



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 27, 2026

**NINE MILE POINT NUCLEAR STATION, UNIT 2– APPROVAL OF ALTERNATIVE RELIEF
NO. GVRR-8 CONCERNING THE EXCESS FLOW CHECK VALVE TEST FREQUENCY
(EPID L-2025-LLR-0097)**

LICENSEE INFORMATION

Licensee: Constellation Energy Generation, LLC

Recipient's Name and Address: Mr. Christopher H. Mudrick Sr.
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer (CNO)
Constellation Nuclear
200 Exelon Way
Kennett Square, PA 19348

Plant Name and Unit: Nine Mile Point Nuclear Station, Unit 2
(Nine Mile Point, 2)

Docket No.: 50-410

1. APPLICATION INFORMATION

Application Date: December 19, 2025

Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.: ML25353A385.

Licensee Proposed Alternative No. or Identifier: GVRR-8

Applicable Inservice Testing (IST) Program Interval and Interval Start/End Dates: Fourth 10-Year IST Program interval (January 1, 2019, to December 31, 2028)

Alternative Provision: The licensee requested an alternative under Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, paragraph (z)(1).

IST Requirements:

- 2012 Edition of the American Society of Mechanical Engineers (ASME) *Operation and Maintenance of Nuclear Power Plants*, Division 1, OM Code: Section IST (OM Code), Subsection ISTC, "Inservice Testing of Valves in Water-Cooled Reactor Nuclear Power Plants," paragraph ISTC-3510, "Exercising Test Frequency," states:

Active Category A, Category B, and Category C check valves shall be exercised normally every 3 mo. [months], except as provided by para. ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222.

- ISTC-3522, “Category C Check Valves,” subparagraph (c), states:

If exercising is not practicable during operation at power and cold shutdown outages, it shall be performed during refueling outages.
- ASME OM Code, Subsection ISTC, paragraph ISTC-3700, “Position Verification Testing,” states in part:

Valves with remote position indicators shall be observed locally at least once every 2 yr [years] to verify that valve operation is accurately indicated.
- 10 CFR 50.55a(b)(3)(xi), “OM condition: Valve Position Indication,” states:

When implementing paragraph ISTC-3700, ‘Position Verification Testing,’ in the ASME OM Code, 2012 Edition through the latest edition of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section, licensees must verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies.

Applicable Code Edition and Addenda: ASME OM Code, 2012 Edition

Applicable Code Components Affected:

The ASME OM Code components applicable to Alternative Request GVRR-8 consist of the 85 excess flow check valves (EFCVs) identified in the section titled “Applicable ASME Code Components and/or System Description” of the Nine Mile Point, Unit 2 licensee’s web-based submittal dated December 19, 2025. These EFCVs are associated with the High Pressure Core Spray (CSH), Low Pressure Core Spray (CSL), Reactor Core Isolation Cooling (ICS), Main Steam System (MSS), Reactor Coolant System (RCS), Residual Heat Removal (RHS), and Reactor Water Cleanup System (WCS).

Brief Description of the Proposed Alternative:

In Alternative Request GVRR-8, the licensee proposed to perform reverse-flow exercising and position indication verification testing of the subject reactor instrumentation line EFCVs by testing a representative sample consisting of an approximately equal number of the listed EFCVs during each refueling outage, such that each EFCV would be tested at least once every five refueling cycles (nominally 10 years), in lieu of the testing frequency requirements specified in the ASME OM Code and 10 CFR 50.55a(b)(3)(xi).

For additional details regarding the licensee’s request, refer to the documents identified above by their respective ADAMS Accession Nos. Alternative Request GVRR-8 cited Nine Mile Point

Unit 2 – NRC Authorization of Alternative Regarding EFCVs dated September 17, 2021 (ML012340462), and the subsequent correction issued on July 12, 2002 (ML021970360), as precedent for the proposed request.

2. REGULATORY EVALUATION

Regulatory Basis: 10 CFR 50.55a(z)(1)

The NRC regulations in 10 CFR 50.55a(z), “Alternatives to codes and standards requirements,” state that alternatives to the requirements of paragraphs (b) through (h) of this section, or portions thereof, may be used when authorized by the Director of the NRC’s Office of Nuclear Reactor Regulation. A proposed alternative must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that: (1) the proposed alternative would provide an acceptable level of quality and safety; or (2) compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The licensee submitted the request on the basis that the proposed alternative would provide an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

3. TECHNICAL EVALUATION

At nuclear power plants, EFCVs are installed on instrument lines to limit the release of fluid in the event of an instrument line break. Examples of EFCV applications include reactor pressure vessel level and pressure instrumentation, main steam line flow instrumentation, recirculation pump suction pressure instrumentation, and reactor core isolation cooling (RCIC) steam line flow instrumentation. EFCVs are not required to close in response to a containment isolation signal and are not required to function under post-loss-of-coolant accident (post-LOCA) conditions.

The 2012 Edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, requires EFCVs to be tested in accordance with Subsection ISTC, paragraph ISTC-3510, which states, in part, that active Category A, Category B, and Category C check valves must be exercised nominally every 3 months. The ASME OM Code recognizes that testing some valves at this frequency may not be practical. Accordingly, paragraph ISTC-3522(c) permits deferral of exercising requirements to refueling outages when testing is not practical during power operation or cold shutdown conditions.

The 85 EFCVs identified in Alternative Request GVRR-8 cannot be exercised during normal plant operation because closure of these valves would isolate instrumentation required for power operation. Therefore, these valves can only be tested during refueling outages. As an alternative to the ASME OM Code-required testing frequency, the licensee proposed testing a representative sample of the EFCVs during each refueling outage. Under the proposed alternative, approximately 20 percent of the EFCVs would be tested during each refueling outage such that each individual valve would be tested approximately once every 10 years.

The licensee’s justification for Alternative Request GVRR-8 relies on GE Topical Report NEDO-32977-A, “Excess Flow Check Valve Testing Relaxation,” dated June 2000 (ML003729011). The topical report provided: (1) an estimate of the frequency of steam releases into the reactor building resulting from an instrument line break concurrent with an EFCV failure to close, and (2) an assessment of the associated radiological consequences. The NRC staff reviewed the

topical report and issued a safety evaluation dated March 14, 2000 (ML003691722), concluding that the EFCV test interval could be extended to a maximum of 10 years. In its safety evaluation, the NRC staff also stated that each licensee implementing the relaxed test interval must maintain a failure feedback mechanism and corrective action program (CAP) to ensure that EFCV performance remains bounded by the assumptions and results of the topical report. In addition, each licensee is required to perform: (1) a plant-specific radiological dose assessment, (2) an EFCV failure analysis, and (3) a release frequency analysis to confirm that plant-specific conditions remain bounded by the generic analyses documented in the topical report.

The licensee stated that an evaluation of the test history at Nine Mile Point 2 demonstrated that the EFCVs are highly reliable, and that the failure of an EFCV to isolate is very infrequent. Specifically, the licensee identified only four as-found operational failures of EFCVs over the operating life of the plant. The licensee stated that this failure rate demonstrates high valve reliability and is consistent with the experience of the 12 boiling-water reactor plants evaluated in NEDO-32977-A. In addition, the licensee calculated the total plant release frequency associated with a random break of reactor instrumentation lines concurrent with failure of the associated EFCV to close using the methodology described in NEDO-32977-A. The licensee concluded that the increase in release frequency associated with the proposed testing interval is insignificant.

The licensee also stated that the consequences of an unisolable rupture of a reactor instrumentation line were evaluated in the Nine Mile Point 2 Updated Final Safety Analysis Report (UFSAR), Section 15.6.2, "Instrument Line Pipe Break," Revision 26, without crediting EFCV function, and that the calculated offsite doses remain substantially below the guidelines of 10 CFR Part 100, "Reactor Site Criteria." Based on the historically high reliability of the EFCVs, their low risk significance, and the limited radiological consequences associated with failure, the licensee concluded that testing a representative sample of EFCVs during each refueling outage provides an acceptable level of quality and safety.

The NRC staff notes that Nine Mile Point 2 Technical Specification (TS) Surveillance Requirement (SR) 3.6.1.3.9 requires verification that a representative sample of reactor instrumentation line EFCVs actuates to the isolation position on an actual or simulated instrument line break signal. The surveillance frequency is controlled in accordance with the Surveillance Frequency Control Program (SFCP). The NRC staff finds that changes to surveillance frequencies under the SFCP are implemented in accordance with Nuclear Energy Institute (NEI) 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1. The NRC staff previously reviewed and approved the methodology described in NEI 04-10, Revision 1, with conditions, in a safety evaluation dated September 19, 2007 (ML072570267), for use in licensee TS amendments establishing an SFCP.

Based on its review, the NRC staff finds that the licensee's proposed alternative is consistent with the guidance and limitations described in GE Topical Report NEDO-32977-A and the associated NRC safety evaluation. Specifically, the NRC staff finds that the licensee has adequately addressed plant-specific radiological dose consequences, EFCV failure rates, release frequency analyses, and implementation of a failure feedback mechanism and CAP at Nine Mile Point 2. The NRC staff further finds that the radiological consequences associated with EFCV failure are acceptably low and that the proposed alternative testing program, in

conjunction with the CAP and existing UFSAR analyses, provides reasonable assurance of the operational readiness of the affected valves.

Accordingly, the NRC staff determines that Alternative Request GVRR-8 provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1) for the 85 EFCVs within the scope of the request during the fourth 10-year IST interval, which is scheduled to end on December 31, 2028.

4. CONCLUSION

As set forth above, the NRC staff determines that proposed Alternative Request GVRR-8 provides an acceptable level of quality and safety for the IST activities associated with the valves within the scope of the request. Accordingly, the NRC staff concludes that the licensee has adequately addressed the requirements of 10 CFR 50.55a(z)(1). Therefore, pursuant to 10 CFR 50.55a(z)(1), the NRC staff authorizes the use of proposed Alternative Request GVRR-8 for the fourth 10-year IST interval at Nine Mile Point 2 for the specified valves within the scope of the request, in lieu of the applicable requirements of the 2012 Edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a.

All other ASME OM Code requirements as incorporated by reference in 10 CFR 50.55a for which relief was not specifically requested and approved, or for which an alternative was not specifically requested and authorized, remain applicable.

Date: May 27, 2026

Undine Shoop, Acting Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

cc: Listserv

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