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10 CFR 50.55a

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SVP-03-096

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Submittal of Proposed Relief Requests to the Requirements of 10 CFR 50.55a Concerning the Fourth Ten-Year Interval Inservice Testing Program

The purpose of this letter is to request approval of proposed relief requests in accordance with 10 CFR 50.55a, "Codes and standards." The attached code relief requests are associated with the fourth ten-year interval Inservice Testing (IST) Program for Quad Cities Nuclear Power Station (QCNPS). The fourth ten-year interval begins on February 19, 2004 and is required by 10 CFR 50.55a(f)(4) to comply with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, OM Code (1998 Edition through 2000 Addenda).

The QCNPS IST fourth ten-year interval will be in effect from February 19, 2004 to February 18, 2014. Accordingly, we request approval of the enclosed relief requests by February 19, 2004.

Should you have any questions concerning this letter, please contact Mr. Wally Beck at (309) 227-2800.

Respectfully,

Timothy J. Tulon
Site Vice President
Quad Cities Nuclear Power Station

Attachment: Quad Cities Nuclear Power Station Inservice Testing Program
Fourth Ten-Year Interval Proposed Relief Requests

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

Quad Cities Nuclear Power Station

Inservice Testing Program Fourth Ten-Year Interval

Proposed Relief Requests

Pump Relief Request Index

Designator	Description
PR-00A	No Comprehensive Test for Certain Group A Pumps

Valve Relief Request Index

Designator	Description
RV-23A	High Pressure Coolant Injection System Exhaust Line Drain Pot to Gland Seal Condenser Solenoid Valve Cannot be Stroke Timed
RV-30B	Main Steam Safety Valve Set Point Testing, Additional Testing Requirements
RV-30C	Main Steam Isolation Valve Technical Specification Stroke Time Limits in Lieu of ASME OM ISTC Stroke Time Limits.
RV-30D	Main Steam Pressure Relief Valves With Auxiliary Actuating Devices Post Installation Testing

10 CFR 50.55a Request Number PR-00A

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Component Number	System	Code Class
1-1002A	Residual Heat Removal	2
1-1002B	Residual Heat Removal	2
1-1002C	Residual Heat Removal	2
1-1002D	Residual Heat Removal	2
2-1002A	Residual Heat Removal	2
2-1002B	Residual Heat Removal	2
2-1002C	Residual Heat Removal	2
2-1002D	Residual Heat Removal	2

2. Applicable Code Edition and Addenda

ASME OM Code 1998 Edition through 2000 Addenda

3. Applicable Code Requirement

ISTB-5123 – Comprehensive Test Procedure. Comprehensive tests shall be conducted with the pump operating at a specified reference point.

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 ISTB-5123. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

The subject pumps are all categorized as Group A pumps. These pumps are operated routinely during normal plant operations. Each pump is tested in accordance with its associated Group A procedure. All of these pumps are operated at conditions within +/- 20% of the design flow rate when being tested each quarter. All of the required Code parameters are measured and compared to their respective reference values. During all Group A inservice testing, full spectrum analysis is performed above the required vibration analysis by the Code. Additionally, these pumps are included in the station preventive maintenance program which requires a complete pump inspection to be performed every 2 years.

The intent of the Code required Comprehensive Test is to test the pump at substantial flow (biennially) such that pump degradation may be easily detected

on the portion of the pump curve which is well sloped. Quad Cities tests each of these pumps at substantial flow (+/- 20% of design) each quarter.

5. Proposed Alternative and Basis for Use

As an alternative to performing Comprehensive Pump tests biennially, the subject pumps will be tested each quarter at +/- 20% of the design flow rate. The required inservice test parameters of Table ISTB-3000-1 based on pump type will be measured and compared to their reference values. The Group A pump test acceptance criteria will be applied. Additionally, during each quarterly Group A test, full spectrum analysis will be performed above the Code required vibration measurements.

Continued Preventive Maintenance on each pump will assist in determining overall mechanical and hydraulic pump health.

Based on the preventive maintenance inspection results, full spectrum analysis, and continued quarterly Group A testing at +/- 20% of design pump flow, an accurate assessment of pump health and operational readiness is determined.

This alternative meets the intent of the Code by regularly testing the pump at a flow condition where degradation can easily be detected. Therefore, this alternative provides an acceptable level of quality and safety.

6. Duration of Proposed Alternative

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

7. Precedents

None

10 CFR 50.55a Request Number RV-23A

Relief Requested
In Accordance with 10 CFR 50.55a(f)(5)(iii)

Inservice Testing Impracticality

1. ASME Code Components Affected

Component Number	System	Code Class	Category
1-2301-032-SO	HPCI	2	B
2-2301-032-SO	HPCI	2	B

2. Applicable Code Edition and Addenda

ASME OM Code 1998 Edition through 2000 Addenda

3. Applicable Code Requirement

ISTC-5150, Solenoid Valve Stroke Testing

4. Impracticality of Compliance

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (f)(5)(iii), relief is requested from the requirement of ASME OM Code ISTC-5150. The basis of the relief request is that the Code requirement is impractical.

These solenoid valves function as a backup to the exhaust line drain pot steam trap. During normal operation of the HPCI turbine using high quality steam, the drain path from the drain pot to the torus via the steam trap is adequate to remove condensate from the turbine exhaust line. However, during HPCI turbine operation with low pressure and low quality steam (e.g., during certain HPCI surveillance tests), condensate collects in the drain pot faster than it can be drained through the trap. Under these conditions, solenoid valve 1(2)-2301-032 opens automatically to drain to the gland seal condenser upon receipt of a signal from a drain pot level switch when the drain pot level reaches the high-level alarm set point. A high level condition alarms a control room annunciator.

These valves are not equipped with hand switches or position indicators and the valves are totally enclosed, so valve position cannot be verified by direct observation. Therefore, it is impractical to exercise and stroke time these valves in accordance with Code requirements.

Valve actuation may be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing that the high level alarm clears. It is impractical to assign a maximum limiting stroke time to these valves using this test method because the time for the alarm to clear would depend primarily on variables such as the rate of filling

and the level of the drain pot when the filling is secured. The steam line drain pot is not equipped with direct level indication; therefore, the time required for the alarm to clear may vary significantly.

Failure of these valves to perform their safety function would be indicated by a drain pot high level alarm. Additionally, condensate entrapped in the steam would cause significant fluctuations in exhaust steam header pressure.

5. Burden Caused By Compliance

Compliance with the quarterly exercising and stroke timing requirements of the Code would require either system modifications to replace these valves with ones of testable design, or to purchase non-intrusive test equipment and develop new test methods and procedures.

6. Proposed Alternative and Basis for Use

A functional verification test is conducted on the drain pot level limit switches and the associated control room annunciators at least once every 92 days. Valve actuation will be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing a positive draining of the HPCI drain pot as indicated by a level increase in gland seal condenser and the high level alarm clears.

7. Duration of Proposed Alternative

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

8. Precedents

This relief request RV-23A was previously approved for Quad Cities Nuclear Power Station Units 1 and 2 for the 3rd 120 month interval. Approval Date – June 16, 1999.

10 CFR 50.55a Request Number RV-30B

Relief Requested
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 Components Affected

Component Number	System	Code Class	Category
1-0203-003A	Main Steam	1	C
1-0203-004A	Main Steam	1	C
1-0203-004B	Main Steam	1	C
1-0203-004C	Main Steam	1	C
1-0203-004D	Main Steam	1	C
1-0203-004E	Main Steam	1	C
1-0203-004F	Main Steam	1	C
1-0203-004G	Main Steam	1	C
1-0203-004H	Main Steam	1	C
2-0203-003A	Main Steam	1	C
2-0203-004A	Main Steam	1	C
2-0203-004B	Main Steam	1	C
2-0203-004C	Main Steam	1	C
2-0203-004D	Main Steam	1	C
2-0203-004E	Main Steam	1	C
2-0203-004F	Main Steam	1	C
2-0203-004G	Main Steam	1	C
2-0203-004H	Main Steam	1	C

2. Applicable Code Edition and Addenda

ASME OM Code 1998 Edition through 2000 Addenda

3. Applicable Code Requirement

Appendix I, I-1330(c) – Requirements for Testing Additional Valves

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the requirement of ASME OM Code, Appendix I, I-1330(c). The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in level of quality or safety.

Valve 1(2)-0203-003A is a dual function safety/relief valve manufactured by Target Rock. The remaining valves are simple safety valves. These main steam safety valves are used to terminate an abnormal pressure increase in the reactor

vessel and the reactor coolant pressure boundary (i.e., they provide overpressure protection).

In accordance with Technical Specifications, at least half of the subject valves are tested and rebuilt during each refueling outage. This accelerated maintenance schedule provides a high level of assurance that these safety valves will perform their safety function.

Quad Cities does not have the facilities required to perform set-point tests on large relief and safety valves. These valves are unbolted from their mounting flanges, decontaminated, and shipped to an off-site test facility. Because of the lengthy period required for removal, transportation, testing and re-installation, the removal and testing of additional valves due to sample expansion would delay unit start-up from refueling outages by at least several days. This represents a significant hardship.

The sample expansion requirements of Appendix I would require two additional valves be tested if one valve failed its set-point test. Since the dual function safety/relief valve is tested each outage, and no less than four of the remaining valves are tested during each outage, the valves already being tested represent an increased sample expansion. Therefore, based on the sample expansion requirements already being met for one valve, and the hardship associated with pulling additional valves, no additional valves will be tested if only one valve fails the set-point test.

5. Proposed Alternative and Basis for Use

The dual function safety/relief valve, and at least half of the eight (8) safety valves, will be tested, rebuilt and reset in accordance with Technical Specifications during each reactor refueling outage. If only one of the eight (8) safety valves fails its set-point test, additional safety valves will not be tested. If more than one safety valve fails, the sample expansion criteria of Appendix I, 1330(c) will be implemented for every additional failed valve.

6. Duration of Proposed Alternative

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

7. Precedents

This relief request RV-30B was previously approved for Quad Cities Nuclear Power Station Units 1 and 2 for the 3rd 120 month interval. Approval Date – May 3, 1994.

10 CFR 50.55a Request Number RV-30C

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

Component Number	System	Code Class	Category
1-0203-001A-AO	Main Steam	1	A
1-0203-001B-AO	Main Steam	1	A
1-0203-001C-AO	Main Steam	1	A
1-0203-001D-AO	Main Steam	1	A
1-0203-002A-AO	Main Steam	1	A
1-0203-002B-AO	Main Steam	1	A
1-0203-002C-AO	Main Steam	1	A
1-0203-002D-AO	Main Steam	1	A
2-0203-001A-AO	Main Steam	1	A
2-0203-001B-AO	Main Steam	1	A
2-0203-001C-AO	Main Steam	1	A
2-0203-001D-AO	Main Steam	1	A
2-0203-002A-AO	Main Steam	1	A
2-0203-002B-AO	Main Steam	1	A
2-0203-002C-AO	Main Steam	1	A
2-0203-002D-AO	Main Steam	1	A

2. Applicable Code Edition and Addenda

ASME OM Code 1998 Edition through 2000 Addenda

3. Applicable Code Requirement

ISTC-5132(b) – Stroke Time Acceptance Criteria – Valves with reference stroke times of less than or equal to 10 seconds shall exhibit no more than +/- 50 % change in stroke time when compared to the reference value.

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 ISTC-5132(b). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

The main steam isolation valves (MSIVs) open to admit reactor steam to the main turbine. They close to provide containment and reactor isolation.

The ISTC Code requirement bases the stroke time acceptance criteria on a fixed reference value taken from a baseline test. However, Technical Specification

3.6.1.3, "Primary Containment Isolation Valves (PCIV's)," establishes an invariable acceptable stroke time range for the MSIVs of $\geq$ 3 seconds to $\leq$ 5 seconds. This fixed range is more conservative and consistent than that required by ISTC-5132(b) since the range is not dependent on a baseline value that may vary by as much as ±1 second.

5. Proposed Alternative and Basis for Use

Technical Specification 3.6.1.3 establishes an acceptable stroke time range for the MSIVs of 3.0 seconds $\leq T_{MSIV} \leq$ 5.0 seconds. Quad Cities will utilize this range for evaluating an acceptable MSIV stroke time in lieu of establishing an acceptance band based on MSIV stroke time reference values. Quad Cities has also established additional limitations on stroke time based on reactor power levels to ensure that the Technical Specification limits are always met. Any MSIV that fails to meet the Technical Specification limits will be considered inoperable and required actions will be in accordance with the Technical Specifications.

6. Duration of Proposed Alternative

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

7. Precedents

This relief request RV-30C was previously approved for Quad Cities Nuclear Power Station Units 1 and 2 for the 3rd 120 month interval. Approval Date – November 1, 1995.

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

Component Number	System	Code Class	Category
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 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 SRVs 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, and leak tested a final time.

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 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.