

RS-07-111

July 27, 2007

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2
Renewed Facility Operating License No. DPR-19
NRC Docket No. 50-237

- References:
1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for Relief from ASME OM Code 5-year Test Interval for Two Main Steam Safety Valves (Relief Request RV-02B)," dated July 3, 2007
 2. Fax from C. Gratton (U.S. NRC) to P. R. Simpson, "Draft Request for Additional Information," dated July 11, 2007

Subject: Response to Request for Additional Information Related to Relief Request RV-02B

In Reference 1, Exelon Generation Company, LLC (EGC) requested relief from the American Society of Mechanical Engineers/American National Standards Institute, "Code for Operation and Maintenance of Nuclear Power Plants," 1998 Edition through 2000 Addenda, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1330, "Test Frequencies, Class 1 Pressure Relief Valves." Specifically, EGC requested NRC approval of proposed Relief Request RV-02B to extend the five year test interval, on a one time basis, for two Main Steam Safety Valves (MSSVs) at Dresden Nuclear Power Station (DNPS) Unit 2. In Reference 2, the NRC transmitted a draft Request for Additional Information to EGC concerning the requested relief.

The response to Reference 2 is presented in Attachment 1 to this letter. In addition, as a result of Reference 2, EGC has revised the requested relief to include an additional MSSV at DNPS Unit 2. The revised relief request is presented in Attachment 2 to this letter.

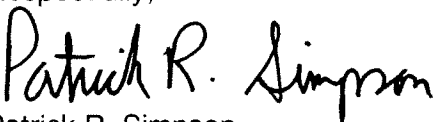
As stated in Reference 1, EGC requests approval of this request by October 26, 2007, to enable plant start-up following the twentieth DNPS Unit 2 refueling outage.

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There are no regulatory commitments contained within this letter.

If you have any questions concerning this letter, please contact Mr. John L. Schrage at (630) 657-2821.

Respectfully,

A handwritten signature in black ink that reads "Patrick R. Simpson". The signature is written in a cursive style with a large, prominent "P" and "S".

Patrick R. Simpson
Manager - Licensing

Attachments:

1. Response to NRC Request for Additional Information, Relief Request RV-02B
2. Relief Request RV-02B, Revision 1

Attachment 1

Response to NRC Request for Additional Information
Relief Request RV-02B

Attachment 1

Response to NRC Request for Additional Information Relief Request RV-02B

By letter dated July 3, 2007, Exelon Generation Company, LLC (EGC) requested relief from the American Society of Mechanical Engineers/American National Standards Institute, "Code for Operation and Maintenance of Nuclear Power Plants," 1998 Edition through 2000 Addenda, (ASME OM Code), Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1330, "Test Frequencies, Class 1 Pressure Relief Valves." The relief request proposed to extend the five year test interval, on a one time basis, for two Main Steam Safety Valves (MSSVs) at Dresden Nuclear Power Station (DNPS) Unit 2. The NRC has requested the following additional information to complete its review.

NRC Question 1

Exelon Generation Company's (EGC's) request for relief from the requirements of the American Society of Mechanical Engineers/American National Standards Institute, "Code for Operation and Maintenance of Nuclear Power Plants" (ASME Code), dated July 3, 2007, states that each main steam safety valve (MSSV) is overhauled to a like-new condition after it is removed and tested. Another section of the relief request uses the term "refurbished" when describing maintenance for each MSSV. Please verify that overhaul/refurbishment requires that each valve be disassembled and inspected to verify that parts are free of defects resulting from time-related degradation or service-induced wear, and that degraded and defective parts that do not meet manufacturer specifications are replaced with new parts or reworked to conform to manufacturer specifications.

EGC Response

DNPS utilizes an ASME OM Code-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the MSSVs. An EGC-approved and qualified procedure is used for disassembly and inspection of MSSVs. This procedure requires that each MSSV be disassembled and inspected upon removal from service, independent of the as-found test results. 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. If components are found worn or outside of the specified tolerance(s), the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and EGC is notified of these components by the off-site vendor. The MSSV is then re-assembled, the as-left test is performed, and the MSSV is returned to DNPS.

NRC Question 2

The relief request states that MSSVs were stored in a controlled environment. Please describe moisture and handling requirements for the controlled environment, and verify that the same requirements for maintaining the controlled environment are implemented at the Dresden Nuclear Power Station (Dresden), Unit 2, and Quad Cities Nuclear Power Station, Units 1 and 2.

Attachment 1

Response to NRC Request for Additional Information Relief Request RV-02B

EGC Response

DNPS and Quad Cities Nuclear Power Station (QCNPS) utilize the same EGC qualified procedures for packaging, handling and storage of Safety Related and Augmented Qualified equipment. The procedures require that the MSSVs be stored within a fire resistant, tear-resistant, weather-tight and well-ventilated building or equivalent enclosure. This storage area or enclosure shall not be subject to flooding; the floor shall be paved or equal and well drained. The storage area must be provided with uniform heating and temperature control to prevent condensation and corrosion. Minimum and maximum temperatures are controlled. At both DNPS and QCNPS, each MSSV is enclosed in a separate sturdy metal box.

NRC Question 3

The relief request states that MSSVs 2-0203-4A and 2-0203-4B were overhauled, tested, stored in a controlled environment for 4 years and 2 months, and will be installed for a period of 4 years and 1 month. Therefore, the MSSVs will not be tested for a period of approximately 8 years and 3 months. Please provide the as-found set-pressure test results (first test actuation) for any MSSVs (Dresser Model 3777Q) that were stored in a controlled environment similar to the controlled environment at Dresden for a period greater than 4 years and installed for a period greater than 4 years without being tested during the storage and installation periods.

EGC Response

EGC removes, tests, and replaces in-service MSSVs at DNPS and QCNPS after two operating cycles (i.e., approximately 48 months). As such, EGC has not identified any MSSVs that have been installed for greater than four years. In addition, EGC has not identified any other MSSVs at DNPS or QCNPS that have been stored in a controlled environment greater than approximately one year, and then placed in service. The historical MSSV test results that are discussed in the Relief Request (i.e., 96 as-found tests since 1997) indicate that all MSSVs that were placed into service, including any MSSVs that were stored for any period of time, were within the plus or minus 3% ASME OM Code tolerance.

These historical test results, in concert with the additional valve tests described in the Relief Request, provide reasonable assurance that the additional time used to store the affected MSSVs will not significantly impact the ability of those MSSVs to perform the required safety function during the extended surveillance interval.

NRC Question 4

The relief request states that MSSV 2-0203-4C will exceed the 5-year test frequency prior to for removal for testing in November 2009, and this valve is not included in the relief request because the guidance in Section 3.1.3 of NUREG-1482, Guidelines for Inservice Testing of Nuclear Power Plants," authorizes the test frequency to be extended

Attachment 1

Response to NRC Request for Additional Information Relief Request RV-02B

beyond 5 years in order [to] coincide with a refueling outage. The Nuclear Regulatory Commission (NRC) staff disagrees that Section 3.1.3 allows the test frequency for MSSVs to be extended beyond 5 years. Section 3.1.3 provides guidance for Technical Specification (TS) inservice test (IST) program testing frequencies and application of the 25 percent grace period to test frequencies up to 2 years.

The 5-year test frequency is not addressed in Section 3.1.3 of NUREG-1482, therefore, the 25 percent grace period is not applicable to the 5-year test frequency. Furthermore, guidance in NUREG-1482 cannot authorize relief from Code requirements. A relief request, and in some instances a TS change, is required to extend an IST test frequency.

In light of the NRC staff's position, please address Exelon's intention not to include MSSV 02-0203-4C as part of Relief Request RV-02B.

EGC Response

Based upon further discussions with the NRC regarding the applicability of NUREG-1482, Section 3.1.3 to MSSV test intervals, EGC has included MSSV 2-0203-4C as part of Relief Request RV-02B. Attachment 2 provides Revision 1 to Relief Request RV-02B, which incorporates MSSV 2-0203-4C into the request.

Attachment 2

Relief Request RV-02B, Revision 1

Relief Request RV-02B, Revision 1

**Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty without Compensating
Increase in Level of Quality or Safety**

1. ASME Code Component(s) Affected

Dresden Nuclear Power Station (DNPS) Unit 2, Main Steam Safety Valves (MSSVs):
Model: 3777Q; Manufacturer: Dresser

TABLE 1: MSSVs Requiring Relief from Code Requirements

Valve Number	Class	Serial Number	Date Installed	Date Last Tested
2-0203-4A	1	BK-7160	11/11/2005	8/31/2001
2-0203-4B	1	BK-6288	11/11/2005	8/22/2001
2-0203-4C	1	BK-6526	11/11/2005	4/15/2004

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME)/American National Standards Institute, "Code for Operation and Maintenance of Nuclear Power Plants," (ASME OM Code), 1998 Edition through 2000 Addenda.

3. Applicable Code Requirement

ASME OM Code, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1330, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (a), "5-Year Test Interval."

4. Reason for Request

10 CFR 50.55a(f)(4) directs a licensee to meet inservice testing requirements for ASME Code Class 1 valves set forth in the ASME OM Code and addenda. DNPS is committed to the 1998 Edition through 2000 addenda of the ASME OM Code.

Section ISTC-3200, "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). Section ISTC-5240, "Safety and Relief Valves," directs that safety and relief valves meet the inservice testing requirements set forth in Appendix I of the ASME OM Code. Appendix I, Section I-1330(a) of the ASME OM Code states that Class 1 pressure relief valves shall be tested at least once every five years, starting with initial electric power generation. This section also states that the test interval for any individual valve shall not exceed five years. The required test ensures that the MSSVs, which are located on each of the main steam lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the safety analysis.

Relief Request RV-02B, Revision 1

Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii) Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

In accordance with 10 CFR 50.55a, "Codes and Standards," paragraph (a)(3)(ii), Exelon Generation Company, LLC (EGC) requests relief from the requirements of ASME OM Code, Appendix I, Section I-1330(a) for three MSSVs at DNPS Unit 2 until the twenty first DNPS Unit 2 refueling outage (i.e., D2R21), which is scheduled to begin in November 2009. Compliance with the applicable requirements of the ASME OM Code for the three MSSVs would result in hardship due to unnecessary personnel radiation exposure, without a compensating increase in the level of quality or safety.

DNPS currently removes and tests four of eight MSSVs every refueling outage, so that all valves are removed and tested every two refueling outages. This methodology supports the ASME OM Code requirements for testing previously untested Class 1 pressure relief valves. After each valve is removed and tested, the MSSVs are overhauled to a like-new condition, and reset to an as-left value of plus or minus 1%. This testing schedule also ensures that the maximum in-service time for any MSSV is less than five years.

During a review of the DNPS inservice testing program with respect to a recent ASME OM Code interpretation, EGC identified a discrepancy relative to the five-year test interval. The ASME OM Code interpretation (i.e., ASME Code Interpretation 01-18 from the ASME OM Code 2003 Edition through 2004 Addenda) indicated that implementation of the five-year test interval should be based upon a "test-to-test" duration. The historical EGC method with respect to MSSV testing has been to use an "installation-to-test" duration, and to ensure that all installed MSSVs would not exceed a five-year interval for the operating cycle.

During the upcoming DNPS Unit 2 refueling outage (i.e., D2R20), which is scheduled to begin in October 2007, EGC will replace and test four MSSVs (i.e., 2-0203-4E, 2-0203-4F, 2-0203-4G and 2-0203-4H). The three affected MSSVs that are listed above in Table 1 (i.e., 2-0203-4A, 2-0203-4B, and 2-0203-4C) are currently scheduled to be removed and tested during D2R21, which will begin in November 2009. This replacement and test schedule is consistent with the historical EGC method for implementing ASME OM Code, Appendix I, Section I-1330(a). However, utilizing a test-to-test interpretation, the five-year interval for two of the three affected MSSVs (i.e., 2-0203-4A and 2-0203-4B) has expired, and the five-year interval for the third MSSV (i.e., 2-0203-4C) will expire prior to the scheduled replacement date, as shown in Table 2 below:

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**Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
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TABLE 2: MSSVs Installed in DNPS Unit 2

S/N	Location	Installation		Scheduled Replacement		Last Date Tested
		Outage	Yr	Outage	Yr	
BK-7160	2-0203-4A	D2R19	11/11/2005	D2R21	11/2/2009	08/31/2001
BK-6288	2-0203-4B	D2R19	11/11/2005	D2R21	11/2/2009	08/22/2001
BK-6526	2-0203-4C	D2R19	11/11/2005	D2R21	11/2/2009	04/15/2004
BK-6296	2-0203-4D	D2R19	11/11/2005	D2R21	11/2/2009	11/9/2004
BK-6270	2-0203-4E	D2R18	10/25/2003	D2R20	10/29/2007	10/29/2002
BK-6528	2-0203-4F	D2R18	10/25/2003	D2R20	10/29/2007	10/30/2002
BK-6312	2-0203-4G	D2R18	10/25/2003	D2R20	10/29/2007	08/7/2003
BK-6265	2-0203-4H	D2R18	10/25/2003	D2R20	10/29/2007	10/29/2002

In order to comply with Appendix I, Section I-1330(a) of the ASME OM Code, utilizing the test-to-test duration interpretation, these three additional MSSVs will have to be added to D2R20, resulting in the removal of seven out of eight MSSVs. Without Code relief, the additional outage work due to the inclusion of the three additional MSSVs would be contrary to the principles of as low as reasonably achievable (ALARA), in that the removal and replacement of the three MSSVs will result in approximately six additional person-rem of cumulative radiation exposure. This additional cumulative radiation exposure represents a hardship for DNPS, without a compensating increase in the level of quality or safety, as discussed below.

5. Proposed Alternative and Basis for Use

For the 4th ten-year inservice testing interval at DNPS Unit 2, EGC proposes to remove and test the four currently scheduled MSSVs during D2R20 (i.e., 2-0203-4E, 2-0203-4F, 2-0203-4G and 2-0203-4H). EGC proposes to leave the three affected MSSVs (i.e., 2-0203-4A, 2-0203-4B, and 2-0203-4C) inservice until D2R21, which is scheduled to begin in November 2009. The five-year test interval for two of the three affected MSSVs (i.e., 2-0203-4A and 2-0203-4B) has expired, and the five-year interval for the third MSSV (i.e., 2-0203-4C) will expire prior to the scheduled replacement date (i.e., D2R21, currently scheduled to begin in October 2007). During D2R21, EGC will remove and test the three affected MSSVs, along with one additional MSSV (i.e., 2-0203-4D). After the D2R21 refuel outage, all eight MSSVs in DNPS Unit 2 will be in compliance with the five-year test-to-test interval.

All MSSVs (as well as the Electromatic Relief Valves (ERVs) and the Target Rock Safety Relief Valve (SRV)) are on the second elevation of the Drywell. The major contributor to radiation exposure on the first and second elevations of the Drywell is the Reactor Recirculation System, for which permanent shielding has been installed. However, other systems on the second elevation of the Drywell also contribute to radiation exposure. These systems include the Reactor Water Cleanup system (RWCU), the Shutdown Cooling system (SDC), and the Isolation Condenser.

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Removal of an installed MSSV and installation of a replacement MSSV require removal of insulation and appurtenances on the MSSV and unbolting the MSSV. Once unbolted, the MSSV is maneuvered from its location and lowered to the first elevation. Due to the highly congested configuration of the General Electric Mark I containment at DNPS, this evolution requires additional rigging. Due to the size of the valves, a crew of five to seven personnel is necessary to safely move each valve.

Historical cumulative radiation exposure at DNPS for removal and replacement of safety and relief valves from the last five DNPS refueling outages (i.e., work evolutions that are the same as replacement of MSSVs) is described in Table 3.

TABLE 3: Cumulative Radiation Exposure

Outage	D3R18	D3R19	D2R17	D2R18	D2R19
Number of Valves Replaced	7	7	7	7	7
Cumulative Radiation Exposure	10.408	23.232	10.578	16.014	12.581

Based upon this data, EGC has concluded that the expected cumulative radiation exposure to remove and replace a single MSSV would be approximately two person-rem. Therefore, the increase in work scope for D2R20 associated with removal and replacement of three additional MSSVs would result in an approximately six additional person-rem, without a compensating increase in the level of quality or safety.

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 Unit 2 or Unit 3 for two operating cycles (i.e., 48 months) have successfully passed the ASME OM Code and Technical Specification (TS) as-found acceptance criteria of plus or minus 3% percent. Historical test data indicates that 30 of the 44 tests remained within an as-left tolerance of plus or minus 1%; only four of the 14 tests that exceeded the tolerance were greater than plus 1%. The data analysis also indicates that, in general, the MSSVs tend to drift slightly downward, which is in a conservative direction.

This historical DNPS test data is consistent with the reliable and consistent performance of the Dresser Model 3777Q MSSVs at DNPS, Units 2 and 3 and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. Since 1997, EGC has collected and documented 96 as-found Model 3777Q test results from both DNPS and QCNPS¹. This test data indicates that

¹ Dresser Model 3777Q MSSVs from QCNPS are tested and refurbished at the same facility that tested and refurbished the DNPS MSSVs, utilizing the same work processes.

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all MSSV test results (i.e., Dresser Model 3777Q valves) are within the ASME acceptance criteria of plus or minus 3%.

In addition to historical valve test results, EGC recently tested four MSSVs, (i.e., all Dresser Model 3777Q valves), that were maintained in a controlled environment for an extended period of time, but never installed. These MSSVs had been previously installed at QCNPS, refurbished, and were awaiting to be installed as replacement MSSVs. The controlled environment in which these MSSVs were stored was not subject to thermal cycling or vibration (i.e., the conditions to which installed MSSVs are subjected). The purpose of the additional testing was to determine the impact of controlled environment storage upon the opening set pressure of MSSVs. These MSSVs, which are listed in Table 4 below, had been maintained in this controlled environment for the duration indicated in the table. The test results for the four MSSVs are also shown below in Table 4. All four MSSVs opened at a pressure within the ASME OM Code acceptance criteria of plus or minus 3% tolerance.

TABLE 4: Stored Valves Test information

Serial Number	Test Date Prior to Storage	Most Recent Test Date	Storage Time	Nameplate Setting (psig)	Tested Pressure (psig)
BK-6252	11/26/2002	4/10/2007	4 years, 4 months	1240	1224
BL-2467	10/8/2003	4/10/2007	3 years, 6 months	1250	1251
BK-6318	4/14/2005	4/11/2007	2 years, 0 months	1260	1261
BK-6294	1/6/2006	4/11/2007	1 year, 3 months	1260	1257

Finally, EGC contacted the MSSV vendor (i.e., Dresser), to identify any operating and/or maintenance experience with Model 3777Q valves that could provide additional insights regarding the impact of controlled environment storage upon MSSVs. The vendor indicated that, in general, there is no degradation in the valve when stored in a controlled environment for approximately five years.

Table 5 below provides both the storage time (i.e., the time period from the as-left test to the installation date) and the installed time for the three affected MSSVs (i.e., 2-0203-4A, 2-0203-4B, and 2-0203-4C). The installed time is provided at startup from D2R20 and, with the requested relief, at the start of D2R21.

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Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii) Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

TABLE 5: Storage Interval and Installed Interval

Valve Number	Storage Time	Installed Time at D2R20 Startup	Installed Time at D2R21 Shutdown
2-0203-4A	4 years, 2 months	2 years, 1 month	4 years, 1 month
2-0203-4B	4 years, 2 months	2 years, 1 month	4 years, 1 month
2-0203-4C	1 year, 7 months	2 years, 1 month	4 years, 1 month

In addition to historical test results, the current DNPS Unit 2 reload ASME overpressure analysis assumes that eight of nine MSSVs are operable, and all of the operable MSSVs open to relieve pressure at the upper ASME limit of plus 3% of the MSSV setpoint. These conservative assumptions provide additional assurance that the requested relief from the ASME OM Code requirement for the three subject MSSVs would not result in a decrease in the level of quality or safety.

Based upon the estimated cumulative radiation exposure to comply with the OM Code, coupled with historical MSSV test results at DNPS, additional test results for stored MSSVs, and vendor recommendations associated with valve storage, EGC has concluded that compliance with the ASME OM Code for the three MSSVs (i.e., replacement during D2R20, instead of during D2R21) would result in a hardship, without a compensating increase in the level of quality or safety.

6. Duration of Proposed Alternative

This proposed alternative is requested until shutdown for D2R21, which is currently scheduled to begin on November 2, 2009. This results in a duration of approximately 39 months for the test-to-test interval of two affected MSSVs (i.e., 2-0203-4A and 2-0203-4B), and approximately eight months for the third affected MSSV (i.e., 2-0203-4C).

7. Precedents

In Reference 1, the NRC reviewed and approved a relief request for Susquehanna Steam Electric Station, Units 1 and 2 to extend the MSSV test interval duration for individual valves to six years for the entire third 10-year Inservice Testing interval. In Reference 2, the NRC reviewed and approved a relief request for Nine Mile Point, Unit 2 to extend the MSSV test interval duration for individual valves to three refueling outages or approximately six years for the entire third 10-year Inservice Testing interval. In both approvals, the NRC allowed for a total installed interval of at least six years in contrast to this one time request to extend the test interval for two MSSVs by approximately three years, while at the same time ensuring that the installed interval will remain at four years.

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8. References

- 1) Letter from R. J. Laufer (USNRC) to B. L. Shriver (SSES), "Susquehanna Steam Electric Station Units 1 and 2 - Third 10-Year Interval Inservice Testing (IST) Program Plans," dated March 10, 2005.
- 2) Letter from M. Banerjee (USNRC) to J.H. Mueller (NMPC), " Nine Mile Point Nuclear Power Station, Unit No. 2 – Alternative to American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC No. MB0290)," dated April 17, 2001.