



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

February 23, 2021

Mr. David P. Rhoades
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT 1 – ALTERNATIVE REQUEST
TO THE REQUIREMENTS OF THE ASME OM CODE FOR THE TESTING
INTERVALS FOR THE INSTRUMENT-LINE FLOW CHECK VALVES
(EPID L-2020-LLR-0114)

Dear Mr. Rhoades:

By letter dated August 20, 2020 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML20233A435), as supplemented by letter dated January 22, 2021 (ADAMS Accession No. ML21022A010), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at Nine Mile Point Nuclear Station, Unit 1 (Nine Mile Point 1).

Specifically, pursuant to Section 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. The licensee requested implementation of Relief Request GV-RR-09 with respect to the inservice testing (IST) requirements for the testing intervals for the instrument-line flow check valves.

As set forth in the enclosed safety evaluation, the NRC staff has determined that proposed alternative GV-RR-09 provides an acceptable level of quality and safety for the valves at Nine Mile Point 1 listed in Table 1 of the enclosed safety evaluation. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements specified in 10 CFR 50.55a(z)(1) for Relief Request GV-RR-09. Therefore, the NRC staff authorizes the use of Relief Request GV-RR-09 for the remainder of the fifth 10-year IST program interval at Nine Mile Point 1, which began on January 1, 2019, and is scheduled to end on December 31, 2028.

All other ASME OM Code requirements for which relief or an alternative were not specifically requested and approved as part of this request remain applicable.

In its application, Exelon included a separate request for a proposed license amendment to change the technical specification required surveillance requirements for the instrument flow line check valves at Nine Mile Point 1. The NRC staff conducted a separate review of the license amendment request, and the result of that review will be communicated to Exelon in separate correspondence.

If you have any questions, please contact the Nine Mile Point Nuclear Station Project Manager, Michael Marshall, at (301) 415-2871.

Sincerely,

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-220

Enclosure:
Safety Evaluation

cc: Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUEST GV-RR-09

NINE MILE POINT NUCLEAR STATION, LLC

EXELON GENERATION COMPANY, LLC

NINE MILE POINT NUCLEAR STATION, UNIT 1

DOCKET NO. 50-220

1.0 INTRODUCTION

By letter dated August 20, 2020 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML20233A435), as supplemented by letter dated January 22, 2021 (ADAMS Accession No. ML21022A010), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at Nine Mile Point Nuclear Station, Unit 1 (Nine Mile Point 1). In particular, the licensee requested implementation of Relief Request GV-RR-09 with respect to the inservice testing (IST) requirements for the testing intervals for the instrument-line flow check valves specified in the ASME OM Code, Division 1, OM Code, Section IST, for the IST program at Nine Mile Point 1 during the fifth 10-year IST program interval.

Pursuant to subparagraph (1) in paragraph (z), "Alternatives to codes and standards requirements," of Section 55a, "Codes and standards," in Part 50, "Domestic Licensing of Production and Utilization Facilities," to Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR), the licensee requested to implement proposed alternative GV-RR-09 on the basis that the proposed alternative will provide an acceptable level of quality and safety.

2.0 REGULATORY REQUIREMENTS

The NRC regulations in 10 CFR 50.55a(f)(4), "Inservice testing standards requirement for operating plants," state, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that are incorporated by reference in 10 CFR 50.55a(a)(1)(iv), to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The NRC regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements of paragraph (f) of 10 CFR 50.55a may be used, when authorized by the NRC, if the licensee demonstrates (1) the proposed alternatives would provide an acceptable level of quality and safety or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The Nine Mile Point 1 fifth 10-year IST program interval began on January 1, 2019, and is scheduled to end on December 31, 2028. The applicable ASME OM Code edition for the Nine Mile Point 1 fifth 10-year IST program interval is the 2012 Edition, which is incorporated by reference in 10 CFR 50.55a with conditions.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request

The licensee requested an alternative to the valve testing requirements of the ASME OM Code, Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants," paragraph ISTC-3522, "Category C Check Valves."

Paragraph ISTC-3522, subparagraph (a), states, in part, "During operation at power, each check valve shall be exercised or examined in a manner that verifies obturator travel by using the methods in para. ISTC-5221."

Subparagraph ISTC-3522(c) states, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

The licensee requested use of its proposed alternative for valves specified in its request. These valves are listed in Table 1 below.

Table 1			
Component	System	Code Class	OM Category
CKV-36-57	Emergency Cooling	1	C
CKV-36-62	Emergency Cooling	1	C
CKV-36-67	Emergency Cooling	1	C
CKV-36-72	Emergency Cooling	1	C
CKV-01-76	Main Steam SRV	1	C
CKV-01-77	Main Steam	1	C
CKV-01-78	Main Steam	1	C
CKV-01-79	Main Steam	1	C
CKV-32-100	Reactor Recirculation	1	C
CKV-32-106	Reactor Recirculation	1	C
CKV-32-112	Reactor Recirculation	1	C
CKV-32-118	Reactor Recirculation	1	C
CKV-32-125	Reactor Recirculation	1	C
CKV-32-131	Reactor Recirculation	1	C
CKV-32-138	Reactor Recirculation	1	C
CKV-32-144	Reactor Recirculation	1	C
CKV-32-151	Reactor Recirculation	1	C

Table 1			
Component	System	Code Class	OM Category
CKV-32-157	Reactor Recirculation	1	C
CKV-32-164	Reactor Recirculation	1	C
CKV-32-170	Reactor Recirculation	1	C
CKV-32-177	Reactor Recirculation	1	C
CKV-32-183	Reactor Recirculation	1	C
CKV-32-204	Reactor Recirculation	1	C
CKV-32-210	Reactor Recirculation	1	C
CKV-32-215	Reactor Recirculation	1	C
CKV-32-221	Reactor Recirculation	1	C
CKV-32-226	Reactor Recirculation	1	C
CKV-32-232	Reactor Recirculation	1	C
CKV-32-237	Reactor Recirculation	1	C
CKV-32-243	Reactor Recirculation	1	C
CKV-32-248	Reactor Recirculation	1	C
CKV-32-254	Reactor Recirculation	1	C
CKV-32-64	Reactor Recirculation	1	C
CKV-32-70	Reactor Recirculation	1	C
CKV-32-76	Reactor Recirculation	1	C
CKV-32-82	Reactor Recirculation	1	C
CKV-32-88	Reactor Recirculation	1	C
CKV-32-94	Reactor Recirculation	1	C
CKV-44.1-07	Reactor Recirculation	1	C
CKV-44.1-12	Reactor Recirculation	1	C
CKV-36-120	Reactor Vessel Instrumentation	1	C
CKV-36-125	Reactor Vessel Instrumentation	1	C
CKV-36-130	Reactor Vessel Instrumentation	1	C
CKV-36-135	Reactor Vessel Instrumentation	1	C
CKV-36-140	Reactor Vessel Instrumentation	1	C
CKV-36-145	Reactor Vessel Instrumentation	1	C
CKV-36-160	Reactor Vessel Instrumentation	1	C
CKV-36-165	Reactor Vessel Instrumentation	1	C
CKV-36-170	Reactor Vessel Instrumentation	1	C
CKV-36-175	Reactor Vessel Instrumentation	1	C
CKV-36-48	Reactor Vessel Instrumentation	1	C
CKV-36-53	Reactor Vessel Instrumentation	1	C

3.2 Reason for Request

The licensee currently tests all excess flow check valves (EFCVs) (referred to as instrument-line flow check valves at Nine Mile Point 1) every 24 months in accordance with the Surveillance Frequency Control Program. These valves are located on instrument lines, and the instruments on these lines are required to operate during normal plant operation and cold shutdown conditions. The licensee stated that

exercising these check valves requires removing the instruments from service, which could cause spurious instrument signal fluctuations to occur, that might result in the inadvertent automatic initiation or trip of systems if the check valves were tested during plant operation.

3.3 Proposed Alternative

The licensee proposed that a representative sample (approximately 20 percent) of the EFCVs be tested every refueling outage with each EFCV tested at least once every 10 years.

In its letter dated August 20, 2020, the licensee stated:

Industry experience as documented in Boiling Water Reactor (BWR) Owners Group Licensing Topical Report (TR) NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," dated June 2000, indicates that EFCVs have a very low failure rate. A review of the maintenance history for [Nine Mile Point 1] EFCVs has shown that they have been highly reliable over the life of the plant. The [Nine Mile Point 1] test experience is consistent with the findings in the NEDO document. The NEDO document indicates that many reported test failures at other plants were related to test methodologies and not actual EFCV failures. A detailed analysis of the maintenance history and a comparison to the acceptance criteria in NEDO-32977-A are provided in Attachments 1 and 2 to the License Amendment Request that this relief request is associated with. The analysis concludes the maintenance history for the [Nine Mile Point 1] EFCVs supports use of the representative sampling basis for determining the testing schedule for the EFCVs. Thus, the EFCVs at [Nine Mile Point 1], consistent with the industry, have exhibited a high degree of reliability, availability, and the alternate sampling approach justified by application of the NEDO-32977 analysis provides an acceptable level of quality and safety.

3.4 NRC Staff Evaluation

The licensee's justification for proposed alternative GV-RR-09 relies on BWR Owners Group TR NEDO-32977-A, dated June 2000 (ADAMS Accession No. ML003729011). Based on the very low failure rate of EFCVs at the nuclear power plants participating in the BWR Owners Group study, the NRC staff accepted this TR and issued a safety evaluation (SE) on March 14, 2000 (ADAMS Accession No. ML003691722). In its SE, the NRC staff indicated the importance of the corrective action program (CAP) to address any EFCV failures when implementing the TR.

In its supplement dated January 22, 2021 (ADAMS Accession No. ML21022A010), the licensee stated that it will utilize the IST program as the means to track the performance of EFCVs in a manner similar to existing performance-based programs. In addition, the licensee stated that the field test procedures and the IST Program Plan will be revised to assure that each EFCV failure is entered into the CAP and evaluated against 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 licensee stated that the IST Program Plan will require a cause evaluation and determination of additional testing requirements. The licensee also stated that the failed valves will be tested in the next refueling outage.

Exelon provided plant-specific failure rate analysis for Nine Mile Point 1 that is documented in GE Hitachi Nuclear Energy Report 006N1767, Revision 0 (Attachment 2 to its letter dated August 20, 2020). As described in GE Hitachi Nuclear Energy Report 006N1767, Revision 0, and BWR Owners Group Topical Report NEDO-32977-A, the Nine Mile Point 1 EFCV failure rate analysis data are consistent with the EFCV failure rate analysis for the 12 BWR nuclear power plants referenced in NEDO-32977-A.

Based on the acceptability of the methods used in GE Hitachi Nuclear Energy Report 006N1767, Revision 0, the plant-specific EFCV failure rate analysis, and the licensee's failure feedback mechanism and CAP including the licensee's plans to update the field test procedures and IST Program Plan as described in its supplement, the NRC staff has determined that the licensee's proposal to test approximately 20 percent of the EFCVs every refueling outage with each EFCV tested at least once every 10 years is an acceptable application of TR NEDO-32977-A at Nine Mile Point 1 . As a result, the NRC staff finds that the licensee's proposed alternative Relief Request GV-RR-09 provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

4.0 CONCLUSION

As set forth above, the NRC staff has determined that proposed alternative GV-RR-09 provides an acceptable level of quality and safety for the valves at Nine Mile Point 1 listed in Table 1 of this SE. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements specified in 10 CFR 50.55a(z)(1) for GV-RR-09. Therefore, the NRC staff authorizes the use of Relief Request GV-RR-09 for the remainder of the fifth 10-year IST program interval at Nine Mile Point 1 , which began on January 1, 2019, and is scheduled to end on December 31, 2028.

All other ASME OM Code requirements for which relief or an alternative were not specifically requested and approved as part of this request remain applicable.

Principal Contributor: R. Wolfgang, NRR

Date: February 23, 2021

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