February 20, 2004

Mr. Christopher M. Crane, President
and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - FOURTH 10-YEAR INSERVICE TESTING PROGRAM RELIEF REQUESTS (TAC NOS. MC0711 THROUGH MC0720)

Dear Mr. Crane:

By letter dated September 11, 2003, as supplemented by letter dated November 18, 2003, Exelon Generation Company, LLC (the licensee) submitted relief requests for the fourth 10-year inservice testing (IST) program interval for Quad Cities Nuclear Power Station, Units 1 and 2. The Quad Cities fourth 10-year IST interval will be in effect from February 19, 2004, to February 18, 2014.

Based on the information provided in your submittals for Relief Request RV-23A, the staff concludes the proposed alternative provides reasonable assurance that the components are operationally ready. Therefore, the proposed alternative under Relief Request RV-23A is authorized pursuant to Section 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR), for the fourth 10-year IST interval.

Based on the information provided in your submittals for Relief Requests RV-30B, RV-30C, and RV-30D, the staff concludes that the proposed alternatives provide an acceptable level of quality and safety. Therefore, the proposed alternatives under Relief Requests RV-30B, RV-30C, and RV-30D are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the fourth 10-year IST interval.

Our safety evaluation is enclosed.

Sincerely,

***/RA by Douglas V. Pickett for/***

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

Docket Nos.: 50-254 and 50-265

Enclosure: Safety Evaluation

cc w/encl: See next page

February 20, 2004

Mr. Christopher M. Crane, President
and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - FOURTH 10-YEAR INSERVICE TESTING PROGRAM RELIEF REQUESTS (TAC NOS. MC0711 THROUGH MC0720)

Dear Mr. Crane:

By letter dated September 11, 2003, as supplemented by letter dated November 18, 2003, Exelon Generation Company, LLC (the licensee) submitted relief requests for the fourth 10-year inservice testing (IST) program interval for Quad Cities Nuclear Power Station, Units 1 and 2. The Quad Cities fourth 10-year IST interval will be in effect from February 19, 2004, to February 18, 2014.

Based on the information provided in your submittals for Relief Request RV-23A, the staff concludes the proposed alternative provides reasonable assurance that the components are operationally ready. Therefore, the proposed alternative under Relief Request RV-23A is authorized pursuant to Section 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR), for the fourth 10-year IST interval.

Based on the information provided in your submittals for Relief Requests RV-30B, RV-30C, and RV-30D, the staff concludes that the proposed alternatives provide an acceptable level of quality and safety. Therefore, the proposed alternatives under Relief Requests RV-30B, RV-30C, and RV-30D are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the fourth 10-year IST interval.

Our safety evaluation is enclosed.

Sincerely,

***/RA by Douglas V. Pickett for/***

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

Docket Nos.: 50-254 and 50-265

Enclosure: Safety Evaluation

cc w/encl: See next page

DISTRIBUTION:

| | | | | |
|---|---|---|---|---|
| PUBLIC | PD3-2 r/f | WRuland | AMendiola | LRossbach |
| PCoates | OGC | GHill (4) | ACRS | MRing, RIII |
| DWeaver | DTerao | WPoertner | | |

**ADAMS Accession Number: ML040330756** *see previous concurrence *SE dated 12/31/03

| OFFICE | PM:LPD3-2 | LA:LPD3-2 | SC:EMEB | OGC | SC:LPD3-2 |
|---|---|---|---|---|---|
| NAME | LRossbach | PCoates | DTerao* | RHoefling** | Dpickett for, AMendiola |
| DATE | 2/8/04 | 2/17/04 | 12/31/03 | 2/09/04 | 2/18/04 |

**OFFICIAL RECORD COPY**

Quad Cities Nuclear Power Station Units 1 and 2

cc:

Site Vice President - Quad Cities Nuclear Power Station
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Quad Cities Nuclear Power Station Plant Manager
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Regulatory Assurance Manager - Quad Cities
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Quad Cities Resident Inspectors Office
U.S. Nuclear Regulatory Commission
22712 206th Avenue N.
Cordova, IL 61242

David C. Tubbs
MidAmerican Energy Company
One River Center Place
106 E. Second, P.O. Box 4350
Davenport, IA 52808-4350

Vice President - Law and Regulatory Affairs
MidAmerican Energy Company
One River Center Place
106 E. Second Street
P.O. Box 4350
Davenport, IA 52808

Chairman
Rock Island County Board of Supervisors
1504 3rd Avenue
Rock Island County Office Bldg.
Rock Island, IL 61201

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, IL 60532-4351

Illinois Emergency Management Agency
Division of Disaster Assistance & Preparedness
110 East Adams Street
Springfield, IL 62701-1109

Document Control Desk - Licensing
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Vice President - Nuclear Services
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President of Operations - Mid-West Boiling Water Reactor
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Licensing and Regulatory Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Director - Licensing and Regulatory Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Associate General Counsel
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Manager Licensing - Dresden, Quad Cities and Clinton
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INTERVAL INSERVICE TESTING PROGRAM RELIEF REQUESTS

EXELON GENERATION COMPANY, LLC

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-254 AND 50-265

## 1.0 INTRODUCTION

By letter dated September 11, 2003, Exelon Generation Company, LLC (the licensee), submitted relief requests associated with the fourth 10-year inservice testing (IST) program plan for pumps and valves for the Quad Cities Nuclear Power Station, Units 1 and 2. The licensee proposed several alternatives to the requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants (OM) Code for its Quad Cities Nuclear Power Station, Units 1 and 2, fourth 10-year interval IST program. In response to staff's request for additional information, the licensee submitted additional information to the NRC in its letter dated November 18, 2003. In its November 18, 2003, letter, the licensee withdrew Relief Request PR-00A. NRC evaluation of the licensee's four remaining relief requests are contained herein.

## 2.0 REGULATORY EVALUATION

Section 50.55a of Title 10 of the *Code of Federal Regulations* (10 CFR), requires that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month (10-year) IST program intervals in accordance with the ASME Code for OM Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(ii), licensees are required to comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in the regulations 12 months prior to the start of each 120-month IST program interval. In accordance with 10 CFR 50.55a(f)(4)(iv), IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to NRC approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions and addenda are met. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidance for Inservice Testing at Nuclear Power Plants."

By letter dated September 11, 2003, as supplemented by letter dated November 18, 2003, the licensee proposed several alternatives to the requirements of the ASME OM Code for the Quad Cities Nuclear Power Station, Units 1 and 2, fourth 10-year IST interval. The Quad Cities Nuclear Power Station, Units 1 and 2 fourth 10-year IST interval commences February 19, 2004. The program was developed in accordance with the 1998 Edition, through 2000 Addenda of the ASME OM Code. The NRC's findings with respect to authorizing alternatives and granting or denying the IST program relief requests are given below.

## 3.0 TECHNICAL EVALUATION

### 3.1 Valve Relief Request RV-23A

#### 3.1.1 Code Requirements

The licensee requested relief from ISTC-5150 which requires that solenoid-operated valves have their stroke times measured and compared to reference values. Relief was requested for valves 1-2301-032-SO and 2-2301-032-SO.

#### 3.1.2 Licensee's Basis for Requesting Relief

These solenoid valves function as a backup to the high pressure coolant injection (HPCI) exhaust line drain pot steam trap. During normal operation of the HPCI turbine using high quality steam, the drain path from the drain pot to the torus via the steam trap is adequate to remove condensate from the turbine exhaust line. However, during HPCI turbine operation with low pressure and low quality steam, condensate collects in the drain pot faster than it can be drained through the trap. Under these conditions, solenoid valves 1(2)-2301-032 open automatically upon receipt of a drain pot high level signal to drain excess condensate to the gland seal condenser.

These valves are not equipped with hand switches or position indicators and the valves are totally enclosed, so valve position can not be verified by direct observation. Valve actuation may be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing that the high level alarm clears. It would be extremely difficult to assign a maximum limiting stroke time to these valves using this test method because the time for the alarm to clear would depend primarily on variables such as the rate of filling and the level of the drain pot when filling is secured. The steam line drain pot is not equipped with direct level indication, therefore, the time required for the alarm to clear may vary significantly.

#### 3.1.3 Licensee's Proposed Alternative Testing

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

3.1.4 Evaluation

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

These valves are not equipped with position indication and the valves are totally enclosed, so valve position cannot be verified by direct observation. Therefore, it is not feasible to exercise and stroke time these valves in accordance with the requirements of the ASME OM Code. Compliance with the Code requirements would require major system modifications.

In lieu of the Code-required stroke time test, the licensee proposes a functional verification test. Valve actuation and operability will be indirectly verified by the proposed test, i.e., by removing the HPCI system from service and by filling the drain pot with water until the high level alarm is received. Positive draining of the HPCI drain pot will be indicated by a level increase in the gland seal condenser and by the clearing of the high-level alarm. Furthermore, failure of these valves to perform their safety function would be indicated by a drain pot high-level alarm during operation with low-pressure steam. Additionally, condensate trapped in the steam would be detected by significant fluctuations in the exhaust steam header pressure.

The staff finds that the proposed functional verification test and high-water level alarms in the control room provide reasonable assurance of the operational readiness of the valves, and that compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety.

3.1.5 Conclusion

Based on the above evaluation, the staff concludes that pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative is authorized on the basis that compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety. The licensee's alternative testing provides reasonable assurance of the valve's operational readiness. This alternative is authorized for the fourth 10-year inservice test interval.

3.2 Valve Relief Request RV-30B

3.2.1 Code Requirements

The licensee requested relief from Appendix I of the ASME OM Code, paragraph I-1330(c) which requires that two additional valves be tested if the as-found set-pressure test exceeds the acceptance criteria. Relief was requested for the following valves:

1-0203-003A, 1-0203-004A, 1-0203-004B, 1-0203-004C, 1-0203-004D, 1-0203-004E, 1-0203-004F, 1-0203-004G, 1-0203-004H, 2-0203-003A, 2-0203-004A, 2-0203-004B, 2-0203-004C, 2-0203-004D, 2-0203-004E, 2-0203-004F, 2-0203-004G, 2-0203-004H

3.2.2 Licensee's Basis for Requesting Relief

Valve 1(2)-0203-003A is a dual function safety/relief valve manufactured by Target Rock. The remaining valves are simple safety valves. These main steam safety valves are used to terminate an abnormal pressure increase in the reactor pressure vessel and the reactor coolant pressure boundary. In accordance with the plant Technical Specifications, at least half of the subject valves are tested and rebuilt during each refueling outage. This accelerated maintenance schedule provides a high level of assurance that these safety valves will perform their safety function.

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

The sample expansion requirements of Appendix I would require two additional valves be tested if one valve fails its set-pressure test. Since the dual function safety/relief valve is tested each outage, and no less than four of the remaining eight valves are tested during each outage, the valves already being tested represent an increased sample expansion.

3.2.3 Licensee's Proposed Alternative Testing

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

3.2.4 Evaluation

Appendix I, paragraph I-1330(c) of the ASME OM Code, requires that Class 1 valves be tested at least once every 5 years and that a minimum of 20 percent of the valves from a valve group be tested within any 24 month period. For valves that fail the set-pressure test, additional valves must be tested on the basis of two additional valves for each valve failure. The licensee proposes to test, rebuild, and retest the safety/relief valve and at least 4 of the 8 safety valves each refueling outage. The minimum number of safety valves that the licensee proposes to test exceeds the number of valves that would be required to be tested per the Code requirements (the Code requires 20 percent of the 8 safety valves or 2 safety valves every 24 months while the licensee proposes to test at least 50 percent of its valves). In fact, the licensee's sample equals the number of valves that would be required to be tested if one valve (in the required sample of 2 valves) failed the test. The licensee proposes that if only one valve fails the test the sample size will not be increased, but if a second valve fails, the size will be expanded as required by Appendix I, paragraph I-1330(c). The licensee's proposal will test the subject valves at an equal or higher rate than that required by the Code.

The staff finds that the proposed alternative testing of the valves provides reasonable assurance of adequate valve operation and readiness because it provides a test method equal or higher than that required by the Code. The staff finds the licensee's proposed alternative provides an acceptable level of quality and safety.

3.2.5 Conclusion

Based on the above evaluation, the staff concludes pursuant to 10 CFR 50.55a(a)(3)(i) that the licensee's proposed alternative is authorized on the basis that the proposed alternative provides an acceptable level of quality and safety. This alternative is authorized for the fourth 10-year inservice test interval.

3.3 Valve Relief Request RV-30C

3.3.1 Code Requirements

The licensee requested relief from ISTC-5132(b) which requires that valves with reference stroke times of less than or equal to 10 seconds exhibit no more than plus or minus 50 percent change in stroke time when compared to the reference value. This relief request applies to the following valves:

1-0203-001A-AO, 1-0203-001B-AO, 1-0203-001C-AO, 1-0203-001D-AO,
1-0203-002A-AO, 1-0203-002B-AO, 1-0203-002C-AO, 1-0203-002D-AO,
2-0203-001A-AO, 2-0203-001B-AO, 2-0203-001C-AO, 2-0203-001D-AO,
2-0203-002A-AO, 2-0203-002B-AO, 2-0203-002C-AO, 2-0203-002D-AO

3.3.2 Licensee's Basis for Requesting Relief

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

The OM Code requirement bases the stroke time acceptance criteria on a fixed reference value taken from a baseline test. However, Technical Specification 3.6.1.3, "Primary Containment Isolation Valves (PCIV's)," establishes an invariable acceptable stroke time range for the MSIV's of greater than or equal to 3 seconds to less than or equal to 5 seconds. This fixed range is more conservative than that required by ISTC-5132(b) because the range is not dependent on a baseline value that may vary by as much as plus or minus 1 second.

3.3.3 Licensee's Proposed Alternative Testing

The Technical Specification acceptable stroke time range will be utilized for evaluating an acceptable MSIV stroke time in lieu of establishing an acceptance band based on MSIV stroke time reference values. Any MSIV that fails to meet the Technical Specification limits will be considered inoperable and required actions will be in accordance with the plant Technical Specifications.

3.3.4 Evaluation

In lieu of the Code required stroke time acceptance criteria based on a fixed reference value taken from a baseline test, the licensee proposes to use the Technical Specification acceptable stroke time range of greater than or equal to 3 seconds and less than or equal to 5 seconds for the MSIVs.

The Technical Specifications provide the minimum system, subsystem, and component operability requirements for safe operation. The licensee's proposed acceptance criteria is generally more conservative than the Code-required acceptance criterion of plus or minus 50 percent change in stroke time when compared to the reference value. Assuming a nominal reference value of 4 seconds for the MSIVs, the Code acceptance criterion would result in an acceptance band of 2 to 6 seconds, which is outside the Technical Specification acceptance band.

The staff finds that the proposed alternative testing of the MSIVs is generally more conservative than the Code-required testing, provides reasonable assurance of adequate valve operation and readiness, and ensures that the MSIVs meet the operability requirements for safe operation. Therefore, the staff finds that the proposed alternative testing method to that required by ISTC-5132(b) is acceptable, and that the licensee's proposed alternative provides an acceptable level of quality and safety.

3.3.5 Conclusion

Based on the above evaluation, the staff concludes that, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is authorized on the basis that the proposed alternative provides an acceptable level of quality and safety. This alternative is authorized for the fourth 10-year inservice test interval.

3.4 Valve Relief Request RV-30D

3.4.1 Code Requirements

The licensee requested relief from Appendix I, paragraph I-3401(d) of the ASME OM Code which requires that valves with auxiliary actuating devices that have been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled be remotely actuated at reduced or normal system pressure to verify open and close capability of the valve before resumption of electric power generation. This relief request applies to the following valves:

1-203-3A, 1-203-3B, 1-203-3C, 1-203-3D, 1-203-3E,
2-203-3A, 2-203-3B, 2-203-3C, 2-203-3D, 2-203-3E

3.4.2 Licensee's Basis for Requesting Relief

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

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

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

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

In this relief request, the licensee proposed an alternative method to test the ERVs, PORVs and S/RVs such that full-valve functionality is demonstrated through overlapping tests, without cycling the valves. The use of an overlapping series of tests has been successfully applied at other stations.

Additionally, 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 valve openings be reduced as much as possible to avoid unnecessary challenges to the valve.

3.4.3 Licensee's Proposed Alternative Testing

The valves will be tested using overlapping tests to verify that the valves are functioning properly at operating conditions and are capable of being opened when installed in the plant. The first test will be performed at a steam test facility, where each valve will be installed on a steam header in the same orientation as in the plant installation, including ambient temperature, valve insulation, and steam conditions. The valve will then be leak tested and 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. For the PORVs, limit switch actuation may be tested prior to or during functional testing.

The valve will then be shipped to the plant without disassembly or alteration of the valve components. A receipt inspection will be performed in accordance with the requirements of the Quality Assurance Program upon arrival of the valve.

Second Test - PORV

> Prior to installation, electrical continuity checks of the limit switches will be performed, and the valve will again be inspected for foreign material and damage. The valve will be installed, insulated, and electrically connected. Proper electrical connections will be verified per procedure. Electrical power to the control panel and signals causing

application of power to the PORV solenoid will be verified to be present at the control panel per procedure. Electrical continuity and resistance checks from the control panel to the relief valve will be performed.

Second Test - ERV and SRV

Prior to installation, the valve will again be inspected for foreign material and damage. The valve will be installed, insulated, and electrically connected. Proper electrical connections will be verified per procedure. Electrical power to the control panel and signals causing application of power to the SRV and ERV solenoids will be verified to be present at the control panels per procedure. In addition, ERV limit switches will be tested. For the relief mode of the S/RVs, 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.

For the ERVs, the second test will be performed with the pilot valve actuator mounted in its normal position. This will allow testing of the manual actuation electrical circuitry, solenoid, actuator, pilot operating lever, and pilot plunger.

3.4.4 Evaluation

The staff has reviewed the licensee's proposed alternative and finds that the testing of the PORVs, ERVs, and S/RVs verifies the functional capability of the valves. A manual actuation and valve leakage test will be performed at a certified 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 installation, the licensee's proposed testing includes verifying proper electrical and pneumatic supply connections, actuator performance, and solenoid coil conductivity. Therefore, all of the components necessary to manually actuate the valves will continue to be tested to demonstrate the functional capability of the valves without the need to stroke test the valves on-line. The staff also finds that the current testing requirements could result in seat leakage during power operation. Excessive seat leakage could interfere with detection and monitoring of pilot valve leakage and could result in high suppression pool temperatures. Also, leakage through a PORV or S/RV pilot valve could eventually result in the inadvertent opening of a PORV or the S/RV.

The staff finds that the proposed alternative testing of the PORVs, ERVs, and S/RVs and associated components provides reasonable assurance of the valve's operational readiness. Therefore, the staff finds that the proposed alternative testing method to that required by Appendix I, paragraph I-3401(d), is acceptable, and that the licensee's proposed alternative provides an acceptable level of quality and safety.

3.4.5 Conclusion

Based on the above evaluation, the staff concludes that, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative is authorized on the basis that the proposed alternative provides an acceptable level of quality and safety. This alternative is authorized for the remainder of the fourth 10-year inservice test interval.

Principal Contributor: W. Poertner, EMEB

Date: February 20, 2004