Exelon Generation

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10 CFR 50.55a

January 31, 2020

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

Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Limerick Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

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

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Proposed Alternative to Utilize Code Case OMN-26

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), Exelon Generation Company, LLC (Exelon), hereby requests NRC approval of a proposed relief request associated with the Inservice Testing (IST) Programs for the cited Exelon Nuclear Power Plants (NPPs). This request proposes to implement the American Society of Mechanical Engineers (ASME) Code Case OMN-26, "Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves," that has been approved by the ASME Board of Nuclear Codes and Standards for use under the 2012 edition of the ASME OM Code. Each of the IST Programs for the cited Exelon NPPs either complies with the 2012 edition of the ASME OM Code or will so by July 2020. The basis for this relief request is that the proposed

alternative rules for safety related Motor Operated Valves provide an acceptable level of quality and safety, equivalent to compliance with ASME Section III requirements.

Exelon requests your review and approval of this fleet request by July 31, 2020.

There are no regulatory commitments contained in this letter.

If you have any questions, please contact Mr. David Neff at (267) 533-1132.

Respectfully,

Shannon B. Rafferty-Czincila
Director - Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Relief Request to Utilize Code Case OMN-26

cc: Regional Administrator - NRC Region I
Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station
NRC Senior Resident Inspector - Calvert Cliffs Nuclear Power Plant
NRC Senior Resident Inspector - Clinton Power Station
NRC Senior Resident Inspector – R.E Ginna Nuclear Power Plant
NRC Senior Resident Inspector - Limerick Generating Station
NRC Senior Resident Inspector - Nine Mile Point Nuclear Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Project Manager - Braidwood Station
NRC Project Manager - Calvert Cliffs Nuclear Power Plant
NRC Project Manager - Clinton Power Station
NRC Project Manager – R.E. Ginna Nuclear Power Plant
NRC Project Manager - Limerick Generating Station
NRC Project Manager - Nine Mile Point Nuclear Station
NRC Project Manager – Peach Bottom Atomic Power Station
Illinois Emergency Management Agency - Department of Nuclear Safety
R. R. Janati - Bureau of Radiation Protection, Commonwealth of Pennsylvania
D. A. Tancabel - State of Maryland
A. L. Peterson - NYSERDA

ATTACHMENT

Relief Request to Utilize Code Case OMN-26

EXELON GENERATION COMPANY, LLC
IST PROGRAM – RELIEF REQUEST
Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
Relief Request to Utilize Code Case OMN-26

1. ASME Code Component(s) Affected:

Active safety related motor operated valves (MOVs) that are required by Subsection ISTC of the 2012 Edition of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code to be tested in accordance with ASME OM Code Mandatory Appendix III.

2. Applicable ASME OM Code Edition:

PLANT	INTERVAL	OM EDITION	START	END
Braidwood Station Units 1 and 2	Fourth	2012 Edition	July 29, 2018	July 28, 2028
Calvert Cliffs Nuclear Power Plant, Units 1 and 2	Fifth	2012 Edition	July 1, 2018	June 30, 2028
Nine Mile Point Nuclear Station, Unit 1 and 2	Fifth - U1 Fourth-U2	2012 Edition	January 1, 2019	December 31, 2028
Peach Bottom Atomic Power Station, Unit 2 and 3	Fifth	2012 Edition	November 16, 2018	August 14, 2028
R.E. Ginna Nuclear Power Plant Unit 1	Sixth	2012 Edition	January 1, 2020	December 31, 2029
Limerick Generating Station, Units 1 and 2	Fourth	2012 Edition	January 8, 2020	January 7, 2030
Clinton Power Station, Unit 1	Fourth	2012 Edition	July 1, 2020	June 30, 2030

3. Applicable Code Requirements:

The ASME OM Code Mandatory Appendix III, Preservice and Inservice testing of Active Electric Motor-Operated Valve Assemblies in Water Cooled Reactor Nuclear Power Plants.

The following Appendix III Paragraphs are affected by this Relief Request to adopt Code Case OMN-26, "Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves."

III-3310 (c).

III-3700 Risk-Informed MOV Inservice Testing.

III-3721 HSSC MOVs.

III-3722 (d).

For each of these paragraphs, relief is being sought for alternative treatments described in Section 5 of this relief request based on the ASME Board of Nuclear Codes and Standards (BNCS) approved Code Case OMN-26.

4. Reason for Request:

In accordance with 10 CFR 50.55a(z)(1), Exelon Generation Company, LLC (Exelon) is requesting approval to adopt ASME OM Code Case OMN-26 in conjunction with implementing Mandatory Appendix III for all Exelon plants identified in Section 2.

Code Case OMN-26 better aligns OM Code Mandatory Appendix III to the Risk and Margin Based Licensee Motor Operated Valve (MOV) Programs developed in response to NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," that have been in effect since 1998. The Appendix III ten-year maximum inservice test interval was originally established to align with the maximum test interval allowed under the Generic Letter 96-05 MOV Programs that, for most Licensees, was established by the Joint Owners Group (JOG) MOV Periodic Verification Program. There is no formal technical basis for the current Appendix III ten-year maximum interval that applies to all MOVs regardless of Risk and Margin. Over the past twenty years, Exelon MOV Programs have demonstrated many margin stable MOVs that can be readily justified to extend from their current MOV Program maximum inservice test intervals of six years (for High Risk) and ten years (for Low Risk).

5. Proposed Alternative and Basis for Use:

Proposed Alternative:
Exelon proposes to implement the ASME OM Code Case OMN-26 alternative risk and margin informed rules for inservice testing of MOVs in its entirety as described below:

Proposed Alternative to III-3310
(c) The maximum inservice test interval shall not exceed 10 years unless Risk Informed Inservice Testing applies under the provisions of para. III-3700. MOV inservice tests conducted per para. III-3400 may be used to satisfy this requirement.

Proposed Alternative to III-3700
Risk-informed MOV inservice testing that incorporate risk insights in conjunction with MOV Functional Margin to establish MOV grouping, acceptance criteria, exercising requirements and test interval may be implemented.

Proposed Alternative to III-3721

III-3721 HSSC MOVs. HSSC MOVs shall be tested in accordance with para. III-3300 and exercised in accordance with para. III-3600 while applying the following HSSC MOV Risk insights and limitations:

(a) HSSC MOVs that can be operated during plant operation shall be exercised quarterly, unless the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small.

(b) For HSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 1 of OMN-26 (see below)

OMN-26 Table 1
HSSC MOV – Margin Based Maximum Inservice Test Intervals

HSSC MOV Functional Margin[D]	Maximum Inservice Test Interval (Years)	If MOV is routinely[A] operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) [B]
Low (< 5%)	2	4
Medium (≥ 5% and < 10%)	4	9
High (≥ 10% and < 20%)	9	9
Very High (≥ 20%)	9	12

OMN-26 Table 1 – Notes

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.
(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Proposed Alternative to III-3722 (d)

(d) For LSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 2 of OMN-26 (see below)

OMN-26 Table 2
LSSC MOV – Margin Based Maximum Inservice Test Intervals

LSSC MOV Functional Margin[D]	Maximum Inservice Test Interval (Years)	If MOV is routinely[A] operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) [B]
Low (< 5%)	4	9
Medium (≥ 5% and < 10%)	9	12
High (≥ 10% and < 20%)	12	12
Very High (≥ 20%)	12	16[C]

OMN-26 Table 2 Notes:

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.
(C) Operating plants that have acquired the requisite test data to satisfy Appendix III, paragraphs III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.
(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Basis for Use:

The requested relief to adopt OMN-26 is in line with the current JOG MOV Periodic Verification Test Program that Exelon has implemented since the late 1990's in response to NRC Generic Letter 96-05. Both the JOG MOV PV Program and Code Case OMN-26 provide a Risk-Margin based methodology that establishes limitations for maximum inservice test intervals for MOVs. Code Case OMN-26 simply provides a reasonable extension of this Risk-Informed philosophy based on the lessons learned and accumulated MOV performance data gathered over more than 25 years of MOV Performance Verification Testing. Appendix III alone, in isolation from OMN-26, provides no such methodology other than a maximum limit for the inservice test interval regardless of Risk or Margin.

The requested allowed maximum inservice test intervals are modest extensions with many of the Low Risk MOVs extending from 10 to 12 years (20% increase). This test interval change can be readily adopted with no loss of MOV performance and/or safety system reliability provided that no adverse performance trends are indicated. Exelon's MOV Performance Trending Governance will ensure that only MOV's with good performance history, high stable margins and no adverse diagnostic trends would be candidates for the OMN-26 based inservice test interval extensions.

The requested High Margin Maximum interval changes afforded by OMN-26 align with Exelon's desire to adopt a divisional MOV outage testing strategy that reduces the implementation burden of MOV Inservice Testing and allows greater flexibility in optimizing safety system availability. The current six and ten-year JOG Program based High-Margin Maximum Intervals do not support this strategy.

The requested relief reduces the maximum test interval for High Safety Significant Component (HSSC) MOVs allowed by Appendix III from ten years to nine years commensurate with Risk Informed Methodology. Further under this relief request, Exelon will treat MOVs currently classified as Medium Risk by the 3-Tier JOG Risk Ranking as High Risk (HSSC) thereby providing more rigorous periodic verification requirements for the applicable valves especially those with less than high margin.

The requested relief takes credit for routine design basis differential pressure testing (DBDPT) of MOVs to justify extending the maximum Inservice test interval to 12 Years for Very High Margin HSSC MOVs and 16 years for Very High Margin Low Safety Significant Component (LSSC) MOVs.

With the exception of Low Risk MOVs routinely operated at design basis differential pressure (D-P) conditions, Code Case OMN-26 does not allow maximum MOV Inservice Test intervals to exceed ten years unless the associated MOVs are classified as High Margin. Most High Risk MOVs are limited to four years or less for Low/Medium Margins and most Low Risk MOVs are limited to nine years or less for Low/Medium Margins. Code Case OMN-26 provides more rigorous requirements targeted specifically to Low/Medium Margin MOVs than currently allowed under Appendix III. This Risk/Margin approach is in line with accepted Risk-Informed Strategies such as the JOG MOV Periodic Verification Program.

Use of the proposed alternative is expected to result in improved MOV Margins at each Exelon station in order to attain higher margin status to allow use of the extended maximum inservice test intervals permitted by the OMN-26 Code Case.

For the majority of applicable MOVs (i.e., those MOVs not subject to periodic stroking under design basis D-P conditions), the Code Case limited the scope to only High Margin Valves for extending test intervals incrementally beyond current limits:

- Test intervals for High Risk MOVs go from six to nine years (Note: Nine years is aligned to Pressurized Water Reactor nuclear power plants (PWRs) on 18-month refueling cycles)
- Test intervals for Low Risk MOVs go from ten to 12 years (Note: 12 years is aligned for all Boiling Water Reactor nuclear power plants (BWRs) and PWRs with either 18- or 24-month refueling cycles)

The Table below provides a detailed comparison of the Maximum MOV Test Intervals for the JOG MOV Program, Mandatory Appendix III and Code Case OMN-26 that Exelon seeks to adopt via this relief request. MOVs identified with **Bold** type have maximum MOV inservice test intervals exceeding the current Appendix III ten-year limit.

EXELON GENERATION COMPANY, LLC
IST PROGRAM – RELIEF REQUEST
Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
Relief Request to Utilize Code Case OMN-26

Exelon Maximum MOV Test Intervals Based on Code Case OMN-26

	Maximum Inservice Test Intervals (Years)							
	HSSC MOVs				LSSC MOVs			
MOV Margin	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)
Low (<5%)	2	10	2 (1,2)	4 (5)	6	10	4 (1,3,5)	9 (5)
Medium (≥5% and <10%)	4	10	4 (1,2,5)	9 (5)	10	10	9 (1,3,5)	**12** (4,5)
High (≥10% and <20%)	6	10	9 (5)	9 (5)	10	10	**12** (4,5)	**12** (4,5)
Very High (≥ 20%)	N/A	10	9 (5)	**12** (4,5)	N/A	10	**12** (4,5)	**16** (4,5,7)
Description ->	Existing Industry Standard	Existing ASME OM Code	Relief Request	Relief Request	Existing Standard	Existing ASME OM Code	Relief Request	Relief Request

Table Notes

1. Code Case Maximum Inservice Test Intervals for all Low/Medium Margin MOVs are less than or equal to current ten-year Appendix III limit. (i.e., Code Case is more conservative than Appendix III for Low/Medium Margin MOVs).

2. Code Case Maximum Inservice Test Intervals for Low/Medium Margin HSSC MOVs are equal to the current JOG MOV PV Program limits of two/four years respectively. (Code Case intervals are aligned with JOG MOV).

3. Code Case Maximum Inservice Test Intervals for Low/Medium Margin LSSC MOVs (four/nine years) are less than the current JOG MOV PV Program limits of six/ten years respectively.

4. The following four categories of MOVs have maximum inservice test intervals that exceed the current ten-year limit:
   a. High Margin, LSSC MOVs. (12 Years)
   b. Very High Margin, HSSC MOVs that are periodically stroked at design basis DP conditions (DBDPT) (12 Years)
   c. Medium Margin, LSSC MOVs that are periodically DBDPT (12 Years)
   d. Very High Margin, LSSC MOVs that are periodically DBDPT (16 Years).

5. Except for Low Margin HSSC MOVs, the Maximum MOV Inservice Test Intervals are optimized for Divisional Outage Scheduling (i.e., 4, 9, 12, 16 years). Nine years is optimal for PWRs restricted to 18 month refueling outages. 12 years is optimal for both PWRs and BWRs and supports both 18-month and 24-month refueling outages.

6. To utilize these intervals, strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no known applicable operating experience, degradation or diagnostic test anomaly that potentially impacts MOV functional margin or the capability of the MOV to perform its design basis function.

7. Operating plants that have acquired the requisite test data to satisfy III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

6. Duration of Proposed Alternative:

The proposed alternative is for use of the Code Case for the remainder of each plant's ten-year Inservice Testing interval as specified in Section 2.

7. Precedent:

None

8. References:

1. ASME OM Code Case OMN-26, Alternative Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves, approved by ASME Board of Nuclear Codes and Standards (BNCS) December 2019.