

September 12, 2007

Mr. Christopher M. Crane
President and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - TEMPORARY RELIEF FROM
5-YEAR TEST REQUIREMENT FOR SAFETY RELIEF VALVES (TAC NO.
MD6621)

Dear Mr. Crane:

By letter dated August 30, 2007, AmerGen Energy Company, LLC (AmerGen, the licensee), submitted Relief Request No. 2208 for Clinton Power Station, Unit 1 (CPS). The relief request proposed an alternative to the requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Section 55a (10 CFR 50.55a), concerning a requirement in the American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI) Standard, Operation and Maintenance of Nuclear Power Plants, Part 1 (ASME OM-1). The proposed alternative involves a one-time extension to the ASME OM-1 5-year test interval for CPS Safety Relief Valves (SRVs) 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C.

The Nuclear Regulatory Commission (NRC) staff's review of AmerGen's analysis in support of its requests for relief is documented in the enclosed safety evaluation. The NRC staff has concluded that compliance with ASME OM-1 5-year test interval for the CPS SRVs would be impractical, i.e. requiring an unnecessary plant shutdown, without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i), relief is granted for CPS SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C, until the eleventh refueling outage (C1R11), which is currently scheduled to begin in January 2008.

Sincerely,

/RA/

Russell Gibbs, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: Safety Evaluation

cc w/encls: See next page

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Russell Gibbs, Chief
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Clinton Power Station, Unit No. 1

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. 2208

RELIEF FROM 5-YEAR TEST INTERVAL FOR SAFETY RELIEF VALVES

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated August 30, 2007, AmerGen Energy Company, LLC (the licensee), submitted Relief Request No. 2208 for Clinton Power Station, Unit 1 (CPS). The licensee requested relief from an inservice testing (IST) requirement of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, related to pressure relief devices. The ASME Code, Section XI, references ASME/American National Standards Institute (ANSI) Standard, Operation and Maintenance of Nuclear Power Plants, Part 1 (OM-1) for periodic testing requirements for pressure relief devices. The proposed alternative involves a one-time extension to the ASME OM-1 5-year test interval for CPS Safety Relief Valves (SRVs) 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a requires, in part, that ASME Class 1, 2, and 3 components must meet the requirements of the specified ASME Code incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. The 1987 Edition through 1988 Addenda of the ASME OM standard is the current Code of Record for the CPS second 10-year inservice test (IST) interval and, specifically, the 1987 addenda of OM-1 governs IST of pressure-relief devices at CPS.

In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternative provides an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making necessary findings.

The licensee is requesting relief in accordance with 10 CFR 50.55a(f)(6)(i) from the 5-year test requirement in Section 1.3.3.1 OM-1 for SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C. The licensee is requesting relief because compliance with ASME OM-1 would be impractical.

The NRC's findings with respect to authorizing relief on a one-time basis to the ASME OM-1 5-year test requirement are given below.

3.0 TECHNICAL EVALUATION FOR RELIEF REQUEST NO. 2208

The licensee has requested relief from an ASME OM-1 requirement in Section 1.3.3.1 for CPS SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C. The proposed alternative involves a one-time extension to the 5-year test interval specified by the Code. A description of the relief request and the NRC staff's evaluation follows.

3.1 ASME OM Code Requirements

ASME OM-1, Section 1.3.3, "Test Frequencies, Class 1 Pressure Relief Devices," requires that Class 1 pressure relief valves be tested at least once every 5 years. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20 percent of the valves from each valve group are required to be tested within any 24-month interval. The test interval for any individual valve must not exceed 5 years.

ASME Code Interpretation 01-18, "ASME OM Code-1995 With OMa ASME Code-1996 Addenda, Appendix I," dated June 26, 2003, clarifies the start of the 5-year test interval. The ASME OM Code Committee position is that the 5-year test interval starts when the valve is tested, not when the valve is installed.

3.2 Licensee's Basis for Relief

Pursuant to 10 CFR 50.55a(f)(6)(i), the licensee requested relief from a requirement in ASME OM-1, Section 1.3.3.1. Testing SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C prior to the upcoming refueling outage, scheduled to begin in January 2008, would be impractical. An unnecessary plant shutdown would be required to test the SRVs and the licensee considers this action to be impractical.

Normal practice at CPS is to remove and test eight of the sixteen SRVs each refueling outage. Spare SRVs that were previously refurbished and tested are installed in place of the removed SRVs. The SRVs removed from service are tested, refurbished and reset to ± 1 percent of setpoint and stored for reinstallation during a future refueling outage. For the January 2008 refueling outage, six of the eight SRVs scheduled for removal will be overdue for the 5-year testing requirement.

The test interval for SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C has currently expired or will expire before the refueling outage scheduled for January 2008 because the licensee incorrectly applied the 5-year test requirement in ASME OM-1, Section 1.3.3.1. The licensee's practice was to start the 5-year interval when a SRV was installed and not to include storage time in the 5-year interval.

The licensee is proposing to delay the testing of SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C until the January 2008 refueling outage because testing the installed SRVs would be impractical. The licensee states that compliance with the applicable requirements in the code would result in an unnecessary shutdown, causing unnecessary challenges to the safety systems and unnecessary cycling of equipment.

The licensee states that it is acceptable to extend the test interval beyond 5 years based on satisfactory performance of the valves during IST. IST history for valves installed for 48 months at CPS from 2001 to the present indicates that 29 of 32 tested SRVs have successfully passed the ASME OM Code setpoint as-found acceptance criteria of ± 3 percent of setpoint. Of the SRV test failures, results were generally considered to represent no decrease in the overall level of quality or safety. For example, one SRV was within 0.004 percent of the acceptance criteria, and another SRV exceeded the acceptance criteria in a negative, or conservative, direction. Additionally, the licensee states that CPS test data is consistent with reliable and consistent performance of the same model valves at other nuclear stations, including Grand Gulf Nuclear Station and Perry Nuclear Power Plant.

The licensee also states that the vendor for the subject Dikkers Model G-471 valve indicated that, in general, there is no degradation to the valve when stored in a controlled environment for up to five years before actual installation. Furthermore, the licensee states that vendor recommendations for valve storage were reviewed and that storage of the valves at CPS was in accordance with a qualified procedure meeting environmental and protective requirements. The affected valves were stored under a controlled environment for up to 44 months prior to installation.

3.3 Licensee's Proposed Alternative Testing

The licensee is proposing to extend the test interval for SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C beyond 5 years on a one-time basis. The test intervals for the affected SRVs would be extended 4 to 9 months, resulting in test intervals of 5 years 4 months to 5 years 9 months. The affected SRVs would be removed, tested, and refurbished during the January 2008 refueling outage.

3.4 NRC Staff's Evaluation of Relief Request

ASME OM-1, Section 1.3.3.1, requires a five-year test-to-test interval for Class 1 SRVs. The licensee's practice with respect to SRV test intervals has been to use an installation-to-test duration. This discrepancy will result in six currently installed SRVs exceeding the 5-year test interval by a maximum of nine months. Testing of the SRVs during power operation is considered impractical since the valves cannot be accessed for testing, or replaced with a tested valve, at normal plant operating conditions.

The licensee states that the subject SRVs, Dikkers Model G-471, are used at CPS and other nuclear plants with good reliability. The valves were successfully tested in the vast majority of as-found tests (i.e. ± 3 percent of setpoint) at CPS. Test failures generally did not represent any significant degradation in the level of quality and safety since typically as-found lift pressure was very close to the acceptable band and in the conservative (lower) direction. Grand Gulf Nuclear Station (GGNS) also uses the Dikkers Model G-471 and the vast majority of SRVs tested since 2001 passed the as-found criteria when tested.

The licensee's current analysis for CPS assumes that two SRVs are out of service and all operable SRVs open to relieve pressure at the ASME Code, Section III upper limit of 1375 psig. This value is greater than the +3 percent tolerance allowed for OM-1 SRV setpoint testing. Additionally, CPS and GGNS experience has shown that, in general, SRV setpoints tend to drift slightly downward, not upward. These added conservatisms provide additional assurance that the requested relief from the ASME code requirement would not result in a decrease in the level of quality or safety.

The licensee stated that the affected SRVs were stored in a controlled environment for a maximum of 44 months prior to installation, and will have been in service for a maximum of 4 years prior to removal during the January 2008 refueling outage. The licensee also stated that the controlled environment was equipped to prevent condensation and corrosion, and the valves are not subject to vibration or thermal cycling while stored. The vendor technical information manual indicated that there is no degradation of the valve when stored in a controlled environment for a period of up to five years before installation. The staff finds that the licensee has stored the valves in a manner that is consistent with the vendor's recommendations and has provided reasonable assurance that the valves would not be adversely affected by storage conditions.

The licensee stated that it removes each SRV after two operating cycles, which is approximately every 48 months. An ASME OM Code-certified off-site vendor is used to perform as-found and as-left testing, inspection, and refurbishment of each SRV that is removed from service in accordance with a licensee approved procedure. The procedure identifies the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. Components are either reworked to within the specified tolerance or replaced if found to be worn or outside of specified tolerances. Although the ASME OM Code does not require that SRVs be routinely refurbished, refurbishment of SRVs every two operating cycles provides reasonable assurance that setpoint drift will be minimized.

Based on the above, the NRC staff finds that the proposed alternative to extend the test interval for CPS SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C beyond the ASME OM-1 5-year test requirement is acceptable.

4.0 CONCLUSION

Based on the information provided by the licensee, the NRC staff has concluded that compliance with the ASME OM-1 5-year test interval for CPS SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C would be impractical. The additional time beyond that required by the ASME Code should not impair the valves' operational readiness. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i), relief is granted for CPS SRVs 1B21-F041B, 1B21-F047F, 1B21-F051B, 1B21-F051G, 1B21-F041C, and 1B21-F051C, until the eleventh refueling outage (C1R11), which is currently scheduled to begin in January 2008.

Principal Contributor: M. Orenak, NRR

Date: September 12, 2007