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10 CFR 50.90
10 CFR 50.55a(a)(3)

RS-03-087

April 25, 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 Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Request for Amendment to Technical Specifications Surveillance Requirements for the Main Steam Line Relief Valves and Relief Request RV-30D

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) requests an amendment to Facility Operating License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. The proposed changes modify Technical Specification (TS) Surveillance Requirement (SR) 3.4.3.2, SR 3.5.1.10, and SR 3.6.1.6.1 to provide an alternative means for testing the Unit 2 main steam Power Operated Relief Valves (PORVs), including those that provide the Automatic Depressurization System (ADS) and the low set relief functions. The proposed changes will allow either the testing of the PORVs such that full functionality is demonstrated through overlapping tests, or by cycling the valve.

Additionally, in accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3), this submittal includes Relief Request RV-30D. This relief request provides an alternative to the requirement of the American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI), Operation and Maintenance of Nuclear Power Plants, OM-1987, Part 1, Section 3.4.1.1(d) to remotely actuate the PORVs following installation or maintenance.

This request is subdivided as follows.

- Attachment 1 provides an evaluation supporting the proposed TS changes.
- Attachment 2 contains the marked-up TS pages with the proposed changes indicated.

- Attachment 3 provides revised TS pages with the proposed changes incorporated.
- Attachment 4 provides the marked-up TS Bases pages with the proposed changes indicated. The TS Bases pages are provided for information only, and do not require NRC approval.
- Attachment 5 provides revised TS Bases pages with the proposed changes indicated. The TS Bases pages are provided for information only, and do not require NRC approval.
- Attachment 6 provides Relief Request RV-30D.

The proposed changes have been reviewed by the QCNPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board in accordance with the requirements of the EGC Quality Assurance Program.

EGC requests approval of the proposed amendment and associated relief request by May 9, 2003, in order to support startup from a planned outage. Startup is currently scheduled for May 10, 2003. Therefore, in accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (a)(6), EGC is requesting NRC approval of the proposed amendment on an exigent basis. Sufficient time is not available to allow 30 days for prior public comment on a schedule to support plant startup, following replacement of the currently leaking PORVs. An explanation of the exigency and why it cannot be avoided is included in Attachment 1.

In accordance with 10 CFR 50.91(b), EGC is notifying the State of Illinois of this application for changes to the TS by transmitting a copy of this letter and its attachments to the designated State Official.

If you have any questions or require additional information, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

April 25, 2003
Executed on

Patrick R. Simpson
Patrick R. Simpson
Manager – Licensing
Mid-West Regional Operating Group

Attachments:

Attachment 1: Evaluation of Proposed Changes
Attachment 2: Marked-up Technical Specifications Pages
Attachment 3: Revised Technical Specifications Pages
Attachment 4: Marked-up Technical Specifications Bases Pages
Attachment 5: Revised Technical Specifications Bases Pages
Attachment 6: Relief Request RV-30D

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

ATTACHMENT 1
Evaluation of Proposed Changes

1.0 INTRODUCTION

2.0 DESCRIPTION OF PROPOSED AMENDMENT

3.0 BACKGROUND

4.0 REGULATORY REQUIREMENTS & GUIDANCE

5.0 TECHNICAL ANALYSIS

6.0 REGULATORY ANALYSIS

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

8.0 ENVIRONMENTAL CONSIDERATION

9.0 PRECEDENT

10.0 IMPACT ON PREVIOUS SUBMITTALS

11.0 REFERENCES

1.0 INTRODUCTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) requests an amendment to Facility Operating License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. The proposed changes modify Technical Specification (TS) Surveillance Requirement (SR) 3.4.3.2, SR 3.5.1.10, and SR 3.6.1.6.1 to provide an alternative means for testing the Unit 2 main steam Power Operated Relief Valves (PORVs), including those that provide the Automatic Depressurization System (ADS) and the low set relief functions. The proposed changes will allow either the testing of the PORVs such that full functionality is demonstrated through overlapping tests, or by cycling the valve.

The 2-0203-3B and 2-0203-3E PORVs on QCNPS Unit 2 are currently in a degraded condition as evidenced by elevated tailpipe temperatures due to suspected seat leakage, and will be replaced in a maintenance outage scheduled to commence on May 8, 2003. The proposed changes will allow the testing of the replacement PORVs such that full functionality is demonstrated through overlapping tests, without cycling the valves. In accordance with 10 CFR 50.91(a)(6), EGC is requesting NRC approval of the proposed changes on an exigent basis, as sufficient time is not available to allow 30 days for prior public comment on a schedule to support plant startup, following replacement of the 3B and 3E PORVs.

Basis for Exigency

On April 16, 2003, QCNPS experienced an inadvertent opening of the 3B PORV. Attempts to re-close the PORV were unsuccessful. The inability to re-close the PORV was attributed to a failure of the pilot assembly caused by steam cutting of the pilot seat.

Following startup from the subsequent forced outage to replace the failed PORV, the 3B and 3E PORVs exhibited high tailpipe temperatures. The high tailpipe temperature on the 3E PORV occurred after the valve was cycled for post-maintenance testing. The 3B PORV exhibited an elevated tailpipe temperature prior to being cycled; however, the tailpipe temperature increased after cycling the valve for post-maintenance testing. These results are consistent with industry experience which indicates that manual actuation of main steam relief valves during plant operation can lead to increased seat leakage.

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. PORV leakage from the main valve disc and seat has little safety significance, as long as the pilot valve retains its function and suppression pool temperature is maintained within Technical Specification limits. However, current leakage from the main seat of the 3B and 3E PORVs is of sufficient quantity to prevent detection of potential pilot valve leakage. Leakage from the pilot valve can eventually cause a PORV to fail open and cause the reactor to blow down to the suppression pool and depressurize.

A review of the tailpipe temperatures for the 3B PORV that failed on April 16, 2003, shows an increasing trend from approximately 207°F on January 31, 2003, to approximately 214°F when the valve inadvertently opened. This data indicates that it took approximately two months for the pilot valve to degrade enough for the leakage to cause the main disc to open and blow down. Discussions with the valve manufacturer (i.e., Target Rock), General Electric, and EGC

valve specialists indicate that steam cutting of a pilot valve to the extent that leakage would compromise the operation of the valve is not expected to occur in less than 30 days. The 3B and 3E PORVs began to display elevated tailpipe temperatures on April 20, 2003. Given that the elevated temperatures eliminate the ability to monitor for pilot valve leakage, it cannot be ruled out as a contributor. Therefore, QCNPS Unit 2 is currently within the 30 day window prior to the pilot valve being compromised. As a result, EGC plans to shutdown on May 8, 2003, prior to the 30 days expiring and replace the 3B and 3E PORVs. This is being done based on the increased potential for pilot valve leakage to cause an inadvertent opening of a PORV, and the subsequent inability to re-close the PORV, and our desire to minimize this type of event from recurring. The need for this license amendment was identified on April 23, 2003, as a result of evaluations performed to address the impact of the 3B and 3E elevated tailpipe temperatures. EGC has used its best efforts to make a timely application for the amendment.

To support plant startup following the outage, and to support efforts to minimize the potential for an inadvertent opening of a relief valve, EGC requests NRC approval of the proposed changes by May 9, 2003. This need date precludes use of the normal 30 days notice period. Accordingly, as described above, the basis for an exigent amendment request exists and the current situation could not have been avoided.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed changes modify SR 3.4.3.2, SR 3.5.1.10, and SR 3.6.1.6.1 to provide an alternative means for testing the Unit 2 main steam PORVs. The proposed changes will allow either the testing of the PORVs such that full functionality is demonstrated through overlapping tests, or by cycling the valve. Specifically, the SRs are revised to read as follows.

SR 3.4.3.2 For Unit 1, verify each relief valve opens when manually actuated.

For Unit 2, verify relief valve 2-0203-3A opens when manually actuated. For relief valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.

SR 3.5.1.10 For Unit 1, verify each ADS valve opens when manually actuated.

For Unit 2, verify ADS valve 2-0203-3A opens when manually actuated. For ADS valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.

SR 3.6.1.6.1 For Unit 1, verify each low set relief valve opens when manually actuated.

For Unit 2, verify each low set relief valve is capable of being opened.

Each of these SRs currently include a Note that states "Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test." No changes to this Note are proposed.

The proposed changes will allow either the testing of the PORVs such that full functionality is demonstrated through overlapping tests, or by cycling the valve. Details regarding the proposed

alternative tests are provided in Section 5.0 of this attachment, and will be incorporated into the QCNPS TS Bases upon implementation of the approved amendment.

3.0 BACKGROUND

Experience in the industry and at QCNPS has indicated that manual actuation of main steam relief valves during plant operation leads to valve seat leakage. There are four PORVs on QCNPS Unit 2 manufactured by Target Rock (i.e., 3B, 3C, 3D, and 3E). The main steam PORVs consist of a main valve disc and seat and a pilot valve. The 3B and 3E PORVs are currently in a degraded condition as indicated by high tailpipe temperatures. 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. PORV leakage from the main valve disc and seat has little safety significance, as long as the pilot valve retains its function and suppression pool temperature is maintained within Technical Specification limits. However, current leakage from the main seats of the 3B and 3E PORVs is of sufficient quantity to prevent detection of potential pilot valve leakage.

Because of the inability to monitor pilot valve leakage due to the elevated tailpipe temperatures, the 3B and 3E PORVs are being replaced. The proposed changes will allow the testing of the PORVs such that full 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.

4.0 REGULATORY REQUIREMENTS & GUIDANCE

10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in a licensee's TS. Criterion 3 of 10 CFR 50.36(c)(2)(ii) requires a limiting condition for operation to be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

5.0 TECHNICAL ANALYSIS

PORVs 3B, 3C, 3D, and 3E are Target Rock Model 93V valves and are part of the Automatic Depressurization System (ADS). ADS is a part of the Emergency Core Cooling System (ECCS). The ECCS is designed to provide adequate core cooling across the entire spectrum of line break accidents. The ADS is designed to depressurize the reactor to permit either the Low Pressure Coolant Injection (LPCI) or Core Spray (CS) systems to cool the reactor core during a small break loss of coolant accident (LOCA). This size break would result in a loss of coolant without a significant pressure reduction, so neither system alone could provide adequate core cooling. The performance analysis of the ADS is conducted in the same manner and with the same basic assumptions as the CS system analysis discussed in Updated Final Safety Analysis Report (UFSAR) Section 6.3.2.1. When the ADS is actuated, the flow of steam through the PORVs results in a maximum energy removal rate with a corresponding minimum mass loss. Thus, the specific internal energy of the saturated fluid in the system is rapidly decreased, which causes a pressure reduction. Since the ADS does not provide coolant makeup to the reactor,

the ADS is considered only in conjunction with the LPCI or CS systems as a backup to the High Pressure Coolant Injection (HPCI) system.

The PORVs also provide overpressure protection to the RPV as discussed in UFSAR Section 5.2.2. The PORVs actuate in the relief mode to control reactor coolant system pressure during transient conditions to prevent the need for safety valve actuation following such transients. In addition, the PORVs can be manually actuated as needed to control reactor pressure during transients other than those specified for the ADS function. An example would be a Group 1 Isolation causing main steam isolation valve closure and a loss of the primary heat sink.

In addition, two PORVs function in the low set relief mode to avoid induced thrust loads on the relief valve discharge line for any subsequent actuations of the relief valve.

The QCNPS Unit 2 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 proposed testing uses overlapping tests to verify the valve functions properly at operating conditions and is capable of being opened when installed in the plant. The use of a series of overlapping tests to demonstrate operability of active components is similar to that used elsewhere in the TS for other systems and components. For example, SR 3.5.1.8 is modified by a Note that excludes vessel injection/spray during emergency core cooling systems injection/spray subsystem actuation testing. The TS Bases for SR 3.5.1.8 state that coolant injection into the vessel is not required since all active components are testable and full flow can be demonstrated by recirculation through test lines. The proposed alternative PORV testing methodology will test the active components and therefore make unnecessary the cycling of the PORV using reactor steam pressure and flow.

Each valve will be sent to a steam test facility where it will be installed on a steam header in the same orientation as 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 be then leak tested, functionally tested to ensure the valve is capable of opening and closing, and leak tested a final time. Valve stroke 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. 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 PORVs are protected from exposure to the environment, airborne contamination, acceleration forces, and physical damage. 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. Therefore, the proposed changes will allow the testing of the PORVs such that full functionality is demonstrated through overlapping tests, without cycling the valve.

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 relief valve openings be reduced as much as possible and unnecessary challenges should be avoided.

The TS Bases for the affected SRs also state that in-situ testing verifies the discharge line is not blocked. The probability of blocking an ADS discharge line and preventing ADS depressurization is considered to be extremely remote. As implemented at QCNPS, the EGC Foreign Material Exclusion program provides the necessary requirements and guidance to prevent and control introduction of foreign materials into structures, systems, and components. This program minimizes the potential for debris blocking an ADS discharge line.

6.0 REGULATORY ANALYSIS

Current testing requirements can result in seat leakage of the PORVs during power operation. Although seat leakage is not an operability concern as long as suppression pool temperature is maintained within TS limits, seat leakage can hinder detection and monitoring of pilot valve leakage. Therefore, pilot valve leakage can go undetected and eventually result in inadvertent opening of a PORV.

Under the proposed testing, valve operability is confirmed using overlapping tests. A manual actuation and valve leakage test will be performed at a certified test facility. The test conditions in the test facility will be similar to those in the plant installation, including valve orientation, ambient temperature, valve insulation, and steam conditions. It also demonstrates the solenoid coil is capable of actuating the PORV pilot valve. Following valve installation, additional tests will be completed to verify proper electrical connection and solenoid coil continuity. Thus, all of the components necessary to manually actuate the PORVs will continue to be tested, and full functionality of the PORVs will be demonstrated while minimizing the potential for creating main valve seat leakage caused by cycling the valve. In addition, Criterion 3 of 10 CFR 50.36(c)(2)(ii) will continue to be met since full functionality will be tested under the proposed methodology.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92, "Issuance of amendment," paragraph (c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

EGC has evaluated the proposed change to the TS for QCNPS, Units 1 and 2, using the criteria in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The following information is provided to support a finding of no significant hazards consideration.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes modify Technical Specification (TS) Surveillance Requirement (SR) 3.4.3.2, SR 3.5.1.10, and SR 3.6.1.6.1 to provide an alternate means for testing the main steam line relief valves, automatic depressurization system valves, and low set relief valves. Accidents are initiated by the malfunction of plant equipment, or the catastrophic failure of plant structures, systems, or components. The performance of relief valve testing is not a precursor to any accident previously evaluated and does not change the manner in which the valves are operated. The proposed testing requirements will not contribute to the failure of the relief valves nor any plant structure, system, or component. Exelon Generation Company, LLC (EGC) has determined that the proposed change in testing methodology provides an equivalent level assurance that the relief valves are capable of performing their intended safety functions. Thus, the proposed changes do not affect the probability of an accident previously evaluated.

The performance of relief valve testing provides assurance that the relief valves are capable of depressurizing the reactor pressure vessel (RPV). This will protect the reactor vessel from overpressurization and allowing the combination of the Low Pressure Coolant Injection and Core Spray systems to inject into the RPV as designed. The low set relief logic causes two low set relief valves to be opened at a lower pressure than the relief mode pressure setpoints and causes the low set relief valves to stay open longer, such that reopening of more than one valve is prevented on subsequent actuations. Thus, the low set relief function prevents excessive short duration relief valve cycles with valve actuation at the relief setpoint, which avoids induced thrust loads on the relief valve discharge line for subsequent actuations of the relief valve. The proposed changes involve the manner in which the subject valves are tested, and have no affect on the types or amounts of radiation released or the predicted offsite doses in

the event of an accident. The proposed testing requirements are sufficient to provide confidence that the relief valves are capable of performing their intended safety functions. In addition, a stuck open relief valve accident is analyzed in the QCNPS Updated Final Safety Analysis Report. Since the proposed testing requirements do not alter the assumptions for the stuck open relief valve accident, the radiological consequences of any accident previously evaluated are not increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes do not affect the assumed accident performance of the PORVs, nor any plant structure, system, or component previously evaluated. The proposed changes do not install any new equipment, and installed equipment is not being operated in a new or different manner. The proposed change in test methodology will ensure that the valves remain capable of performing their safety functions due to meeting the testing requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, with the exception of opening the valve following installation or maintenance for which a relief request has been submitted, proposing an acceptable alternative. No setpoints are being changed which would alter the dynamic response of plant equipment. Accordingly, no new failure modes are introduced.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed changes will allow testing of the manual actuation electrical circuitry, including the solenoid, without causing the relief valve to open. The relief valves will be manually actuated prior to installation in the plant. Therefore, all modes of relief valve operation will be tested prior to entering the mode of operation requiring the valves to perform their safety functions. The proposed changes do not affect the valve setpoint or the operational criteria that directs the relief valves to be manually opened during plant transients. There are no changes proposed which alter the setpoints at which protective actions are initiated, and there is no change to the operability requirements for equipment assumed to operate for accident mitigation.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based upon the above, EGC concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR50.92(c), and, accordingly, a finding of no significant hazards consideration is justified.

8.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation," or would change an inspection or surveillance requirement. However, the proposed amendment does not involve: (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," Paragraph (c)(9). Therefore, pursuant to 10 CFR 51.22, Paragraph (b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

9.0 PRECEDENT

The NRC has granted similar license amendments for Clinton Power Station in Reference 1 and LaSalle County Station in Reference 2.

10.0 IMPACT ON PREVIOUS SUBMITTALS

EGC has reviewed the proposed changes for impact on previous submittals awaiting NRC approval for QCNPS, and has determined that there is no impact to any of them.

11.0 REFERENCES

1. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "Clinton Power Station, Unit 1 – Issuance of Amendment (TAC No. MB2256)," dated March 19, 2002

2. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "LaSalle County Station, Units 1 and 2 – Issuance of Amendments (TAC Nos. MB2253 and MB2254)," dated December 13, 2001

ATTACHMENT 2
Marked-up Technical Specifications Pages

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.3-2
3.5.1-6
3.6.1.6-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the safety valves are as follows: Number of Safety Valves — Setpoint (psig) 1 — 1135 ± 11.3 2 — 1240 ± 12.4 2 — 1250 ± 12.5 4 — 1260 ± 12.6	In accordance with the Inservice Testing Program
SR 3.4.3.2	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify ~~Verify~~ each relief valve opens when manually actuated.	24 months
SR 3.4.3.3	----------NOTE---------- Valve actuation may be excluded. ---------- Verify each relief valve actuates on an actual or simulated automatic initiation signal.	24 months

For Unit 2, verify relief valve 2-0203-3A opens when manually actuated. For relief valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.8	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.9	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.10	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify ~~Verify~~ each ADS valve opens when manually actuated.	24 months
SR 3.5.1.11	Verify automatic transfer capability of the LPCI swing bus power supply from the normal source to the backup source.	24 months
SR 3.5.1.12	Verify ADS pneumatic supply header pressure is ≥ 80 psig.	31 days

For Unit 2, verify ADS valve 2-0203-3A opens when manually actuated. For ADS valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify Verify each low set relief valve opens when manually actuated.	24 months
SR 3.6.1.6.2	----------NOTE---------- Valve actuation may be excluded. ---------- Verify each low set relief valve actuates on an actual or simulated automatic initiation signal.	24 months

For Unit 2, verify each low set relief valve is capable of being opened.

ATTACHMENT 3
Revised Technical Specifications Pages

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.3-2
3.5.1-6
3.6.1.6-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the safety valves are as follows: Number of Safety Valves — Setpoint (psig) 1 — 1135 ± 11.3 2 — 1240 ± 12.4 2 — 1250 ± 12.5 4 — 1260 ± 12.6	In accordance with the Inservice Testing Program
SR 3.4.3.2	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify each relief valve opens when manually actuated. For Unit 2, verify relief valve 2-0203-3A opens when manually actuated. For relief valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.	24 months
SR 3.4.3.3	----------NOTE---------- Valve actuation may be excluded. ---------- Verify each relief valve actuates on an actual or simulated automatic initiation signal.	24 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.8	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.9	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.10	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify each ADS valve opens when manually actuated. For Unit 2, verify ADS valve 2-0203-3A opens when manually actuated. For ADS valves 2-0203-3B, C, D, and E, verify each valve is capable of being opened.	24 months
SR 3.5.1.11	Verify automatic transfer capability of the LPCI swing bus power supply from the normal source to the backup source.	24 months
SR 3.5.1.12	Verify ADS pneumatic supply header pressure is $\geq$ 80 psig.	31 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- For Unit 1, verify each low set relief valve opens when manually actuated. For Unit 2, verify each low set relief valve is capable of being opened.	24 months
SR 3.6.1.6.2	----------NOTE---------- Valve actuation may be excluded. ---------- Verify each low set relief valve actuates on an actual or simulated automatic initiation signal.	24 months

ATTACHMENT 4
Marked-up Technical Specifications Bases Pages

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.3-6
B 3.5.1-15
B 3.5.1-16
B 3.6.1.6-3
B 3.6.1.6-4

Bases Insert

For Unit 2, this SR can also be met using overlapping tests to confirm power operated relief valve (PORV) operability. Under this alternative, a manual valve actuation and valve leakage test is performed at a certified steam test facility. This test is conducted under conditions similar to those in the plant installation, including valve orientation, ambient temperature, valve insulation, and steam conditions. Valve stroking and seat tightness are verified to be within design limits. Limit switch actuation may be tested prior to or during functional testing. In addition, the test demonstrates the solenoid coil is capable of actuating the PORV pilot valve. Following valve installation, additional tests are completed to verify proper electrical connection and solenoid coil continuity. This alternative provides a complete check of the capability of the valve to open and close.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.3.2

A manual actuation of each relief valve, including the S/RV, is performed to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the relief valve or the S/RV diverts steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this test. Adequate pressure at which this test is to be performed is 300 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open.

INSERT Bases Insert

This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. Unit startup is allowed prior to performing this test because valve OPERABILITY is verified, per ASME Code requirements (Ref. 5), prior to valve installation. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If the S/RV fails to actuate due only to the failure of the solenoid but is capable of opening on overpressure, the safety function of the S/RV is considered OPERABLE.

The 24 month Frequency ensures that each solenoid for each relief valve is tested. The 24 month Frequency was developed based on the relief valve tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 5). Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.9

The ADS designated valves are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.10 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.5.1.10.

SR 3.5.1.10

A manual actuation of each ADS valve is performed to verify that the valve and solenoid are functioning properly and that no blockage exists in the valve discharge lines. This is demonstrated by the response of the turbine control or bypass valve or by a change in the measured flow or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this SR. Adequate pressure at which this SR is to be performed is 300 psig (the pressure

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.10 (continued)

recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.9 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

INSERT Bases Insert

This

The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply just prior to or during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.11

The LPCI System injection valves and recirculation pump discharge valves are powered from the LPCI swing bus, which must be energized after a single failure, including loss of power from the normal source to the swing bus. Therefore, the automatic transfer capability from the normal power source to the backup power source must be verified to ensure the automatic capability to detect loss of normal power and initiate an automatic transfer to the swing bus backup power source. Verification of this capability every 24 months ensures that AC electrical power is available for proper operation of the associated LPCI injection valves and recirculation pump valves. The swing bus automatic transfer scheme must be OPERABLE for both LPCI subsystems to be OPERABLE. The Frequency of 24 months is based on the need

(continued)

BASES (continued)

ACTIONS

A.1

With one low set relief valve inoperable, the remaining OPERABLE low set relief valve is adequate to perform the designed function. However, the overall reliability is reduced. The 14 day Completion Time takes into account the redundant capability afforded by the remaining low set relief valve and the low probability of an event occurring during this period in which the remaining low set relief valve capability would be required.

B.1 and B.2

If two low set relief valves are inoperable or if the inoperable low set relief valve cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

A manual actuation of each low set relief valve is performed to verify that the valve and solenoids are functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine control or bypass valve, by a change in the measured steam flow, or by any other method that is suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the low set relief valves divert steam flow upon opening. Sufficient time is therefore allowed, after the required pressure and flow are achieved, to perform this test. Adequate pressure at which this test is to be performed is $\geq$ 300 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open.

INSERT Bases Insert

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1 (continued)

The 24 month Frequency was based on the relief valve tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 2). The Frequency of 24 months ensures that each solenoid for each low set relief valve is tested. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. Unit startup is allowed prior to performing the test because valve OPERABILITY is verified by Reference 2 prior to valve installation. The 12 hours allowed for manual actuation after the required pressure and flow is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR.

SR 3.6.1.6.2

The low set relief designated relief valves are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the low set relief function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.3, "Low Set Relief Valve Instrumentation," overlaps this SR to provide complete testing of the safety function.

The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation. This prevents a reactor pressure vessel pressure blowdown.

(continued)

ATTACHMENT 5
Revised Technical Specifications Bases Pages

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.3-6
B 3.4.3-7
B 3.4.3-8
B 3.5.1-15
B 3.5.1-16
B 3.5.1-17
B 3.5.1-18
B 3.6.1.6-3
B 3.6.1.6-4
B 3.6.1.6-5

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.3.2

A manual actuation of each relief valve, including the S/RV, is performed to verify that, mechanically, the valve is functioning properly. This can be demonstrated by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the relief valve or the S/RV diverts steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this test. Adequate pressure at which this test is to be performed is 300 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open.

For Unit 2, this SR can also be met using overlapping tests to confirm power operated relief valve (PORV) operability. Under this alternative, a manual valve actuation and valve leakage test is performed at a certified steam test facility. This test is conducted under conditions similar to those in the plant installation, including valve orientation, ambient temperature, valve insulation, and steam conditions. Valve stroking and seat tightness are verified to be within design limits. Limit switch actuation may be tested prior to or during functional testing. In addition, the test demonstrates the solenoid coil is capable of actuating the PORV pilot valve. Following valve installation, additional tests are completed to verify proper electrical connection and solenoid coil continuity. This alternative provides a complete check of the capability of the valve to open and close.

This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. Unit startup is allowed prior to performing this test because valve OPERABILITY is verified, per ASME Code requirements (Ref. 5), prior to valve installation. The 12 hours allowed after the required pressure is reached is

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.3.2 (continued)

sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If the S/RV fails to actuate due only to the failure of the solenoid but is capable of opening on overpressure, the safety function of the S/RV is considered OPERABLE.

The 24 month Frequency ensures that each solenoid for each relief valve is tested. The 24 month Frequency was developed based on the relief valve tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 5). Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.4.3.3

The relief valves, including the S/RV, are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the relief valve operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TESTs in LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," and LCO 3.3.6.3, "Relief Valve Instrumentation," overlap this SR to provide complete testing of the safety function.

The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.4.3.2.

(continued)

BASES (continued)

REFERENCES

1. UFSAR, Section 5.2.2.1.
2. UFSAR, Section 15.2.3.1.
3. UFSAR, Section 15.2.2.1.
4. UFSAR, Chapter 15.
5. ASME, Boiler and Pressure Vessel Code, Section XI.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.9

The ADS designated valves are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.10 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.5.1.10.

SR 3.5.1.10

A manual actuation of each ADS valve is performed to verify that the valve and solenoid are functioning properly. This is demonstrated by the response of the turbine control or bypass valve or by a change in the measured flow or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this SR. Adequate pressure at which this SR is to be performed is 300 psig (the pressure

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.10 (continued)

recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation.

For Unit 2, this SR can also be met using overlapping tests to confirm power operated relief valve (PORV) operability. Under this alternative, a manual valve actuation and valve leakage test is performed at a certified steam test facility. This test is conducted under conditions similar to those in the plant installation, including valve orientation, ambient temperature, valve insulation, and steam conditions. Valve stroking and seat tightness are verified to be within design limits. Limit switch actuation may be tested prior to or during functional testing. In addition, the test demonstrates the solenoid coil is capable of actuating the PORV pilot valve. Following valve installation, additional tests are completed to verify proper electrical connection and solenoid coil continuity. This alternative provides a complete check of the capability of the valve to open and close.

This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed after the required pressure is reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.9 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply just prior to or during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.11

The LPCI System injection valves and recirculation pump discharge valves are powered from the LPCI swing bus, which must be energized after a single failure, including loss of power from the normal source to the swing bus. Therefore, the automatic transfer capability from the normal power source to the backup power source must be verified to ensure the automatic capability to detect loss of normal power and initiate an automatic transfer to the swing bus backup power source. Verification of this capability every 24 months ensures that AC electrical power is available for proper operation of the associated LPCI injection valves and recirculation pump valves. The swing bus automatic transfer scheme must be OPERABLE for both LPCI subsystems to be OPERABLE. The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that the components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.12

Verification every 31 days that ADS pneumatic supply header pressure is ≥ 80 psig ensures adequate nitrogen pressure for reliable Target Rock ADS valve operation. The accumulator on the Target Rock ADS valve provides pneumatic pressure for valve actuation. The design pneumatic supply pressure requirements for the accumulator are such that, following a failure of the pneumatic supply to the accumulator, at least two valve actuations can occur with the drywell at 70% of design pressure. The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. This minimum required pressure of ≥ 80 psig is provided by the ADS pneumatic supply header. The 31 day Frequency takes into consideration administrative controls over operation of the nitrogen system and alarm for low nitrogen pressure.

(continued)

BASES (continued)

REFERENCES

1. UFSAR, Section 6.3.2.1.
2. UFSAR, Section 6.3.2.2.
3. UFSAR, Section 6.3.2.3.
4. UFSAR, Section 6.3.2.4.
5. UFSAR, Section 15.6.4.
6. UFSAR, Section 15.6.5.
7. 10 CFR 50, Appendix K.
8. UFSAR, Section 6.3.3.
9. 10 CFR 50.46.
10. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

BASES (continued)

ACTIONS

A.1

With one low set relief valve inoperable, the remaining OPERABLE low set relief valve is adequate to perform the designed function. However, the overall reliability is reduced. The 14 day Completion Time takes into account the redundant capability afforded by the remaining low set relief valve and the low probability of an event occurring during this period in which the remaining low set relief valve capability would be required.

B.1 and B.2

If two low set relief valves are inoperable or if the inoperable low set relief valve cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

A manual actuation of each low set relief valve is performed to verify that the valve and solenoids are functioning properly. This can be demonstrated by the response of the turbine control or bypass valve, by a change in the measured steam flow, or by any other method that is suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the low set relief valves divert steam flow upon opening. Sufficient time is therefore allowed, after the required pressure and flow are achieved, to perform this test. Adequate pressure at which this test is to be performed is ≥ 300 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by at least 2 turbine bypass valves open.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1 (continued)

For Unit 2, this SR can also be met using overlapping tests to confirm power operated relief valve (PORV) operability. Under this alternative, a manual valve actuation and valve leakage test is performed at a certified steam test facility. This test is conducted under conditions similar to those in the plant installation, including valve orientation, ambient temperature, valve insulation, and steam conditions. Valve stroking and seat tightness are verified to be within design limits. Limit switch actuation may be tested prior to or during functional testing. In addition, the test demonstrates the solenoid coil is capable of actuating the PORV pilot valve. Following valve installation, additional tests are completed to verify proper electrical connection and solenoid coil continuity. This alternative provides a complete check of the capability of the valve to open and close.

The 24 month Frequency was based on the relief valve tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 2). The Frequency of 24 months ensures that each solenoid for each low set relief valve is tested. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. Unit startup is allowed prior to performing the test because valve OPERABILITY is verified by Reference 2 prior to valve installation. The 12 hours allowed after the required pressure and flow is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR.

SR 3.6.1.6.2

The low set relief designated relief valves are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.2 (continued)

that the mechanical portions (i.e., solenoids) of the low set relief function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.3, "Low Set Relief Valve Instrumentation," overlaps this SR to provide complete testing of the safety function.

The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation. This prevents a reactor pressure vessel pressure blowdown.

REFERENCES

1. UFSAR, Section 6.2.1.3.4.2.

2. ASME, Boiler and Pressure Vessel Code, Section XI.

ATTACHMENT 6
Relief Request RV-30D

ASME Components Affected

The affected components are the Quad Cities Nuclear Power Station (QCNPS), Unit 2, main steam Power Operated Relief Valves (PORVs).

Equipment Piece Number	Description
2-0203-3B	Main Steam 3B Power Operated Relief Valve
2-0203-3C	Main Steam 3C Power Operated Relief Valve
2-0203-3D	Main Steam 3D Power Operated Relief Valve
2-0203-3E	Main Steam 3E Power Operated Relief Valve

Applicable Code Edition and Addenda

The applicable code edition is OM-1987, Part 1 (OM-1), "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices," Section 3.4.1.1, "Main Steam Pressure Relief Devices with Auxiliary Actuating Devices."

Applicable Code Requirement

Paragraph 3.4.1.1(d) states that, "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 system pressure to verify open and close capability of the valve prior to resumption of electric power generation. Set pressure verification is not required."

Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3), relief is requested from the requirement of OM-1, Section 3.4.1.1(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 QCNPS has indicated that manual actuation of the main steam PORVs during plant operation can lead to valve seat leakage. The main steam PORVs at QCNPS are Model 93V PORVs manufactured by Target Rock and consist of a main valve disc and seat and a pilot valve. The 3B and 3E PORVs are currently in a degraded condition as indicated by high tailpipe temperatures. 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. PORV leakage from the main valve disc and seat has little safety significance, as long as the pilot valve retains its function and suppression pool temperature is maintained within Technical Specification limits. However, current leakage from the main seat of the 3B and 3E PORVs is of sufficient quantity to prevent detection of potential pilot valve leakage. Leakage from the pilot valve can eventually cause a PORV to fail open and cause the reactor to blowdown to the suppression pool and depressurize.

Because of the elevated tailpipe temperatures due to seat leakage, the 3B and 3E PORVs will be replaced. The relief request will allow the testing of the PORVs such that full 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 relief valve openings be reduced as much as possible and unnecessary challenges should be avoided.

Proposed Alternative and Basis for Use

The QCNPS, Unit 2 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 proposed testing uses overlapping tests to verify the valves function properly at operating conditions and are capable of being opened when installed in the plant.

Each valve will be sent to a steam test facility where it 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 be then leak tested, functionally tested to ensure the valve is capable of opening and closing, 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. 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. Prior to installation, electrical continuity checks of the limit switches will be performed. 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.

Duration of Proposed Alternative

QCNPS requests approval of the proposed alternative for the duration of the third ten-year inservice testing interval for Unit 2, which ends on March 10, 2004.

Precedent

The NRC has granted similar relief for main steam safety relief valves for Clinton Power Station in Reference 1 and LaSalle County Station in Reference 2.

References

1. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "Clinton Power Station, Unit 1 – Relief Request 2204 (TAC No. MB2548)," dated March 28, 2002

2. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "LaSalle County Station, Units 1 and 2 – Relief Request RV-11 (TAC Nos. MB2251 and MB2252)," dated December 13, 2001