

October 2, 2003

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

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 - RELIEF REQUEST  
FOR FOURTH 10-YEAR INSERVICE TESTING INTERVAL (TAC NOS. MB8741,  
MB8742, MB8743, MB8744, MB8745, AND MB8746)

Dear Mr. Skolds:

By letter dated April 30, 2003, Exelon Generation Company, LLC (EGC, the licensee) submitted three requests for relief (RV-02A, RV-23H, and RV-57A) from requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) (1998 Edition through 2000 Addenda), for Dresden Nuclear Power Station (DNPS), Units 2 and 3. These relief requests were for the fourth 10-year inservice testing interval scheduled to commence on November 1, 2003, and end by October 31, 2012. Additional information was provided in a letter dated August 15, 2003, for relief requests RV-02A and RV-57A. A letter dated September 15, 2003, from EGC withdrew the relief request RV-02A.

Based on the information provided in your submittal for relief request RV-23H, the staff concludes that compliance with the specified Code requirements results in hardship without a compensating increase in the level of quality and safety. Therefore, for RV-23H, the proposed alternative 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 inservice testing interval at DNPS. The proposed alternative contained in the request for relief would provide reasonable assurance that the component is operationally ready.

Similarly, for relief request RV-57A, the staff has determined that compliance with the specified Code requirements is impractical. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i), for the fourth 10-year inservice testing interval at DNPS, relief request RV-57A may be granted based on impractical design configuration of the valves and the burden on the licensee if the Code requirements were imposed. The proposed testing contained in the request for relief provides reasonable assurance that the component is operationally ready. Granting relief pursuant to

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10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The enclosed safety evaluation contains the basis for this determination.

Sincerely,

***/RA by L. Raghavan for/***

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

Docket Nos.: 50-237 and 50-249

Enclosure: Safety Evaluation

cc w/encl: See next page

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10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INTERVAL REQUEST FOR RELIEF

EXELON GENERATION COMPANY, LLC

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

By letter dated April 30, 2003, (Ref. 5.1) Exelon Generation Company, LLC (EGC), the licensee for the Dresden Nuclear Power Station (DNPS), Units 2 and 3, submitted three relief requests (RV-02A, RV-23H, and RV-57A) from the inservice testing (IST) requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) (1998 Edition through 2000 Addenda) for the fourth 10-year interval IST program at the DNPS scheduled to commence on November 1, 2003, and end by October 31, 2012. In a subsequent letter dated August 6, 2003 (Ref. 5.2), additional information was provided for relief requests RV-02A and RV-57A. However, in a letter dated September 15, 2003 (Ref. 5.3), EGC withdrew relief request RV-02A.

The NRC staff's findings with respect to relief requests RV-23H and RV-57A are contained in this safety evaluation.

2.0 REGULATORY EVALUATION

Section 50.55a of Title 10 of the *Code of Federal Regulations* (10 CFR 50.55a) requires that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with the ASME OM Code applicable edition and addenda, except when alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to 10 CFR 50.55a(a)(3)(i), 10 CFR 50.55a(a)(3)(ii), or 10 CFR 50.55a(f)(6)(i). In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the alternatives will 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 would be impractical for its facility. The regulations in 10 CFR 50.55a authorize the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. The applicable IST Code of Record for the fourth 10-year interval at the Dresden Nuclear Power Station (DNPS), Units 2 and 3, is the 1998 Edition through 2000 Addenda.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Valve Relief Request RV-23H

The licensee has requested relief for valves 2-2301-32 and 3-2301-32 from the stroke time requirements of ISTC-5150 of 1998 Edition through 2000 Addenda of ASME OM Code. The licensee proposes to exercise these valves quarterly using the handswitch. They will also be functionally tested each refueling outage by filling the drain pot and verifying that these valves actuate as indicated by high level alarm clearing.

##### 3.1.1 Licensee's Basis For The Relief Request

The licensee states:

A relief was requested in 1996 by DNPS and granted by the NRC for the 3<sup>rd</sup> interval due to impracticality of compliance. Therefore, this relief request is being re-submitted for the fourth interval to comply with the current OM Code. These valves function as a backup to the exhaust line drain pot steam trap. During normal operation of the 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 operation with low pressure and low quality steam (which is seen during HPCI [high pressure coolant injection] surveillance testing during plant startup and as would be expected during HPCI operation during a small break LOCA), condensate collects in the drain pot faster than it can be drained through the trap. Under these conditions, valve 2301-32 opens automatically to drain 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. A high level condition actuates an alarm in the control room.

These valves are equipped with hand switches to enable remote operation from the control room; they are not equipped with position indicators and the valves are totally enclosed, so valve position cannot be verified by direct observation. Therefore, it is impractical to exercise and stroke these valves in accordance with Code requirements. Valve actuation may be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing that the high level alarm clears. It is impractical to assign a maximum limiting stroke time to these valves using this test method because the time for the alarm to clear would depend primarily on variables such as the rate of filling and the level of the drain pot when the filling is secured. The steam line drain pot is not equipped with direct level indication; therefore, the time required for the alarm to clear may vary significantly and operation of valve 2301-32 cannot be verified by operation of the switch.

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. Functional tests are conducted on the drain pot level alarm switches at least once each cycle to verify their operability. Additionally, condensate entrapped in the steam would cause significant fluctuations in exhaust steam header pressure.

Compliance with the quarterly exercising and stroke timing requirements of the Code would require either system modifications and to replace these valves with ones of

testable design, or to purchase non-intrusive test equipment and develop new test methods and procedures.

### 3.1.2 Proposed Alternative

The licensee states:

These valves will be exercised quarterly using the handswitch. They will also be functionally tested each refueling outage by the drain pot and verifying that valve 2301-32 actuates as indicated by the high level alarm clearing.

Because exercising of these valves without stroke timing provides no measure of valve degradation, maintenance activities were instituted to compensate for testing deficiencies. Following discussions with the manufacturer regarding valve design and application, it was decided to disassemble, examine and repair or replace these valves every third cycle in addition to the above testing.

### 3.1.3 Staff Evaluation

The licensee has requested relief for valves 2-2301-32 and 3-2301-32 from the stroke time requirements of ISTC-5150 of 1998 Edition through 2000 Addenda of ASME OM Code. A similar relief request was requested in 1996 by DNPS and granted by the NRC for the third interval due to impracticality of compliance (Reference 5.4). This relief request is being resubmitted for the fourth interval.

A review of the valve design indicates that both valves 2-2301-32 and 3-2301-32 are totally enclosed and are not equipped with position indicators. Therefore, valve position cannot be verified by direct observation. Due to these design limitations, it would cause undue hardship on the licensee to measure a stroke time for these valves using the traditional methods of position indication. Because the valve design does not allow direct measurement of the stroke time, the licensee proposes to enhance the maintenance activities for these valves, (i.e., disassembly, inspection, repair or replacement every third cycle). In addition, the licensee will perform a functional test to ensure that the valves are capable of fulfilling their safety function by monitoring the drain pot high level alarm during operation with low pressure steam as an indirect means of verifying movement of valve obturator. This functional test combined with the enhanced maintenance activities will provide an adequate indication of the valve's condition and operational readiness. Imposition of these Code requirements would require either system modifications and replacement of these valves with ones of testable design, or purchase of more advanced testing equipment.

### 3.1.4 Conclusion

Pursuant to 10CFR50.55a(a)(3)(ii), relief request RV-23H is authorized for the fourth IST interval on the basis that compliance with Code requirements results in hardship without a compensating increase in the level of quality and safety. The proposed alternative consisting of enhanced maintenance activities and an indirect functional test of the affected valves will provide a good indication of the valve's condition and operational readiness.

### 3.2 Valve Relief Request RV-57a

The licensee has requested relief for valves 2/3-5741-62 from the stroke time requirements of ISTC-5130 of 1998 Edition through 2000 Addenda of ASME OM Code. In lieu of stroke time test, the licensee proposes to exercise and fail-safe test these valves quarterly.

#### 3.2.1 Licensee's Basis For The Relief Request

The licensee states:

A [r]elief was requested in 1996 by DNPS and granted by the NRC for the 3<sup>rd</sup> interval due to impracticality of compliance. Therefore, this relief request is being re-submitted for the fourth interval to comply with the current OM Code. This valve controls the cooling water flow through the Control Room HVAC Refrigerant heat exchanger. The valve receives a signal from a pressure transmitter located on the refrigerant side. When the pressure increases due to the refrigerant temperature rising, valve 2/3-5741-62 throttles flow down when the pressure drops.

The valve opens and closes based on a signal from a pressure transmitter and therefore, cannot be accurately timed.

Forcing the valve to stroke by disconnecting the air tubing from the transducer and connecting an external air source is cumbersome and will not yield repeatable data. The valve stem is readily visible and can easily be observed for degrading condition.

#### 3.2.2 Proposed alternative

The licensee states in Reference 5.1:

This valve will be exercised and fail-safe tested quarterly by isolating the air to the valve. Stem conditions and motion will be observed for evidence of degrading conditions.

The licensee also states in Reference 5.2:

A preventive maintenance (PM) program for the 2/3-5741-62, "Control Room Heating, Ventilation, and Air conditioning Outlet Flow Control Valve" was implemented for the third ten-year and will be implemented for the fourth ten-year interval. The PM program consists of the following.

- A quarterly stroke of valve in accordance with Procedure DOS 1600-04, "Unit 2/3 Quarterly Valve Timing," was implemented and includes acceptance criteria to document any unusual stem motion or evidence of degraded conditions.
- A preventive maintenance rebuild of the valve was implemented and occurs every five years.

#### 3.2.3 Staff Evaluation

The licensee has requested relief for valves 2/3-5741-62 from the stroke time requirements of ISTC-5130 of 1998 Edition through 2000 Addenda of ASME OM Code. A similar relief request



was requested in 1996 by DNPS and granted by the NRC for the third interval due to impracticality of compliance (Ref. 5.4). This relief request is being resubmitted for the fourth interval.

The valves 2/3-5741-62 are control valves and can not be tested in accordance with the provisions of the Code requirements. Because these control valves respond only to pressure changes in the system, they are not usually in their full-open or full-close position. During a quarterly test, they can only be stroked from an intermediate position depending on the system operating conditions. As such, there is no way to establish a reference value for a repeatable stroke time test.

The licensee proposes to exercise the valve quarterly by isolating the air to the valve and observe the stem conditions and motion for evidence of degrading conditions. However, observation of stem movement does not give a very good indication of degrading conditions. Therefore, the licensee proposes a preventive maintenance (PM) program which was implemented for the third interval and will be implemented for the fourth interval. The PM program consists of the following.

- A quarterly stroke of valve in accordance with Procedure DOS 1600-04, "Unit 2/3 Quarterly Valve Timing," was implemented and includes acceptance criteria to document any unusual stem motion or evidence of degraded conditions.
- A preventive maintenance rebuild of the valve was implemented and occurs every five years.

The staff finds that the preventive maintenance rebuild of the valve every five years in conjunction with the observation of the stem movement quarterly will provide a good indication of the valve conditions and its operational readiness. Imposition of the Code requirements would require a system modification to enable testing in accordance with the Code requirements, and thus is impractical and burdensome on the licensee.

#### 3.2.4 Conclusion

Pursuant to 10CFR50.55a(f)(6)(i), relief request RV-57A is granted for the fourth IST interval based on the impracticality of measuring the stroke time with the existing valve design. The preventive maintenance rebuild of the valve every five years in conjunction with the observation of the stem movement quarterly will provide a good indication of the valve condition and operational readiness. Granting relief pursuant to 10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

#### 4.0 CONCLUSION SUMMARY

Based on the above evaluation, for the fourth 10-year IST interval of Dresden Units 2 and 3 scheduled to commence on November 1, 2003, and end by October 31, 2012, the staff concludes that:

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief request RV-23H is authorized on the basis that compliance with Code requirements results in hardship without a compensating

increase in the level of quality and safety. The additional enhanced maintenance activities and indirect functional test for the affected valves will provide adequate indication of the valve's condition and operational readiness.

In addition, pursuant to 10 CFR 50.55a(f)(6)(i), relief request RV-57A is granted based on the impracticality of measuring the stroke time with the existing valve design. The preventive maintenance rebuild of the valve every 5 years in conjunction with the observation of the stem movement quarterly will provide a good indication of the valve's condition and operational readiness. Granting relief pursuant to 10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

## 5.0 REFERENCES

1. Letter from R. J. Hovey, Exelon Generation Company, to NRC, "Submittal of Proposed Alternatives and Reliefs to the Requirements of 10CFR50.55a Concerning the Fourth Ten-Year Interval Inservice Testing Program," dated April 30, 2003.
2. Letter from Patrick R. Simpson, Exelon Generation Company, to NRC, "Additional Information Regarding Inservice Testing Program Relief Requests," dated August 6, 2003.
3. Letter from Patrick R. Simpson, Exelon Generation Company, to NRC, "Withdrawal of Inservice Testing Program Relief Request," dated September 15, 2003.
4. Letter from U. S. NRC to D. L. Farrar (Commonwealth Edison company), "Revision 3 to the Third 10-year Interval Inservice Testing Program - Dresden Nuclear Power Station Units 2 and 3," dated April 16, 1996.

Principal Contributor: Y.S. (John) Huang, NRR/DE/EMEB

Date: October 2, 2003