

December 3, 2004

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

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 - ISSUANCE
OF AMENDMENTS RE: REVISED MAIN TURBINE SYSTEM REQUIREMENTS
TECHNICAL SPECIFICATION CHANGE (TAC NOS. MC1596 AND MC1597)

Dear Mr. Shriver:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 218 to Facility Operating License No. NPF-14 and Amendment No. 193 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2). These amendments are in response to your application dated December 5, 2003, as supplemented by letter dated June 4, 2004.

These amendments revise SSES 1 and 2 Technical Specifications (TSs) by adding a requirement to apply linear heat generation (LHGR) limits if the main turbine bypass system becomes inoperable. The proposed changes clarify TS 3.7.6 to state that both minimum critical power ratio and LHGR limits for an inoperable main turbine bypass system are required if the system becomes inoperable.

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, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures: 1. Amendment No. 218 to
License No. NPF-14
2. Amendment No. 193 to
License No. NPF-22
3. Safety Evaluation

cc w/encls: See next page

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3. Safety Evaluation

DISTRIBUTION:

PDI-1 R/F GMatakas, RGN-1
ACRS RGuzman OGC
PUBLIC M'OBrien GHill (4)
RLaufer GThomas DLPM DPR
FAkstulewicz

cc w/encls: See next page

*Provided SE input by memo. No substantive changes made.

Accession No.: ML043350010

Package No.: ML

TSs: ML

OFFICE	PDI-1/PM	PDI-2/LA	SRXB*	OGC	PDI-1/SC
NAME	RGuzman	SLitte for MO'Brien	FAkstulewicz	MWoods	RLaufer
DATE	11/24/04	11/24/04	07/07/04	11/29/04	12/2/04

OFFICIAL RECORD COPY

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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. 218
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 December 5, 2003, as supplemented by letter dated June 4, 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-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. 218 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: December 3, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 218

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
TS / 3.7-15
3.7-16

INSERT
TS / 3.7-15
TS / 3.7-16

PPL SUSQUEHANNA, LLC
ALLEGHENY ELECTRIC COOPERATIVE, INC.
DOCKET NO. 50-388
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 193
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 December 5, 2003, as supplemented by letter dated June 4, 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. 193 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: December 3, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 193

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
TS / 3.7-15
3.7-16

INSERT
TS / 3.7-15
TS / 3.7-16

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 218 TO FACILITY OPERATING LICENSE NO. NPF-14
AND AMENDMENT NO. 193 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 388

1.0 INTRODUCTION

By application dated December 5, 2003 (Reference 3), as supplemented by letter dated June 4, 2004 (Reference 4), 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 proposed changes would revise SSES 1 and 2 TSs by adding a requirement to apply linear heat generation (LHGR) limits if the main turbine bypass system (MTBS) becomes inoperable. The proposed changes clarify TS 3.7.6 to state that both minimum critical power ratio (MCPR) and LHGR limits for an inoperable MTBS are required if the system becomes inoperable. The supplemental letter dated June 4, 2004, 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 no significant hazards consideration determination as published in the *Federal Register* on January 6, 2004 (69 FR 698).

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission (NRC) finds that PPL in its December 5, 2003, submittal identified the applicable 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, "Reactor design," in Appendix A to Part 50, "General Design Criteria for Nuclear Power Plants," 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 during any condition of normal operation, including the effects of anticipated operational occurrences.

2. GDC-13, "Instrumentation and control," states, in part, that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety.
3. Generic Letter 88-16 (Reference 1) allow licensees to include the cycle specific parameter limits such as LHGR in the Core Operating Limit Report (COLR), provided the changes in the parameter limits are determined using the NRC-approved methodology and consistent with all applicable limits of the final safety analysis report.

3.0 TECHNICAL EVALUATION

3.1 Background

The MTBS is designed to control steam pressure when reactor steam generation exceeds turbine requirements during turbine unit startup, sudden load reduction, and cooldown. It allows excess steam flow from the reactor to the condenser without going through the turbine. The full bypass capacity of the system is approximately 25 percent of the nuclear steam supply system rated steam flow. Sudden load reductions within the capacity of the steam bypass can be accommodated without a reactor scram. The MTBS consists of five valves (all five valves have the same capacity) connected to the main steam lines between the main steam isolation valves and the turbine stop valve bypass valve chest. Each of these valves is operated by hydraulic cylinders. The MTB valves are controlled by the pressure regulation function of the main turbine electro-hydraulic control system. The MTB valves are normally closed, and the pressure regulator controls the turbine control valves that direct all steam flow to the turbine. If the speed governor or the load limiter restricts steam flow to the turbine, the pressure regulator controls the system pressure by opening the MTB valves.

The LHGR is a measure of the heat generation rate of a fuel rod in a fuel assembly at any axial location. Limits on LHGR are specified to ensure that fuel design limits are not exceeded anywhere in the core during normal operation, including anticipated operational occurrences (AOOs).

The average planar linear heat generation rate (APLHGR) is a measure of the average LHGR of all the fuel rods in a fuel assembly at any axial location. Limits on APLHGR are specified to ensure that fuel design limits are not exceeded anywhere in the core during normal operation, including AOOs, and that the peak cladding temperature during the postulated loss-of-coolant accident (LOCA) does not exceed 2200 degrees Fahrenheit.

3.2 PPL's Proposed Change

When PPL converted the SSES 1 and 2 TSs to Revision 1 of the Standard Technical Specifications (STS), the plant MTBS TS limiting condition for operation (LCO) 3.7.6 only included MCPR as the only appropriate thermal limit to be applied for an inoperable MTBS. The current TSs for this LCO does not contain any reference to LHGR as applicable for an inoperable MTBS.

The MTBS fast opening feature is assumed to function during the turbine generator load rejection and during feedwater controller failure transients as discussed in the final safety analysis report. Opening the bypass valves during the pressurization event mitigates the increase in reactor vessel pressure, which affects the MCPR during the event. Therefore, an inoperable MTBS may result in an MCPR penalty. The proposed change adds a requirement to implement LHGR limits if the MTBS becomes inoperable. The proposed change parallels an already existing requirement for MCPR limits. Currently, the SSES 1 and 2 COLRs contain MCPR and LHGR limits when the MTBS becomes inoperable. This proposed change clarifies TS 3.7.6 to state that both the MCPR and LHGR limits are required by TSs if the MTBS become inoperable.

The cycle specific safety analyses assume a certain number of operable turbine bypass valves as an input (i.e., one through five). Therefore, the MTBS is considered operable when the number of operable bypass valves is greater than or equal to the number assumed in the safety analyses. The number of bypass valves assumed in the safety analyses is specified in the COLR. The MCPR and LHGR limits for the inoperable MTBS are also specified in the COLR. In addition, LHGR values for each cycle are given in the COLR, and they are calculated using the NRC staff-approved methodology given in the SSES 1 and 2 TS Bases Section 3.2.3 (Reference 2).

In the STS, APLHGR is applicable for inoperable MTBS. This requirement is based on the assumption of General Electric (GE) fuel in the core and with GE analysis methods. Since SSES 1 and 2 is currently loaded with Framatome-ANP fuel, this requirement is not applicable to the current operating core.

The NRC staff requested a clarification from PPL for the basis of including the LHGR rather than APLHGR as an applicable thermal limit when the MTBS is inoperable. PPL in a letter dated June 4, 2004, submitted the necessary information. PPL stated that the APLHGR limits are derived from LOCA analyses, and the LOCA analyses results are unaffected by inoperability of MTBS. Hence, APLHGR limits are not affected. Limits on LHGR are specified to ensure that fuel design limits are not exceeded anywhere in the core during normal operation. The applicable safety analyses have determined that LHGR is the appropriate thermal margin limit to be used for MTBS operability since it protects against fuel damage and mechanical and thermal overpowering during a transient. Therefore, PPL's proposal to add LHGR rather than APLHGR, as an applicable thermal limit when the MTBS is inoperable, is acceptable.

3.3 Conclusion

The NRC staff has reviewed PPL's justification for the proposed revision (Reference 3) and the response to the NRC staff's request for additional information (Reference 4) to revise SSES 1 and 2 TSs Section 3.7.6 to include LHGR in addition to MCPR limits as applicable thermal limits when the MTBS is inoperable. Based on the results of the review, the NRC staff finds the proposed changes are consistent with the guidance given in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications," and therefore, finds it 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. 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 (69 FR 698). 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. Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications," October 3, 1998.
2. ANF-89-98(P)(A) Revision 1 and Revision 1 Supplement 1, "Generic Mechanical Design Criteria for BWR Fuel Design," Advanced Nuclear Fuels Corporation, May 1995.
3. B.L Shriver to U.S. NRC, "Susquehanna Steam Electric Station Proposed Amendment No. 258 to License NPF-14 and Proposed Amendment No. 223 to License NFP-22: Revised Main Turbine Bypass System Requirements PLA-5694," December 5, 2003 (ADAMS Accession No. ML033500447).
4. B.L Shriver to U.S. NRC, "Susquehanna Steam Electric Station Response to NRC Request for Additional Information Relative to Susquehanna Steam Electric Station, Units 1 and 2 Revised Main Turbine Bypass System Requirements (TAC Nos. MC1596 and MC1597) PLA-5759," June 4, 2004 (ADAMS Accession No. ML041670546).

Principal Contributor: G. Thomas

Date: December 3, 2004