

September 20, 2007

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

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNIT 2 - REQUEST FOR RELIEF  
FROM ASME OM CODE 5-YEAR TEST INTERVAL REQUIREMENTS  
(TAC NO. MD5959)

Dear Mr. Crane:

By letter dated July 3, 2007, as supplemented on July 27, 2007, Exelon Generation Company, LLC (EGC, the licensee), submitted Relief Request No. RV-02B for Dresden Nuclear Power Station, Unit 2 (DNPS 2). The relief request proposed an alternative to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a, concerning a requirement in the American Society of Mechanical Engineers, Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). The proposed alternative involves a one-time extension to the ASME OM Code 5-year test interval for DNPS 2 main steam safety valves (MSSVs) 2-0203-4A, 2-0203-4B, and 2-0203-4C.

The Nuclear Regulatory Commission (NRC) staff has reviewed EGC's analysis in support of its request for relief. The NRC staff has concluded that compliance with ASME OM Code 5-year test interval for DNPS 2, MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C would result in hardship due to unnessential personnel radiation exposure without a compensating increase in the level of quality and safety, and that there is reasonable assurance that the valves are operationally ready. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for DNPS 2 MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C through November 2009.

C. Crane

- 2 -

The NRC staff's safety evaluation is enclosed. If you have any questions, please contact Christopher Gratton at 301-415-1055.

Sincerely,

***/RA/***

Russell A. Gibbs, Chief  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-237

Enclosure:  
Safety Evaluation

cc w/encl: See next page

C. Crane

- 2 -

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Dresden Nuclear Power Station, Units 2 and 3

cc:

Site Vice President - Dresden  
via e-mail

Director - Licensing & Regulatory Affairs  
via e-mail

Plant Manager - Dresden Nuclear Power Station  
via e-mail

Vice President - Regulatory Affairs  
via e-mail

Manager Regulatory Assurance - Dresden  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. RV-02B

RELIEF FROM 5-YEAR TEST INTERVAL FOR MAIN STEAM SAFETY VALVES

2-0203-4A, 2-0203-4B, AND 2-0203-4C

EXELON GENERATION COMPANY, LLC

DRESDEN NUCLEAR POWER STATION, UNIT 2

DOCKET NO. 50-237

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC, the Commission) dated July 3, 2007, as supplemented on July 27, 2007, Exelon Generation Company, LLC (the licensee), submitted Relief Request (RR) No. RV-02B for Dresden Nuclear Power Station, Unit 2 (DNPS 2). The relief request proposed an alternative to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a, concerning a requirement in the American Society of Mechanical Engineers (ASME), Code for Operation and Maintenance of Nuclear Power Plants (OM Code). The proposed alternative involves a one-time extension to the ASME OM Code 5-year test interval for DNPS 2 Main Steam Safety Valves (MSSVs) 2-0203-4A, 2-0203-4B, and 2-0203-4C.

2.0 REGULATORY EVALUATION

Section 50.55a(f) of 10 CFR, "Inservice Testing Requirements," requires, in part, that ASME Class 1, 2, and 3 components must meet the requirements of the ASME 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. The 1998 Edition through 2000 Addenda of the ASME OM Code is the current Code of Record for the DNPS 2 inservice test (IST) program.

In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternative provides 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 OM Code requirements upon making necessary findings.

The licensee is requesting relief in accordance with 10 CFR 50.55a(a)(3)(ii) from the 5-year test requirement in Mandatory Appendix I, Section I-1330(a) of the ASME OM Code for DNPS 2 MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C. The licensee is requesting relief because

compliance with this ASME OM Code requirement would result in hardship due to unessential personnel radiation exposure, without a compensating increase in the level of quality or safety. The NRC's findings with respect to authorizing relief to the ASME OM Code 5-year test requirement are given below.

### 3.0 TECHNICAL EVALUATION FOR RELIEF REQUEST NO. RV-02B

The licensee has requested relief from an ASME OM Code requirement in Mandatory Appendix I, Section I-1330(a) for DNPS 2, MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C. The proposed alternative involves a one-time extension to the 5-year test interval specified by the Code. The MSSVs provide overpressure protection for the reactor coolant pressure boundary. The licensee's analysis in support of its RR from the 5-year test requirement is described in the licensee's letter dated July 3, 2007, as supplemented on July 27, 2007. A description of the RR and the NRC staff's evaluation follows.

#### 3.0.1 ASME OM Code Requirements

ASME OM Code Mandatory Appendix I, Section I-1330(a), "Test Frequencies, Class 1 Pressure Relief Valves," requires that Class 1 pressure relief valves be tested at least once every 5 years, starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20 percent of the valves from each valve group are required to be tested within any 24-month interval. The test interval for any individual valve must not exceed 5 years.

ASME Code Interpretation 01-18, "ASME OM Code-1995 With OM ASME Code-1996 Addenda, Appendix I," dated June 26, 2003, states that the 5-year test interval starts when the valve is tested.

#### 3.0.2 Licensee's Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee requested authorization of an alternative to a requirement in ASME OM Code, Mandatory Appendix I, Section I-1330(a). The licensee asserts that testing MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C during the upcoming DNPS 2 refueling outage scheduled to begin in October 2007 would result in hardship due to unessential personnel radiation exposure, without a compensating increase in the level of quality or safety.

Normal practice at DNPS 2 was to remove and test four of the eight MSSVs each refueling outage. Spare MSSVs that were previously refurbished and tested were installed in place of the MSSVs that are removed. The MSSVs removed from service were tested, refurbished, and then retested before being reinstalled during a future refueling outage. MSSVs 2-0203-4E, 2-0203-4F, 2-0203-4G, and 2-0203-4H were scheduled to be removed and tested during the October 2007 refueling outage.

The test interval for MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C has currently expired or will expire before the refueling outage scheduled for November 2009 because the licensee incorrectly applied the 5-year test requirement in ASME OM Code Mandatory Appendix I, Section I-1330(a). The licensee's practice was to start the 5-year interval when a MSSV was installed and not to include storage time in the 5-year interval.

The licensee is proposing to delay the testing of MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C until the November 2009 refueling outage because without Code relief, the additional outage work would be contrary to the principles of keeping radiation exposure as low as reasonably achievable (ALARA). Crews of up to seven workers would be required to remove each inservice MSSV and install each spare MSSV. Insulation and appurtenances on the MSSV would also require removal and reinstallation. Because of the location of the MSSVs in the containment, this would result in radiation exposure to the maintenance personnel performing the work. The removal of three additional MSSVs (2-0203-4A, 2-0203-4B, and 2-0203-4C) would add approximately six person-rem (the licensee estimates that it take two person-rem per MSSV to remove and replace a MSSV) to the radiation exposure for the October 2007 refueling outage without a compensating increase in the level of quality or safety.

The licensee states that it is acceptable to extend the test interval beyond 5 years because inservice testing history at DNPS from May 1997 to the present indicates that all tested MSSVs (i.e., 44 MSSVs) that have been installed in either DNPS 2 or DNPS 3 for 48 months have successfully passed the ASME OM Code setpoint as-found acceptance criteria of  $\pm 3$  percent. Additionally, a review of the setpoint test results (for both units) indicates that, in general, the MSSVs tend to drift slightly downward, not upward.

### 3.0.3 Licensee's Proposed Alternative Testing

The licensee is proposing to extend the test interval for MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C beyond 5 years on a one-time basis. The test interval for MSSVs 2-0203-4A and 2-0203-4B would be extended to 8 years and 3 months and the test interval for MSSV 2-0203-4C would be extended to 5 years and 7 months. These MSSVs would be removed and tested during the November 2009 refueling outage.

### 3.0.4 NRC Staff's Evaluation of Relief Request

The NRC staff has reviewed the MSSV as-found set-pressure test summary results provided by the licensee to determine if it is acceptable to extend the test interval for MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C beyond 5 years. The MSSV setpoint test summary results from 1997 to present include 44 data points from DNPS 2 and DNPS 3 valves. The licensee also provided MSSV setpoint test summary results from 1997 to present for 52 data points from Quad Cities Nuclear Power Station (QCNPS), Unit 1 and Unit 2 MSSVs. The QCNPS and DNPS MSSVs are identical. Test history shows that all MSSVs successfully passed the ASME OM Code as-found acceptance criteria of  $\pm 3$  percent. The licensee stated that the current DNPS 2 ASME overpressure analysis assumes that the MSSVs open to relieve pressure at the upper ASME limit of 3 percent of the MSSV setpoint. Furthermore, setpoint drift percentages indicates that in general, the MSSV setpoints tend to drift slightly downward; not upward.

The licensee stated that MSSVs 2-0203-4A and 2-0203-4B were stored in a controlled environment for a period of 4 years and 2 months prior to installation, and will have been in service for a period 4 years and 1 month prior to removal during the November 2009 refueling outage. The licensee also stated that the controlled environment was equipped to prevent condensation and corrosion. The licensee recently tested four MSSVs that were stored in this same controlled environment for up to 4 years and 4 months in order to determine the impact of

storage in a controlled environment on the opening set pressure. Results of this testing indicated that setpoint drift for three of the four MSSVs was negligible. The setpoint drift for the fourth MSSV was -1.3 percent.

The licensee stated that it removes each MSSV after two operating cycles, which is approximately every 48 months. An ASME OM Code-certified off-site vendor is used to perform as-found and as-left testing, inspection, and refurbishment of each MSSV that is removed from service in accordance with a licensee approved procedure. The procedure identifies the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. Components are either reworked to within the specified tolerance or replaced if found to be worn or outside of specified tolerances.

The NRC staff finds that the proposed alternative to extend the test interval for DNPS 2 MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C beyond the ASME OM Code 5-year test requirement is acceptable. The additional time beyond that required by the ASME Code should not impair the valves' operational readiness based on the following:

- ◆ The refurbishment of MSSV every two operating cycles provides reasonable assurance that setpoint drift will be minimized.
- ◆ Past performance demonstrates that the MSSVs successfully passed the ASME OM Code as-found acceptance criteria of  $\pm 3$  percent. This supports the current DNPS 2 ASME overpressure analysis that assumes that the MSSVs open to relieve pressure at the upper ASME limit of 3 percent of the MSSV setpoint.
- ◆ Setpoint drift percentages indicate that in general, MSSV setpoints tend to drift slightly downward; not upward. From an overpressure protection standpoint, a setpoint drift in the downwards direction is conservative because the valve would tend to open sooner than required.
- ◆ Test results for MSSVs stored in a controlled environment for up to 4 years and 4 months demonstrates that storage in the controlled environment has a minimal effect on the setpoint.

#### 4.0 CONCLUSION

Based on the information provided by the licensee, the NRC staff has concluded that compliance with ASME OM Code 5-year test interval for DNPS 2 MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C would result in hardship due to unessential personnel radiation



exposure, and, further, that there is reasonable assurance that the valves are operationally ready. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative is authorized for DNPS 2 MSSVs 2-0203-4A, 2-0203-4B, and 2-0203-4C through November 2009.

Principal Contributor: Stephen G. Tingen, NRR

Date: September 20, 2007