Technical Specifications for SSES Units 1 and 2 (Reference 5). The amendments (Nos. 232 to NPF-14 and 209 to NPF-22 for SSES Units 1 and 2, respectively) were approved in NRC letter from R. V. Guzman to B. T. McKinney, "Susquehanna Steam Electric Station, Units 1 and 2 – Issuance of Amendment Re: Revision to Technical Specification 3.4.10, Reactor Coolant System Pressure and Temperature Limits (TAC Nos. MC8646 and MC8647)," March 30, 2006 (Reference 6). In PPL's request and in the NRC's SER for the amendments, the referenced edition for the ASME Code, Section XI, Appendix G, is the 1998 Edition and 2000 Addenda, which had incorporated the methodology of ASME Code Case N-640.

The P-T limits in the current licensing basis for SSES Units 1 and 2, effective since March 30, 2006, do not rely on the exemption to allow the use of ASME Code Case N-640, granted on February 7, 2002. On the basis that ASME Code Case N-640 has been incorporated into the ASME Code referenced in the NRC's SER for Amendment Nos. 232 to NPF-14 and 209 to NPF-22, the exemption to allow the use of ASME Code Case N-640 is no longer required and is hereby withdrawn for SSES Units 1 and 2.

**NRC RAI 4.1.3 Part B:**

Clarify whether the 10 CFR Part 50, Appendix G-based exemption referred to in Paragraph 2E of Operating License NPF-14 for SSES Unit 1 was granted relative to the USE requirements that are promulgated in Section IV.A.1 of 10 CFR Part 50, Appendix G, or the P-T limit requirements that are promulgated in Section IV.A.2 of 10 CFR Part 50, Appendix G.

**PPL Revised Response:**

Section 5.3.1 of the NRC's SER (NUREG-0776) and Section 5.3.1.5.1 of the SSES FSAR delineate the specific information that applies to the Appendix G-based exemptions in Paragraph 2E of Operating License NPF-14. The exemptions granted relative to USE and P-T limit requirements apply only to the fracture toughness test data and methods used to determine the initial USE and RTndt values for the vessel materials for SSES Units 1 and 2. The exemptions do not apply to the requirements of 10 CFR 50 Appendix G, as promulgated in Sections IV.A.1 and IV.A.2, regarding supplemental fracture toughness tests and analyses to account for neutron irradiation and to ensure that adequate safety margins will be maintained throughout the operating life of the plant.

**NRC RAI 4.1.3 Part C:**

Provide your regulatory basis that justifies whether or not the exemptions granted on the 10 CFR Part 50, Appendix G requirements, as referred to in Paragraph 2E of Operating License NPF-14 for SSES Unit 1 and in the NRC's letter of February 7, 2002, are needed for the period of extended operation.

**PPL Revised Response:**

The Appendix G-based exemptions are related only to the fracture toughness test data and methods used to determine the initial USE and RTndt values for the vessel materials for SSES Units 1 and 2. To demonstrate continued compliance with the fracture toughness requirements of 10 CFR 50 Appendix G, updated USE values and adjusted reference temperature (ART) values are periodically determined to account for revised neutron fluence projections and to revise the P-T limit curves. The determination of the updated USE and ART values rely on the original values determined from the original fracture toughness tests, which relied on the Appendix G-based exemptions. Therefore, the Appendix G-based exemptions are needed throughout the current license term and during the period of extended operation.

PPL identified no TLAAs that were performed in support of the Appendix G-based exemptions used to determine the original USE and RTndt values. The subsequent determinations of USE, ART, and P-T limits, which are TLAA and have been evaluated for the period of extended operation, are performed in accordance with the requirements of 10 CFR 50 Appendix G. PPL concludes the Appendix G-based exemptions are not based upon or supported by any TLAA, and therefore the exemptions are not identified in the LRA.

The exemption to allow the use of ASME Code Case N-640 was previously discussed in the response to Part A of this RAI.

**Revised LRA Section 4.1.3:**

Based on the preceding responses to this RAI, the SSES LRA Section 4.1.3 is revised as follows:

Pursuant to 10 CFR 54.21(c)(2), an applicant for license renewal must provide: (1) a listing of plant-specific exemptions granted pursuant to 10 CFR 50.12 that are in effect and based on a TLAA, and (2) an evaluation of these exemptions to justify their continuation for the period of extended operation. Docketed NRC correspondence, and other SSES current licensing basis documentation, identified in Section 4.1.1, was reviewed for exemptions.

As a result of the review, one exemption was identified as meeting the definition of a TLAA. An exemption to the requirements of 10 CFR 50.60(a) and 10 CFR 50, Appendix G, allows the use of ASME Code Case N-640 in the generation of the Pressure-Temperature (P-T) limits for SSES Units 1 and 2. The analysis related to this exemption meets the criteria for a TLAA and has been included in Table 4.1-1. See LRA Section 4.2.4 for the discussion on the P-T Limits TLAA.