

March 19, 2002

Mr. Oliver D. Kingsley, President  
and Chief Nuclear Officer  
Exelon Nuclear  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, Illinois 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - ISSUANCE OF AMENDMENT  
(TAC NO. MB2256)

Dear Mr. Kingsley:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 144 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to the AmerGen Energy Company (AmerGen), LLC, application dated June 21, 2001, as supplemented by letter dated January 18, 2002.

The amendment changes technical specification (TS) surveillance requirements (SRs) for manual actuation of certain main steamline safety/relief valves (S/RVs), including those valves that provide the automatic depressurization system and the low-low set valve functions. The specific TS changes apply to SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1, including the associated bases for these requirements, to allow stroking of only the S/RV actuator to demonstrate valve operability.

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/**

Jon B. Hopkins, 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. 144 to NPF-62  
2. Safety Evaluation

cc w/encls: See next page

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Clinton Power Station, Unit 1

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Clinton Power Station, Unit 1

- 2 -

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AMERGEN ENERGY COMPANY, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 144

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 June 21, 2001, as supplemented by letter dated January 18, 2002, 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. 144 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: March 19, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 144  
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

3.4-11

3.5-5

3.6-23

Insert Pages

3.4-11

3.5-5

3.6-23

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. NPF-62

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated June 21, 2001, AmerGen Energy Company (AmerGen), LLC, the licensee for Clinton Power Station (Clinton), Unit 1, proposed a change to modify technical specification (TS) manual actuation surveillance requirements for certain main steam line safety/relief valves (S/RVs) including those valves that provide the automatic depressurization system (ADS) and the low-low set (LLS) valve functions. In a subsequent letter dated January 18, 2002, the TS changes were revised to remove the wording in the requirements that indicate that the surveillances are to be performed on a staggered basis for each valve solenoid. The specific TS changes evaluated herein apply to surveillance requirement (SR) 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1, including the associated bases for these TS requirements, to allow stroking of only the S/RV actuator to demonstrate valve operability.

The S/RVs at Clinton are Dikkers 8x10, direct-acting, spring-loaded safety valves with attached pneumatic actuators that are designed to perform as either a safety valve or as a relief valve. The safety mode of operation is independent and separate from the relief mode. The safety mode of operation is initiated when the force produced by the increasing static inlet steam pressure overcomes the opposing spring, disk/stem weight, and frictional forces acting to move the disc in the opening direction. The relief mode of operation is initiated when an electrical signal is received at any or all of the solenoid valves located on the pneumatic relief-mode actuator assembly. The manual actuation of the S/RVs is initiated from the control room. The solenoid and air-control valve will open to allow an air source to pressurize the lower side of the piston in the pneumatic cylinder to push it upwards. This action is transmitted through a lever arm and pivot mechanism which in turn lifts the valve stem/disk, thereby opening the valve to allow steam discharge through the valve. Upon de-energizing the solenoid, the air valve will reposition to allow the pressurized air in the cylinder to vent to the atmosphere, thus closing the valve.

Sixteen S/RVs are installed to protect the reactor pressure vessel (RPV) from over-pressurization during upset conditions. The size and number of S/RVs are selected such that peak pressure in the nuclear system will not exceed the American Society of Mechanical Engineer (ASME) Boiler and Pressure Vessel Code (Code) stress limits for the reactor coolant pressure boundary. SR 3.4.4.3 verifies that S/RVs can be manually opened. The frequency of SR 3.4.4.3 requires the testing to be performed on a staggered test basis to ensure that each valve solenoid is alternately tested.

Seven of the 16 S/RVs use the relief mode to perform the ADS function. The ADS is designed to provide depressurization of the RPV during a small break loss-of-coolant accident if the high-pressure core spray system fails or is unable to maintain required water level in the RPV. The ADS will depressurize the RPV to allow the combination of the low-pressure coolant injection system and low-pressure core spray system to inject into the RPV. The ADS valves can be opened automatically or from a remote location manually. SR 3.5.1.7 verifies that the ADS valves can be manually opened. The frequency of SR 3.5.1.7 requires the testing to be performed on a staggered test basis to ensure that each valve solenoid is alternately tested.

Five of the 16 S/RVs are equipped for the LLS function. The LLS logic causes two LLS valves to be opened at a lower pressure than the relief or safety mode pressure setpoints and causes all the LLS valves to stay open longer such that reopening of more than one S/RV is prevented on subsequent actuations. Therefore, the LLS function prevents excessive short duration S/RV cycles with valve actuation at the relief setpoint. SR 3.6.1.6.1 verifies that the LLS valves can be manually opened. The frequency of SR 3.5.1.7 requires the testing to be performed on a staggered test basis to ensure that each valve solenoid is alternately tested.

Currently, a minimum of 25 percent of the S/RVs are removed from the plant and setpoint tested in accordance with Inservice Testing Program and SR 3.4.4.1. The setpoint testing program includes the manual actuation of the S/RVs during the bench testing of the valves. A second set of spare S/RVs are reinstalled in the plant, and SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1 are performed on all of the valves to manually actuate the valves with plant-installed equipment.

## 2.0 PROPOSED TECHNICAL SPECIFICATION CHANGE

The licensee states that experience at Clinton, and at other plants such as Grand Gulf, has indicated that repeated manual actuation of the S/RVs can lead to through-seat leakage during plant operation. In the current operating cycles for CPS, approximately 63 percent (i.e., 10 of 16) of the valves are exhibiting seat leakage. Seven valves exhibited leakage following startup from the fall 2000 refueling outage, and an additional three valves developed leakage following forced outages in December 2000, and February 2001. The S/RV leakage is directed to the containment suppression pool causing a need to increase the frequency of suppression pool cooling, unless the plant is shutdown to remove and replace the leaking S/RV(s).

The licensee states that the proposed change to SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1 will allow the uncoupling of the S/RV stem from the pneumatic valve actuator prior to performing applicable SR. This will allow the verification that the actuator functions without requiring the opening of the S/RV. The S/RVs removed each refueling outage will continue to be manually actuated during the bench testing of the valves as part of the setpoint testing program. Additionally, the uncoupling of the S/RV stem from actuator will allow increased manual actuation testing of the S/RV solenoids.

The licensee states that the proposed changes to SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1 will result in the testing of the manual actuation of the S/RVs being performed in two overlapping steps in accordance with the requirements of SR 3.4.4.1. The SR 3.4.4.1 setpoint testing of the S/RVs is performed after the valve and actuator assemblies have been removed from the plant and transported to an approved facility. The valves are bench-tested to verify the safety and relief modes of valve operation. The safety mode is tested by verifying that the pressure below

the valve disk that is required to open the valve is consistent with TS requirements. The relief mode is tested by providing air to the valve actuator and verifying the performance and ability of the valve actuator lever and pivot mechanism to open the valve.

The licensee states that the proposed changes to SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1 will verify that the valve actuator for each S/RV, ADS, and LLS valve strokes when manually actuated after it is installed in the plant. The testing will be performed with the actuator uncoupled from the S/RV stem to allow the testing of the manual actuation electrical circuitry, solenoid and air control valve, and the actuator without causing the S/RV, ADS or LLS valve to open. Following cycling, the relief-mode actuator is re-coupled, and the proper positioning of the stem nut is independently verified.

The licensee also states that all components necessary to manually actuate the S/RV, ADS, or LLS valves will continue to be tested by the requirements of SR 3.4.4.1 and the proposed requirements of SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1 without potentially causing through-seat leakage in the valves. Therefore, the proposed change to exclude valve actuation will allow the testing of all manual valve solenoids on an 18-month frequency instead of on a staggered basis.

### 3.0 EVALUATION

The staff has reviewed the licensee's proposed TS change and finds that current testing requirements can result in additional seat leakage of the S/RVs during power operation. Such leakage would be directed to the primary containment suppression chamber causing a need to increase cooling to the suppression pool water or a possible plant shutdown to fix the leaking valve. The proposed testing provides for actual stroking of the S/RVs after performing the ASME Code setpoint testing on a sample of valves combined with stroking only the S/RV actuators after the S/RVs have been installed.

The staff finds that the proposed TS testing is reasonable because the only significant difference between the current TS testing and the testing proposed by the licensee is that the proposed sample stroke-testing of the total S/RV population each outage, when the S/RVs are setpoint tested, is less than the current testing of all S/RVs on a staggered basis each refueling. However, the 1987 ASME/American National Standards Institute, Operation and Maintenance of Nuclear Power Plants, OM-1987, Part 1 (OM-1) standard, which is currently applicable to the licensee, requires only that a sample of S/RVs be setpoint tested in any test period. Furthermore, OM-1 provides for the stroking of S/RV actuators only when setpoint tests, or maintenance or repair activities, are performed. Therefore, the licensee's proposed testing frequency meets the OM-1 required frequency that the staff has found to be adequate for testing valves of this type.

The staff notes that, with the proposed changes to SR 3.4.4.3, SR 3.5.1.7, and SR 3.6.1.6.1, all of the S/RV air solenoids are actuated on an 18-month frequency. This is more frequent than the current SR which requires only that the air solenoids be tested on a staggered basis when the S/RVs are actuated. Therefore, this part of the proposal exceeds the current TS requirement.

Based on the above evaluation, the staff finds that the licensee has adequately demonstrated the adequacy of the proposed TS changes for Clinton. The proposed changes provide for

reasonable testing of the S/RVs to demonstrate their relief mode function is adequate without the need for actual stroking of the S/RVs. Therefore, the staff concludes that the proposed TS changes to SR 3.4.4.1, SR 3.5.1.7, and SR 3.6.1.6.1 are acceptable.

#### 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 (66 FR 50465). 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: Y.S. Yuang

Date: March 19, 2002