Exelon Generation

200 Exelon Way
Kennett Square, PA 19348

www.exeloncorp.com

10 CFR 50.55a

NMP1L3123

December 27, 2016

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

Nine Mile Point Nuclear Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-63 and NPF-69
NRC Docket Nos. 50-220 and 50-410

Subject: Request for Relief to Perform Pressure Isolation Valve Leakage Testing at Frequencies Consistent with 10 CFR 50, Appendix J

Attached for your review is Relief Request No. GVRR-3 associated with the fourth Inservice Testing (IST) interval for Nine Mile Point Nuclear Station, Unit 1 (NMP1) and the third IST interval for Nine Mile Point Nuclear Station, Unit 2 (NMP2). The fourth interval of the NMP1 and third interval of NMP2 IST programs comply with the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, 2004 Edition with no Addenda.

Proposed Relief Request No. GVRR-3 requests authorization to perform pressure isolation valve leakage testing at frequencies consistent with 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B, "Performance-Based Requirements."

We request your approval by December 27, 2017. There are no regulatory commitments in this letter. If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,

James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Relief Request No. GVRR-3

cc: USNRC Region I, Regional Administrator
USNRC Senior Resident Inspector, NMP
USNRC Project Manager, NMP

Attachment

Relief Request No. GVRR-3

1. **ASME Code Component(s) Affected**

UNIT 1

Component Number	System	Code Class	Category
CKV-40-03	CS	1	A/C
CKV-40-13	CS	1	A/C
CKV-40-20	CS	2	A/C
CKV-40-21	CS	1	A/C
CKV-40-22	CS	1	A/C
CKV-40-23	CS	2	A/C
CKV-38-165	SDC	2	A/C
CKV-38-166	SDC	2	A/C
CKV-38-167	SDC	2	A/C
CKV-38-168	SDC	2	A/C
CKV-38-169	SDC	1	A/C
CKV-38-170	SDC	1	A/C
CKV-38-171	SDC	1	A/C
CKV-38-172	SDC	1	A/C

UNIT 2

Component Number	System	Code Class	Category
2CSH*V108	CSH	1	A/C
2CSH*MOV107	CSH	1	A
2CSL*V101	CSL	1	A/C
2CSL*MOV104	CSL	1	A
2ICS*V156	ICS	1	A/C
2ICS*V157	ICS	1	A/C
2RHS*V16A	RHS	1	A/C
2RHS*V16B	RHS	1	A/C
2RHS*V16C	RHS	1	A/C
2RHS*V39A	RHS	1	A/C
2RHS*V39B	RHS	1	A/C
2RHS*MOV104	RHS	1	A
2RHS*MOV112	RHS	1	A
2RHS*MOV113	RHS	1	A
2RHS*MOV24A	RHS	1	A
2RHS*MOV24B	RHS	1	A
2RHS*MOV24C	RHS	1	A
2RHS*MOV40A	RHS	1	A
2RHS*MOV40B	RHS	1	A
2RHS*MOV67A	RHS	1	A
2RHS*MOV67B	RHS	1	A

2. Applicable Code Edition and Addenda

ASME OM Code 2004 Edition with no Addenda

3. Applicable Code Requirement

ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," states that Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages are within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied.

ISTC-3630(a), "Frequency," requires licensees to conduct these leakage rate tests at least once every two years.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (z)(1), relief is requested from the requirement of ASME OM Code ISTC-3630(a). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

ISTC-3630 requires that leakage rate testing for Pressure Isolation Valves (PIVs) be performed at least once every two years. PIVs are not specifically included in the scope for performance-based testing as provided for in 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B, "Performance-Based Requirements." These motor-operated and check valve PIVs are, in some cases, Containment Isolation Valves (CIVs), but are not within the Appendix J scope since the Reactor Shutdown Cooling System valves are considered water-sealed.

The Nine Mile Point, Unit 1 (NMP1) leakage rate testing program is in accordance with NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J," Revision 0, dated July 21,1995.

The Nine Mile Point, Unit 2 (NMP2) Technical Specifications contain a requirement to establish the leakage rate testing program in accordance with the guidelines contained in NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated October 2008.

NEI 94-01, Revision 0, allows an extension of Type A Testing up to 15 months. NEI 94-01, Revision 2-A, allows an extension not to exceed 9 months. This is the proposed limit for extensions.

The concept behind the Option B alternative for CIVs is that licensees should be allowed to adopt cost effective methods for complying with regulatory requirements. Additionally, NEI 94-01 describes the risk-informed basis for the extended test intervals under Option B. That justification shows that for CIVs which have demonstrated good performance by the successful completion of two consecutive leakage rate tests over two consecutive cycles may increase their test frequencies. Further, it states that if the component does not fail

within two operating cycles, further failures appear to be governed by the random failure rate of the component. NEI 94-01 also presents the results of a comprehensive risk analysis, including the conclusion that "the risk impact associated with increasing [leak rate] test intervals is negligible (i.e., less than 0.1 percent of total risk)."

The valves identified in this relief request are all in water applications. Testing is performed with water pressurized to pressures lower than function maximum pressure differential; however, the observed leakage is adjusted to the function maximum pressure differential value in accordance with ISTC 3630(b)(4). This relief request is intended to provide for a performance-based scheduling of PIV tests at NMP1 and NMP2. The reason for requesting this relief is dose reduction to conform with NRC and industry As Low As Reasonably Achievable (ALARA) radiation dose principles. The nominal fuel cycle lengths at NMP1 and NMP2 are 24 months. However, since refueling outages may be scheduled slightly beyond 24 months, a 4-1/2 year period is used to provide a bounding timeframe to encompass two refueling outages. The review of recent historical data identified that PIV testing each refueling outage results in a total personnel dose of approximately 1 Rem, assuming all of the PIVs remain classified as good performers. The proposed extended test intervals would provide for a savings of approximately 1 Rem over an approximate 4 year period (two refuel outages).

NUREG-0933, "Resolution of Generic Safety Issues," Issue 105, "Interfacing Systems LOCA at LWRs," discussed the need for PIV leak rate testing based primarily on three pre-1985 historical failures of applicable valves industry-wide. These failures all involved human errors in either operations or maintenance. None of these failures involved inservice equipment degradation. The performance of PIV leak rate testing provides assurance of acceptable seat leakage with the valve in a closed condition. Typical PIV testing does not identify functional problems which may inhibit the valves ability to reposition from open to closed. For check valves, functional testing is accomplished in accordance with ASME OM Code Section ISTC-3520, "Exercising Requirements," and Section ISTC-3522, "Category C Check Valves." For power-operated valves, testing is full stroke testing in accordance with the ASME OM Code to ensure their functional capabilities. Performance of the separate two-year PIV leak rate testing does not contribute any additional assurance of functional capability; it only determines the seat tightness of the closed valves.

5. Proposed Alternative and Basis for Use

NMP1 and NMP2 propose to perform PIV testing at intervals ranging from every refueling outage to every third refueling outage. The specific interval for each valve would be a function of its performance and would be established in a manner consistent with the CIV process under 10 CFR 50 Appendix J, Option B. A conservative control will be established such that if any valve fails either PIV test, the test interval for both tests will be reduced consistent with Appendix J, Option B requirements until good performance is reestablished.

The primary basis for this relief request is the historically good performance of the PIVs.

The functional capability of the check valves is demonstrated by the open and close exercising. This testing is separate and distinct from PIV testing and is performed at a refuel outage frequency in accordance with ASME OM Code, Section ISTC-3522.

Note that NEI 94-01 is not the sole basis for this relief request, given NEI 94-01 does not address seat leakage testing with water. This document was cited as an approach similar to the requested alternative method.

If the proposed alternative is authorized and the valves exhibit good performance, there is the possibility that the PIV test frequency could be extended so that the test would not be required each refueling outage.

Tables 1 through 6 below present historical test data that demonstrates acceptable PIV performance for all the related systems:

Table 1: Unit 1 Historical Leak Rate Test Performance for Core Spray (System 40) PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
CKV-40-03	3/23/2011	<1	5	
CKV-40-03	4/17/2013	<1	5	
CKV-40-03	3/27/2015	<1	5	
CKV-40-13	12/16/2012	<1	5	
CKV-40-13	4/17/2013	<1	5	
CKV-40-13	3/27/2015	<1	5	
CKV-40-20	12/18/2012	<1	5	
CKV-40-20	5/1/2013	<1	5	
CKV-40-20	3/27/2015	<1	5	
CKV-40-21	12/18/2012	<1	5	
CKV-40-21	5/1/2013	<1	5	
CKV-40-21	3/27/2015	<1	5	
CKV-40-22	3/23/2011	<1	5	
CKV-40-22	4/25/2013	<1	5	
CKV-40-22	3/27/2015	<1	5	
CKV-40-23	3/23/2011	<1	5	
CKV-40-23	4/25/2013	<1	5	
CKV-40-23	3/27/2015	<1	5	

Table 2: Unit 1 Historical Leak Rate Test Performance for Reactor Shutdown Cooling (System 38) Check Valve PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
CKV-38-165	3/27/2011	<1	5	
CKV-38-165	5/1/2013	<1	5	
CKV-38-165	3/27/2015	<1	5	
CKV-38-166	3/27/2011	<1	5	
CKV-38-166	5/1/2013	<1	5	
CKV-38-166	3/27/2015	<1	5	
CKV-38-167	3/27/2011	<1	5	
CKV-38-167	5/1/2013	<1	5	
CKV-38-167	3/27/2015	<1	5	
CKV-38-168	3/27/2011	<1	5	
CKV-38-168	5/1/2013	<1	5	
CKV-38-168	3/27/2015	<1	5	
CKV-38-169	3/27/2011	<1	5	
CKV-38-169	5/1/2013	<1	5	
CKV-38-169	3/27/2015	<1	5	
CKV-38-170	3/27/2011	<1	5	
CKV-38-170	5/1/2013	<1	5	
CKV-38-170	3/27/2015	<1	5	
CKV-38-171	3/27/2011	<1	5	
CKV-38-171	5/1/2013	<1	5	
CKV-38-171	3/27/2015	<1	5	
CKV-38-172	3/27/2011	<1	5	
CKV-38-172	5/1/2013	<1	5	
CKV-38-172	3/27/2015	<1	5	

Table 3: Unit 2 Historical Leak Rate Test Performance for Core Spray High (CSH) PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
2CSH*V108	4/20/2012	<1	5	
2CSH*V108	4/23/2014	<1	5	
2CSH*V108	4/28/2016	<1	5	
2CSH*MOV107	4/20/2012	<1	5	
2CSH*MOV107	4/23/2014	<1	5	
2CSH*MOV107	4/28/2016	<1	5	

Table 4: Unit 2 Historical Leak Rate Test Performance for Core Spray Low (CSL) PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
2CSL*V101	4/14/2012	<1	5	
2CSL*V101	4/15/2014	<1	5	
2CSL*V101	4/21/2016	<1	5	
2CSL*MOV104	4/14/2012	<1	5	
2CSL*MOV104	4/15/2014	<1	5	
2CSL*MOV104	4/21/2016	<1	5	

Table 5: Unit 2 Historical Leak Rate Test Performance for Reactor Core Isolation Cooling (ICS) PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
2ICS*V156	5/1/2012	<1	5	
2ICS*V156	4/4/2014	<1	5	
2ICS*V156	4/14/2016	<1	5	
2ICS*V157	5/7/2012	<1	5	
2ICS*V157	4/4/2014	<1	5	
2ICS*V157	4/27/2016	<1	5	

Table 6: Unit 2 Historical Leak Rate Test Performance for Residual Heat Removal (RHS) PIVs

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
2RHS*V16A	4/14/2012	<1	5	
2RHS*V16A	4/9/2014	<1	5	
2RHS*V16A	4/22/2016	<1	5	
2RHS*V16B	5/12/2012	<1	5	
2RHS*V16B	3/31/2014	<1	5	
2RHS*V16B	4/26/2016	<1	5	
2RHS*V16C	4/30/2012	<1	5	
2RHS*V16C	3/30/2014	<1	5	
2RHS*V16C	4/29/2016	<1	5	
2RHS*V39A	4/26/2012	<1	5	
2RHS*V39A	4/9/2014	<1	5	
2RHS*V39A	4/22/2016	<1	5	
2RHS*V39B	5/12/2012	<1	5	
2RHS*V39B	3/31/2014	<1	5	
2RHS*V39B	4/26/2016	<1	5	
2RHS*MOV104	5/1/2012	<1	5	
2RHS*MOV104	3/31/2014	<1	5	
2RHS*MOV104	4/26/2016	<1	5	
2RHS*MOV112	5/14/2012	<1	5	
2RHS*MOV112	4/13/2014	<1	5	
2RHS*MOV112	4/24/2016	<1	5	
2RHS*MOV113	5/14/2012	<1	5	
2RHS*MOV113	4/13/2014	<1	5	
2RHS*MOV113	4/24/2016	<1	5	
2RHS*MOV24A	4/14/2012	<1	5	
2RHS*MOV24A	4/09/2014	<1	5	
2RHS*MOV24A	4/22/2016	<1	5	
2RHS*MOV24B	5/12/2012	<1	5	
2RHS*MOV24B	3/31/2014	<1	5	
2RHS*MOV24B	4/26/2016	<1	5	

Component	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
2RHS*MOV24C	4/30/2012	<1	5	
2RHS*MOV24C	3/30/2014	<1	5	
2RHS*MOV24C	4/29/2016	<1	5	
2RHS*MOV40A	4/14/2012	<1	5	
2RHS*MOV40A	4/10/2014	<1	5	
2RHS*MOV40A	4/22/2016	<1	5	
2RHS*MOV40B	5/12/2012	<1	5	
2RHS*MOV40B	3/31/2014	<1	5	
2RHS*MOV40B	4/26/2016	<1	5	
2RHS*MOV67A	4/26/2012	<1	5	
2RHS*MOV67A	4/09/2014	<1	5	
2RHS*MOV67A	4/22/2016	<1	5	
2RHS*MOV67B	5/12/2012	<1	5	
2RHS*MOV67B	3/31/2014	<1	5	
2RHS*MOV67B	4/26/2016	<1	5	

The extension of test frequencies will be consistent with the guidance provided for Appendix J, Type C leak rate tests as detailed in NEI 94-01, Paragraph 10.2.3.2, "Extended Test Interval," which states:

> Test intervals for Type C valves may be increased based upon completion of two consecutive periodic As-found Type C tests where the result of each test is within a licensee's allowable administrative limits. Elapsed time between the first and last tests in a series of consecutive passing tests used to determine performance shall be 24 months or the nominal test interval (e.g., refueling cycle) for the valve prior to implementing Option B to Appendix J. Intervals for Type C testing may be increased to a specific value in a range of frequencies from 30 months up to a maximum of 60 months. Test intervals for Type C valves are determined in accordance with NEI 94-01, Section 11.0, "Basis for Performance and Risk-Based Testing Frequencies for Type A, Type B, and Type C Tests."

Additional basis for this relief request is provided below:

- Separate functional testing of motor-operated valve (MOV) PIVs and Check Valve PIVs per ASME OM Code will continue.
- The low likelihood of valve mis-positioning during power operations (e.g., procedures, interlocks).
- Relief valves in the low pressure (LP) piping - these relief valves may not provide Inter-System Loss of Coolant Accident (ISLOCA) mitigation for inadvertent PIV mis-positioning but their relief capacity can accommodate conservative PIV seat leakage rates.
- Alarms that identify high pressure (HP) to LP leakage - Operators are highly trained to recognize symptoms of a present ISLOCA and to take appropriate actions.

6. Duration of Proposed Alternative

The proposed alternative will be utilized for the remainder of the third and fourth 120 month interval which is currently scheduled to end on December 31, 2018 for NMP1 and NMP2.

7. Precedents

1. A similar relief request was approved for Fermi Power Station for the third IST Interval in a letter from R. J. Pascarelli (NRC) to J. M. Davis (Detroit Edison), "Fermi 2 - Evaluation of In-Service Testing Program Relief Requests VRR-011, VRR-012, and VRR-013 (TAC Nos. ME2558, ME2557, and ME2556)," dated September 28, 2010 (ADAMS Accession No. ML102360570).

2. A similar relief request was approved for Quad Cities Nuclear Power Station, Units 1 and 2 for the fifth IST interval in a letter from J. Wiebe (NRC) to M. J. Pacilio (Exelon), "Quad Cities Nuclear Power Station, Units 1 and 2 - Safety Evaluation in Support of Request for Relief Associated with the Fifth 10 Year Interval Inservice Testing Program (TAC Nos. ME7981, ME7982, ME7983, ME7984, ME7985, ME7986, ME7987, ME7988, ME7990,

ME7991, ME7992, ME7993, ME7994, and ME7995)," dated February 14, 2013 (ADAMS Accession No.ML13042A348).

3. A similar relief request was approved for Dresden Nuclear Power Station, Units 2 and 3 for the fifth IST interval in a letter from T. L. Tate (NRC) to B. Hanson (Exelon), "Dresden Nuclear Power Station, Units 2 and 3 – Relief Request to Use An Alternative from the American Society of Mechanical Engineers Code Requirements (CAC Nos. MF5089 AND MF5090) dated October 27, 2015 (ADAMS Accession No. ML15174A303).

4. A similar relief request was approved for Peach Bottom Atomic Power Station, Units 2 and 3 for the fourth interval in a letter from D. A. Broaddus (NRC) to B. Hanson (Exelon), "Peach Bottom Atomic Power Station, Units 2 and 3 - Safety Evaluation of Relief Request GVRR-2 Regarding the Fourth 10-Year Interval of the Inservice Testing Program (CAC NOS. MF7630 and MF7631)," dated September 21, 2016 (ADAMS Accession No. ML16235A340).