May 28, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - ISSUANCE OF EXIGENT AMENDMENTS RE: ELECTROMATIC RELIEF VALVE TESTING (TAC NOS. MB8737 AND MB8738)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 216 to Facility Operating License No. DPR-29 and Amendment No. 210 to Facility Operating License No. DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2, respectively. The amendments consist of changes to the technical specifications in response to your application dated May 1, 2003, as supplemented May 2 and May 15, 2003. Your application included Relief Request RV-30E, which will be addressed by separate Nuclear Regulatory Commission correspondence.

The amendments modify technical specification surveillance requirements to provide an alternative means of testing the Unit 1 main steam Electromatic relief valves, including those that provide the automatic depressurization and the low set relief functions, and provide an alternative means for testing the Units 1 and 2 dual function Target Rock safety/relief valves. You requested that these amendments be treated as exigent amendments in accordance with 10 CFR 50.91(a)(6).

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Carl F. Lyon, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-254 and 50-265

Enclosures: 1. Amendment No. 216 to DPR-29
2. Amendment No. 210 to DPR-30
3. Safety Evaluation

cc w/encls: See next page

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EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 216
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated May 1, 2003, as supplemented May 2 and May 15, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 216, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 28, 2003

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 210
License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Exelon Generation Company, LLC (the licensee) dated May 1, 2003, as supplemented May 2 and May 15, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 210, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION
/RA/
Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 28, 2003

ATTACHMENT TO LICENSE AMENDMENT NOS. 216 AND 210

FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30

DOCKET NOS. 50-254 AND 50-265

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by number and contain marginal lines indicating the area of change.

Remove Pages	Insert Pages
3.4.3-2	3.4.3-2
3.5.1-6	3.5.1-6
3.6.1.6-2	3.6.1.6-2

The following Technical Specification Bases pages are provided for information only:

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 216 TO FACILITY OPERATING LICENSE NO. DPR-29

AND AMENDMENT NO. 210 TO FACILITY OPERATING LICENSE NO. DPR-30

EXELON GENERATION COMPANY, LLC

AND

MIDAMERICAN ENERGY COMPANY

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-254 AND 50-265

1.0 INTRODUCTION

By application dated May 1, 2003, as supplemented May 2 and May 15, 2003, Exelon Generation Company, LLC (the licensee) requested changes to the technical specifications (TSs) for the Quad Cities Nuclear Power Station (Quad Cities), Units 1 and 2. The proposed changes would revise TS surveillance requirements (SRs) to provide an alternative means of testing the Unit 1 main steam Electromatic relief valves (ERVs), including those that provide the automatic depressurization and the low set relief functions, and provide an alternative means for testing the Units 1 and 2 dual function Target Rock safety/relief valves (S/RVs). The proposed changes allow the testing of the valves such that full functionality is demonstrated either by overlapping tests or by cycling the valves.

The licensee states that the 1-0203-3A S/RV and the 1-0203-3C and 1-203-3D ERVs on Quad Cities, Unit 1, are currently exhibiting elevated tailpipe temperatures due to suspected seat leakage. Due to increased suppression pool temperature, the licensee plans to replace the 3A S/RV during a maintenance outage scheduled to commence on May 20, 2003. The licensee may also replace the 3C and 3D ERVs during the maintenance outage, pending results of additional testing to be performed at the start of the outage.

Industry experience has shown that manual actuation of main steam relief valves during plant operation can lead to increased seat leakage. Increased pilot valve leakage increases the potential of an inadvertent opening of an S/RV. In addition, leakage from either the pilot valve or the main valve seat of an ERV or an S/RV results in increased suppression pool temperature. In order to minimize the potential for steam leakage past the ERVs and S/RVs resulting in increased suppression pool temperature, and to reduce the potential for pilot valve leakage which can cause an inadvertent opening of the S/RV, the licensee proposes to demonstrate valve functionality by means other than *in situ* testing. The licensee requested that the proposed changes be treated as exigent amendments in accordance with 10 CFR

50.91(a)(6). The supplements dated May 2 and May 15, 2003, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 13, 2003 (68 FR 25645). Specifically the proposed changes would revise:

1.1 SR 3.4.3.2

SR 3.4.3.2 requires the licensee to,

> 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.

The licensee proposes to change SR 3.4.3.2 to read,

> Verify each relief valve is capable of being opened.

1.2 SR 3.5.1.10

SR 3.5.1.10 requires the licensee to,

> For Unit 1, verify each ADS [automatic depressurization system] 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.

The licensee proposes to change SR 3.5.1.10 to read,

> Verify each ADS valve is capable of being opened.

1.3 SR 3.6.1.6.1

SR 3.6.1.6.1 requires the licensee to,

> 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.

The licensee proposes to change SR 3.6.1.6.1 to read,

> Verify each low set relief valve is capable of being opened.

2.0 REGULATORY EVALUATION

The regulation at 10 CFR 50.36(c)(2)(ii), Criterion 3, requires a limiting condition for operation 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. The staff finds that the licensee in Sections 4.0 and 6.0 of Attachment 1 of its May 1, 2003, submittal, identified the applicable regulatory requirements.

The Quad Cities Unit 1 ERVs 3B, 3C, 3D, and 3E, and Units 1 and 2 S/RVs 3A 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. 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 of the ADS and the CS system are discussed in updated final safety analysis report (UFSAR) Sections 6.3.2.4 and 6.3.2.1, respectively. 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 system.

The S/RVs and ERVs also provide overpressure protection to the RPV as discussed in UFSAR Section 5.2.2. The S/RVs and ERVs 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. The S/RVs and ERVs can also be manually actuated as needed to control reactor pressure during transients other than those specified for the ADS function, for example, during a Group 1 isolation causing main steam isolation valve closure and a loss of the primary heat sink.

The S/RV in each unit also functions in the safety mode to relieve pressure when the inlet steam pressure reaches the lift set pressure. This ensures that the peak reactor pressure vessel pressure in the nuclear system will not exceed the American Society of Mechanical Engineers Boiler and Pressure Vessel Code limits for the reactor coolant pressure boundary. In addition, two ERVs 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 regulatory requirements for which the staff based its acceptance are 10 CFR 50.36(c)(2)(ii). The Nuclear Regulatory Commission (NRC) has previously approved similar TS changes at several boiling water reactor facilities (e.g., the LaSalle, Clinton, and Hatch nuclear power facilities) regarding alternatives to on-line stroke testing of main steam S/RVs with system steam pressure. The TS changes are consistent with those approved by the NRC for the Quad Cities Unit 2 main steam power-operated relief valves in Amendment Nos. 215/209, dated May 8, 2003.

3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment which are described in Attachment 1 of the licensee's submittal. The detailed evaluation below will support the conclusion that: (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.

3.1 Licensee's Basis for TS Change

The licensee states that experience in the industry and at Quad Cities has indicated that manual actuation of main steam relief valves during plant operation can lead to valve seat leakage. There are four Dresser model 1525VX ERVs on Quad Cities, Unit 1 (i.e., 3B, 3C, 3D, and 3E) and one dual function Target Rock model 7367F S/RV each on Quad Cities, Units 1 and 2 (i.e., 3A).

The main steam ERVs consist of a main valve disc and seat and a pilot valve. The ERVs are opened by automatic or manual switch actuation of a solenoid. The switch energizes the solenoid to actuate a plunger, which contacts the pilot valve operating lever, thereby opening the pilot valve. When the pilot valve opens, pressure under the main valve disc is vented. This allows reactor pressure to overcome main valve spring pressure, which forces the main valve disc downward to open the main valve.

The main steam S/RV in each unit can be actuated in either the safety mode or the relief mode. In the safety mode (i.e., spring mode of operation), the S/RV opens when the inlet steam pressure reaches the lift set pressure. In the relief mode (i.e., power actuated mode of operation), automatic or manual switch actuation energizes a solenoid valve that admits air to the air operator piston chamber and also strokes the air plunger, which strokes the second-stage disc that is 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.

The licensee states that the proposed changes use overlapping tests to verify the valve functions properly at operating conditions and is capable of being opened when installed in the plant. The proposed alternative testing for the S/RVs and the ERVs would test the active components and therefore make unnecessary the cycling of the S/RVs and ERVs using reactor steam pressure and flow. Specifically, the licensee states that the proposed changes will allow testing of manual actuation of the S/RVs and ERVs in two overlapping tests. The first test will be performed at a steam test facility, where the valve 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 then be leak tested, functionally tested to ensure the valve is capable of opening and closing, and leak tested a final time. In addition, the licensee states that, for the safety mode of the S/RVs, an as-found setpoint verification and as-found leak check will be performed, followed by verification of set pressure, delay, and main disc stroke time.

The licensee further states that the tested valves 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 licensee's Quality Assurance Program upon arrival of the valve at Quad Cities. The licensee's storage requirements ensure the valves are protected from exposure to the environment, airborne contamination, acceleration forces, and physical damage. 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 S/RV 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 the S/RVs, the licensee states that 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. The licensee states that this test also does not disturb the safety-mode pilot valve.

For the ERVs, the licensee states that 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 reactor pressure needed to overcome main valve closure forces, the main valve will not stroke during the test.

The licensee states that the above verifications will provide a complete check of the capability of the valves to open and close. The licensee also states that the proposed TS changes will allow the testing of the S/RVs and ERVs such that full functionality is demonstrated through overlapping tests, without cycling the valves.

As additional justification for the proposed TS changes, the licensee states that the Boiling Water Reactor Owners' Group 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 licensee considers the probability of blocking an ADS discharge line and preventing ADS depressurization to be extremely remote. The licensee also states that the Foreign Material Exclusion program, as implemented at Quad Cities, provides the necessary requirements and guidance to prevent and control introduction of foreign materials into structures, systems, and components. The licensee states that this program minimizes the potential for debris blocking an ADS discharge line.

3.2 Licensee’s Evaluation of ERV Operational Experience at Nine Mile Point 1

As part of its review of the Quad Cities alternative testing method, the NRC staff requested that the licensee address concerns regarding recent operating experience with ERVs at Nine Mile Point Nuclear Station, Unit 1. The licensee addressed the staff’s concerns and provided additional information in a letter dated May 15, 2003. Specifically, the staff identified that during a recent event (NRC Event Notification Report 39779) on April 21, 2003, at Nine Mile Point 1, failure of an electrical connection in an ERV solenoid resulted in inadequate solenoid actuating force for opening the pilot valve. Also, the proposed testing of the ERVs at a steam testing facility use a slave solenoid, not the solenoids installed in the plant. Since there will be no steam pressure resisting the opening of the pilot valve during the proposed dry stroke second test, there is less solenoid force required to open the pilot valve during this test than for

operational conditions with steam pressure. In addition, as a result of an event at Nine Mile Point Unit 1 on October 2, 2000, there were potential problems identified regarding dry stroking (i.e., without system steam pressure) of the ERV pilot valves. The dry stroking issue is discussed in NRC Inspection Report 50-220 and 50-410/2000-008, dated December 22, 2000 (ADAMS Accession No. ML003780274), which describes the dry stroking as a possible cause of significant damage to the pilot valves. The issues identified at Nine Mile Point Unit 1 directly relate to the licensee's above described "second" test for the ERVs after valve reinstallation in the system, since any degradation within the solenoid should be identified by the proposed testing and the proposed dry stroking of the pilot valves should not result in damage to the valves.

To address the issues regarding the verification of the solenoid capability, the licensee stated that the solenoid actuator is designed to operate the pilot valve under all design conditions. The actuator includes two coils. One coil can be considered a pull-in coil, and the second considered a hold-in coil. The pull-in coil provides sufficient force to actuate the pilot, and then the hold-in coil provides sufficient force to maintain the pilot in an open position. Contacts designated as cutout contacts control the energization of these coils during solenoid motion. The licensee states that during inspection of the solenoid operator prior to testing, specific attention is given to maintenance and testing of the cutout contacts. An as-found contact resistance value is measured, the contacts are cleaned, the associated springs and mechanisms are inspected, and as-left contact resistances are verified to be less than one ohm (i.e., closed) and greater than one megohm (i.e., open). Resistance checks and meggar tests are then performed on both coils. Finally, during electrical actuation, operating voltages and currents are verified to be within acceptance criteria limits. The licensee states that these steps provide substantial indication that the solenoid operator is capable of functioning as designed. The licensee also states that operating experience indicates that a solenoid that is capable of actuating the pilot in cold conditions is capable of actuating the pilot under normal operating conditions. The licensee states that pilot actuation and verification of coil and contact performance provides additional assurance that the ERVs will actuate when required.

The Nine Mile Point event described in NRC Event Notification Report 39779 was a failure of an ERV to open when actuated. The failure was reportedly due to inadequate solenoid force caused by high resistance in the cutout switch, such that the output force was not adequate to overcome the pilot spring force. The licensee states that the proposed testing for the Quad Cities ERVs will include manual actuation of the electrical circuitry, solenoid actuator, pilot operating lever, and pilot plunger after installation in the plant. 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. The licensee states that since the proposed testing for the Quad Cities ERVs includes a manual actuation of the solenoid and pilot valve, the test will demonstrate that the solenoid force is adequate to overcome the pilot spring force. Resistance checks of the cutout switch will assure the solenoid is capable of producing its full output force.

The above referenced NRC inspection report for Nine Mile Point Unit 1 states that the spurious operation and sticking of valve ERV-111 most probably was caused by a bent stem and partial disk-stem separation, and that dry cycling of pilot valves can cause the partial disk-stem separation. To address the issue regarding potential damage to the ERV pilot valves due to dry stroking, the licensee reviewed the inspection report for Nine Mile Point Unit 1 and held discussions with the Nine Mile Point licensee and the ERV vendor (Dresser).

The licensee states that, although it proposes to dry cycle the ERV pilot valves at Quad Cities, the proposed testing alternative can detect partial disk-stem separation. In addition to the above described testing at a steam test facility, the post-installation testing includes manual dry cycling of the pilot valve to verify that the stem travel and lever arm adjusting screw gap are within limits. Following this verification, the ERV solenoid will be energized to manually stroke the pilot valve. The stem travel and lever arm adjusting screw gap will then be rechecked to verify that these parameters are within limits following the dry cycling. The licensee states that partial disk-stem separation caused by dry cycling of the pilot valve will be detected during this recheck. Discussions with the ERV manufacturer, Dresser, concluded that this recheck would detect partial disk-stem separation caused by dry cycling of the pilot valve. In addition, the licensee has performed dry cycling of the pilot valves at Quad Cities for many years, with no signs of partial or full disc detachment. Therefore, the licensee states that the proposed testing is adequate to detect the partial disk-stem separation experienced at Nine Mile Point Unit 1 during the simulated bench test described in the NRC inspection report.

The licensee states that its maintenance procedures for the ERV pilot valves include appropriate inspections of the stem, pilot valve bushing, and disc to identify any nicks, gouges, or other damage that could impair free movement. The licensee's procedure requires checking the gap at the end of the stem that has the thinnest cross section. This is the area most likely to be bent if not properly handled. In addition, free movement of the stem in the bushing and of the disc-to-stem connection are checked. This check assures that the stem is straight, the pilot can travel freely, and the pilot disc can seat properly.

3.3 Evaluation of TS Changes

The staff has reviewed the licensee's basis for the proposed TS change and finds that with the proposed testing, the functional capability of the ERVs and the S/RVs are verified. A manual actuation and valve leakage test will be performed at a certified steam test facility using test conditions similar to those for the installed valves in the plant, including valve orientation, ambient temperature, valve insulation, and steam conditions. Following ERV and S/RV installation, the licensee's proposed testing includes verifying proper electrical and pneumatic supply connections and actuator performance. It is noted that, although the tests of the ERVs at the steam test facility are not performed with the actual valve solenoids installed in the plant, the solenoids are adequately tested and verified by separate tests. In addition, the licensee has adequately considered the applicable Nine Mile Point Unit 1 operational experience regarding the necessary verification and testing of the ERV solenoid capability and the prevention and detection of possible damage to the ERV pilot valves during the proposed dry stroke testing following installation. Therefore, all of the components necessary to actuate the ERVs and the S/RVs will continue to be tested to demonstrate the functional capability of the valves, without the need to stroke test the valves on-line with system steam pressure conditions.

In addition, the staff finds that the current testing requirements could result in seat leakage of the ERVs and the S/RVs during power operation. Excessive seat leakage could result in excessive suppression pool temperatures. Also, leakage through an S/RV pilot valve could eventually result in the inadvertent opening of the S/RV.

The staff also finds that the licensee's Foreign Material Exclusion program provides reasonable assurance that the ERV and S/RV discharge lines would remain unblocked.

Therefore, the staff finds that the licensee's proposed changes to SRs 3.4.3.2, 3.5.1.10, and 3.6.1.6.1 for stroke testing the Unit 1 ERVs and the Units 1 and 2 S/RVs are acceptable. The licensee also proposed changes to the TS Bases to reflect the changes to the SRs. The staff has no objection to the proposed changes to the TS Bases.

4.0 EXIGENT CIRCUMSTANCES

The Commission's regulations, as stated in 10 CFR 50.91, provide special exceptions for the issuance of amendments when the usual 30-day public notice cannot be met. One type of special exception is an exigency. An exigency exists when the NRC staff and the licensee need to act quickly and time does not permit the staff to publish a *Federal Register* notice allowing 30 days for prior public comment, and the staff also determines that the amendment involves no significant hazards consideration. In accordance with 10 CFR 50.91(a)(6)(A), the NRC staff published a *Federal Register* notice on May 13, 2003 (68 FR 25645), providing reasonable notice to the public of the licensee's proposed amendment and of the NRC staff's proposed determination of no significant hazards consideration. No comments were received.

In its May 1, 2003, application, the licensee discussed the need for an exigent review of the proposed license amendment. On Unit 1, the 3A S/RV and 3C and 3D ERVs are currently leaking as evidenced by elevated tailpipe temperatures. The high tailpipe temperatures are indicative of steam leakage past the pilot valves or main valve seats. Leakage from ERVs and S/RVs is discharged to a point below the minimum water level in the suppression pool. Thus, the steam leakage can result in increasing suppression pool temperature. In addition, leakage past the pilot valves of S/RVs could cause an inadvertent opening of the main valve.

Experience in the industry and at Quad Cities indicates that manual actuation of main steam relief valves during plant operation can lead to increased seat leakage. As a result, the licensee plans as part of a maintenance outage scheduled for May 20, 2003, to replace the 3A S/RV. In addition, the 3C and 3D ERVs may also be replaced during the maintenance outage, pending results of additional testing to be performed at the start of the outage. This is being done based on the potential for steam leakage past the ERVs and S/RVs to result in increased suppression pool temperature. In addition, the alternative testing proposed for the 3A S/RV will reduce the potential for pilot valve leakage which can cause an inadvertent opening of the S/RV and impair the ability to re-close the valve. The need for this license amendment was identified shortly following an inadvertent opening of a relief valve on Unit 2 that occurred April 16, 2003, and the S/RV and ERV work was added to the scope of the planned maintenance outage on April 23, 2003. The licensee states that it has used its best efforts to make a timely application for the amendment.

To support plant startup following the outage, to minimize the potential for increased suppression pool temperature caused by leaking relief valves, and to minimize the potential for an inadvertent opening of a relief valve, the licensee requested NRC approval of the proposed changes by May 29, 2003. This date precludes use of the normal 30-day notice period. Accordingly, as described above, the basis for an exigent amendment request exists and the current situation could not have been avoided. Unit startup following the planned outage is scheduled on May 30, 2003, which did not allow sufficient time for the NRC staff to publish a *Federal Register* notice allowing 30 days for prior public comment.

On the basis of the above discussion, the NRC staff has determined that exigent circumstances exist and that the licensee used its best efforts to make a timely application and did not cause the exigent situation.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

In the regulations in 10 CFR 50.92, the Commission states that it may make a final determination that a license amendment involves no significant hazards consideration determination if operation of the facility in accordance with the 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.

Operation of Quad Cities in accordance with the proposed amendments will not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed changes modify TS 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 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. 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 confidence 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 LPCI and CS 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 do not affect any function related to the safety mode of the dual function safety/relief valves. 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 Quad Cities 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.

The proposed amendments will not create the possibility of a new or different kind of accident from any previously analyzed. The proposed changes do not affect the assumed accident performance of the main steam relief valves, 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.

The proposed amendments will not involve a significant reduction in a margin of safety. The proposed changes will allow testing of the valve actuation electrical circuitry, including the solenoid, and mechanical actuation components, 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 on the above considerations, the NRC staff concludes that the amendments meet the three criteria of 10 CFR 50.92. Therefore, the NRC staff has made a final determination that the proposed amendments do not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendments change an inspection or a surveillance requirement. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final finding that the amendments involve no significant hazards consideration. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: G. Hammer

Date: May 28, 2003