



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

April 26, 2021

Mr. Frank R. Payne
Site Vice President
Energy Harbor Nuclear Corp.
Perry Nuclear Power Plant
P.O. Box 97, SB306
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 – ISSUANCE OF RELIEF REQUESTS VR-3, REVISION 0, AND VR-5, REVISION 0, ASSOCIATED WITH THE FOURTH 10-YEAR INSERVICE TESTING INTERVAL (EPID L-2021-LLR-0007, L-2021-LLR-0008 [COVID-19])

Dear Mr. Payne:

By letter dated January 28, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML21028A796), as supplemented by a letter also dated February 22, 2021 (ADAMS Accession No. ML21053A010), Energy Harbor Nuclear Corp. (the licensee) submitted alternative requests (ARs) Nos. VR-3, Revision 0, and VR-5, Revision 0, to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to specific requirements in the 2012 Edition of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) at Perry Nuclear Power Plant (PNPP).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee requested to use the proposed alternatives in requests VR-3, Revision 0, and VR-5, Revision 0, on the basis that complying with the requirements of the ASME OM Code would result in hardship without a compensating increase in the level of quality and safety.

The NRC staff concludes that requests VR-3, Revision 0, and VR-5, Revision 0, will provide reasonable assurance that the valves at PNPP, listed in the licensee's requests, are operationally ready to perform their safety functions until the spring 2023 refueling outage. The NRC staff finds that complying with the requirements of the ASME OM Code would result in hardship without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC authorizes the use of requests VR-3, Revision 0, and VR-5, Revision 0, at PNPP until the next scheduled refueling outage in spring 2023.

The enclosed safety evaluation documents the technical basis for the NRC's verbal authorizations of VR-3, Revision 0, and VR-5, Revision 0, on March 3, 2021 (ADAMS Accession Nos. ML21063A191 and ML21063A193, respectfully).

All other requirements in the ASME OM Code for which relief was not specifically requested and approved in this request remains applicable.

F. Payne

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If you have any questions, please contact the Project Manager, Scott Wall, at 301-415-2855 or e-mail at Scott.Wall@nrc.gov.

Sincerely,

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:
Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUESTS VR-3 AND VR-5

FOURTH 10-YEAR INTERVAL INSERVICE TESTING INTERVAL

ENERGY HARBOR NUCLEAR CORP.

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1.0 INTRODUCTION

By letter dated January 28, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML21028A796), as supplemented by a letter also dated February 22, 2021 (ADAMS Accession No. ML21053A010), Energy Harbor Nuclear Corp. (EHNC, the licensee) submitted alternative requests (ARs) Nos. VR-3, Revision 0, and VR-5, Revision 0, to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to specific requirements in the 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) at Perry Nuclear Power Plant (PNPP) associated with the fourth 10-year interval inservice testing (IST) interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee requested to use the proposed alternatives in requests VR-3, Revision 0, and VR-5, Revision 0, on the basis that complying with the requirements of the ASME OM Code would result in hardship without a compensating increase in the level of quality and safety.

The NRC verbally authorized VR-3, Revision 0, and VR-5, Revision 0, on March 3, 2021 (ADAMS Accession Nos. ML21063A191 and ML21063A193, respectfully).

2.0 REGULATORY EVALUATION

Adherence to the ASME OM Code is mandated by 10 CFR 50.55a(f)(4), which states, in part, that valves that are within the scope of the ASME OM Code must meet the IST requirements set forth in the ASME OM Code; and that valves that are within the scope of the ASME OM Code, but are not classified as ASME boiler & pressure vessel (B&PV) Code Class 1, 2, or 3, may be satisfied as part of an augmented IST program.

Pursuant to 10 CFR 50.55a(b)(3)(xi), "OM condition: Valve Position Indication," the licensee must comply with the provisions for verifying operation indications in Subsection ISTC-3700 of the ASME OM Code.

Regulation 10 CFR 50.55a(z) states, in part, that alternatives to the requirements of 10 CFR 50.55a(f) 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.

3.0 TECHNICAL EVALUATION

The information provided by the licensee in support of the requests for alternatives to ASME OM Code requirements has been evaluated and the bases for disposition are documented below. For clarity, the licensee's requests have been evaluated in several parts according to ASME OM Code Testing Category.

Applicable Code Edition and Addenda

The applicable Code edition and addenda for the fourth IST interval of the PNPP is the 2012 Edition of ASME Code, Section XI.

Duration of the Alternative

For VR-3, Revision 0, and VR-5, Revision 0, the licensee requested an alternative to allow a one-time extension of the operational readiness testing interval for the valves listed in Tables 1 and 2 of this safety evaluation at PNPP, during the spring of 2021 refueling outage (RFO). The licensee stated that it will resume the normal outage examination frequency at the next opportunity, currently expected to be the next RFO in spring 2023.

Common Reason for Requests

On March 13, 2020, the President of the United States declared a national emergency due to the spread and infectious nature of the Coronavirus-2019 (COVID-19) virus and resulting pandemic. To prevent the spread of COVID-19 and to protect the health and safety of plant personnel while maintaining responsibilities to support critical infrastructure, the licensee intends to reduce the amount of personnel on site, which will pose a hardship for completing the currently planned spring 2021 RFO work scope. With the current work scope and potential loss of personnel, the licensee may not be able to complete the RFO in a timely manner, which could affect critical infrastructure that is needed during this time.

3.1 Proposed Alternative VR-3, Revision 0

ASME Code Components Affected

In its submittal, the licensee requests a one-time extension of the testing interval for the following nine solenoid valves at PNPP:

Table 1

Component ID	Component Description	Code Class	Valve Category
1D23-F010A	Suppression Pool Level A Dry Leg Isolation Valve	2	A

Component ID	Component Description	Code Class	Valve Category
1D23-F010B	Suppression Pool Level B Dry Leg Isolation Valve	2	A
1D23-F020A	Containment Pressure A Containment Isolation Valve	2	A
1D23-F020B	Containment Pressure B Containment Isolation Valve	2	A
1D23-F030A	Containment Drywell A Differential Pressure – Containment Leg Valve	2	A
1D23-F030B	Containment Drywell B Differential Pressure – Containment Leg Valve	2	A
1D23-F040A	Containment Drywell A Differential Pressure – Drywell Leg Valve	2	A
1D23-F040B	Containment Drywell B Differential Pressure – Drywell Leg Valve	2	A
1D23-F050	Suppression Pool Level C Dry Leg Isolation Valve	2	A

Applicable Code Requirement

The IST requirements of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a related to this AR request are as follows:

- ASME OM Code, Subsection ISTC-3630, “Leakage Rate for Other Than Containment Isolation Valves,” paragraph (a), “Frequency,” states, in part, that “Tests shall be conducted at least once every 2 yr [years].”
- ASME OM Code, Subsection ISTC-3700, “Position Verification Testing,” states, in part, that:

Valves with remote position indicators shall be observed locally at least once every 2 yr [years] 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.

Reason for Request

The licensee reported that the solenoid valves listed in its request are tested every 2 year in accordance with ASME OM Code (2012 Edition), Subsection ISTC-3630, paragraph (a), and Subsection ISTC-3700. Therefore, these valves were scheduled to be tested during the RFO in the spring of 2021.

The licensee submitted the relief request considering the expected hardship of obtaining and maintaining onsite staff sufficient to prepare, perform, and recover from the examination. The

licensee stated that the testing of the solenoid valves listed in its request during the spring 2021 RFO at PNPP, would represent a hardship during the COVID-19 outbreak. For example, the licensee intended to reduce the amount of personnel on site to prevent the spread of COVID-19 at PNPP. Therefore, the licensee asserted that the testing of the specified solenoid valves at PNPP, during the spring 2021 RFO would result in a hardship without a compensating increase in the level of quality and safety in accordance with 10 CFR 50.55a(z)(2).

Licensee's Proposed Alternative

The licensee proposed an extension of the IST program testing intervals for the solenoid valves listed in its request to the next RFO for PNPP, currently scheduled for the spring of 2023.

The licensee stated that leakage rate testing and position indication verification are performed on the affective solenoid valves every RFO and that there has not been a failure of the position indication light or measured leakage rate criteria for any solenoid valve in the last 13 years. The licensee asserted that the performance of these solenoid valves supports extending the one-time operational readiness test interval and provides reasonable assurance that the solenoid valves are operationally ready to perform their safety functions.

NRC Staff Evaluation

Based on the information described above for the specific solenoid valves at PNPP, listed in the licensee's request, the NRC staff finds that: (1) solenoid valve testing during the past 13 years indicates their acceptable historical performance; and (2) a hardship existed for certain IST program activities related to these solenoid valves during the RFO in the spring of 2021 that would be contrary to the health and safety of plant personnel. The NRC staff also performed a search in the INPO Industry Reporting Information System (IRIS) operating experience database and only found two failures in the past 30 plus years of operation.

Therefore, the NRC staff finds that the licensee's proposed alternative for a one-time extension of operational readiness testing for the 9 specified solenoid valves at PNPP, in accordance with 10 CFR 50.55a(z)(2) will provide reasonable assurance that the solenoid valves will be operationally ready to perform their safety functions until the spring 2023 RFO.

3.2 Proposed Alternative VR-5, Revision 0

ASME Code Components Affected

In its submittal, the licensee requests a one-time extension of the testing interval for the following 2 relief valves at PNPP:

Table 2

Component ID	Component Description	Code Class	Valve Category
1C41-F029B	SLC Pump B Relief Valve	2	C
1E51-F018	RCIC Turbine Lube Oil Cooler Relief to CRW	2	C

SLC – Standby Liquid Control

RCIC – Reactor Core Isolation Cooling

CRW – Clean Radwaste Collection System

Applicable Code Requirement

The IST requirements of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a related to this AR, are as follows:

- ASME OM Code, Mandatory Appendix I, Subsection I-1350, “Test Frequency, Classes 2 and 3 Pressure Relief Valves,” paragraph (a), “10-Yr Test Interval,” states, in part, that:

Classes 2 and 3 pressure relief valves, with the exception of PWR [Pressurized Water Reactor] main steam safety valves, shall be tested every 10 yr [year], starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested during any single plant operating cycle; however, a minimum of 20% of the valves from each valve group shall be tested within any 48-mo [month] interval. This 20% shall consist of valves that have not been tested during the current 10-yr test interval, if they exist.

Reason for Request

The licensee reported that the relief valves listed in its request are at the end of their required 48-month required test interval as specified by ASME OM Code (2012 Edition), Mandatory Appendix I, paragraph I-1350(a). Therefore, these valves were scheduled to be tested during the RFO in the spring of 2021.

The licensee submitted the AR considering the expected hardship of obtaining and maintaining onsite staff sufficient to prepare, perform, and recover, from the testing. The licensee stated that the functional testing of the relief valves listed in its request during the spring 2021 RFO at PNPP, would represent a hardship during the COVID-19 outbreak. For example, the licensee intended to reduce the number of personnel on site to prevent the spread of COVID-19 at PNPP. In addition to the hardship of performing relief valve testing on site during COVID-19 outbreak, the licensee indicated that with vendor personnel working remotely, the production schedule of the vendor providing the relief valves to be used as pre-tested replacements has been impacted. This impact will challenge the acquisition of qualified and tested replacement relief valves. Therefore, the licensee asserted that the testing of the specified relief valves at PNPP during the spring 2021 RFO would result in a hardship without a compensating increase in the level of quality and safety in accordance with 10 CFR 50.55a(z)(2).

Licensee’s Proposed Alternative

The licensee proposed an extension of the IST program 48-month test interval for the relief valves listed in its request to the next RFO for PNPP, currently scheduled for the spring of 2023.

The licensee noted that currently installed relief valve 1C41-F029B was previously tested at a vendor facility on February 28, 2013. ASME OM Code, paragraph I-1350(a), states, in part, that the test interval for any installed valve shall not exceed 10 years and the 10-year test interval shall begin from the date of the as-left set pressure test. Testing relief valve 1C41-F029B during the spring of 2023 RFO would meet this 10-year test interval requirement by using a portion of the 6-month test interval extension permitted by ASME OM Code Case OMN-20, “Inservice Test Frequency.” The currently installed relief valve 1E51-F018 was tested at the

vendor facility on March 10, 2014, and testing this valve during the spring of 2023 RFO would meet this 10-year test interval requirement.

On February 22, 2021, in response to a request for additional information (RAI), the licensee provided clarification that it was requesting an alternative to the requirement that a minimum of 20 percent of the valves from each valve group be tested within any 48-month interval. In addition, the licensee provided the results of the post-removal set pressure tests of the relief valves in the two test groups from 2009 to 2017. There are two relief valves in the group that includes relief valve 1E51-F0018. Three of five set pressure tests in this group met the acceptance criteria range. The results for this group indicate that relief valve 1E51-F0018 lifted at a pressure lower than the acceptance criteria range. The licensee stated that if relief valve 1E51-F0018 were to lift low during operation, water would be diverted from the RCIC lube oil cooler. There is a high temperature alarm on the cooler outlet that would actuate if temperature were greater than 160 degrees Fahrenheit, and this condition would be identified. Even with the low lift pressure for this relief valve, no RCIC lube oil cooler temperature alarms, and no step increases in the auxiliary building clean radiological waste drain sump were noted during RCIC pump operation. Relief valve 1E51-F0018 was removed and replaced by a new valve before this set pressure test was performed. The RAI response also indicates that both relief valves in the test group that includes relief valve 1C41-F0029B met the acceptance criteria range in the post-removal set pressure testing from 2009 to 2017.

NRC Staff Evaluation

As incorporated by reference in 10 CFR 50.55a, ASME OM Code (2012 Edition), mandatory Appendix I, paragraph I-1350(a), requires, in part, that ASME Boiler and Pressure Vessel Code Classes 2 and 3 pressure relief valves, with the exception of PWR main steam safety valves, shall be tested every 10 years, starting with initial electric power generation. Also, a minimum of 20 percent of the valves from each valve group shall be tested within any 48-month interval. This 20 percent shall consist of valves that have not been tested during the current 10-year test interval, if they exist.

In lieu of performing the ASME OM Code requirement that a minimum of 20 percent of the valves from each valve group shall be tested within any 48-month interval, the licensee requested a one-time extension to the next RFO currently scheduled for the spring of 2023 be allowed for the testing of relief valves 1C41-F029B and 1E51-F018.

In its submittal dated January 28, 2021, the licensee provided justification that compliance with the provisions in ASME OM Code, Mandatory Appendix I, paragraph I-1350(a), as incorporated by reference in 10 CFR 50.55a, to conduct testing of a minimum of 20 percent of the relief valves from each valve group within any 48-month interval would result in a hardship without a compensating increase in the level of quality and safety in accordance with 10 CFR 50.55a(z)(2), if performed during the spring 2021 RFO. In addition to the hardship of performing relief valve testing on site during the COVID-19 outbreak, the licensee indicated that with vendor personnel working remotely, the production schedule of the vendor providing the relief valves to be used as pre-tested replacements has been impacted. This impact will challenge the acquisition of qualified and tested replacement relief valves.

The licensee also provided the results of the post-removal set pressure tests of the two relief valve groups from 2009 to 2017. Relief valve 1C41-F0029B passed its set pressure test and relief valve 1E51-F0018 lifted at a pressure lower than its acceptance criteria range. The NRC staff notes that the high temperature alarm on the RCIC lube oil cooler did not actuate during

RCIC system operation, indicating that relief valve 1E51-F0018 did not lift during RCIC system operation. Also, the valve was replaced by a new valve prior to the unsatisfactory post-removal set pressure test of the removed valve.

Based on the above information, the NRC staff finds that requiring the licensee to perform set pressure testing during the spring 2021 RFO for the two relief valves identified in the licensee's submittal, as required by the ASME OM Code, would cause a hardship to the licensee due to the reduction of personnel on site and at the valve vendor's facility due to COVID-19. The NRC staff finds that the past set pressure test of relief valve 1C41-F0029B and the replacement of relief valve 1E51-F0018 before the set pressure test was performed on the removed relief valve are adequate to demonstrate operational readiness of these relief valves.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives described in ARs VR-3, Revision 0, and VR-5, Revision 0, will provide reasonable assurance that the valves at PNPP, listed in the licensee's request are operationally ready to perform their safety functions until the spring 2023 RFO. The NRC staff finds that complying with certain requirements of the ASME OM Code would result in hardship without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC authorizes the use of proposed alternatives VR-3, Revision 0, and VR-5, Revision 0, at PNPP, until the next scheduled RFO in the spring of 2023.

All other ASME Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

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Date: April 26, 2021

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 – ISSUANCE OF RELIEF REQUESTS VR-3, REVISION 0, AND VR-5, REVISION 0, ASSOCIATED WITH THE FOURTH 10-YEAR INSERVICE TESTING INTERVAL (EPID L-2021-LLR-0007, L-2021-LLR-0008 [COVID-19]) DATED APRIL 26, 2021

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