February 28, 2005

Mr. Bryce L. Shriver
President-PPL Generation
and Chief Nuclear Officer
PPL Susquehanna, LLC
Two North Ninth Street, GENTW15
Allentown, PA 18101-1179

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 - ISSUANCE OF AMENDMENT REGARDING MINIMUM CRITICAL POWER RATIO SAFETY LIMIT AND REFERENCE CHANGES (TAC NO. MC4431)

Dear Mr. Shriver:

The Commission has issued the enclosed Amendment No. 194 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Unit 2 (SSES-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 8, 2004, as supplemented by your letters dated February 1 and 14, 2005.

This amendment changes the SSES-2 TSs by revising the SSES-2 Cycle 13 Minimum Critical Power Ratio Safety Limit in Section 2.1.1.2 and the references listed in Section 5.6.5.b.

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

Sincerely,

/RA/

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

Docket No. 50-388

Enclosures: 1. Amendment No. 194 to License No. NPF-22
2. Safety Evaluation

cc w/encls: See next page

February 28, 2005

Mr. Bryce L. Shriver
President-PPL Generation
and Chief Nuclear Officer
PPL Susquehanna, LLC
Two North Ninth Street, GENTW15
Allentown, PA 18101-1179

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 - ISSUANCE OF AMENDMENT REGARDING MINIMUM CRITICAL POWER RATIO SAFETY LIMIT AND REFERENCE CHANGES (TAC NO. MC4431)

Dear Mr. Shriver:

The Commission has issued the enclosed Amendment No. 194 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Unit 2 (SSES-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 8, 2004, as supplemented by your letters dated February 1 and 14, 2005.

This amendment changes the SSES-2 TSs by revising the SSES-2 Cycle 13 Minimum Critical Power Ratio Safety Limit in Section 2.1.1.2 and the references listed in Section 5.6.5.b.

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

Sincerely,

/RA/

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

Docket No. 50-388

Enclosures: 1. Amendment No. 194 to License No. NPF-22
2. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:
PUBLIC PDI-1 RF RLaufer FAkstulewicz ACRS THuang
RGuzman MO'Brien GHill (2) OGC GMatakas, RGN-1 TBoyce
DLPM DPR

***** SE provided. No major changes made.
ADAMS Accession No.: ML050590044

OFFICE	PDI-1/PM	PDI-2/LA	SRXB *	OGC	PDI-1/SC
NAME	RGuzman	MO'Brien	FAkstulewicz	DCummings	RLaufer
DATE	2/25/05	2/25/05	1/18/05 SE DTD	2/23/05	2/25/05

Susquehanna Steam Electric Station, Units 1 and 2

cc:

Britt T. McKinney
Vice President - Nuclear Site Operations
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0467

Robert A. Saccone
General Manager - Nuclear Operations
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0467

Aloysius J. Wrape, III
General Manager - Performance
Improvement and Oversight
PPL Susquehanna, LLC
Two North Ninth Street, GENPL4
Allentown, PA 18101-1179

Terry L. Harpster
General Manager - Plant Support
PPL Susquehanna, LLC
769 Salem Blvd., NUCSA4
Berwick, PA 18603-0467

Gregory F. Ruppert
General Manager - Nuclear Engineering
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0467

Rocco R. Sgarro
Manager - Nuclear Regulatory Affairs
PPL Susquehanna, LLC
Two North Ninth Street, GENPL4
Allentown, PA 18101-1179

Walter E. Morrissey
Supervising Engineer
Nuclear Regulatory Affairs
PPL Susquehanna, LLC
769 Salem Blvd., NUCSA4
Berwick, PA 18603-0467

Michael H. Crowthers
Supervising Engineer
Nuclear Regulatory Affairs
PPL Susquehanna, LLC
Two North Ninth Street, GENPL4
Allentown, PA 18101-1179

Dale F. Roth
Manager - Quality Assurance
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB2
Berwick, PA 18603-0467

Luis A. Ramos
Community Relations Manager,
Susquehanna
PPL Susquehanna, LLC
634 Salem Blvd., SSO
Berwick, PA 18603-0467

Bryan A. Snapp, Esq
Assoc. General Counsel
PPL Services Corporation
Two North Ninth Street, GENTW3
Allentown, PA 18101-1179

Supervisor - Document Control Services
PPL Susquehanna, LLC
Two North Ninth Street, GENPL4
Allentown, PA 18101-1179

Richard W. Osborne
Allegheny Electric Cooperative, Inc.
212 Locust Street
P.O. Box 1266
Harrisburg, PA 17108-1266

Director - Bureau of Radiation Protection
Pennsylvania Department of
Environmental Protection
P.O. Box 8469
Harrisburg, PA 17105-8469

Senior Resident Inspector
U.S. Nuclear Regulatory Commission

Susquehanna Steam Electric Station, Units 1 and 2

cc:

P.O. Box 35, NUCSA4
Berwick, PA 18603-0035
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Board of Supervisors
Salem Township
P.O. Box 405
Berwick, PA 18603-0035

Dr. Judith Johnsrud
National Energy Committee
Sierra Club
443 Orlando Avenue
State College, PA 16803

PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 194
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 PPL Susquehanna, LLC, dated September 8, 2004, as supplemented by letters dated February 1 and 14, 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. 194 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, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 194

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/2.0-1	TS/2.0-1
TS/5.0-22	TS/5.0-22
TS/5.0-23	TS/5.0-23
TS/5.0-23a	TS/5.0-23a

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 194 TO FACILITY OPERATING LICENSE NO. NPF-22

PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-388

1.0 INTRODUCTION

By application dated September 8, 2004, Agencywide Documents Access and Management System (ADAMS) Accession No. ML042590562, as supplemented by letters dated February 1 and 14, 2005, ADAMS Accession Nos. ML050410261 and ML050540551, respectively, PPL Susquehanna, LLC, (PPL, the licensee), requested changes to the Technical Specifications (TSs) for Susquehanna Steam Electric Station, Unit 2 (SSES-2).

The supplemental letters dated February 1 and 14, 2005, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 4, 2005 (70 FR 404).

The proposed changes would revise the SSES-2 Cycle 13 (U2C13) Minimum Critical Power Ratio (MCPR) Safety Limit in Section 2.1.1.2 and the references listed in Section 5.6.5.b.

2.0 REGULATORY EVALUATION

2.1 Regulatory Requirements

The regulatory requirements and guidance which the NRC staff considered in its review of the application are as follows:

1. Title 10 of the *Code of Federal Regulations* (10 CFR) establishes the fundamental regulatory requirements with respect to the reactivity control systems. Specifically, General Design Criterion 10 (GDC-10), "Reactor design," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 states, in part, that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded.

2. NRC Generic Letter 88-16 (GL 88-16), "Removal of Cycle-Specific Parameter Limits from Technical Specifications," provides guidance on modifying cycle-specific parameter limits in the TSs.

3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," provides guidance on the acceptability of the reactivity control systems, the reactor core, and fuel-system design. Specifically, Section 4.2, "Fuel System Design," specifies the criteria for evaluation of fuel-design limits such that there be at least 95% probability at a 95% confidence level that the hot fuel rod in the core does not experience a departure from nucleate boiling or a transition condition during normal operation or anticipated operational occurrences. Section 4.4, "Thermal Hydraulic Design," provides guidance on the review of thermal-hydraulic design in meeting the requirement of GDC-10 and the fuel-design criteria established in Section 4.2.

3.0 TECHNICAL EVALUATION

3.1 Proposed Change to MCPR Safety Limit

PPL proposed to change the MCPR safety limit values in TS 2.1.1.2 for U2C13 operation from 1.10 to 1.09 for two-recirculation loop operation and from 1.11 to 1.10 for single-recirculation loop operation with the reactor steam dome pressure $ 785 psig and core flow $ 10 million lb_m/hr. The current U2C13 core given in Figure 1 of the February 1, 2005, supplement has 764 fuel assemblies, of which there are 292 fresh ATRIUM-10 bundles, 284 once-burned ATRIUM-10 bundles, and 188 twice-burned ATRIUM-10 bundles.

PPL described the approved methodologies used to calculate the MCPR safety limit value for the proposed TS change in the submittal. The U2C13 MCPR safety limit analysis was performed by Framatone-ANP (FANP) using SSES-2, plant-and cycle-specific fuel and core parameters including power profiles provided by PPL and the Nuclear Regulatory Commission (NRC)-approved methods, (1) ANF-524(P)(A), Rev. 2, "Critical Power Methodology for Boiling Water Reactors," Supplement 1 Revision 2 and Supplement 2, (2) EMF-1997(P)(A), Rev. 0 & Supplement 1, Rev. 0, (3) EMF-2158(P)(A), Rev. 0, "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2."

PPL provides justification that the decrease in the MCPR safety limit is due to a reduction in power distribution uncertainties because the POWERPLEX-III core monitoring system uses the CASMO-4/MICROBURN-B2 code system. (Note that the radial and local power distribution uncertainties based on the CASMO-4/MICROBURN-B2 code system are smaller than the corresponding uncertainties based on the CASMO-3/MICROBURN-B code system.) PPL also provides results of its sensitivity analyses for the various MCPR safety limit inputs or uncertainties on a cycle-specific basis including impact on the MCPR safety limit values for increasing the nominal channel bow in the February 1, 2005, supplement.

The NRC staff has reviewed the justification contained in the application and supplements for the MCPR safety limit value of 1.09 for two-recirculation loop operation and 1.10 for single-recirculation loop operation. Based on our review of the application, and the supplements to the application, the NRC staff has concluded that the MCPR safety limit analysis for U2C13 operation using the plant and cycle-specific calculations in conjunction with

the approved methods, is acceptable because the reduction of the MCPR safety limit value is due to the effect of reduced power distribution uncertainties and compensates for any increasing MCPR safety limit value due to a penalty for the channel bow effect as described in the February 1, 2005, supplement. The U2C13 MCPR safety limit will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition, which satisfies the requirements of GDC-10 of Appendix A to 10 CFR Part 50 regarding acceptable fuel-design limit. The NRC staff has concluded that the justification for analyzing and determining the MCPR safety limit value of 1.09 for two-recirculation loop operation and 1.10 for single-recirculation loop operation for U2C13 is acceptable.

3.2 TS 5.6.5.b Core Operating Limits Report References

PPL proposed to delete its analytical methods and add the FANP's NRC-approved analytical methods that are not already contained in TS 5.6.5.b.

The NRC staff has reviewed the proposed changes and their associated bases and finds them acceptable because the deleted references are the PPL analytical methods which are no longer in use. The added references are the NRC-approved FANP analytical methods to be used in support of the U2C13 operation.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (70 FR 404). The amendment also relates to changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusions set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Huang

Date: February 28, 2005