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January 5, 2022
L-21-280

10 CFR 50.55a

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

Subject:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
10 CFR 50.55a Request Number VR-12, Revision 0, Request for Relief from
Containment Isolation Valve ASME OM Code Requirements

In accordance with 10 CFR 50.55a(z)(1), Energy Harbor Nuclear Corp. hereby requests Nuclear Regulatory Commission (NRC) staff approval of request VR-12, Revision 0, that proposes an alternative to the requirements of American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) of Nuclear Power Plants for certain Perry Nuclear Power Plant (PNPP) containment isolation valves. The enclosed request identifies the affected components, applicable code requirements, and descriptions and bases for the proposed alternative. Energy Harbor Nuclear Corp. requests approval of the proposed alternative by February 1, 2023.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager, Fleet Licensing, at (330) 696-7208.

Sincerely,

A handwritten signature in black ink, appearing to read "Rod L. Penfield", written over a horizontal line.

Rod L. Penfield

Perry Nuclear Power Plant, Unit No. 1

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Enclosure:

Perry Nuclear Power Plant 10 CFR 50.55a Request Number: VR-12, Revision 0

cc: NRC Region III Administrator

NRC Resident Inspector

NRR Project Manager

Enclosure A
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Perry Nuclear Power Plant
10 CFR 50.55a Request Number VR-12, Revision 0

(6 pages follow)

Proposed Alternative
in Accordance with 10 CFR 50.55a(z)(1)

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--Alternative Provides Acceptable Level of Quality and Safety--

1. **ASME Code Components Affected**

Table 1

American Society of Mechanical Engineers (ASME) Code Component(s) Affected				
Valve Number	Valve Name	System	OM Category	ASME Code Class
1P87-F046	DRYWELL FLOOR DRN SUMP PEN ISOL VLV	Post Accident Sample System	A	2
1P87-F049	RX RECIRC AND RWCU CONT PEN ISOL VLV	Post Accident Sample System	A	2
1P87-F052	DRYWELL FLOOR DRN SUMP PEN ISOL VLV	Post Accident Sample System	A	2
1P87-F055	RX RECIRC AND RWCU CONT PEN ISOL VLV	Post Accident Sample System	A	2
1P87-F037	SUP POOL WATER SAMPLE ISOL VLV	Post Accident Sample System	A	2
1P87-F083	SUPP POOL RETURN ISOL VLV	Post Accident Sample System	A	2
1P87-F0264	SUPP POOL RETURN ISOL VLV	Post Accident Sample System	A	2
1D23-F010A	SUPR POOL LEVEL A DRY LEG ISOL VALVE	Containment Atmosphere Monitoring	A	2
1D23-F010B	SUPR POOL LEVEL B DRY LEG ISOL VALVE	Containment Atmosphere Monitoring	A	2
1D23-F020A	CNTMT PRESS A CNTMT ISOL VALVE	Containment Atmosphere Monitoring	A	2
1D23-F020B	CNTMT PRESS B CNTMT ISOL VALVE	Containment Atmosphere Monitoring	A	2
1D23-F030A	CNTMT DW A DIFF PRESS-CNTMT LEG	Containment Atmosphere Monitoring	A	2

1D23-F030B	CNTMT DW B DIFF PRESS-CNTMT LEG	Containment Atmosphere Monitoring	A	2
1D23-F040A	CNTMT DW A DIFF PRESS-DW LEG	Containment Atmosphere Monitoring	A	2
1D23-F040B	CNTMT DW B DIFF PRESS-DW LEG	Containment Atmosphere Monitoring	A	2
1D23-F050	SUPR POOL LEVEL C DRY LEG ISOL VLV	Containment Atmosphere Monitoring	A	2
1G43-F050A	SUPR POOL LEVEL A WET LEG ISOL VALVE	Suppression Pool Makeup	A	2
1G43-F050B	SUPR POOL LEVEL B WET LEG ISOL VALVE	Suppression Pool Makeup	A	2
1G43-F060	SUPR POOL LEVEL C WET LEG ISOL VALVE	Suppression Pool Makeup	A	2
1M17-F055	CNTMT VACUUM A CNTMT ISOL VALVE	Containment Vacuum Relief	A	2
1M17-F065	CNTMT VACUUM B CNTMT ISOL VALVE	Containment Vacuum Relief	A	2

Abbreviations used in Table 1

CNTMT	Containment
CONT	Containment
DRN	Drain
DW	Drywell
PEN	Penetration
SUP	Suppression
SUPP	Suppression
SUPR	Suppression
RX	Reactor

2. Applicable Code Edition

American Society of Mechanical Engineers Operation and Maintenance of Nuclear Power Plants, 2012 Edition.

3. Applicable Code Requirement(s)

Subsection ISTC-3700, "Position Verification Testing," states:

Valves with remote position indicators shall be observed locally at least once every 2 yr to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation.

4. Reason for Request

In accordance with 10 CFR 50.55a, Codes and standards, paragraph (z)(1), an alternative is proposed to ASME OM Code, 2012 Edition, subsection ISTC-3700 for select valves. The basis of the request is that the proposed alternative valve position verification frequencies and leakage tests provide an acceptable level of quality and safety. The current regulation does not allow the test frequency to be altered or adjusted based on existing NRC approved testing, past test performance results, likelihood of failure, nor consequence of failure. The proposed alternative will allow the performance of valve position indication verification and leakage testing to credit existing Code and NRC approved test methodologies and frequencies and be commensurate with the valve's risk ranking.

5. Proposed Alternative and Basis for Use

Proposed Alternative

ISTC-3700 states valves with remote position indicators shall be observed locally at least once every two years to verify that valve operation is accurately indicated. For certain valves at PNPP, 10 CFR 50, Appendix J, Type C testing (specifically, local leak rate testing (LLRT)) is credited to meet the position indication verification requirement. For certain isolation valves on instrument lines that penetrate containment, the inservice testing program utilizes 10 CFR 50, Appendix J, Type C testing methodology to meet the leakage rate and position indication verification requirements. Energy Harbor Nuclear Corp. is proposing to adopt the 10 CFR 50, Appendix J, Option B—Performance-Based Requirements program consistent with NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J " for PNPP. This program allows LLRT intervals to be extended up to 75 months for valves with a history of satisfactory testing, which entails completion of two consecutive periodic as-found tests where the results of each test are within the allowable administrative limits. Energy Harbor Nuclear Corp. proposes an alternative to the ASME OM Code, ISTC-3700 requirements, to perform the valve supplemental position verification at a frequency consistent with 10 CFR 50, Appendix J, Type C testing. The NRC approved the use of Option B at PNPP on September 9, 1997 (Accession No. ML021840313).

The method used at PNPP is a pressure test using LLRT equipment. This method involves pressurizing the containment penetration volume and verifying the penetration remains pressurized while the valve is indicating closed on the main control room board. The valve is then opened using the control switch in the main control room. A decrease in pressure is then verified along with valve position indicating open in the main control room. This method satisfies the requirement for position indication verification and ensures that the indicating system accurately reflects the valve position. The subject valves are all in category A and are all containment isolation valves (CIV) per the plant safety analysis. All the subject valves have a safety function to close to isolate containment during a loss-of-coolant accident (LOCA) when required. Since these valves are CIV, they are individually seat leakage tested in accordance with 10 CFR 50, Appendix J, Option B or the inservice testing program. The subject valves are designed that the position of the valve is not locally observable. The coil position is internal to the valve body and not observable in either the energized or de-energized state.

Basis for Use

10 CFR 50, Appendix J, states:

The purposes of the tests are to assure that:

(a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the technical specifications or associated bases

and

(b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment.

The paragraph above describes the 10 CFR 50, Appendix J, role in validating a component's ability to perform, as designed. Valves are subject to strict leakage requirements to assure performance of the overall containment structure. Valves that do not perform acceptably receive maintenance to restore performance. Performance is validated with subsequent consecutive leakage testing to provide assurance that maintenance is effective and valve performance is satisfactory. These requirements ensure licensees are effectively protecting the public health and safety by maintaining plant equipment to the specifications established by the plant's design basis and technical specifications (TSs). This alternate program allows 10 CFR 50, Appendix J, Type C LLRT intervals to be extended up to 75 months for valves. The NRC has endorsed NEI 94-01 Revision 3-A as providing an acceptable level of quality and safety.

Test frequencies in accordance with 10 CFR 50, Appendix J are based on performance. Valves with consistent, acceptable performance qualify for frequency extensions up to 75 months. Valves must pass two successful as-found leakage tests to qualify for a 75-month test frequency. A valve demonstrates acceptable performance when it exhibits leakage below the assigned administrative limits. Valves that do not meet the performance standard are tested every refueling interval, in accordance with 10 CFR 50, Appendix J, which is more frequent than the most limiting frequency requirement for supplemental position verification of up to two years. The valves in Table 1 have met the performance standard for extension to a 75-month period.

Regulation 10 CFR 50.55a(a)(1)(iv), "ASME Operation and Maintenance Code," identifies ASME OM Code, 2012 Edition, as an acceptable test methodology, subject to conditions in 10 CFR 50.55a(b), "Use and conditions on the use of standards." ASME OM Code, 2012 Edition, paragraph ISTA-1100, "Scope," states:

Section IST establishes the requirements for pre-service and inservice testing and examination of certain components to assess their operational readiness in light-water reactor nuclear power plants. It identifies the components subject to test or examination, responsibilities, methods, intervals, parameters to be measured and evaluated, criteria for evaluating the results, corrective action, personnel qualification, and record keeping.

ASME OM Code, 2012 Edition, ISTA-1100, provides instructions for the assurance of operational readiness of certain components, such as valves, through periodic performance testing. Operational readiness is a component's ability to perform its function as described by plant design and TSs. ASME OM Code, 2012 Edition, also contains instructions for resolving issues identified via testing, and the corrective action provisions detail the role of analysis and maintenance in restoring components to meeting design requirements. ASME OM Code serves a similar function to 10 CFR 50, Appendix J. ASME OM Code components are assessed on a periodic basis to assure performance capability. When performance criteria are not met, analysis is performed to verify operational readiness or maintenance is performed to restore performance and verified with follow-up testing. These requirements ensure licensees are effectively protecting the public health and safety by maintaining plant equipment to the specifications established by the plant design and TSs.

A review of the Energy Harbor Nuclear Corp. maintenance and code-required performance history at PNPP concluded that the valves listed in Table 1 have been reliable. The ASME OM Code, 2012 Edition requirements for the valves listed in Table 1 have been met, including position indication verification and leakage testing. This was determined by review of recorded performance history for the valves in Table 1, which dates back to 2011. All valves were found to have performed satisfactorily. This finding was also supported by a search of condition reports dating back to 2011.

There was only one condition report for impaired design, but the valve was later declared satisfactory after investigation. Therefore, obtaining position verification and leakage testing at a test interval longer than the frequencies specified in ASME OM Code, 2012 Edition, and controlled by 10 CFR 50, Appendix J, Option B—Performance-Based Requirements, provides an acceptable level of quality and safety.

For the valves in Table 1, performing the position verification on an interval consistent with 10 CFR 50, Appendix J aligns with the frequency of an NRC endorsed testing program. Therefore, the past performance of the valves in Table 1, coupled with the utilization of the robust, performance-based, program requirements from 10 CFR 50, Appendix J, Option B, justify that the proposed alternative provides an acceptable level of quality and safety.

6. Duration of Proposed Alternative

Alternative is requested for the fourth 10-year IST interval for PNPP, ending May 17, 2029.

7. Precedent

A similar request has been approved for Fermi, Unit 2 (ADAMS Accession No. ML17354B002).