December 6, 2007

Mr. Charles G. Pardee
Chief Nuclear Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 – RELIEF REQUEST NO. 2209 FROM 5-YEAR TEST REQUIREMENT FOR SAFETY RELIEF VALVES (TAC NO. MD6622)

Dear Mr. Pardee:

By letter dated August 30, 2007, as supplemented by letter dated September 28, 2007, Exelon Generation Company, LLC (the licensee), submitted Relief Request (RR) No. 2209 for Clinton Power Station, Unit No. 1 (CPS). The licensee requested relief from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a concerning a requirement in the American Society of Mechanical Engineers (ASME)/American National Standards Institute OMa-1988, "Operations and Maintenance of Nuclear Power Plants (OM Code)," 1987 Edition through 1988 Addenda. The RR involves an extension to the ASME OM Code 5-year test interval for CPS Safety Relief Valves (SRVs) 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D.

The Nuclear Regulatory Commission (NRC) has reviewed the licensee's analysis in support of its requests for relief. The NRC staff has concluded that compliance with ASME OM Code 5-year test interval for CPS for the above mentioned valves, would result in hardship due to unnecessary personnel radiation exposure without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D until the twelfth refueling outage (C2R12), which is currently scheduled to begin in January 2010.

Sincerely,

/RA/

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

Docket No. 50-461

Enclosure:
Safety Evaluation

cc w/encls: See next page

December 6, 2007

Mr. Charles G. Pardee
Chief Nuclear Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 – RELIEF REQUEST NO. 2209 FROM 5-YEAR TEST REQUIREMENT FOR SAFETY RELIEF VALVES (TAC NO. MD6622)

Dear Mr. Pardee:

By letter dated August 30, 2007, as supplemented by letter dated September 28, 2007, Exelon Generation Company, LLC (the licensee), submitted Relief Request (RR) No. 2209 for Clinton Power Station, Unit No. 1 (CPS). The licensee requested relief from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a concerning a requirement in the American Society of Mechanical Engineers (ASME)/American National Standards Institute OMa-1988, "Operations and Maintenance of Nuclear Power Plants (OM Code)," 1987 Edition through 1988 Addenda. The RR involves an extension to the ASME OM Code 5-year test interval for CPS Safety Relief Valves (SRVs) 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D.

The Nuclear Regulatory Commission (NRC) has reviewed the licensee's analysis in support of its requests for relief. The NRC staff has concluded that compliance with ASME OM Code 5-year test interval for CPS for the above mentioned valves, would result in hardship due to unnecessary personnel radiation exposure without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D until the twelfth refueling outage (C2R12), which is currently scheduled to begin in January 2010.

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

Docket No. 50-461
Enclosure:
Safety Evaluation
cc w/encls: See next page
DISTRIBUTION:

PUBLIC	LPL3-2 R/F	
RidsAcrsAcnwMailCenter	RidsOgcRp	RidsNrrLAEWhitt
RidsNrrPMSSands	RidsNrrRgn3MailCenter	RidsNrrDciCptb
RidsNrrDciCptb	RidsNrrDorlLpl3-2	TBloomer, EDO Region III
RidsNrrPMMThorpe-Kavanaugh		STingen, NRR

Adams Accession No. ML073190479

OFFICE	LPL3-2/PM	LPL3-2/LA	DCI/CPTB/BC	OGC (NLO)	LPL3-2/BC
NAME	SSands	EWhitt	JMcHale	MSmith	RGibbs
DATE	12/6/07	12/6/07	10/05/07	11 / 26 /07	12/6/07

OFFICIAL RECORD COPY

Clinton Power Station, Unit No. 1

cc:

Corporate Distribution
Exelon Generation Company, LLC
via e-mail

Clinton Distribution
Exelon Generation Company, LLC
via e-mail

Clinton Senior Resident Inspector
U.S. Nuclear Regulatory Commission
via e-mail

Illinois Emergency Management Agency
Division of Disaster Assistance &
Preparedness
via e-mail

J. W. Blattner, Project Manager
Sargent & Lundy Engineers
via e-mail

Chairman of DeWitt County
c/o County Clerk's Office
DeWitt County Courthouse
Clinton, IL 61727

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. 2209 FROM 5-YEAR TEST

INTERVAL FOR SAFETY RELIEF VALVES

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated August 30, 2007(Agencywide Documents Access and Management System (ADAMS) Accession No. ML072420466), Exelon Generation Company, LLC (the licensee), submitted Relief Request (RR) No. 2209 for Clinton Power Station, Unit No. 1 (CPS). On September 25, 2007 (ADAMS Accession No. ML072620007), the Nuclear Regulatory Commission (NRC) requested the licensee to submit additional information to support its request. The licensee submitted the requested information in a letter dated September 28, 2007 (ADAMS Accession No. ML072740030). The licensee requested relief from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a concerning a requirement in the American Society of Mechanical Engineers (ASME)/American National Standards Institute OMa-1988, "Operations and Maintenance of Nuclear Power Plants," (OM Code) 1987 Edition through 1988 Addenda. The RR involves an extension to the ASME OM Code 5-year test interval for CPS Safety Relief Valves (SRVs) 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D.

2.0 REGULATORY REQUIREMENT

The regulation at 10 CFR 50.55a(f), "Inservice Testing Requirements," requires, in part, that ASME Code Class 1, 2, and 3 components must meet the requirements of the OM Code and applicable addenda, 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.

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 the ASME OM Code requirements upon making necessary findings.

The licensee requested relief in accordance with 10 CFR 50.55a(a)(3)(ii) from the 5-year test requirement in Part 1, "Requirements for Inservice Testing of Nuclear Power Plant Pressure

Enclosure

Relief Devices," Section 1.3.3, "Test Frequencies, Class I Pressure Relief Valves," Paragraph (b), "Subsequent 5-Year Test Periods," of the ASME OM Code. The RR involves an extension to the ASME OM Code 5-year test interval for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D. The licensee is requesting relief because compliance with this ASME OM Code requirement would result in hardship due to unnecessary personnel radiation exposure, without a compensating increase in the level of quality or safety. The NRC's findings with respect to authorizing relief from the ASME OM Code 5-year test requirement are given below.

3.0 TECHNICAL EVALUATION

The licensee has requested relief from an OM Code requirement in Part 1, Section 1.3.3(b), for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D. The request for relief involves an extension to the 5-year test interval specified by the ASME OM Code. The SRVs provide overpressure protection for the reactor coolant pressure boundary. The licensee's analysis in support of its request for relief from the 5-year test requirement is described in the licensee's letters dated August 30, 2007, and September 28, 2007. A description of the RR and the NRC staff's evaluation follows.

3.0.1 ASME OM Code Requirements

ASME OM Code Part I, Section 1.3.3(b), requires that Class 1 pressure relief valves be tested at least once every 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.

The licensee has requested relief from an OM Code requirement in Part 1, Section 1.3.3(b), for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D.

3.0.2 Licensee's Basis for Relief

There are 16 SRVs installed in CPS. All 16 SRVs would have to be tested during the upcoming CPS refueling outage scheduled for January 2008, in order to meet the ASME OM Code Part I, Section 1.3.3(b) 5-year test requirement. Normal practice at CPS is to remove and test 8 of the 16 SRVs each refueling outage. Spare SRVs that were previously refurbished and tested are installed in place of the SRVs that are removed. The SRVs removed from service are tested, refurbished, and then retested before being reinstalled during a future refueling outage. The licensee is proposing to remove and test eight SRVs during the upcoming refueling outage scheduled for January 2008. The eight SRVs with the oldest test dates will be tested during the January 2008 refueling outage.

The licensee stated that CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D were stored in a controlled environment for up to 34 months prior to installation, and will have been in service for up to 72 months prior to removal during the January 2010, refueling outage.

The licensee is requesting authorization to extend test interval for SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D beyond 5 years because it incorrectly applied the 5-year test requirement in the ASME OM Code Part I, Section 1.3.3(b). 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. Testing SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D during the upcoming Unit 1 refueling outage scheduled to begin in January 2008, would result in hardship due to unnecessary personnel radiation exposure, without a compensating increase in the level of quality or safety. The licensee is proposing to delay the testing of SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D until the January 2010, refueling outage, because it would be a hardship to remove all 16 SRVs during the January 2008, refueling outage.

Without Code relief, the additional outage work would be contrary to the principles of keeping radiation exposure as low as reasonably achievable . Crews of up to five to seven workers are required to remove each inservice SRV and install each spare SRV. Insulation and appurtenances on the SRV also require removal and reinstallation. Because of the location of the SRVs in the containment, this results in radiation exposure to the maintenance personnel performing the work. The removal of eight additional SRVs during the upcoming January 2008, refueling outage, would add approximately 6 person-roentgen equivalent man (rem) (the licensee estimates that it take .7 person-rem to remove and replace one SRV) to the radiation exposure for the January 2008, refueling outage without a compensating increase in the level of quality or safety.

The licensee states that it is acceptable to extend the test interval beyond 5 years based on satisfactory performance of the valves during inservice testing (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, two of the SRVs were 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 (Dikkers Model G-471) at Grand Gulf Nuclear Station, Unit 1 (Grand Gulf) and Perry Nuclear Power Plant, Unit No. 1 (PNPP).

3.0.3 Licensee's Proposed Alternative Testing

The licensee is proposing to extend the test interval for Unit 1 SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D beyond 5 years on a one-time basis. The requested interval extension for CPS SRVs varies between 14 to 23 months beyond the allowable 5-year interval. The testing of CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D, would be postponed from the upcoming January 2008, refueling outage, to the January 2010, refueling outage.

3.0.4 NRC Staff Evaluation

The NRC staff has reviewed the SRV as-found set-pressure test summary results provided by the licensee to determine if it is acceptable to extend the test interval beyond the allowable 5-year interval specified in the ASME OM Code. The SRV setpoint test summary results from 2001 to present include 32 data points from CPS valves that were inservice for two operating cycles (48 months). The licensee also provided SRV setpoint test summary results from Grand Gulf and PNPP. The CPS, Grand Gulf , and PNPP SRVs are identical. Test history shows that SRVs generally passed the ASME OM Code as-found acceptance criteria of ±3 percent. Failure to meet the ASME OM Code as-found acceptance criteria of ±3 percent rarely occurred. Several failures were within 0.004 percent of the acceptance criteria of ±3 percent, and another SRV exceeded the acceptance criteria in a negative, or conservative, direction.

The licensee also stated that the controlled environment for SRV storage was equipped to prevent condensation and corrosion. The licensee provided test results for two SRVs that were stored in this same controlled environment for 6 years and 7 months in order to determine the impact of storage in a controlled environment on the opening set pressure. Results of this testing indicated that setpoint drift was +0.8 percent for one SRV and 0.0 percent for the other SRV.

The licensee stated that 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.

The NRC staff finds that the proposed alternative to extend the test interval for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D beyond the ASME OM Code 5-year test requirement is acceptable. The additional time beyond that required by the ASME OM Code should not impair the valves' operational readiness based on the following:

> Although the ASME OM Code does not require that SRVs to be routinely refurbished, routine refurbishment of SRV provides reasonable assurance that setpoint drift will be minimized.
>
> Past performance demonstrates that the SRVs generally passed the Code as-found acceptance criteria of ±3 percent. This supports the current CPS ASME overpressure analysis for the reactor coolant system that assumes that the SRVs open to relieve pressure at the upper ASME limit of 3 percent of the SRV setpoint. Successfully passing the OM Code as-found acceptance criteria of ±3 percent is also consistent with CPS Technical Specification Surveillance Requirement 3.4.4.1 which requires that SRV lift setpoints be verified to be within ±3 percent of setpoint.
>
> Test results for SRVs stored in a controlled environment for up to 6 years and 7 months demonstrate that storage in the controlled environment has a minimal effect on the setpoint.

4.0 CONCLUSION

Based on the information provided by the licensee, the NRC staff has concluded that compliance with ASME OM Code 5-year test interval for CPS SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D would result in hardship due to unnecessary personnel radiation exposure. The additional time beyond that required by the ASME Code should not impair the valves' operational readiness. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for SRVs 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D and 1B21-F051D until the twelfth refueling outage (C2R12), which is currently scheduled to begin in January 2010.

Principal Contributor: S. Tingen, NRR

Date: December 6, 2007