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10 CFR 50.55a

RS-20-006

January 2, 2020

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

> Quad Cities Nuclear Power Station, Units 1 and 2 Renewed Facility Operating License Nos. DPR-29 and DPR-30 <u>NRC Docket Nos. 50-254 and 50-265</u>

- Subject: Submittal of Relief Request for Revision to RV-03 Associated with Fifth Inservice Testing Interval
- Reference: Letter from J.S. Weibe (U.S. NRC) to M.J. Pacilio (Exelon Generation Company, LLC), "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 [ML13042A348]

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), Exelon Generation Company, LLC (EGC), requests NRC approval of relief request RV-03 Revision 1. The referenced letter authorized the alternative described in RV-03 Revision 0 for the Fifth 10-Year Inservice Testing (IST) Interval for Quad Cities Nuclear Power Station (QCNPS), which began on February 18, 2013 and is scheduled to end on February 17, 2023. The fifth interval complies with the requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code (2004 Edition through 2006 Addenda).

The proposed revision of RV-03 removes previously described air testing of the motor-operated pressure isolation valves (PIVs) that are also containment isolation valves (CIVs) on the basis that these valves are exempt from air testing because their respective lines meet the requirements for designation as closed water loops. Other than the removal of the description of air testing, the basis for the previously granted relief to allow for performance-based scheduling of PIV tests at QCNPS is unchanged.

EGC requests approval of this request by January 4, 2021 to provide for continued performance-based scheduling of PIV testing consistent with 10 CFR 50 Appendix J, Option B without the additional air test.

There are no regulatory commitments contained within this letter.

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Should you have any questions concerning this letter, please contact Ms. Rebecca L. Steinman at (630) 657-2831.

Sincerely,

Patrick R. Simpson

Sr Manager Licensing Exelon Generation Company, LLC

Attachments:

- 1. 10 CFR 50.55a Relief Request RV-03 Revision 1
- 2. Leakage History for QCNPS Unit 1 and 2 PIVs
- cc: U.S. NRC Region III, Regional Administrator U.S. NRC Senior Resident Inspector, QCNPS U.S. NRC Project Manager, QCNPS Illinois Emergency Management Agency – Division of Nuclear Safety

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Proposed Alternative to the ASME Code to Revise Pressure Isolation Valve (PIV) Leak Test Frequency Consistent with Appendix J, Option B in Accordance with 10 CFR 50.55a(z)(1) "Alternate Provides Acceptable Level of Quality and Safety"

1. ASME Code Component(s) Affected

Component Number	<u>Valve</u> Type	<u>CIV, PIV,</u> <u>Both</u>	<u>System</u>	<u>Code</u> Class	<u>Category</u>
1(2)-1001-047-MO	Gate	Both	RHR	1	А
1(2)-1001-050-MO	Gate	Both	RHR	1	А
1(2)-1001-029A-MO	Gate	Both	RHR	1	А
1(2)-1001-029B-MO	Gate	Both	RHR	1	А
1(2)-1001-068A	Check	PIV	RHR	1	A/C
1(2)-1001-068B	Check	PIV	RHR	1	A/C
1(2)-1402-009A	Check	PIV	CS	1	A/C
1(2)-1402-009B	Check	PIV	CS	1	A/C
1(2)-1402-025A-MO	Gate	Both	CS	1	А
1(2)-1402-025B-MO	Gate	Both	CS	1	А

2. Applicable Code Edition and Addenda

ASME OM Code 2004 Edition through 2006 Addenda

3. Applicable Code Requirement

ISTC-3522, "Category C Check Valves," requires licensees exercise Category C check valves to verify obturator travel with methods in ISTC-5221 during power operation, during cold shutdown if not practicable during power operation, or during refueling outages if not practicable during power and cold shutdowns.

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 2 years.

4. <u>Reason for Request</u>

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) for the subject valves. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

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ISTC-3630 requires that leakage rate testing for Pressure Isolation Valves (PIVs) be performed at least once every 2 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" (referred to here as Option B).

The QCNPS Technical Specification Section 5.5.12 contains a requirement to establish the leakage rate testing program in accordance with the guidelines contained in NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 2012, and conditions and limitations specified in NEI 94-01, Revision 2-A, dated October 2008.

The concept behind the Option B alternative for containment isolation valves (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 valves which have demonstrated good performance by the successful completion of two consecutive leak rate tests for two consecutive cycles may increase their test frequencies. Furthermore, 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 statement that "the risk impact associated with increasing [leak rate] test intervals are negligible (less than 0.1 % of total risk)."

The valves identified in this relief request are installed in water applications. While the motor-operated PIVs affected by this relief request are also CIVs they are exempt from air testing because their respective lines meet the requirements for designation as closed water loops. The check valve PIVs are not CIVs and not within the Appendix J scope. The PIV 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 QCNPS. The reason for requesting this relief is dose reduction / ALARA. Recent historical data was used to identify that PIV testing alone incurs a total dose of approximately 600 millirem each refuel outage. Assuming the subject PIVs continue to remain classified as good performers the extended test intervals would provide for a savings of approximately 1.2 rem over a 4-1/2 year period (a bounding timeframe encompassing two refueling outages). In addition, this relief aids the station in the implementation of a division-based outage schedule.

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-1980 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, such functional testing is

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accomplished per ASME OM Code ISTC-3522, "Category C Check Valves," and ISTC-3520, "Exercising Requirements." Power-operated valves are routinely full stroke tested per ASME OM Code to ensure their functional capabilities. At QCNPS, these functional tests for motor-operated PIVs are performed on a 2-year frequency in accordance with OM Code Case OMN-1 Section 3.6, "MOV Exercising Requirements." The functional testing of the PIV check valves will be monitored through a Condition Monitoring Plan in accordance with ISTC-5222, "Condition-Monitoring Program," and Mandatory Appendix II, "Check Valve Condition Monitoring Program." Performance of the separate 2-year PIV leak rate testing does not contribute any additional assurance of functional capability; it only determines the seat tightness of the closed valves.

The functional capability of check valves 1(2)-1001-068A/B is demonstrated by the opening and closing of the valves using a valve actuator each refuel outage. This test is separate and distinct from the PIV testing; therefore, there is no need for a Condition Monitoring Plan for these valves.

The functional capability of check valves 1(2)-1402-009A/B is demonstrated by:

- 1. The injection of Core Spray Flow into the Reactor Vessel on a Cold Shutdown frequency verifies the valves capability of opening.
- 2. The capability of building pressure against the valve during Pressure Isolation Valve Seat Leakage Testing verifies the valves are closed.

These tests provide reasonable assurance of operational readiness.

The use of a Condition Monitoring Plan is intended to align the frequency for the closure exercise testing with the pressure isolation valve test. By use of a Condition Monitoring Plan, the check valve closure test, based on performance, would be verified concurrently with the PIV seat leakage test. The frequency of the check valve closure test would then be the same as the PIV seat leakage test since closure performance and seat leakage performance are linked. The PIV seat leakage test would not pass if the valve failed to close.

5. **Proposed Alternative and Basis for Use**

QCNPS proposes 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 Option B. A conservative control will be established such that if any valve fails their PIV test, the test interval will be reduced consistent with Option B requirements until good performance is reestablished.

The primary basis for this relief request is the historically good performance of the PIVs. The tables in Attachment 2 present test data that demonstrate acceptable historical PIV performance for the Residual Heat Removal (RHR) and Core Spray (CS) systems. The only recorded seat leakage failures of PIVs at QCNPS were determined to be a result of the test methodology and not due to any physical condition of the valves.

The extension of test frequencies will be consistent with the guidance provided for Appendix J, Type C leak rate tests as detailed in paragraph 10.2.3.2, "Extended Test

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Interval," of NEI 94-01 "Nuclear Energy Institute - Industry Guideline for Implementing Performance Based Option of 10 CFR Part 50, Appendix J," 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 (as limited by Regulatory Guide 1.163, "Performance Based Containment Leak-Test Program"). Test intervals for Type C valves are determined in accordance with Section 11.0 of NEI 94-01.

Additional basis for this relief request is provided below:

- Separate functional testing of MOV PIVs and Condition Monitoring of Check Valve PIVs per ASME OM Code.
- Low likelihood of valve mispositioning during power operations (e.g., procedures, interlocks).
- Relief valves in the low pressure (LP) piping these relief valves may not provide Inner-System Loss of Coolant Accident (ISLOCA) mitigation for inadvertent PIV mispositioning 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 or incipient ISLOCA and to take appropriate actions.

6. **Duration of Proposed Alternative**

The proposed alternative will be utilized for the remainder of the Fifth 120-month Interval beginning February 18, 2013 and ending February 17, 2023.

7. <u>Precedents</u>

- Letter from R. J. Pascarelli (U.S. Nuclear Regulatory Commission) 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).
- Letter from J. Wiebe (U.S. Nuclear Regulatory Commission) to M. J. Pacilio (Exelon Nuclear), "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,

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ME7988, ME7990, ME7991, ME7992, ME7993, ME7994, and ME7995)," dated February 14, 2013 (ADAMS Accession No. ML13042A348).

- Letter from T. L. Tate (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "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).
- Letter from D. A. Broaddus (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "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).
- Letter from J. G. Danna (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "Nine Mile Point Nuclear Station, Units 1 and 2 – Re: Alternative to the Requirements of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (CAC Nos. MF9073 and MF9074)," dated May 30, 2017 (ADAMS Accession No. ML17136A112)
- Letter from J. G. Danna (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "Limerick Generating Station, Units 1 and 2 -Proposed Relief Request GVRR-8 Regarding Inservice Testing Program Third 10-Year Interval (CAC NOS. MF8787 AND MF8788)," dated February 7, 2017 (ADAMS Accession No. ML17004A063)
- Letter from L.M. Regner (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "Lasalle County Station, Units 1 and 2 - Request from the Requirements of The ASME Code Related to Pressure Isolation Valve Testing Frequency (EPID L-2019-LLR-0062)," dated September 10, 2019 (ADAMS Accession No. ML19217A306)
- Letter from J. G. Danna (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation, LLC), "Limerick Generating Station, Units 1 and 2 – Safety Evaluation of Relief Requests GVRR-8, 11-PRR-1, 90-PRR-1 and 47-VRR-2 Regarding the Fourth 10-Year Interval of The Inservice Testing Program (EPID L-2018-LLR-0384, EPID L-2018-LLR-0385, EPID L-2018-LLR-0386, and EPID L-2018-LLR-0387)," dated October 28, 2019 (ADAMS Accession No. ML19228A195)

Leakage History of QCNPS Unit 1 and 2 PIVs Page 1 of 6

The tables below summarize the leakage history for QCNPS Unit 1 and 2 Residual Heat Removal (RHR) and Core Spray (CS) system PIVs for at least three tests.

RHR Shutdown Cooling Suction PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1001-047-MO	5/10/2007	2	5		
1-1001-047-MO	5/7/2009	0.39	5		
1-1001-047-MO	5/15/2011	0.1216	5		
1-1001-047-MO	3/5/2015	0.143	5		
1-1001-047-MO	3/20/2019	1.674	5		
	•				
1-1001-050-MO	5/10/2007	0.6	5		
1-1001-050-MO	5/7/2009	No Measurable Leakage	5		
1-1001-050-MO	5/15/2011	No Measurable Leakage	5		
1-1001-050-MO	5/27/2011	No Measurable Leakage	5		
1-1001-050-MO	3/5/2015	1.49	5		
1-1001-050-MO	3/20/2019	No Measurable Leakage	5		
				•	
2-1001-047-MO	4/1/2006	0.0777	5		
2-1001-047-MO	3/7/2008	0.04	5		
2-1001-047-MO	3/23/2010	3.063	5		
2-1001-047-MO	3/23/2012	0.282	5		
2-1001-047-MO	4/14/2014	0.08	5		
2-1001-047-MO	3/23/2018	2.33	5		
2-1001-050-MO	4/1/2006	No Measurable Leakage	5		
2-1001-050-MO	3/7/2008	No Measurable Leakage	5		
2-1001-050-MO	3/23/2010	No Measurable Leakage	5		
2-1001-050-MO	3/23/2012	0.744	5		
2-1001-050-MO	4/14/2014	No Measurable Leakage	5		
2-1001-050-MO	3/23/2018	No Measurable Leakage	5		

Leakage History of QCNPS Unit 1 and 2 PIVs Page 2 of 6

Core Spray Injection PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1402-025A-MO	5/12/2007	No Measurable Leakage	5		
1-1402-025A-MO	5/12/2009	0.086	5		
1-1402-025A-MO	5/15/2011	0.22	5		
1-1402-025A-MO	3/12/2013	0.074	5		
1-1402-025A-MO	3/28/2017	0.074	5		
1-1402-025B-MO	5/12/2007	No Measurable Leakage	5		
1-1402-025B-MO	4/28/2009	2.18	5		
1-1402-025B-MO	5/15/2011	0.003	5		
1-1402-025B-MO	3/7/2015	0.0025	5		
1-1402-025B-MO	3/29/2019	No Measurable Leakage	5		
2-1402-025A-MO	3/27/2006	No Measurable Leakage	5		
2-1402-025A-MO	3/5/2008	No Measurable Leakage	5		
2-1402-025A-MO	4/4/2010	No Measurable Leakage	5		
2-1402-025A-MO	3/21/2012	0.0013	5		
2-1402-025A-MO	3/26/2016	0.004	5		
2-1402-025B-MO	4/5/2006	No Measurable Leakage	5		
2-1402-025B-MO	3/11/2008	No Measurable Leakage	5		
2-1402-025B-MO	3/21/2010	No Measurable Leakage	5		
2-1402-025B-MO	3/31/2012	0.0011	5		
2-1402-025B-MO	4/8/2014	No Measurable Leakage	5		
2-1402-025B-MO	3/21/2018	No Measurable Leakage	5		

RHR LPCI Injection PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1001-029A-MO	5/14/2007	No Measurable Leakage	5		
1-1001-029A-MO	5/7/2009	No Measurable Leakage	5		
1-1001-029A-MO	5/21/2011	2.89	5		
1-1001-029A-MO	3/13/2013	0.0186	5		
1-1001-029A-MO	3/29/2017	No Measurable Leakage	5		

Leakage History of QCNPS Unit 1 and 2 PIVs Page 3 of 6

RHR LPCI Injection PIVs				
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments
1-1001-029B-MO	5/13/2007	No Measurable Leakage	5	
1-1001-029B-MO	4/29/2009	No Measurable Leakage	5	
1-1001-029B-MO	5/23/2011	No Measurable Leakage	5	
1-1001-029B-MO	3/5/2014	0.04	5	
1-1001-029B-MO	3/19/2019	0.31	5	
2-1001-029A-MO	4/3/2006	0.2	5	
2-1001-029A-MO	3/10/2008	No Measurable Leakage	5	
2-1001-029A-MO	3/29/2010	0.097	5	
2-1001-029A-MO	3/23/2012	1.146	5	
2-1001-029A-MO	3/25/2016	0.022	5	
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2-1001-029B-MO	4/4/2006	No Measurable Leakage	5	
2-1001-029B-MO	3/13/2008	No Measurable Leakage	5	
2-1001-029B-MO	3/18/2010	No Measurable Leakage	5	
2-1001-029B-MO	3/30/2012	0.0081	5	
2-1001-029B-MO	4/9/2014	0.007	5	
2-1001-029B-MO	3/21/2018	No Measurable Leakage	5	

Core Spray PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1402-009A	7/15/1994	No Measurable Leakage	1		
1-1402-009A	3/30/1996	No Measurable Leakage	5		
1-1402-009A	11/19/1998	0.69	5		
1-1402-009A	10/18/2000	1.2	5		
1-1402-009A	4/1/2005	No Measurable Leakage	5		
1-1402-009A	5/12/2007	1.1	5		
1-1402-009A	5/12/2009	1.43	5		
1-1402-009A	5/15/2011	0.9226	5		
1-1402-009A	3/12/2013	0.147	5		
1-1402-009A	3/28/2017	0.145	5		

Leakage History of QCNPS Unit 1 and 2 PIVs Page 4 of 6

Core Spray PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1402-009B	7/15/1994	No Measurable Leakage	1		
1-1402-009B	3/13/1996	2.86	5		
1-1402-009B	10/22/2000	7.364	5	Valve not seated properly.	
1-1402-009B	10/24/2000	4.87	5	Retest	
1-1402-009B	11/5/2002	4.8	5		
1-1402-009B	3/21/2005	1.43	5		
1-1402-009B	5/12/2007	3.16	5		
1-1402-009B	4/28/2009	2.18	5		
1-1402-009B	5/15/2011	5.368	5	Valve not seated properly.	
1-1402-009B	5/25/2011	4.46	5	Retest	
1-1402-009B	5/27/2011	No Measurable Leakage	5	Retest with high pressure.	
1-1402-009B	3/7/2015	0.15	5		
1-1402-009B	3/23/2019	No Measurable Leakage	5		
				•	
2-1402-009A	7/2/1995	0.25	5		
2-1402-009A	4/10/1997	No Measurable Leakage	5		
2-1402-009A	2/21/1999	No Measurable Leakage	5		
2-1402-009A	1/31/2000	No Measurable Leakage	5		
2-1402-009A	2/17/2002	44.3	5	Valve not seated properly.	
2-1402-009A	2/19/2002	No Measurable Leakage	5	Retest following seating of valve.	
2-1402-009A	3/27/2006	No Measurable Leakage	5		
2-1402-009A	3/5/2008	No Measurable Leakage	5		
2-1402-009A	4/4/2010	No Measurable Leakage	5		
2-1402-009A	3/21/2012	0.000461	5		
2-1402-009A	3/26/2016	No Measurable Leakage	5		
2-1402-009B	7/2/1995	No Measurable Leakage	5		
2-1402-009B	4/10/1997	0.125	5		
2-1402-009B	2/25/1999	0.68	5		
2-1402-009B	1/31/2000	No Measurable Leakage	5		
2-1402-009B	2/15/2002	No Measurable Leakage	5		
2-1402-009B	2/17/2002	No Measurable Leakage	5		
2-1402-009B	2/25/2004	No Measurable Leakage	5		
2-1402-009B	3/9/2004	No Measurable Leakage	5		
2-1402-009B	4/5/2006	0.19	5		

Leakage History of QCNPS Unit 1 and 2 PIVs Page 5 of 6

Core Spray PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
2-1402-009B	3/11/2008	0.35	5		
2-1402-009B	3/21/2010	0.7	5		
2-1402-009B	3/31/2012	No Measurable Leakage	5		
2-1402-009B	4/8/2014	No Measurable Leakage	5		
2-1402-009B	3/21/2018	No Measurable Leakage	5		

RHR PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
1-1001-068A	7/18/1994	No Measurable Leakage	1		
1-1001-068A	2/10/1996	No Measurable Leakage	5		
1-1001-068A	11/20/1998	No Measurable Leakage	5		
1-1001-068A	4/2/2005	No Measurable Leakage	5		
1-1001-068A	5/14/2007	No Measurable Leakage	5		
1-1001-068A	5/7/2009	No Measurable Leakage	5		
1-1001-068A	5/21/2011	0.278	5		
1-1001-068A	3/13/2013	No Measurable Leakage	5		
1-1001-068A	3/29/2017	0.149	5		
1-1001-068B	7/18/1994	No Measurable Leakage	1		
1-1001-068B	3/31/1996	No Measurable Leakage	5		
1-1001-068B	4/2/2005	1.35	5		
1-1001-068B	5/13/2007	0.33	5		
1-1001-068B	4/29/2009	No Measurable Leakage	5		
1-1001-068B	5/23/2011	0.346	5		
1-1001-068B	3/5/2015	0.29	5		
1-1001-068B	3/19/2019	0.1	5		

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RHR PIVs					
Valve	Date of Test	Measured Value (gpm)	Required Action Limit (gpm)	Comments	
2-1001-068A	7/2/1995	No Measurable Leakage	5		
2-1001-068A	4/17/1997	No Measurable Leakage	5		
2-1001-068A	2/20/1999	1.3	5		
2-1001-068A	1/26/2000	No Measurable Leakage	5		
2-1001-068A	2/22/2002	No Measurable Leakage	5		
2-1001-068A	4/3/2006	No Measurable Leakage	5		
2-1001-068A	3/10/2008	No Measurable Leakage	5		
2-1001-068A	3/29/2010	No Measurable Leakage	5		
2-1001-068A	3/23/2012	No Measurable Leakage	5		
2-1001-068A	3/25/2016	No Measurable Leakage	5		
2-1001-068B	7/2/1995	No Measurable Leakage	5		
2-1001-068B	4/10/1997	No Measurable Leakage	5		
2-1001-068B	2/25/1999	No Measurable Leakage	5		
2-1001-068B	2/1/2000	No Measurable Leakage	5		
2-1001-068B	2/15/2002	No Measurable Leakage	5		
2-1001-068B	4/4/2006	No Measurable Leakage	5		
2-1001-068B	3/13/2008	0.33	5		
2-1001-068B	3/18/2010	No Measurable Leakage	5		
2-1001-068B	3/30/2012	0.29	5		
2-1001-068B	4/9/2014	No Measurable Leakage	5		
2-1001-068B	3/21/2018	No Measurable Leakage	5		