

10 CFR 50.55a

RS-08-144

November 3, 2008

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Request for Relief from ASME OM Code 5-year Test Interval for Safety Relief Valves (Relief Request No. 2210)

In accordance with 10 CFR 50.55a, "Codes and Standards," paragraph (a)(3)(ii), AmerGen Energy Company, LLC (AmerGen) requests NRC approval of proposed Relief Request No. 2210 to extend the 5-year Inservice Test (IST) interval to a 6.5-year IST interval for the 16 Dikkers Valves Model G-471 safety relief valves at Clinton Power Station (CPS), Unit 1.

Specifically, AmerGen requests relief from the American Society of Mechanical Engineers/American National Standards Institute (ASME/ANSI), OMa-1988, "Operations and Maintenance of Nuclear Power Plants," 1987 Edition through 1988 Addenda (ASME OM Code), Part 1, "Requirements for Inservice Testing of Nuclear Power Plant Pressure Relief Devices," Section 1.3.3, "Test frequencies, Class 1 Pressure Relief Valves," paragraph (b), "Subsequent 5-Year Test Periods." This relief is requested for the remainder of the second 10-year IST interval, which began January 1, 2000 and is scheduled to end on December 31, 2009.

AmerGen requests approval of this request by November 3, 2009, to support planning for the twelfth refueling outage that is scheduled to begin in January 2010.

There are no regulatory commitments contained within this letter.

If you have any questions concerning this letter, please contact Mr. Timothy A. Byam at (630) 657-2804.

Respectfully,

A handwritten signature in black ink that reads "Jeffrey L. Hansen". The signature is written in a cursive style with a large, prominent initial "J".

Jeffrey L. Hansen
Manager – Licensing

Attachment: Relief Request No. 2210, Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii), Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

1. ASME Code Component(s) Affected

Components: 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D,
1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A,
1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F,
1B21-F051B, 1B21-F051C, 1B21-F051D, 1B21-F051G

Description: Clinton Power Station (CPS) Unit 1, Safety Relief Valves (SRVs)
Dijkers Valves Model G-471

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," ASME/ANSI OMa-1988, "Operations and Maintenance of Nuclear Power Plants," 1987 Edition through 1988 Addenda (ASME OM Code).

3. Applicable Code Requirement

ASME OM Code, Part 1, "Requirements for Inservice Testing of Nuclear Power Plant Pressure Relief Devices," Section 1.3.3, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (b), "Subsequent 5-Year Test Periods."

This section states that all valves of each type and manufacturer shall be tested within each subsequent 5-year period with a minimum of 20% of the valves tested within any 24 months. This 20% shall be previously untested valves, if they exist.

4. Reason for Request

10 CFR 50.55a(f)(4) directs a licensee to meet inservice testing requirements for ASME Code Class 1 valves set forth in the ASME OM Code and addenda. The second 10-year inservice testing (IST) interval for CPS is based on the 1987 Edition through 1988 addenda of the ASME OM Code; specifically, the 1987 Edition of the OM Code, Part 1 (OM-1), "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices."

The ASME OM Code, Part 10 (OM-10), Section 3.2, "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). OM-1, Section 4.3.1, "Safety and Relief Valves," directs that safety and relief valves meet the inservice testing requirements set forth in Part 1 of the ASME OM Code. Section 1.3.3.1 of the ASME OM Code states that Class 1 pressure relief valves shall be tested within the initial 5-year period, starting with initial electric power generation. This section also states that all valves of each type and manufacturer shall be tested within each subsequent 5-year period. The required test ensures that the SRVs, which are located on each

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

of the main steam lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the CPS safety analysis.

The Dikkers Model G-471 SRVs have shown exemplary test history at CPS, as described in Section 5 below. However, given the current 24-month operating cycle for CPS, AmerGen Energy Company, LLC (AmerGen) is required to remove and test fifty percent (i.e., eight of 16) of the SRVs every refueling outage, so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves within a five-year interval. Approval of extending the test interval to 6.5 years would reduce the minimum number of SRVs tested at CPS over three refueling outages by eight.

Without Code relief, the incremental outage work due to the inclusion of the eight additional SRVs would be contrary to the principles of maintaining exposure to radiation as low as reasonably achievable (ALARA), in that the removal and replacement of the eight SRVs over three refueling outages will result in approximately 5.6 person-rem of additional cumulative radiation exposure. In addition, as discussed below, historical SRV test results for the Dikkers Model G-471 SRVs indicate that the CPS SRVs continue to perform well. Therefore, this additional cumulative radiation exposure represents a hardship for CPS without a compensating increase in the level of quality or safety.

In accordance with 10 CFR 50.55a, Codes and standards," paragraph (a)(3)(ii), AmerGen requests relief from the five-year test interval requirements of ASME OM Code, Part 1, Section 1.3.3.1 for the Dikkers Model G-471 SRVs at CPS. AmerGen requests that the test interval be increased from five years to 6.5 years. All other requirements of the ASME OM Code would be met. Compliance with the applicable requirements of the ASME OM Code for these SRVs results in hardship due to unnecessary personnel radiation exposure without a compensating increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

For the second 10-year IST interval at CPS Unit 1, AmerGen proposes that ASME Class 1 pressure relief valves (i.e., Dikkers Model G-471 SRVs) shall be tested at least once every 6.5 years. A minimum of approximately 20% of the pressure relief valves will be tested within any 24-month interval and that this 20% shall consist of valves that have not been tested during the current 6.5 year interval, if they exist. The test interval for any individual valve shall not exceed 6.5 years.

All SRVs are located in the upper elevations of the CPS drywell. The major contributors to radiation exposure are the Main Steam Lines, including the SRVs, along with High Pressure Core Spray and Low Pressure Core Spray lines passing through the area.

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

Removal of an installed SRV and installation of a replacement SRV requires installation of scaffolding, removal of insulation and various appurtenances on the SRV, and unbolting the SRV. Once unbolted, the SRV is maneuvered from its location and lowered to the first elevation and transported through the drywell and containment equipment hatches. Each SRV weighs approximately 3050 pounds, and due to its size, a crew of five to seven personnel is necessary to safely move each valve.

AmerGen has evaluated the historical cumulative radiation exposure at CPS for removal and replacement of SRVs from the last five CPS refueling outages. The work evolutions necessary to remove and replace these valves each refueling outage, which includes the removal and replacement of eight SRVs, are conducted under equivalent radiological conditions and with the same personnel requirements. This historical cumulative radiation exposure data is provided in Table 1.

Table 1
Cumulative Radiation Exposure

| Outage | RF-7 | C1R08 | C1R09 | C1R10 | C1R11 |
|-------------------------|-------|-------|--------|-------|-------|
| Number of SRVs Replaced | 16 | 16 | 8 | 8 | 8 |
| Cumulative Person-Rem | 8.062 | 8.837 | 12.139 | 5.325 | 4.9 |

Based on this data, AmerGen has concluded that the expected cumulative radiation exposure to remove and replace a single SRV would be approximately 0.7 person-rem. The outage-specific variability of cumulative radiation exposure is attributed to the location of a particular valve relative to higher radiation fields, the physical configuration of surrounding equipment for a particular valve, and the impact of outage-specific plant configurations. Therefore, absent the requested relief, replacement of eight incremental SRVs would result in approximately 5.6 additional person-rem over three refueling outages.

IST history for SRVs at CPS from 2001 to present indicates that all but three of 40 total tests of SRVs have successfully passed the ASME OM Code as-found acceptance criteria of plus or minus 3%, a majority of which were installed for two operating cycles. Historical data also indicates that the as-found setpoints for 28 of 40 tests remained within the as-left tolerance of plus or minus 1%.

The as-found test data for the three SRV failures indicates that two of the three SRV test failures did not decrease the level of quality or safety, in that the as-found setpoint for one SRV was within 0.004% of the acceptance criteria, and one SRV exceeded the acceptance criteria in a negative, or more conservative direction. The three SRV failures that occurred were SRVs that were as-left setpoint tested using nitrogen by on-site personnel and then as-found setpoint tested by an off-site certified vendor using steam. CPS has since abandoned on-site nitrogen setpoint testing and refurbishment by on-site personnel, and instead, sends the SRVs to a

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

certified off-site vendor for as-found and as-left setpoint testing using steam. Since changing to as-found and as-left testing using steam as a testing medium, there have been no failures.

In addition to the historical test results, the current CPS Unit 1 reload ASME overpressure analysis assumes that two SRVs are out of service, and all of the operable SRVs open to relieve pressure at the upper ASME Code limit of 1375 psig. This value is greater than the plus 3% of the SRV setpoint. These conservative assumptions provide additional assurance that the requested relief from the ASME OM Code requirement for the subject SRVs would not result in a decrease in the level of quality or safety.

CPS currently utilizes an ASME OM Code-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the SRVs. An AmerGen-approved and qualified procedure is used for disassembly and inspection of the SRVs. This procedure requires that each SRV be disassembled and inspected upon removal from service, independent of the as-found test results. 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. If components are found worn or outside of the specified tolerance(s), the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and AmerGen is notified of these components by the off-site vendor. The SRV is then reassembled, the as-left test is performed, and the SRV is returned to CPS.

The ASME OM-1 Sub-Group on Safety and Relief Valves developed Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves." Code Case OMN-17 allows owners to extend the test interval for safety and relief valves from 60 months to 72 months plus a six-month grace period. The code case imposes a special maintenance requirement to disassemble and inspect each safety and relief valve to verify that parts are free from defects resulting from the time related degradation or service induced wear prior to the start of the extended test interval. The purpose of this maintenance is to reduce the potential for setpoint drift. As noted above AmerGen utilizes an ASME OM Code-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the Dikkers Model G-471 SRVs for CPS. AmerGen has verified that the approved and qualified procedure that is used by the off-site vendor for disassembly, inspection, repair, and testing of the SRVs satisfies the special maintenance requirement specified in Code Case OMN-17.

All currently installed SRVs at CPS were disassembled, inspected, repaired, and tested in accordance with the qualified procedure, prior to installation, to verify that parts were free from defects resulting from time-related degradation or maintenance-induced wear. Therefore, currently installed SRVs at CPS comply with Code Case OMN-17.

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

Furthermore, each SRV removed from service at CPS will continue to be disassembled, inspected, repaired, and tested in accordance with the qualified procedure prior to reinstallation. Upon approval of the proposed relief request, the test interval (i.e., the frequency for disassembly, inspection, repair, and testing) for any SRV shall not exceed 6.5 years (i.e., 72 months plus a six-month grace period).

Based upon the estimated cumulative radiation exposure to comply with the ASME OM Code, coupled with historical SRV test results for Dikkers Model G-471 SRVs at CPS, AmerGen has concluded that compliance with the ASME OM Code would result in hardship, without a compensating increase in the level of quality or safety.

6. Duration of Proposed Alternative

This relief is requested for the remainder of the second 10-year IST interval that began January 1, 2000 and is scheduled to end on December 31, 2009.

7. Precedents

In Reference 1, the NRC reviewed and approved relief requests for both Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2 to extend their main steam safety valve (MSSV) test interval duration for individual valves to 6.5 years for the remainder fourth 10-year Inservice Testing interval. In Reference 2, the NRC reviewed and approved a relief request for Susquehanna Steam Electric Station (SSES), Units 1 and 2 to extend the MSSV test interval duration for individual valves to six years for the entire third 10-year Inservice Testing interval. In Reference 3, the NRC reviewed and approved a relief request for Nine Mile Point Nuclear Power Station, Unit 2 (NMP2) to extend the MSSV test interval duration for individual valves to three refueling outages or approximately six years for the entire third 10-year Inservice Testing interval. In all of these approvals, the NRC allowed for a total installed interval of at least six years.

This proposed relief request is consistent with the DNPS, QCNPS, SSES and NMP2 precedents, in that it will establish a test interval that would enable AmerGen to maintain a Dikkers Model G-471 SRV in service for three operating cycles, while also allowing adequate time to transport, test, and refurbish an SRV, at an external facility prior to reinstallation.

8. References

- 1.) Letter from U. S. NRC to Mr. Charles G. Pardee (Exelon Generation Company, LLC), "Dresden Nuclear Power Station Units 2 and 3 – Relief Request No. RV-02C from 5-year Test Interval for Main Steam Safety Valves (TAC Nos. MD8150 and MD8151) and Quad Cities Nuclear Power Station,

ATTACHMENT
Relief Request No. 2210
Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety

Units 1 and 2 – Relief Requests No. RV-30E and RV-30F from 5-year test interval for Main Steam Safety Valves (TAC Nos. MD6682, MD6683, MD8241, and MD8242)," dated June 27, 2008

- 2.) Letter from U. S. NRC to Mr. B. L. Shriver (PPL Susquehanna, LLC), "Susquehanna Steam Electric Station Units 1 and 2 – Third 10-year Interval Inservice Testing (IST) Program Plans (TAC Nos. MC3382, MC3383, MC3384, MC3385, MC3386, MC3387, MC3388, MC3389, MC4421, MC4422)," dated March 10, 2005
- 3.) Letter from U. S. NRC to Mr. J. H. Mueller (Niagara Mohawk Power Corporation), "Nine Mile Point Nuclear Power Station, Unit No. 2 – Alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC No. MB0290)," dated April 17, 2001