



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

September 21, 2021

Mr. Ernest J. Kapopoulos, Jr.
Site Vice President
H. B. Robinson Steam Electric Plant
Duke Energy Progress, LLC
3581 West Entrance Road, RNPA01
Hartsville, SC 29550

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2 – PROPOSED
ALTERNATIVES TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS
CODE FOR OPERATION AND MAINTENANCE OF NUCLEAR POWER
PLANTS (EPID L-2021-LLR-0022)

Dear Mr. Kapopoulos:

By letter dated March 29, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21088A139), Duke Energy Progress, LLC (Duke Energy, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of an alternative to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at H.B. Robinson Steam Electric Plant, Unit 2 (RNP).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Paragraph 50.55a(z)(1), the licensee requested to use an alternative method to the valve inservice testing requirements for relief valves meeting the criteria of ASME OM Code Case OMN-24, "Alternative Rules for Testing ASME Class 2 and 3 Pressure Relief Valves (For Relief Valves in a Group of One)," on the basis the proposed alternative would provide an acceptable level of quality or safety.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the proposed alternatives described in alternative request IST-RR-7 provide an acceptable level of quality and safety. Accordingly, the NRC staff concludes that Duke Energy has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of alternative request IST-RR-7 for the sixth 10-year inservice testing program interval at RNP, which begins on February 19, 2022, and ends on February 18, 2032. All other ASME OM Code requirements for which relief or an alternative was not specifically requested and approved remain applicable.

E. Kapopoulos

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If you have any questions, please contact Project Manager John Klos at 301-415-5136 or by e-mail to John.Klos@nrc.gov.

Sincerely,

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosure:
Safety Evaluation

cc: Listserv



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

PROPOSED ALTERNATIVE REQUEST IST-RR-7

REGARDING THE SIXTH 10-YEAR INTERVAL INSERVICE TESTING PROGRAM

DUKE ENERGY PROGRESS, LLC

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-261

EPID-2021-LLR-0022

1.0 INTRODUCTION

By letter dated March 29, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21088A139), Duke Energy Progress, LLC (Duke Energy, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of an alternative to certain requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) at H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP) associated with the sixth 10-Year Interval Inservice Testing Program.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternatives in request IST-RR-7, on the basis that the alternative provides an acceptable level of quality and safety.

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 Inservice Testing (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 (BPV) Code Class 1, 2, or 3, may be satisfied as part of an augmented IST program.

The regulations in 10 CFR 50.55a(z) state, 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.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request, and the NRC to authorize, the proposed alternative requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Proposed Alternative IST-RR-7

The applicable Code edition and addenda for the RNP Sixth 10-year IST program interval is the 2017 Edition of ASME OM Code, which is incorporated by reference in 10 CFR 50.55a with conditions. The proposed alternative is for the requirements in Appendix I subparagraph I-1350, Test Frequency, Classes 2 and 3 Pressure Relief Valves Except PWR Main Steam Safety Valves, "(a)(2): For valve groups containing only one valve, the valve shall be tested at least every 48 months."

ASME Code Components Affected

In its submittal, the licensee proposed alternative testing for the following relief valves:

Table 1: RNP ASME Class 2 and 3 Relief Valves in a Group of One (1)

Component ID	Description	Category	Class
CC-707	Component Cooling Water (CCW) Surge Tank Relief	Category C	3
CC-948	CCW Surge Tank Vacuum Breaker	Category C	3
CVC-257	Volume Control Tank (VCT) Relief	Category C	3
RHR-706	Residual Heat Removal (RHR) System Relief	Category C	2
SI-857A	Boron Injection Tank to Safety Injection (SI) Test Line Relief	Category C	2
SI-857B	Loop "B" Cold Leg Injection Relief to Pressurizer Relief Tank (PRT)	Category C	2
SI-859	Relief to PRT from SI Test Line	Category C	2
SI-871	Containment Spray Pump Suction Relief	Category C	2
SI-872	Spray Additive Tank (SAT) Relief	Category C	3

Applicable Code Requirement

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

- ASME OM Code, Subsection ISTC, paragraph ISTC-5240, "Safety and Relief Valves," requires that safety and relief valves shall meet the inservice test requirements of the Mandatory Appendix I of the ASME OM Code.

- ASME OM Code, Mandatory Appendix I, Section I-1350, “Test Frequency, Classes 2 and 3 Pressure Relief Except PWR Main Steam Safety Valves” subparagraph I-1350(a)(1) states, “The maximum allowable time between tests for any valve, with the exception of pressurized-water reactor (PWR) main steam safety valves, shall not exceed 10 year, starting with initial electric power generation.”
- ASME OM Code, Mandatory Appendix I, Section I-1350, “Test Frequency, Classes 2 and 3 Pressure Relief Except PWR Main Steam Safety Valves” subparagraph I-1350(a)(2) states, “For valve groups containing only one valve, the valve shall be tested at least every 48 months.”
- ISTA-3130(b) states, “Code Cases shall be applicable to the edition and addenda specified in the test plan.”
- ASME OM Code, Code Case OMN-24, “Alternative Requirements for Testing ASME Class 2 and 3 Pressure Relief Valves (For Relief Valves in a Group of One).”

Reason for Request

RNP proposes to implement ASME OM Code Case OMN-24, Alternative Rules for Testing ASME Class 2 and 3 Pressure Relief Valves (For Valves in a Group of One), on the basis that the proposed alternative would provide an acceptable level of quality and safety. This alternative would also relax the requirements of paragraph I-1350(a)(2), which requires testing of Class 2 and 3 relief valves in a group of one at least every 48 months, but the alternative would remain in compliance with paragraph I-1350(a)(1) where the test interval would not exceed 10 years, with the Code Case allowing a 6 month grace period to coincide with refueling outages.

The published ASME OM Code 2020 Edition “Applicability Index for ASME OM Cases” includes the ASME OM Code Case OMN-24 and its applicability for ASME OM Code 2001 Edition through the 2020 Edition. Code Case OMN-24 has not been approved for use in Regulatory Guide 1.192, “Operation and Maintenance Code Case Acceptability, ASME OM Code,” Revision 3.

Proposed Alternative and Basis for Use

RNP relief valves listed in Table 1 are Class 2 and 3 relief valves in a group of only one valve. The licensee would implement the alternative methods of ASME OM Code Case OMN-24 for the relief valve test frequencies for relief valves listed in Table 1. Each of the items (a) through (f) of the Code Case are addressed as follows:

- a) The relief valve shall be tracked by its plant identification number as provided by its manufacturer or as applied by the Owner (RNP).
- b) Upon adoption of this Code Case, the initial test interval shall not exceed 48 months since its last set-pressure test. A 12 month period is allowed to complete testing once the relief valve is removed from the system.
- c) A relief valve that satisfies the as-found set-pressure test criterion may have its test interval extended by up to 24 months. The test interval shall begin from the date of the as-left set-pressure test for the installed valve.

- d) A relief valve that fails the as-found set-pressure test shall have its test interval reduced by 24 months. The minimum required test frequency for this circumstance is a 24 month interval.
- e) The test interval for any individual relief valve shall not exceed 120 months except that a six (6) month grace period is allowed to coincide with refueling outages to accommodate extended operation or shutdown periods.
- f) The Owner (RNP) may satisfy testing requirements by installing a pretested valve to replace the valve that had been in service provided that the valve removed from service shall be tested within 12 months of removal from the system.

RNP proposed an alternative to test the relief valves listed in Table 1 by implementing the requirements of ASME OM Code Case OMN-24, Alternative Rules for Testing ASME Class 2 and 3 Pressure Relief Valves (For Relief Valves in a Group of One). Compliance with the requirements of ASME OM Code Case OMN-24 as an alternative to the specific requirements of Section I-1350 will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, compliance with the requirements ASME OM Code Case OMN-24 would result in an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).

NRC Staff Evaluation

Per ASME OM Code, I-1350(a)(1), the maximum allowable time between tests for Class 1 and 2 relief valves, with the exception of main steam safety valves, shall not exceed 10 years. Section I-1200, "Definitions," defines a valve group as "Valves of the same manufacturer, type, system application, and service media." A valve that has been determined to be in a group of one is required to be tested every 48 months.

ASME OM Code Case OMN-24 was approved by the ASME Operations and Maintenance Standards Committee on May 17, 2018, with the NRC representative voting in the affirmative on this Code Case. On February 2, 2021, NRC published the regulatory guides (RGs) proposed rule in the *Federal Register* (86 FR 7820) for public comments. ASME OM Code Case OMN-24 is included in the proposed Revision 4 of RG 1.192 (ADAMS Accession No. ML20120A629), "Operation and Maintenance Code Case Acceptability, ASME OM Code," where it is listed in the table of Code Cases acceptable for use. RG 1.192, Revision 4, is currently scheduled to be incorporated by reference in 10 CFR 50.55a in the spring of 2022. The licensee proposed to adopt the language of the published Code Case OMN-24 in its entirety.

Code Case OMN-24 allows Class 2 and 3 relief valves in a group of one to be initially tested at a 48-month interval, and if the valve satisfies the as-found set-pressure test criterion the test interval may be extended 24 months. This may be repeated until the valve reaches a maximum test interval of 10 years. Any valve that fails the as-found set-pressure test shall have its test interval reduced by 24 months. The minimum required test frequency for this circumstance is a 24 month interval.

The NRC staff finds that extending the test interval of Class 2 and 3 safety relief valves in 2-year steps per interval with a maximum final interval of 10 years to be acceptable. Extending or reducing the test interval in small increments is a prudent, acceptable approach in evaluating a component's performance over time. This effort will also help determine the best test interval

for that component. The NRC staff finds that allowing the licensee use of ASME OM Code Case OMN-24 in their IST program provides an acceptable level of quality and safety for valves listed in Table 1, and that this alternative will provide adequate indication of relief valve performance.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives described in alternative request IST-RR-7 provide an acceptable level of quality and safety for relief valves listed in Table 1. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of alternative request IST-RR-7 for the sixth 10-year IST program interval at RNP, which begins on February 19, 2022, and ends on February 18, 2032.

All other ASME OM Code requirements for which relief or an alternative was not specifically requested and approved remain applicable.

Principal Contributor: Gurjendra Bedi, NRR

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