March 30, 2006

Mr. Britt T. McKinney
Sr. Vice President
and Chief Nuclear Officer
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0467

SUBJECT: 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)

Dear Mr. McKinney:

The Commission has issued the enclosed Amendment No. 232 to Facility Operating License No. NPF-14 and Amendment No. 209 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2). These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated October 5, 2005.

These amendments change the SSES 1 and 2 TSs 3.4.10, "RCS [Reactor Coolant System] Pressure and Temperature (P/T) Limits," by removing the valid P/T curve limit date and replacing it with the effective full-power years (EFPY) of radiation exposure on each of the P/T limit curves for SSES 1 and 2. The new P/T limit will be 35.7 EFPY for SSES 1 and 30.2 EFPY for SSES 2.

A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's Biweekly *Federal Register* Notice.

Sincerely,

/RA/

Richard V. Guzman, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures: 1. Amendment No. 232 to License No. NPF-14
2. Amendment No. 209 to License No. NPF-22
3. Safety Evaluation

cc w/encls: See next page

March 30, 2006

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cc w/encls: See next page

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NAME	RGuzman	SLittle	GCranston *	PMoulding	RLaufer
DATE	3/23/06	3/28/06	1/12/06 (SE DTD)	3/29/06	3/30/06

OFFICIAL RECORD COPY

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cc:

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PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-387

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 232
License No. NPF-14

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:

   A. The application for the amendment filed by PPL Susquehanna, LLC, dated October 5, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;

   C. There is reasonable assurance: (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-14 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 232 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 30, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 232

FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
TS/3.4-30	TS/3.4-30
TS/3.4-30a	TS/3.4-30a
TS/3.4-30b	TS/3.4-30b

PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 209
License No. NPF-22

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:

   A. The application for the amendment filed by the PPL Susquehanna, LLC, dated October 5, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;

   C. There is reasonable assurance: (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-22 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 209 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 30, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 209

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
TS/3.4-30	TS/3.4-30
TS/3.4-30a	TS/3.4-30a
TS/3.4-30b	TS/3.4-30b

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 232 TO FACILITY OPERATING LICENSE NO. NPF-14

AND AMENDMENT NO. 209 TO FACILITY OPERATING LICENSE NO. NPF-22

PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-387 AND 50-388

1.0 INTRODUCTION

By application dated October 5, 2005, Agencywide Documents Access and Management System (ADAMS) Accession No. ML052850302 (Reference 1), PPL Susquehanna, LLC (PPL, the licensee) requested changes to the Technical Specifications (TSs) for Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2). The current TSs have pressure-temperature (P/T) limit curves that expire in May of 2006, with an expected exposure of 19.01 effective full-power years (EFPYs) for SSES 1 and 18.68 EFPYs for SSES 2. The proposed amendments would revise the validity of the P/T limit curves to 35.7 and 30.2 EFPYs for SSES 1 and 2, respectively, based on recalculated vessel beltline fluence values.

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission (NRC) staff evaluated the proposed amendments on the basis of Title 10 of the *Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix G (Reference 2); Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code) (Reference 3); and Regulatory Guide (RG) 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence" (Reference 4).

Appendix G to 10 CFR Part 50 promulgates requirements for the establishment of P/T limits and minimum temperature requirements for reactor vessels. Appendix G to Section XI of the ASME Code presents a procedure for obtaining the allowable loadings for ferritic pressure retaining materials in components. RG 1.190 offers calculational and dosimetry guidance for determining pressure vessel neutron fluence.

Using previously accepted P/T curves, the licensee recalculated the fluence for the period for which the P/T curves are valid. The new fluence calculations were performed using the RAMA code, which has been approved by the NRC staff (Reference 5). Therefore, this review establishes that the methodology used followed the guidance in RG 1.190 and the conditions

established in the NRC staff's acceptance of the RAMA code, and that the methodology was applied correctly.

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment, which are described in the enclosure and Attachment 3 to the licensee's October 5, 2005, submittal. The NRC staff also reviewed Attachments 1 and 2, the proposed changes to the TS and related bases.

3.1 Background

The NRC staff approved Amendment Nos. 200 and 174 to Facility Operating License Nos. NPF-14 and NPF-22, respectively, on February 7, 2002 (Reference 6). These amendments consisted of TS changes updating the P/T limit curves for SSES 1 and 2. At that time, the NRC staff determined that the proposed P/T limit curves were applicable until May 2006 for SSES 1, and until May 2005 for SSES 2.

The basis for the NRC staff's acceptance of the licensee's amendments was conservatism in the licensee's fluence evaluation and the chemical properties of the reactor vessels. The licensee proposed P/T curves for 32 EFPYs, and limited the applicability to May 2006 for SSES 1 and May 2005 for SSES 2, which corresponded to predicted exposures of 19.1 EFPYs and 17.6 EFPYs for SSES 1 and 2, respectively.

Subsequent to the issuance of the amendments, the NRC staff approved Amendment No. 197 for SSES 2, which changed the validity of the P/T limit curves to May 1, 2006 (Reference 7). As before, the basis for this amendment was conservatism in the revised expected core exposure, which, at 18.6 EFPYs, remained well below the 32 EFPYs for which the P/T limit curves were developed.

In light of the upcoming expiration of the P/T limit curves as indicated in Amendment No. 200 (SSES 1) and Amendment No. 197 (SSES 2), the licensee has reevaluated the expiration date of the P/T limit curves. The licensee proposes to retain the existing P/T limit curves, having used the recently approved RAMA code methodology to recalculate the associated fluence. This intent is reflected in the safety evaluation reports that accompany the amendments discussed above.

3.2 NRC Staff Evaluation

The licensee had previously developed a set of P/T limit curves using conservative assumptions to develop an estimated peak fluence that would be reached at approximately 32 EFPYs for each unit. The licensee has revised those limits by using a calculational methodology that has been approved by the NRC. Keeping the same curve, the licensee recalculated the maximum fluence, and determined that the curves would be applicable for 35.7 and 30.2 EFPYs for SSES 1 and 2, respectively.

The methodology used to determine the maximum fluence is the RAMA code methodology developed by the Electric Power Research Institute and approved by the NRC. The

methodology meets the intent of RG 1.190, “Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence.” It uses the most recent BUGLE-96 nuclear transport and reaction cross section data (Reference 8). The calculation uses S_8 angular quadrature for determining ray trajectories. The code uses P_5 Legendre expansion to represent the anisotropy in the scattering cross sections for uranium and plutonium nuclides, and through P_7 scattering for all other nuclides in the model. These methods all meet the intent of RG 1.190, and, therefore, are acceptable for calculating reactor pressure vessel fluence.

The NRC staff approved the RAMA code, but noted that the applicant did not quantify the bias and uncertainty required for the qualification of the methodology as described in RG 1.190.

As a part of the RAMA plant-specific qualification for SSES 1 and 2 (Reference 5), however, the NRC staff found the fluence calculations acceptable based on comparison to capsule dosimetry analysis from an SSES 2 surveillance capsule. The NRC staff determined that the capsule measurements were of high quality, and that there was no significant bias in the RAMA fluence predictions. Ultimately, as a condition of the approval of the RAMA code, the NRC staff concluded that “no calculational bias is required for application of the methodology to plants of similar geometrical design to Susquehanna and Hope Creek i.e. BWR-IV plants.”

Additionally, the NRC staff reviewed the previously accepted curves and compared the expected maximum fluence, which was expected to be reached for both units at 32 EFPYs, to the proposed revisions to the values. The NRC staff noted that the revised values for SSES 1 and 2 - 35.7 and 30.2 EFPYs, respectively - do not represent a significant departure from the original P/T limit curves’ validity. The end of life adjusted reference temperature values, previously expected to be reached at 32 EFPY, will now be reached at 35.7 and 30.2 EFPYs for SSES 1 and 2, respectively, and have been confirmed by the NRC staff. Moreover, the revised calculations represent a fluence calculation that retains the necessary conservatism in the estimated vessel irradiation at the end of life and at the end of the curve’s valid period. The licensee’s decision to revise the applicability of these curves maintains the intent of RG 1.190.

3.3 Conclusion

Because the licensee used the RAMA code, which the NRC staff previously approved as an acceptable methodology for calculating neutron fluence on the reactor vessel, and because the licensee used NRC-staff approved methodologies specified in RG 1.190, the NRC staff concludes that the proposed changes to the P/T limit curves to Facility Operating Licenses NPF-14 and NPF-22, for SSES Units 1 and 2, respectively, are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. Because the

proposed change does not involve any physical alteration of the plant or change in methods governing normal plant operation, the NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (71 FR 2595). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Letter from B.T. McKinney to U.S. NRC, Susquehanna Steam Electric Station Proposed Amendment No. 280 to Unit 1 Facility Operating License NPF-14 and Proposed Amendment No. 249 to Unit 2 Facility Operating License NPF-22: Revise Technical Specification 3.4.10 “RCS Pressure and Temperature (P/T) Limits,” October 5, 2005.

2. Title 10 of the *Code of Federal Regulations*, “Domestic Licensing of Production and Utilization Facilities,” Part 50.”

3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, 1998 edition, Section XI, Appendix G, “Fracture Toughness Criteria for Protection Against Failure,” 2000 addenda, New York.

4. U.S. NRC, “Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence,” Regulatory Guide 1.190.

5. G. Hsii, U.S. Nuclear Regulatory Commission, Memorandum to M. Mitchell, U.S. NRC, “RAMA: A Radiation Transport Code to Calculate BWR Vessel and Reactor Internals Neutron Fluence,” April 2005.

6. Letter from U.S. NRC (D. Collins) to PPL (R.G. Byram), “Susquehanna Steam Electric Station, Units 1 and 2 - Issuance of Amendment Regarding Reactor Pressure Vessel Pressure-Temperature Limits,” February 7, 2002.

7. Letter from U.S. NRC (R. Guzman) to PPL (B. L. Shriver), “Susquehanna Steam Electric Station, Unit 2 - Issuance of Amendment Regarding Reactor Pressure Vessel Pressure-Temperature Limits,” April 25, 2005.

8. Electric Power Research Institute, “RAMA Fluence Methodology - Susquehanna Unit 2 Surveillance Capsule Fluence Evaluation for Cycles 1 - 5,” BWRVIP-117, Palo Alto, California, August 2003.

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Date: March 30, 2006