September 29, 2003

Mr. John L. Skolds, Chairman
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, Illinois 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - ISSUANCE OF AMENDMENT (TAC NO. MB5737)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 159 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to your application dated July 31, 2002 (RS-02-119), and supplemented by letters dated March 7 (RS-03-048) and August 28, 2003 (RS-03-169).

The amendment revises Appendix A, Technical Specifications (TSs), of the Operating License by adding a Surveillance Requirement (SR) to TS 3.2.2, "Minimum Critical Power Ratio (MCPR)," that requires determination of the MCPR limits following completion of control rod scram time testing. The new SR provides for the required evaluation necessary to apply faster scram times to provide for improved MCPR operating limits.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Douglas V. Pickett, Senior Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Amendment No. 159 to NPF-62
2. Safety Evaluation

cc w/encls: See next page

September 29, 2003

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ADAMS Accession Number: ML032000000 (Package)
ADAMS Accession Number: ML032471679 (Letter)
ADAMS Accession Number: ML032000000 (Technical Specifications)

OFFICE	PM:PD3-2	LA:PD3-2	SC:SRXB	OGC	SC:PD3-2
NAME	DPickett	THarris	FAkstulewicz*	LZaccari	AMendiola
DATE	09/11/03	09/11/03	9/05/03	09/15/03	09/24/03

OFFICIAL RECORD COPY

*See FAkstulewicz to DPickett memorandum dated 9/5/03

Clinton Power Station, Unit 1

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AMERGEN ENERGY COMPANY, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 159
License No. NPF-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by AmerGen Energy Company, LLC (the licensee), dated July 31, 2002, and supplemented by letters dated March 7, and August 28, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and 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;

   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 Facility Operating License No. NPF-62 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 159 are hereby incorporated into this license. AmerGen Energy Company, 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 of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 29, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 159

FACILITY OPERATING LICENSE NO. NPF-62

DOCKET NO. 50-461

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 Pages	Insert Pages
3.2-2	3.2-2
-	3.2-2a

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE NO. NPF-62

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By application dated July 31, 2002, and supplemented by letters dated March 7, and August 28, 2003, AmerGen Energy Company LLC (the licensee), proposed changes to the Technical Specifications (TS) for Clinton Power Station (CPS), Unit 1. The proposed change includes adding a surveillance requirement (SR) to determine the minimum critical power ratio (MCPR) operating limit following the performance of control rod scram time testing.

The supplemental letters contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original *Federal Register* Notice.

2.0 REGULATORY EVALUATION

The analytical methods and assumptions used to establish the operating limit MCPR are presented in the Clinton Updated Safety Analysis Report Chapters 4, 6, and 15. To ensure that the MCPR safety limit (SL) is not exceeded during any transient event that occurs with moderate frequency, limiting transients have been analyzed to determine the largest reduction in critical power ratio (CPR). The types of transients evaluated are loss of flow, increase in pressure and power, positive reactivity insertion, and coolant temperature decrease. The limiting transient yields the largest change in CPR (ΔCPR). When the largest ΔCPR is added to the MCPR SL, the required operating limit MCPR is obtained.

The regulatory requirements that the Nuclear Regulatory Commission (NRC) staff considered in its review of the application are in 10 CFR 50.36, “Technical Specifications,” which provides the regulatory requirements for the content required in a licensee’s TS. 10 CFR 50.36(c)(3) requires that the TS will include SRs to assure that the limiting conditions for operation will be met. The proposed SR will assure the improved MCPR operating limits based on scram times are met.

3.0 TECHNICAL EVALUATION

The function of the MCPR operating limit is to ensure that no fuel damage results during anticipated operational occurrences. The NRC has approved the methodology of NEDE-24011-P-A, “General Electric Standard Application for Reactor Fuel, GESTAR-II,” for

determining MCPR operating limits. GESTAR-II offers two acceptable methods for determining the MCPR operating limit (i.e., Option A and Option B).

Option A uses the scram times required by TS Limiting Condition for Operation (LCO) 3.1.4, "Control Rod Scram Times," to determine the MCPR operating limit. Prior to the use of GE14 fuel, the Clinton facility has calculated their MCPR operating limit using Option A from GESTAR-II. The BWR/2 through BWR/5 type plants have credited the application of a mean scram speed operating limit (i.e., Option B). Faster scram speeds produce lower, improved MCPR operating limits. Using the GE14 fuel, the Clinton facility now records faster scram times and could benefit by implementing Option B in determining the MCPR operating limit.

The licensee proposes to add SR 3.2.2.2 to TS 3.2.2, "Minimum Critical Power Ratio (MCPR)" that requires determination of the MCPR limits following completion of control rod scram time testing when thermal power $\geq$ 21.6 percent rated thermal power. The proposed SR will require determination of the operating limit MCPR based on the scram time results. The operating limit MCPR can be revised as a result of the use of Option B scram times and the cycle-specific analysis performed in support of current Cycle 9 operations.

The licensee has provided the following rationale for the proposed changes:

(1) Proposed SR 3.2.2.2 does not change the scram time calculation method;

(2) The purpose of this SR is to require the evaluation of the scram time test results to determine the applicable MCPR operating limit in accordance with the Option B methodology;

(3) Historically, the BWR/6 plants using the Option A method have not been limited by pressurization events. However, with the implementation of GE14 fuel for Clinton Cycle 9, pressurization events have become more limiting which is similar to most BWR/4 plants using the Option B methodology; and

(4) Proposed SR 3.2.2.2 is based on the standard improved TSs for BWR/4 facilities and the frequency proposed in SR 3.2.2.2 (i.e., within 72 hours following completion of the scram time tests) is consistent with the standard TS.

The Option A methodology provides a more restrictive MCPR operating limit for pressurization events since Option A scram times are typically slower than the actual scram times. The Option B analysis yields a less restrictive operating limit based on the actual scram times associated with the CPS control rod drives and therefore provides additional operating flexibility. The CPS Option B scram time analysis is documented in GE Nuclear Energy Report GE-NE-0000-0000-7456-01P, "Option B Scram Times for Clinton Power Station," February 2002, which was included in the licensee's letter dated March 7, 2003.

Control rod scram times can be obtained by either 1) individually scramming a control rod and measuring the time using the process computer and the transient analysis recording system, or 2) automatic data acquisition during an automatic reactor scram. A control rod is timed from "full out" to "full in" with the times recorded at rod notch positions 43, 29 and 13 to ensure

compliance with the SRs. Control rod scram time testing is performed in accordance with CPS TS LCO 3.1.4, “Control Rod Scram Times.”

The staff has reviewed the subject application and supporting analyses. Based on our review, we have concluded that the proposed modification to add SR 3.2.2.2 to TS 3.2.2 is acceptable because: (1) the methodology for use of the Option B and Option A limits has been previously approved by the NRC and is included in NEDE-24011-P-A, “General Electric Standard Application for Reactor Fuel, GESTAR-II,” as amended through Amendment 26; (2) both methodologies yield the function of the MCPR operating limit to ensure that no fuel damage results during anticipated operational occurrences and that the Safety Limit Minimum Critical Power Ratio is not exceeded; (3) the fast scram times for the BWR/6 plants is a direct result of the control rod drive systems’ mechanical design and not a reflection of the test methodology; and (4) the Option B will provide additional operational flexibility to compensate for loss of the MCPR margin due to the new core design (i.e., decreased heat transfer time from fuel rod to coolant due to reduced fuel rod diameter such as GE-14 fuel results in relatively greater increase in the ΔCPR from pressurization transients than does for local events such as a rod withdrawal error for non-pressurization events).

Based on our review, the staff concludes that the above described TS changes and associated Bases to add a SR to TS 3.2.2 to determine the MCPR limit following the performance of control rod scram time testing is acceptable because the supporting analysis for the proposed TS changes are based on an NRC approved methodology.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

This 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 or changes a surveillance requirement. 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 (67 FR 58637). 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 staff 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: Tai Huang, NRR

Date: September 29, 2003