Edward Casulli
Site Vice President

Susquehanna Nuclear, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3795 Fax 570.542.1504
Edward.Casulli@talenenergy.com

TALEN ENERGY

January 04, 2024

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

10 CFR 50.55a

**SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION REGARDING PROPOSED
RELIEF REQUEST FOR THE FIFTH 10-YEAR
INSERVICE TEST PROGRAM INTERVAL
PLA-8096**

**Docket No. 50-387
and 50-388**

References:
1) Susquehanna letter to NRC, "Proposed Relief Request for the Fifth 10-Year Inservice Test Program Interval (PLA-8074)," dated August 03, 2023 (ADAMS Accession No. ML23215A173).

2) NRC email to Susquehanna, "Request for Additional Information Relief [Alternative] Request RR-01 Proposed Alternative for Excess Flow Check Valves Fifth 10-year Interval Inservice Testing Program, Susquehanna Steam Electric Station, Units 1 and 2, Docket Nos. 50-387 and 50-388 (EPID L-2023-LLR-0043)," dated November 30, 2023 (ADAMS Accession No. ML23334A168).

3) NRC email to Susquehanna, "Request for Additional Information Relief [Alternative] Request RR-02 Pressure Isolation Valve Leak Test Frequency Fifth 10-year Interval Inservice Testing Program Susquehanna Steam Electric Station, Units 1 and 2, Docket Nos. 50-387 and 50-388 (EPID L-2023-LLR-0044)," dated November 30, 2023 (ADAMS Accession No. ML23334A150).

Pursuant to 10 CFR 50.55a, Susquehanna Nuclear, LLC (Susquehanna), submitted, in Reference 1, Relief Requests RR01 and RR02. Relief Request RR01 proposes alternatives to the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants Code (OM Code) test requirements for excess flow check valves (EFCV). Relief Request RR02 proposes alternatives to the ASME OM Code to revise pressure isolation valve leak test frequency consistent with 10 CFR 50, Appendix J, Option B, for the affected components.

The NRC provided Requests for Additional Information (RAI) for RR01 and RR02 in References 2 and 3, respectively. Enclosure 1 provides Susquehanna's response to the RR01 RAIs. Enclosure 2 provides Susquehanna's response to the RR02 RAIs.

There are no new or revised commitments contained in this submittal.

Should you have any questions regarding this submittal, please contact Ms. Melisa Krick, Manager – Nuclear Regulatory Affairs, at (570) 542-1818.

E. Casulli

Enclosures:
1. Response to Request for Additional Information RR01
2. Response to Request for Additional Information RR02

Copy: NRC Region I
Mr. C. Highley, NRC Senior Resident Inspector
Ms. J. England, NRC Senior Resident Inspector
Ms. A. Klett, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

Enclosure 1 to PLA-8096

Response to Request for Additional Information RR01

Response to Request for Additional Information

On August 03, 2023, Susquehanna Nuclear, LLC (Susquehanna), submitted Relief Request RR01, which proposes alternatives to the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants Code (OM Code) test requirements for excess flow check valves (EFCV), associated with the Fifth 10-Year Inservice Test (IST) Program Interval for Susquehanna Steam Electric Station (SSES), Units 1 and 2 (Reference 1). The NRC provided a Request for Additional Information (RAI) in Reference 2. The response to the RAI is provided below.

EMIB-RAI-1

In its submittal, the licensee cited the NRC safety evaluation dated March 11, 2022 (ML22061A040), which authorized an alternative for EFCVs at Nine Mile Point Unit 2, as a precedent. That NRC safety evaluation states the Nine Mile Point Unit 2 request specified that any failed valves will be tested during the next refueling outage. However, the licensee's request for Susquehanna does not discuss the provisions for testing failed valves at the next refueling outage.

The NRC staff requests that the licensee describe in more specificity the actions it would take if an EFCV fails its test and whether the licensee would test the valve during the next refueling outage (and if not, why not).

Susquehanna Response

Susquehanna Steam Electric Station, Units 1 and 2, will utilize the IST Program as the means to track the performance of EFCVs in a manner similar with existing performance-based testing programs. To ensure that the EFCV performance remains consistent with the extended test interval, as bounded by the General Electric Nuclear Energy Topical Report NEDO-32977-A, a minimum performance standard has been established. The performance standard will require less than or equal to one failure during a 24-month rolling average to ensure that adverse trends in EFCV performance are identified and dispositioned in the Corrective Action Program. Field test procedures and the IST Program Plan will be revised to assure that each failure is entered into the Corrective Action Program (CAP) and evaluated against the performance criteria with appropriate corrective actions taken based on the failure analysis and trend in failures.

If failures exceed the performance criteria of less than or equal to one failure during a 24-month rolling average, the IST Program Plan will require a cause evaluation and determination of

additional testing requirements. The failed valves will also be retested in the next refueling outage.

EMIB-RAI-2

In its submittal, the licensee cited the NRC safety evaluation dated March 11, 2022 (ML22061A040), which authorized an alternative for EFCVs at Nine Mile Point Unit 2, as a precedent. The safety evaluation states:

> Under proposed Alternative Request GV-RR-10, Nine Mile Point 2 *EFCVs will be tested on a representative sampling basis of approximately 20 percent every refueling outage*, and all EFCVs will be tested at least once within a 10-year interval. [emphasis added]

In its submittal, the licensee discusses that it would implement a sampling plan and that EFCVs would be tested on a representative sampling basis in accordance with Technical Specification Surveillance Requirement 3.6.1.3.9 (which requires the licensee to verify a representative sample of EFCVs actuate to check flow on a simulated instrument line break in accordance with the surveillance frequency control program), such that each EFCV will be tested at least once every 10 years.

The NRC staff requests that the licensee further describe the sampling of EFCVs for testing during each refueling outage (e.g., discuss the approximate percentage of valves that would be tested each refueling outage).

Susquehanna Response

Susquehanna EFCVs will be tested on a representative sampling basis of approximately 20 percent every refueling outage, and all EFCVs will be tested at least once in within a ten-year frequency.

EMIB-RAI-3

In Relief Request RR-01, the licensee references General Electric Boiling Water Reactor Owners Group (BWROG) Topical Report NEDO-32977-A/821-00658-01, "Excess Flow Check Valve Testing Relaxation," June 2000 (ML003729011). The NRC staff reviewed NEDO-32977-A and issued a safety evaluation on March 14, 2000 (ML003691722), which concluded that the topical report was acceptable for referencing in relaxation of EFCV surveillance testing, subject to certain conditions specified in section 4.0, "Conclusion," of the safety evaluation. The licensee for Nine Mile Point Unit 2 addressed those conditions in its RAI response dated November 15, 2021 (ML21320A049).

The NRC staff requests that the licensee describe its actions to address the conditions specified in the safety evaluation dated March 14, 2000, for the acceptability of BWROG NEDO-32977-A to support Relief Request RR-01.

Susquehanna Response

1. EFCV failure rate and release frequency;

   An evaluation of the maintenance history and comparison to the acceptance criteria in the General Electric Nuclear Energy Topical Report NEDO-32977-A concludes that Susquehanna Steam Electric Station, Units 1 and 2, have demonstrated that the EFCVs are highly reliable and that failures to isolate are very infrequent (2 out of approximately 400 tests in 20 years). The failure rate of the EFCVs was confirmed to be below the highest failure rates presented in NEDO-32977-A.

2. Failure feedback mechanism and corrective action program;

   See response to EMIB-RAI-1.

3. Radiological dose assessment;

   The impact of the increase in EFCV surveillance test intervals to 10 years at SSES would be bounded by the analysis in the safety evaluation dated March 14, 2000 (Reference 3), for the acceptability of BWROG NEDO-32977-A. As discussed in the NEDO-32977-A Safety Evaluation, an EFCV instrument line break with or without an orifice would not be a significant dose concern. Susquehanna EFCV instrument lines contain orifices sized to limit flow in case of an instrument line break. The release estimate included in the Safety Evaluation was considered sufficiently low, and the consequence of a EFCV failure is unlikely to lead to core damage. Additionally, as noted in the response to Condition 1 above, the SSES failure rate is sufficiently low as to not exceed the industry average. The consequences of the steam release from this event are bounded by the existing Updated Final Safety Analysis Report analysis and that the increase in risk associated with SSES request for relaxation of EFCV surveillance testing is low.

References

1. Susquehanna letter to NRC, "Proposed Relief Request for the Fifth 10-Year Inservice Test Program Interval (PLA 8074)," dated August 03, 2023 (ADAMS Accession No. ML23215A173).

2. NRC email to Susquehanna, "Request for Additional Information Relief [Alternative] Request RR-01 Proposed Alternative for Excess Flow Check Valves Fifth 10-year Interval Inservice Testing Program, Susquehanna Steam Electric Station, Units 1 and 2, Docket Nos. 50-387 and 50-388 (EPID L-2023-LLR-0043)," dated November 30, 2023 (ADAMS Accession No. ML23334A168).

3. Safety Evaluation of General Electric Nuclear Energy Topical Report B21-00658-01, "Excess Flow Check Valve Testing Relaxation" (TAC Nos. MA7884 and M84809), dated March 14, 2000 (ADAMS Accession No. ML003691722).

Enclosure 2 to PLA-8096

Response to Request for Additional Information RR02

Response to Request for Additional Information

On August 03, 2023, Susquehanna Nuclear, LLC (Susquehanna), submitted Relief Request RR02, which proposes alternatives to the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants Code (OM Code) to revise pressure isolation valve leak test frequency consistent with 10 CFR 50, Appendix J, Option B, for the affected components, associated with the Fifth 10-Year Inservice Test (IST) Program Interval for Susquehanna Steam Electric Station (SSES), Units 1 and 2 (Reference 1). The NRC provided a Request for Additional Information (RAI) in Reference 2. The response to the RAI is provided below.

EMIB-RAI-1

By letter dated September 19, 2023 (ML23257A122), the NRC staff authorized an alternative to postpone the leakage test of check valve 251130 at Susquehanna, Unit 2 until the spring 2025 refueling outage. The NRC staff requests the licensee to confirm whether check valve 251130 at Susquehanna, Unit 2 will be leakage tested during the spring 2025 refueling outage.

Susquehanna Response

Check valve 251130 will be tested in the Unit 2, Cycle 22 refueling outage in the spring of 2025. This action is being tracked in the station's Corrective Action Program.

EMIB-RAI-2

The NRC staff requests the licensee to describe the basis for including containment isolation valves (CIVs) that are within the scope of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," as part of Relief Request RR-02.

Susquehanna Response

The table of valves on page 1 of RR02 in Reference 1 lists the pressure isolation valves (PIV) that are applicable to the relief. This table identifies several valves that have dual function as PIVs and CIVs, denoted as "Both" under the "CIV, PIV, Both" column. The valves identified as both PIVs and CIVs are subject to PIV seat leakage testing under IST OM Code and CIV local leak rate testing under Appendix J Option B. RR02 would not affect the Appendix J testing intervals as CIVs are already using performance-based intervals dictated under Option B. As discussed in

RR02, Section 5, Susquehanna is requesting permission to extend intervals on IST PIV seat leakage testing comparable to the Appendix J Option B.

EMIB-RAI-3

The NRC staff requests the licensee to describe the representative sampling of PIVs (e.g., how the licensee plans to obtain test data during outages to support an extended test interval program) within the scope of the request during each refueling outage for leakage testing when implementing Relief Request RR-02.

Susquehanna Response

As discussed in RR02, Section 5, Susquehanna is requesting permission to use performance-based testing intervals on PIV seat leakage testing that would be comparable to the performance-based Option B in Appendix J for Local Leak Rate Testing. The basis for extending the interval on PIV seat leakage testing would be based on two prior consecutive surveillance tests not exceeding the acceptance criteria, which will show a history of good performance thus allowing extension of the test interval. If a PIV exceeds the acceptance criteria it would go back on the standard interval until good performance is established again. Valve testing will be scheduled and performed such that the valves are tested throughout the interval (e.g., staggered through the interval based on divisional outages).

EMIB-RAI-4

The table in RR-02 refers to a PIV as a pressure injection valve, which differs from other parts of the alternative request, which refer to pressure isolation valves. The NRC staff requests the licensee to clarify the apparent discrepancy within Relief Request RR-02.

Susquehanna Response

This is a typographical error in the legend of the table in RR02; it should state “PIV = Pressure Isolation Valve.”

References

1. Susquehanna letter to NRC, "Proposed Relief Request for the Fifth 10-Year Inservice Test Program Interval (PLA 8074)," dated August 03, 2023 (ADAMS Accession No. ML23215A173).

2. NRC email to Susquehanna, "Request for Additional Information Relief [Alternative] Request RR-02 Pressure Isolation Valve Leak Test Frequency Fifth 10-year Interval Inservice Testing Program Susquehanna Steam Electric Station, Units 1 and 2, Docket Nos. 50-387 and 50-388 (EPID L-2023-LLR-0044)," dated November 30, 2023 (ADAMS Accession No. ML23334A150).