September 21, 2004

Mr. Bryce L. Shriver
President, PPL Generation, LLC
and Chief Operating Officer
PPL Generation, LLC
2 North Ninth Street
Allentown, PA 18101

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 - ISSUANCE OF AMENDMENT REGARDING MINIMUM CRITICAL POWER RATIO SAFETY LIMITS (TAC NO. MC0837)

Dear Mr. Shriver:

The Commission has issued the enclosed Amendment No. 191 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 16, 2003, as supplemented by your letter dated April 27, 2004.

This amendment revises the values of the Safety Limit for Minimum Critical Power Ratio in TS 2.1.1.2 for the current SSES-2 Cycle 12 mid-cycle two-recirculation-loop and single-recirculation-loop operation.

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. 191 to License No. NPF-22
2. Safety Evaluation

cc w/encls: See next page

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DISTRIBUTION:

PUBLIC	PDI-1 RF	RLaufer	FAkstulewicz	ACRS	THuang
RGuzman	MO'Brien	GHill (4)	OGC	GMatakas, RGN-1	TBoyce

***** SE provided. No major changes made. *See previous concurrence

Accession No.: ML042640004 Package No.: ML042640007 TSs: ML

OFFICE	PDI-1/PM	PDI-2/LA	SRXB *****	OGC*	PDI-1/SC
NAME	RGuzman	MO'Brien	FAkstulewicz	HMcGurren	RLaufer
DATE	9/17/04	9/17/04	9/3/04 SE DTD	9/14/04	9/20/04

OFFICIAL RECORD COPY

Susquehanna Steam Electric Station, Units 1 and 2

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PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 191
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 16, 2003, as supplemented by letter dated April 27, 2004, 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. 191 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: September 21, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE	INSERT
TS/2.0-1	TS/2.0-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 191 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 16, 2003, as supplemented by letter dated April 27, 2004, PPL Susquehanna, LLC, (PPL, the licensee), requested changes to the Technical Specifications (TSs) for Susquehanna Steam Electric Station, Unit 2 (SSES-2). The proposed changes revise the values of the Safety Limit for Minimum Critical Power Ratio (SLMCPR) in TS 2.1.1.2 for current SSES-2 Cycle 12 (U2C12) mid-cycle two-recirculation-loop and single-recirculation-loop operation. The supplement dated April 27, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on October 28, 2003 (68 FR 61480*).*

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 transition condition during normal operation or anticipated operational occurrence (AOO). 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 SLMCPR

PPL proposed to change the SLMCPR values in TS 2.1.1.2 for U2C12 operation from 1.10 to 1.08 for two-recirculation-loop operation and from 1.11 to 1.09 for single-recirculation-loop operation with the reactor steam dome pressure $\geq$ 785 psig and core flow $\geq$ 10 million lb_m/hr. SLMCPR is not considered as a safety concern for reactor operation below 785 psig dome pressure at core flow of less than 10 lbm/hr. The current U2C12 core has 764 fuel assemblies, of which there are 284 fresh ATRIUM-10 bundles, 300 once-burned ATRIUM-10 bundles, and 180 twice-burned ATRIUM-10 bundles.

PPL described the approved methodologies used to calculate the SLMCPR value for the proposed TS change in their September 16, 2003, submittal. The U2C12 SLMCPR analysis was performed by Framatone-ANP using Susquehanna SES Unit 2, plant- and cycle-specific fuel and core parameters including power profiles provided by PPL, and NRC-approved methods including: (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) PL-NF-90-001-A, "Application of Reactor Analysis Methods for BWR Design and Analysis;" and (4) EMF-2158(P)(A), Rev. 0, "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2."

PPL provided justification for the decrease in the SLMCPR by explaining that the ability to reduce the limit value is due to a reduction in power distribution uncertainties between the POWERPLEX-II core monitoring system using the CASMO-3/MICROBURN-B-based uncertainties currently used for the initial portion of U2C12 operation and the POWERPLEX-III core monitoring system using CASMO-4/MICROBURN-B2 code system currently used. The primary reasons for the limit reduction is that the radial and local power distribution uncertainties for the CASMO-4/MICROBURN-B2 code system are smaller than the corresponding uncertainties for the CASMO-3/MICROBURN-B code system. PPL also provided a comparison of the power distribution uncertainties for two-loop operation using these two code systems in its supplement dated April 27, 2004.

3.2 Evaluation of TS 2.1.1.2 SLMCPR

The NRC staff has reviewed the justification for the proposed revision and the response to the NRC staff's request for additional information. Based on results of the review, the NRC staff

concludes that the SLMCPR analysis for the U2C12 operation was performed using approved staff methods, and that the plant- and cycle-specific values used for the cycle evaluation are appropriate and within the ranges of applicability for the approved methods. The U2C12 SLMCPR 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. Therefore, the NRC staff has concluded that the justification for analyzing and determining the SLMCPR value of 1.08 for two-recirculation-loop operation and 1.09 for single-recirculation-loop operation for U2C12 is acceptable.

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 (68 FR 61480). Accordingly, the amendment meets 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 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: September 21, 2004