

10 CFR 50.55a

RS-03-221

November 18, 2003

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

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License No. DPR-29 and DPR 30
NRC Docket No. 50-254 and 50-265

Subject: Quad Cities Nuclear Power Station, Units 1 and 2, Fourth Interval Inservice Testing Program Plan

- References:**
- (1) Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for Amendment to Technical Specifications Surveillance Requirements for the Main Steam Line Relief Valves and Relief Request RV-30D," dated April 25, 2003
 - (2) Letter from T. J. Tulon (Exelon Generation Company, LLC) to U. S. NRC, "Submittal of Proposed Relief Requests to the Requirements of 10 CFR 50.55a Concerning the Fourth Ten-Year Interval Inservice Testing Program," dated September 11, 2003
 - (3) Letter from U. S. NRC to J. L. Skolds (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Unit 2 – Relief Request RV-30D, Inservice Testing Program Relief Regarding Main Steam Power Operated Relief Valves," dated May 8, 2003

In References 1 and 2, Exelon Generation Company, LLC (EGC) requested relief from certain requirements of 10 CFR 50.55a, "Codes and standards," for the third and fourth interval inservice testing (IST) program plans, respectively, for Quad Cities Nuclear Power Station (QCNPSS), Units 1 and 2. In Reference 3, the NRC approved relief request RV-30D (i.e., Reference 1) for the third interval IST program plan, scheduled to conclude on March 30, 2004.

On October 29, 2003, and during a teleconference on November 3, 2003, the NRC noted that relief request RV-30D (i.e., Reference 1) identified additional testing of the Power Operated Relief Valves (PORVs) not included in the subsequent request for the fourth interval IST program. As a result, relief request RV-30D for the fourth interval IST has been revised and is provided in the attachment to this letter.

Additionally, EGC is withdrawing relief request PR-00A, "No Comprehensive Test for Certain Group A Pumps," of Reference 2, based on a reevaluation of the need for this request.

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If you have any questions or require additional information, please contact Mr. Thomas G. Roddey at (630) 657-2811.

Respectfully,



Patrick R. Simpson
Manager – Licensing

Attachment: Relief Request RV-30D, Revision 1

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

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10 CFR 50.55a Request Number RV-30D

**Relief Requested
In Accordance with 10 CFR 50.55a(a)(3)(i)**

Alternate Provides Acceptable Level of Quality and Safety

1. ASME Code Components Affected

<u>Component Number</u>	<u>System</u>	<u>Code Class</u>	<u>Category</u>
1-203-3A	Main Steam	1	B/C
1-203-3B	Main Steam	1	B/C
1-203-3C	Main Steam	1	B/C
1-203-3D	Main Steam	1	B/C
1-203-3E	Main Steam	1	B/C
2-203-3A	Main Steam	1	B/C
2-203-3B	Main Steam	1	B/C
2-203-3C	Main Steam	1	B/C
2-203-3D	Main Steam	1	B/C
2-203-3E	Main Steam	1	B/C

2. Applicable Code Edition and Addenda

ASME OM Code 1998 Edition through 2000 Addenda

3. Applicable Code Requirement

Appendix I, I-3410(d) – Class 1 Main Steam Pressure Relief Valves With Auxiliary Actuating Devices – Each valve that has been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled shall be remotely actuated at reduced or normal system pressure to verify open and close capability of the valve before resumption of electric power generation. Set-pressure verification is not required.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(i), relief is requested from the requirement of ASME OM Code Appendix I, I-3410(d). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

Experience in the industry and at Quad Cities Nuclear Power Station (QCNPS) has indicated that manual actuation of the main steam relief valves during plant operation can lead to valve seat leakage. Currently, QCNPS Unit 1 has four Electromatic Relief Valves (ERVs) designated 1-203-3B, 1-203-3C, 1-203-3D, 1-203-3E. Currently, QCNPS Unit 2 has four Power Operated Relief Valves designated 2-203-3B, 2-203-3C, 2-203-3D, 2-203-3E. Each unit also has a dual

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function Target Rock safety/relief valve (S/RV) designated 1-203-3A and 2-203-3A for Unit 1 and Unit 2 respectively. The Target Rock valve can actuate by either the safety mode or the relief mode. Each ERV, PORV and S/RV consists of a main valve disc and seat and a pilot valve arrangement.

Past history has indicated elevated tailpipe temperatures downstream of some of the subject valves. Based on previous testing and temperature trends, the most likely cause of the high tailpipe temperatures is leakage from the main valve disc and seat, rather than leakage from the pilot valve.

Valve seat leakage from either the main valve disc or pilot valve can result in increased suppression pool temperature, which has little safety significance, as long as suppression pool temperature is maintained within Technical Specification limits. However, leakage from a pilot valve can lead to inadvertent opening of the main valve, and the subsequent inability to re-close the valve.

The purpose of this relief request is to allow the testing of the ERVs, PORVs and S/RVs such that full valve functionality is demonstrated through overlapping tests, without cycling the valve. The use of an overlapping series of tests has been successfully applied at other stations.

Additionally, the Boiling Water Reactor Owners' Group (BWROG) Evaluation of NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," recommended that the number of safety valve openings be reduced as much as possible and unnecessary challenges should be avoided.

5. Proposed Alternative and Basis for Use

The QCNPS ERVs are solenoid operated with a single stage pilot. Operation of the pilot valve vents the chamber under the main valve, which causes it to open. The PORVs are solenoid operated with a dual stage pilot. They are similar to other multi-stage pilot actuated S/RVs in that lifting of the first stage pilot relieves loading from the second stage pilot, allowing it to change position, relieving pressure on the main disc. With this pressure relieved, the solenoid is able lift the main disc with the assistance of inlet pressure. This causes the main disc to move rapidly to its full open position. The S/RVs have two pilots; both pilots operate in the safety mode. In the relief mode, the second-stage disc is stroked by an air plunger.

The proposed alternative testing uses overlapping tests to verify the valves function properly at operating conditions and are capable of being opened when installed in the plant.

This proposed alternate will allow QCNPS to test the manual actuation of the ERVs, PORVs, and S/RVs in two overlapping tests. The first test will be performed at a steam test facility, where each valve will be installed on a steam header in the same orientation as in the plant installation. The test conditions in the test facility will be similar to those in the plant installation, including ambient temperature, valve insulation, and steam conditions. The valve will then be leak tested, functionally tested to ensure the valve is capable of opening and closing,

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and leak tested a final time. Valve stroking time will be measured and verified to be within design limits. Valve seat tightness will be verified by a cold bar test, and if not free of fog, leakage will be measured and verified to be below design limits. For the PORVs, limit switch actuation may be tested prior to or during functional testing.

The valve will then be shipped to the plant without any disassembly or alteration of the valve components. A receipt inspection will be performed in accordance with the requirements of the EGC Quality Assurance Program upon arrival of the valve at QCNPS. The storage requirements in effect at QCNPS ensure the valves are protected from exposure to the environment, airborne contamination, acceleration forces, and physical damage.

Second Test – PORV

Prior to installation, electrical continuity checks of the limit switches will be performed, and the valve will again be inspected for foreign material and damage. The valve will be installed, insulated, and electrically connected. Proper electrical connections will be verified per procedure. Electrical power to the control panel and signals causing application of power to the PORV solenoid will be verified to be present at the control panel per procedure. Electrical continuity and resistance checks from the control panel to the relief valve will be performed. These verifications will provide a complete check of the capability of the valve to open and close.

Second Test – ERV and SRV

Prior to installation, the valve will again be inspected for foreign material and damage. The valve will be installed, insulated, and electrically connected. Proper electrical connections will be verified per procedure. Electrical power to the control panel and signals causing application of power to the SRV and ERV solenoids will be verified to be present at the control panel per procedure. In addition, ERV limit switches will be tested. For the relief mode of SRVs, the second test will be performed after installation in the plant by energizing a solenoid that pneumatically actuates a plunger located within the main valve body. Actuation of the plunger allows pressure to be vented from the top of the main valve piston. This allows reactor pressure to lift the main valve piston, which opens the main valve. However, since this test will be performed prior to establishing the reactor pressure needed to overcome main valve closure forces, the main valve will not stroke during the test. This test also does not disturb the safety-mode pilot valve, leakage through which is an issue with temperature detection of leakage after steam is applied to the valve.

For the ERVs, the second test will be performed with the pilot valve actuator mounted in its normal position. This will allow testing of the manual actuation electrical circuitry, solenoid, actuator, pilot operating lever, and pilot plunger. However, since this test will be performed prior to establishing the necessary reactor pressure to overcome main valve closure forces, the main valve will not be stroked during the test.

These verifications will provide a complete check of the capability of the valves to open and close. Therefore, the proposed alternative will allow the testing of the

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ERVs, PORVs and S/RVs such that full functionality is demonstrated through overlapping tests without cycling the valves.

6. **Duration of Proposed Alternative**

The proposed alternative will be utilized for the entire 4th 120 month interval.

7. **Precedents**

Similar relief for the PORVs was previously approved for QCNPS Unit 2 for the 3rd 120 month interval by letter dated May 8, 2003. In addition, similar relief for the QCNPS Unit 1 ERVs, and QCNPS Units 1 and 2 S/RVs, was approved for the 3rd 120 month interval by letter dated May 28, 2003.